OPERATIONAL MANAGEMENT PLAN

UPPER SAGINAW RIVER
DREDGED MATERIAL DISPOSAL FACILITY

SAGINAW RIVER, MICHIGAN

US Army Corps
of Engineers®

Prepared by:
U.S. Army Corps of Engineers
Detroit District 11 Jun 2008

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DREDGED MATERIAL DISPOSAL FACILITY
SAGINAW RIVER, MICHIGAN
11 Jun 2008

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Upper Saginaw River Dredged Material Disposal Facility

Operational Management Plan

June 11, 2008

I. General

This Operational Management Plan (OMP) is intended to set forth the operational, monitoring, inspection, and maintenance requirements for the Dredged Material Disposal Facility (DMDF) for the Upper Saginaw River. The United States Army Corps of Engineers (Corps) operates and maintains the DMDF until it is filled. The State of Michigan, Department of Environmental Quality (MDEQ) issued a Certification to the Corps to discharge sediment dewatering effluent to the Saginaw River under Section 401 of the Clean Water Act (33 U.S.C. 1341) (See Appendix F for Certification).

In accordance with Federal laws, policies and agreements, Saginaw County, as local sponsor, is obligated to meet the following conditions of local cooperation:

a. Furnish all lands, easements, and rights-of-way necessary for the construction, operation, and maintenance of the facility;
b. Hold and save the Corps free from all damages arising from construction or operation and maintenance of the DMDF and any betterments except for damages due to the fault or negligence of the Corps or its contractors. See Appendix D.

Saginaw County, in its capacity as local sponsor, has received authorizations from the MDEQ regarding wetlands, floodplain, and storm water to the Saginaw River, under the Natural Resources and Environmental Protection Act (451 PA 1994, as amended). See Appendix I.

II. Description of the DMDF

A. GENERAL

Saginaw Bay is located on the west shore of Lake Huron, approximately 90 miles north-northwest of Detroit, Michigan (see figure 1). The Saginaw River is at the head of the 51-mile-long bay. The Saginaw River generally runs north-south within the southeast corner of Bay County and empties into Lake Huron. The Saginaw River channel is a Federally authorized commercial navigation project. The Federal Navigation Project (Project) has been divided into two segments for management purposes: the Lower Saginaw River and the Upper Saginaw River.

The Lower Saginaw River segment includes the lower 4.7 miles of the Saginaw River, from the Penn Central Railroad Bridge to the river mouth, and the 14 miles of channel in the bay (see figure 2). The Upper Saginaw River extends from approximately river mile 4.7 upstream to approximately the confluence of the Tittabawasee River and Shiawasee River.

Material from Federal navigational maintenance dredging for the Upper Saginaw River will be placed into the DMDF. The dredging activity may be accomplished with either mechanical or hydraulic methods. If a third party wishes to place material into the DMDF, the process to request and obtain approval from the Corps is contained in Detroit District regulation, DM 1145-1-1 and Corps Policy Guidance Letter No. 47.

The DMDF (shown in figures 3, 4, and 5 and Appendix B) encompasses an area of 213[1] acres and is designed to provide storage capacity of 3.1 million cubic yards of dredged material for a minimum 20-year operational period. It consists of three major features: the perimeter dike structures, two interior cross dikes, and a system of discharge weirs with floating skimmers. The cross dikes divide the DMDF into a three-celled system. A contractor- provided dredged material pumpout and pipeline distribution system would be utilized during each maintenance dredging event. The maintenance dredging activities will range from 50,000 to 150,000 cubic yards of dredged material per year.

B. DIKES

The eleven feet high clay perimeter dikes have a crest elevation of 591.0 feet, referenced to the North American Vertical Datum 1929 (NGVD29), a constant side slope of 1V to 2.5H, 10 feet wide crest, and an approximate 65 feet width at the toe. The placement site is underlain by clay. The perimeter dike consists of compacted clay obtained from on-site. The interior cross dikes have a crest elevation of 591.0 feet. They have constant side slopes of 1V to 2.5H, and a 5 feet wide crest. The cross dikes each contain an interior weir that aids in the containment and control of water within the site. A more detailed description of the dike structure will be included on the as-built drawings after construction of the facility is completed.

C. PIPELINE

The location of the contractor-provided dredged material pumpout and pipeline distribution system will be located at the northern end of the DMDF. See Appendix G for Pipeline Easement. A small berm with a culvert will be constructed across the proposed mitigation area as a part of the inlet pipeline route. The pipeline would discharge dredged sediments and transport water into

[1] Figures may contain proposed acreage for DMDF but provide a general description of the DMDF. Final configuration of the DMDF will be included in the As-Built Drawings.

the northern confinement cell. Stoplog-type overflow weirs will be installed in the interior cross dikes to control the flow of water throughout the DMDF. The dredged material will be hydraulically pumped into the containment cells and allowed to settle. Initially each cell has the capacity to contain the sediments and transport water from a single dredging season. The solids would then be allowed to settle. A stoplog-type weir and effluent discharge line will be located at the south east corner of the DMDF, discharging into the Saginaw River. The effluent would be monitored as required in the 401 water quality certification.

D. DISCHARGE WEIRS AND OIL SKIMMERS

A discharge weir with an oil skimmer will be installed in each cross dike. A final outlet weir with an oil skimmer, located at the southeast corner of the DMDF, will discharge effluent into the Saginaw River. The approximate coordinates for the final outlet weir are 43-31-06 N, 83-53-22 W (degrees, minutes, seconds). Effluent monitoring will take place at this weir. The weir will be equipped with floating oil skimmers to contain oil and debris within the facility. A gate valve or similar type of valve will be installed on the downstream discharge pipeline to prevent any leakage from being released from the confinement area. More detailed descriptions of the weirs and skimmers will be included on the as-built drawings.

An additional discharge period may be required to accommodate managing water discharge due to storm events. In the event of such occurrence, the discharge would be monitored as required in the 401 Certification.

E. CROSS DIKES

The cross dikes separate the site into three distinct cells. Cell A is located on the most northerly end of the DMDF. Cell A will be the first cell filled and contains the current pipeline connection. At first, the weir between cell A and cell B will remain closed, allowing for the material to settle out before releasing the water into cell B. As cell A fills, water will be released sooner into cell B, where it will have time to settle until being released into cell C. Cell C contains the outlet weir where the water will be released back into the Saginaw River. After cell A has been filled close to capacity, it will be covered with cleaner material to act as the “cap” and the pipeline will be extended in order to release dredged material into cell B. Cell C will then act as cell B’s secondary settling basin. This management method maximizes removal of total solids from the final effluent and ensures the final effluent complies with the 401 Certification and manages wildlife exposure to dredged material. Water will not be released from cell C until it meets the 401 Certification requirements. Both cells B and C will also be capped with cleaner material after they become filled.

III. Operation, Monitoring, Inspection and Maintenance

A. GENERAL

The Corps shall operate and maintain the DMDF while it is being used for dredged material disposal. Personnel assigned by the Engineering and Technical Services Office, Detroit District, Corps of Engineers shall be responsible for operating, monitoring, inspecting, and maintaining the DMDF.

B. PERIODIC INSPECTION

Periodic inspections shall be made at the following times while the DMDF is operated by the Corps:

1) Immediately prior to, during, and after maintenance dredging operations.
2) At least once annually, if placement of dredged material is not scheduled during the calendar year.
3) After periods of extreme adverse weather conditions in the area, i.e., intense rainfall or extended periods of hot weather.
4) At any other time deemed necessary by the Corps.
5) The Corps will consider reasonable requests from DEQ for additional inspections. If the Corps grants the request, DEQ staff will accompany Corps and/or County staff, if available, on additional inspections.

The Corps shall provide the MDEQ Saginaw Bay District multi-media coordinator, and Saginaw County a schedule of all planned inspections and notice of any other inspections. The MDEQ and Saginaw County may participate in any inspection.

The DMDF should be inspected periodically between 15 June and 31 October for botulism. See Section V.C.

Whenever personnel are on site, they should be aware of any conditions, such as dust or odor. During inspections, personnel should record the approximate water elevations in the cells.

To facilitate inspections, there is a suggested check sheet contained in Appendix C.

C. ANNUAL INSPECTION AND REPORT

During operation of the DMDF by the Corps, an annual inspection of the facility will be conducted jointly by representatives of the Corps and Saginaw County. The MDEQ Water Bureau Saginaw Bay District Supervisor will be notified of the

inspection date and MDEQ staff may participate in the inspection. The annual inspection will include:

1) A visual inspection of the dikes to assure their structural integrity (looking for seeps, animal burrows, sinkholes, settlement, erosion, unacceptable woody vegetation or tall vegetation that would hinder inspections, etc).
2) An estimation of the volume of water in the cells.
3) Inspection of the weirs, oil skimmers, gate valve, any monitoring devices, and appurtenant structures to assure that they operate properly.
4) Assure signage is in place and serviceable.

A report detailing the findings of the inspection will be prepared by the Corps. The report will cover inspection and maintenance of the DMDF and its appurtenances made during the period covered by the report. If temporary or permanent repairs have been made, the dates and the type of construction, along with photographs of the repaired areas, would be included in the report. Photographs showing the facility in operation or its condition at the time of inspection would also be included in the report. The annual report is in addition to periodic reports and reports required by the 401 Certification. A copy of the annual report will be provided to the MDEQ Saginaw Bay District multi media coordinator upon request.

D. ACTION PLANS IN RESPONSE TO INSPECTION FINDINGS

In the event an inspection determines that there is a problem with any aspect of the DMDF, it will be immediately reported to the Corps Chief of Operations. It will be the responsibility of the Operations Office to ensure that the proper measures are taken to repair the problem.

If dust is a problem, light spraying or reworking the interior would help to alleviate excessive dust and odor. Mosquito populations may be controlled through dewatering with approval for a discharge from the DEQ pursuant to the 401 Certification, and possibly reworking the interior to enhance drying.

Water inside the facility must be tested prior to release, as required in the 401 Certification, and must be coordinated with both the Corps Environmental Analysis Branch and MDEQ.

IV. Dewatering and Material Management

A. BACKGROUND

The goals of the operational management plan include dewatering and densification of dredged material to properly dispose of sediments, maximize

storage capacity, and maintain acceptable water quality of effluent. The U.S. Environmental Protection Agency states in their Contaminated Sediments Remediation Guidance Document, that drying dredged material by means of natural dewatering is a technically feasible method of treatment when utilized in a dredged material disposal facility (DMDF).

Evaporative drying will be used at this site. It is an effective technique of natural dewatering of dredged materials. It permits maximum retention time for fine grained sediments to sufficiently settle out, a necessary process to meet the 401 Certificate discharge requirements. Drying is also the most effective control method for preventing waterfowl botulism.

Natural processes often need man-made assistance to effectively dewater dredged material since dewatering is influenced by climate and is relatively slow. Providing good surface drainage is a condition needed to speed the evaporative drying process. It allows evaporation to dry the dredged sediments from the surface downward, even when local precipitation exceeds evaporation. Good surface drainage should be achieved by proper dredged material placement and progressive trenching methods as described in EM 1110-2-5027.

When natural dewatering is not possible, then additional dewatering techniques should be considered, such as placement of dredged materials in thin lifts, selective placement of dredged materials within each cell, and effective operation of interior weirs between each cell. The disposal area operations will be managed to provide a minimum of a three foot freeboard and to minimize ponded water below the goal of a nine month maximum water retention period. If it is necessary to minimize ponded water storage time in each cell to meet this goal; pumping of water, select dredged material placement, grading and interior filter cells may also be used to reduce suspended solids so that a discharge may take place.

B. PREDREDGED MATERIAL MANAGEMENT

Predredged Management Activities includes site preparation. Immediately before a disposal operation, the desirability of vegetation within the containment area will be evaluated. Moderate vegetation may be beneficial because it helps dewater dredged material by transpiration and may improve the effluent quality by filtering. If vegetation is too thick, it could possibly hinder the dewatering operation. In this case, it may be more beneficial to grade existing topography from planned inlet locations toward the weir locations to facilitate drainage of the area.

Two interior dikes have been constructed. The basic rationale behind their construction is to subdivide the area into manageable segments and/or to control the flow of dredged material through the disposal area. Control of material

placement is helpful to facilitate dewatering or to provide proper control of disposal area effluent. Interior dikes have the additional benefit of being able to be used as haul roads, if widened during future operations at the site.

The perimeter dikes have been designed and constructed to prevent seepage of contaminated water from leaving the disposal facility. The dikes are constructed entirely of low permeability compacted clay soils. Construction included excavation of a six foot deep inspection trench to cut off any potential pathway through drainage tiles.

The placement of the weirs and inflow pipes will help the efficiency of the dewatering process. Effective operation may require that the dredged material pipe location be moved periodically from one part of the site to another, to ensure a proper filling sequence and obtain proper surface elevation gradients.

C. MANAGEMENT DURING DISPOSAL

Dredged materials will be placed into the DMDF by hydraulic means. During hydraulic pump out the influent pipe will be placed at a location remote from the weir in each cell. This ensures that the dredged material slurry has sufficient retention time for natural settling of solids to attenuate the water borne materials before the effluent passes through the outflow weir and returns to the Saginaw River. Thus, coarse particles such as sand, gravel and clay balls will be rapidly deposited near the pipe while fine-grained silts and clays migrate further and settle from suspension along with adsorbed pollutants before reaching the weir. Oil skimmers shall be used to improve effluent water quality from the DMDF if oil and grease are present in the dredged material.

The removal of water following the dredging operation will be expedited by managing inlet pipe placement and weirs during the disposal operation. Gains in long-term storage capacity of containment areas through natural drying processes will be increased by depositing material in such a way that it slopes continually and as practical toward the outlets weirs. Inlet pipes are placed at various points in the inlet zone, discharging either simultaneously (multiple inlet pipes) or alternately (single movable inlet pipe or multiple inlet pipes discharging singly). A common practice that may be used is to use a single inlet pipe, changing its location between disposal operations. The result of this practice is the buildup of several mounds, one near each inlet pipe location. By careful management of the inlet pipe locations, a continuous line of mounds may be constructed. When the line of mounds is complete, the dredged material will slope downward toward the weir. If the mound area is graded between disposal operations, the process will be repeated by extending the inlet pipe over the previous mound area and constructing a new line of mounds.

Dredged material from the Upper Saginaw River will be placed into the DMDF. The dredging activity may be accomplished with either mechanical or hydraulic

methods, although placement of the dredged materials into the DMDF will be by hydraulic methods.

The materials dredged from the Upper Saginaw River will be placed into the DMDF in such a manner that the material with higher contaminant levels would be dredged and placed first in any dredging season. Dredged materials with the lower concentration of contaminants shall be placed last in any dredging season, forming “the interim cover”. The dredged materials will be placed into the DMDF in accordance with the dredging work plan which will be completed by the Corps’ Detroit District office and provided to both Corps field personnel and MDEQ.

D. POST-DREDGED MATERIAL MANAGEMENT

Periodic site inspections following the dredging operations will be performed. Once the ponded water has been decanted, site management efforts will concentrate on maximizing the containment storage capacity gained from continued evaporative drying and consolidation of dredged materials.

E. EFFLUENT MONITORING

Effluent quality monitoring procedures shall be conducted as required in the 401 Certification. The site will be monitored to document the effluent discharge. The site water will be tested prior to discharge to evaluate whether the effluent meets the 401 Certification requirements. This testing information will be coordinated with the MDEQ a minimum of 10 days prior to a proposed discharge. If the pre-release wastewater characterization meets 401 Certification requirements and is approved by the MDEQ, the weir would be lowered and the effluent released to the Saginaw River. The number of boards removed shall be minimized to prevent scouring of the dredged material settlement column by high velocities. If the testing indicates that the pre-release wastewater characterization does not meet the 401 Certification requirements, then additional settling time would be allowed or other treatment methods will be employed, and the weir will not be lowered until further testing demonstrates that the water meets the 401 Certification requirements.

F. GROUNDWATER MONITORING

Groundwater monitoring wells have been placed outside of the perimeter dikes to monitor the effects of this project, if any, on groundwater. Groundwater monitoring will be performed in accordance with the Groundwater Monitoring Plan, provided in Appendix H.

V. Wildlife Control

A. GENERAL

Wildlife exposure will be limited at the site through several controls. Dredging will take place in the summer and fall. The material in the site will be allowed to settle during the winter months, and due to ice conditions, exposure will be limited during the settling process. During spring, the water in the site will be evaluated to determine if it meets the 401 Certification requirements and released when it does. With many years of experience, we have found that dredged material is very high in nutrient rich soil and seeds, which causes vegetation to grow quickly. After the first year, vegetative growth will take place and further limit wildlife exposure in the site by stabilizing the sediment. Wildlife exposure will also be limited by using only one cell for placement during the dredging operation.

Vegetation control will be accomplished as stated in the Appendix C, however vegetation control will not be accomplished in the mitigated wetland area.

B. FENCING

An eight feet high chain-link fence built around the entire perimeter of the DMDF will limit access to the site.

C. BOTULISM CONTROL

Botulism poisoning occurs as a result of ingestion of a toxin produced by the spore forming bacterium Clostridium botulinum. The conditions for growth of the spore are warm temperature, anaerobic conditions and an animal protein food supply.

The most effective method of preventing botulism is to manage the DMDF with the objective of drying the dredged sediments, and to maintain close surveillance of the DMDF during high potential botulism periods. Perched ponds and mud flats with warm stagnant water and dead fish or invertebrates brought up with dredged material facilitate botulism growth and should be avoided.

Botulism Risk Period – If mud flats are present, botulism can occur when temperatures reach the mid 60s degrees Fahrenheit. However, most of the botulism-related die-offs of waterfowl in the Saginaw Bay region have occurred when air temperatures are in the upper 80s and 90s.

The most critical botulism period occurs between August 1st and September 30th. During this period, inspectors should watch closely for signs of waterfowl botulism and additional inspections may be required if hot weather conditions persist.

Botulism sickness in waterfowl can be identified by the following symptoms which are a result of the extent to which the central nervous system is paralyzed: The

bird is unable to fly, but may still be able to swim or walk. The bird can only sit, or flop on the ground, often not even being able to raise its head. In this case, the bird will die from lack of food and water or may drown if it's in deep enough water due to an inability to control its head. Birds can survive if given fresh water and are protected from direct sunlight and predators.

If avian mortality or illness occurs at the facility, the following actions would be taken immediately:

1) Contact the Corps Chief, Environmental Analysis Branch at 313-226-6752 who will contact the MDNR field representative.
2) A small number (up to 6) of fresh, dead specimens of each species of bird involved in the die-off should be collected by the DNR field personnel for submission to the Wildlife Disease Lab for examination and botulism testing. All other carcasses should be collected, placed in plastic bags, removed from the site, and buried or incinerated. A single decomposing carcass (animal, fish or bird) can produce enough botulism infected maggots to kill many waterfowl.
3) Sick specimens collected shall be given water and provided to the MDNR field representative for euthanasia or rehabilitation.
4) If botulism is found to be the cause of dead or sick birds, the Corps shall work with the MDNR to determine the best course of action to minimize the effects of the outbreak event. One aspect of this plan will be to begin an intense inspection cycle where sick and deceased birds are removed from the site on a continuous basis. The Corps will also work with the MDNR and USFWS to determine if additional measures should be implemented to prevent future outbreaks.

VI. Site Access/Control

A. FENCING

Site access will be restricted through the use of a fence and gate.

B. SIGNAGE

Appropriate signage will be provided on the facility to warn the public about access restrictions to the site.

VII. Emergency Response Procedures

In the event any condition or occurrence at the DMDF requires immediate attention, the Corps shall contact the MDEQ and Saginaw County immediately.

During the period of Federal operation and maintenance of the DMDF, the Corps shall have primary responsibility to take appropriate measures to alleviate any condition or occurrence that has the potential to threaten public health or the environment.

Contact shall be made as follows:

To the Corps: Wayne Schloop, Chief, Operations and Maintenance Division
Phone 313-226-5013
Email Wayne.Schloop@usace.army.mil

To MDEQ: Brenda Brouillet, DEQ Saginaw Bay District Office's multi-media coordinator
Phone 989-686-8025
Email BROUILLB@michigan.gov

To Saginaw County: Jim Koski, Public Works Commissioner
Phone 989-790-5258
Email jkoski@saginawcounty.com

VIII. Maintenance Transfer

At the time the facility reaches capacity, a final cap or cover layer will be evaluated in accordance with Corps guidance documents, which are based on contaminant pathways. If clean material is available from the navigation channel, that material will be used as a cover layer.

Before transfer of the DMDF to Saginaw County, the Corps, in coordination with the County, will develop a long term Operations and Maintenance Plan that will meet all applicable local, State, and Federal requirements in effect at the time. The County will be responsible to follow this plan.

The Corps will transfer maintenance responsibilities to Saginaw County, upon termination of the Corps use of the DMDF. Dredged material discharge pipeline and associated equipment shall be removed by the Corps for the assumption of maintenance responsibility by Saginaw County.

OPERATIONAL MANAGEMENT PLAN

UPPER SAGINAW RIVER
DREDGED MATERIAL DISPOSAL FACILITY
SAGINAW RIVER, MICHIGAN
JUN 2008

APPENDIX A

FIGURES

Figure 1

Regional map showing the relative location of the Upper Saginaw River project site.

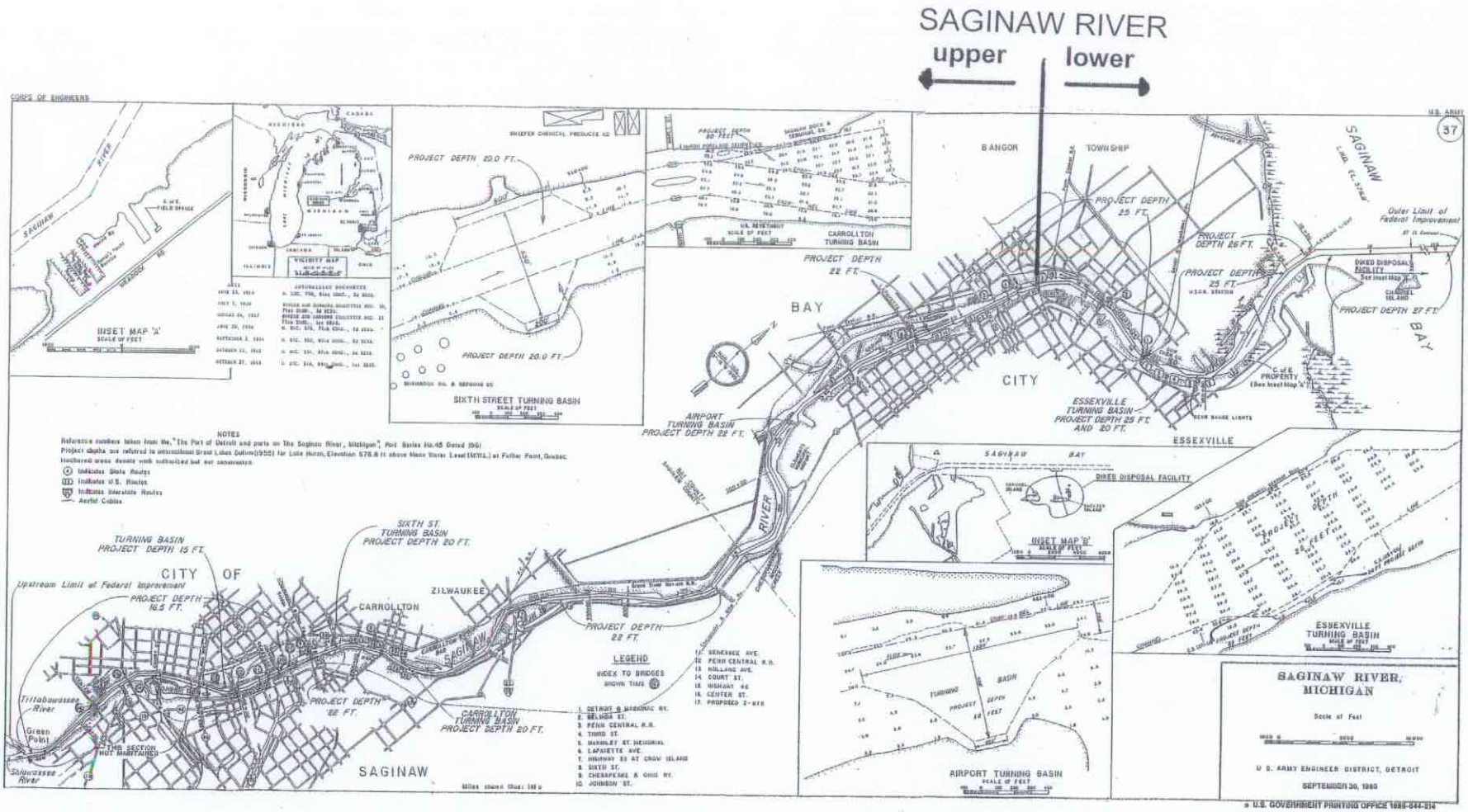
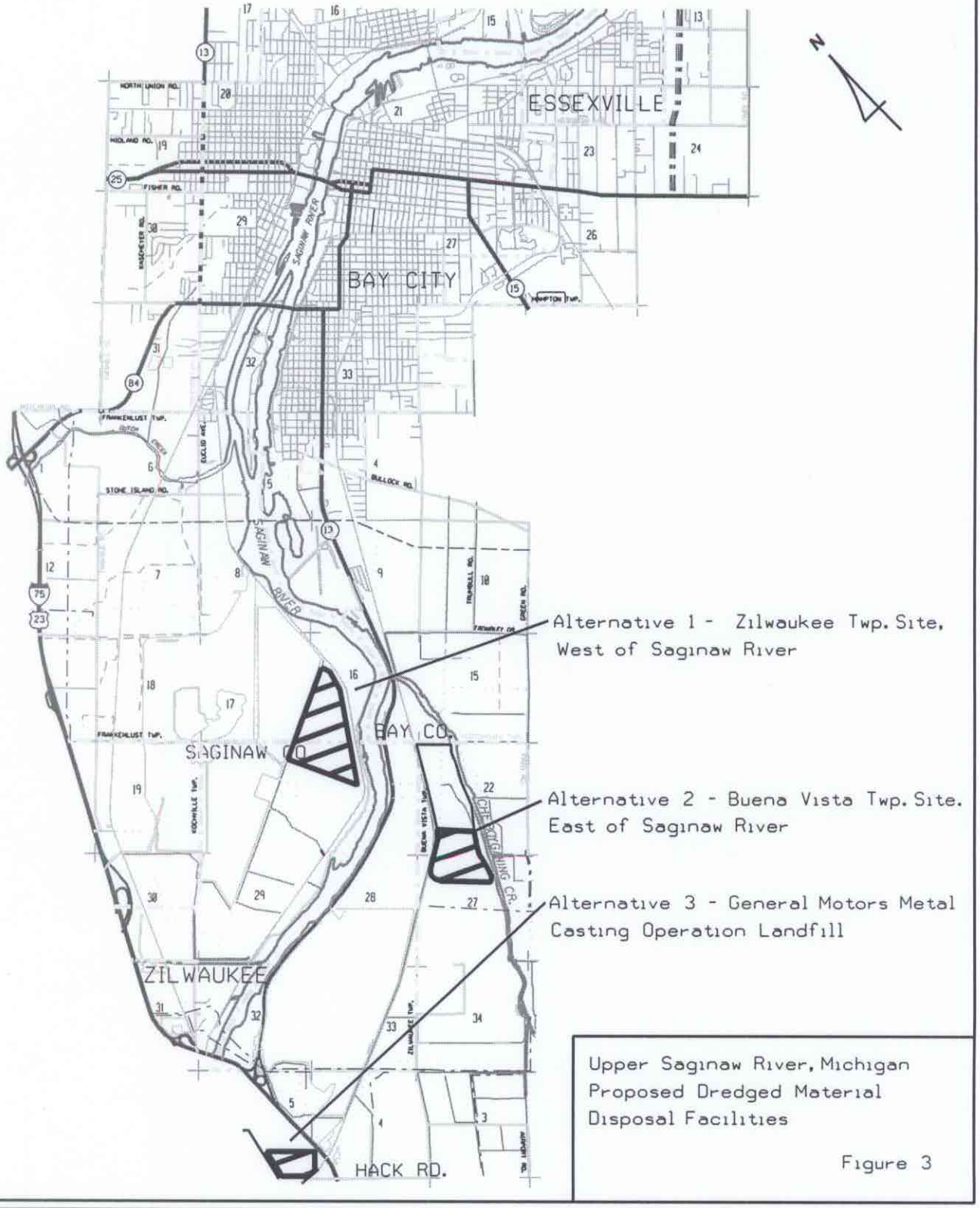

SAGINAW RIVER
upper
lower
CORPS OF ENGINEERS
U.S. ARMY
37
BANGOR
TOWNSHIP
SAGINAW
BAY
CITY
ESSEXVILLE
PROJECT DEPTH 25 FT.
PROJECT DEPTH 26 FT.
PROJECT DEPTH 25 FT.
PROJECT DEPTH 27 FT.
PROJECT DEPTH 22 FT.
PROJECT DEPTH 20.0 FT.
PROJECT DEPTH 20.0 FT.
CARROLLTON TURNING BASIN
SIXTH STREET TURNING BASIN
INSET MAP 'A'
SCALE OF FEET
VICINITY MAP
Outer Limit of Federal Improvement
DIKED DISPOSAL FACILITY
See Inset Map 'A'
C.&E. PROPERTY
ESSEXVILLE TURNING BASIN PROJECT DEPTH 25 FT. AND 20 FT.
AIRPORT TURNING BASIN PROJECT DEPTH 22 FT.
NOTES
Reference numbers taken from the, "The Port of Detroit and parts on The Saginaw River, Michigan", Port Series No.45 Dated 1961
Project depths are referred to international Great Lakes Datum(1955) for Lake Huron, Elevation 578.8 ft above Mean Water Level (M.W.L.) at Father Point, Quebec.
Hachured areas denote work authorized but not constructed.
Indicates State Routes
Indicates U.S. Routes
Indicates Interstate Routes
Aerial Cables
SAGINAW BAY
DIKED DISPOSAL FACILITY
INSET MAP 'B'
SCALE OF FEET
TURNING BASIN PROJECT DEPTH 15 FT.
SIXTH ST. TURNING BASIN PROJECT DEPTH 20 FT.
CITY OF
Upstream Limit of Federal Improvement
PROJECT DEPTH 16.5 FT.
CARROLLTON
ZILWAUKEE
PROJECT DEPTH 22 FT.
PROJECT DEPTH 22 FT.
CARROLLTON TURNING BASIN PROJECT DEPTH 20 FT.
Tittabawassee River
Green Point
Shiawassee River
THIS SECTION NOT MAINTAINED
SAGINAW
LEGEND
INDEX TO BRIDGES
SHOWN THUS
1. DETROIT & MACKINAC RY.
2. BELINDA ST.
3. PENN CENTRAL R.R.
4. THIRD ST.
5. McKINLEY ST. MEMORIAL
6. LAFAYETTE AVE.
7. HIGHWAY 23 AT CROW ISLAND
8. SIXTH ST.
9. CHESAPEAKE & OHIO RY.
10. JOHNSON ST.
11. GENESEE AVE.
12. PENN CENTRAL R.R.
13. HOLLAND AVE.
14. COURT ST.
15. HIGHWAY 46
16. CENTER ST.
17. PROPOSED 2-RTR
AIRPORT TURNING BASIN
SCALE OF FEET
ESSEXVILLE TURNING BASIN
SCALE OF FEET
SAGINAW RIVER, MICHIGAN
Scale of Feet
U. S. ARMY ENGINEER DISTRICT, DETROIT
SEPTEMBER 30, 1960
U.S. GOVERNMENT PRINTING OFFICE 1966-644-214

Figure 2



Upper Saginaw River, Michigan
Proposed Dredged Material
Disposal Facilities

Figure 3

...\Design CADD\Upper Saginaw1.dgn May. 14, 2004 13:00:58

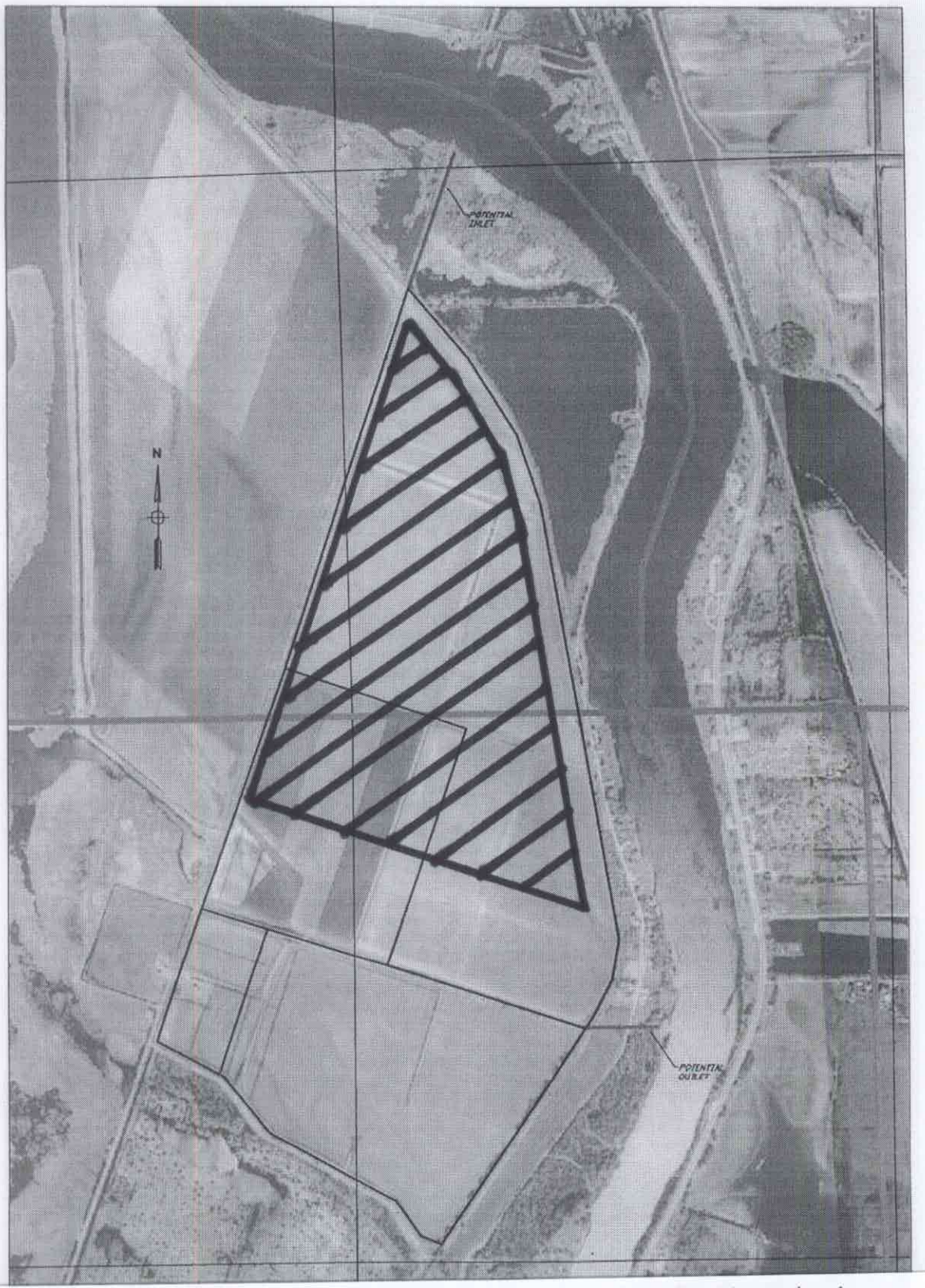
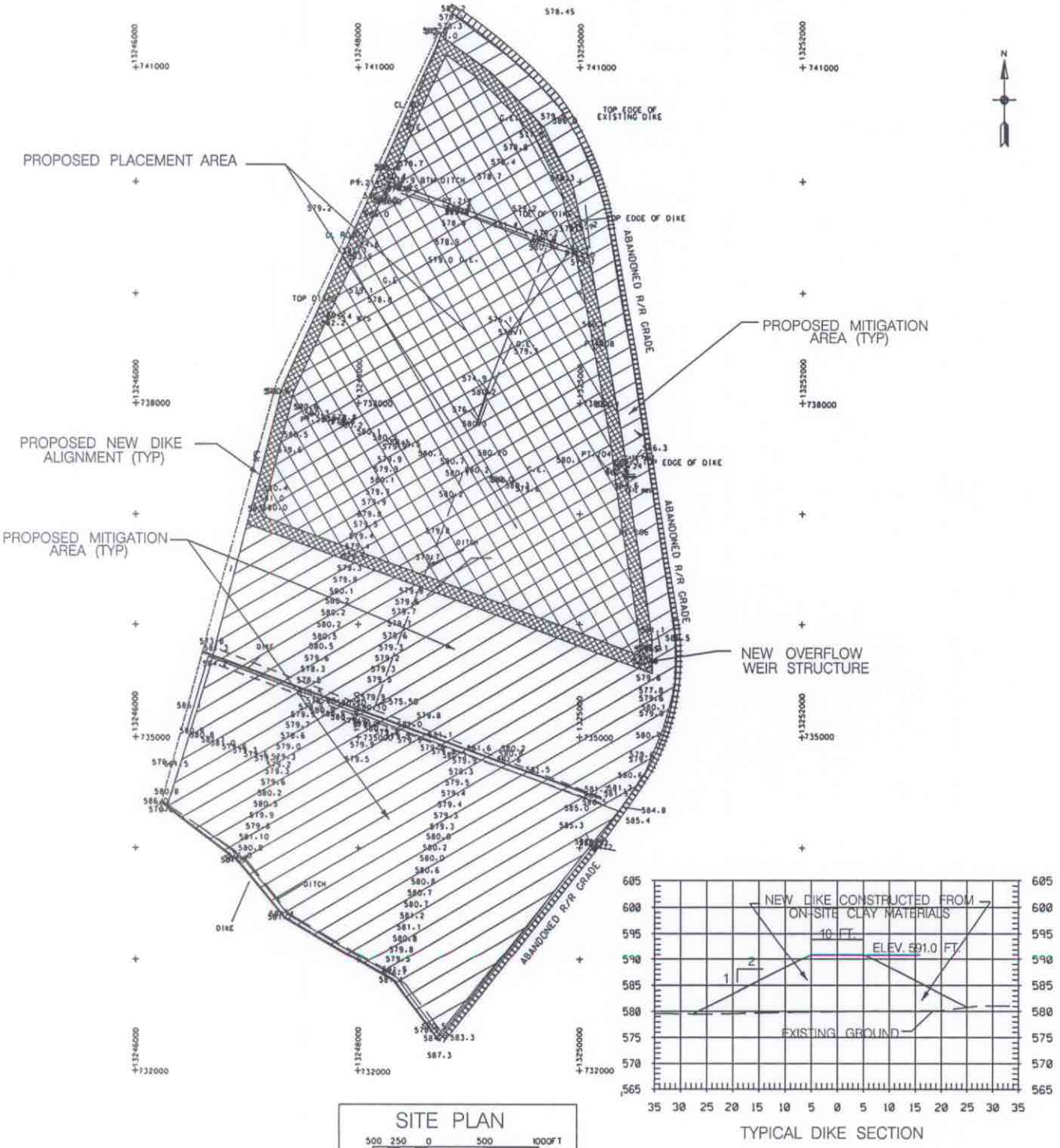


Figure 4 – Aerial photograph of the proposed placement site for Alternative 1 – "Develop the Zilwaukee Township Site, West of Saginaw River, into a Dredged Material Disposal Facility". The hatched area represents the 281 acres that will be used to place the dredged material from the Saginaw River, which is just to the right (east) of the proposed site.



SITE PLAN

500 250 0 500 1000FT

SCALE: 1" = 500'

TYPICAL DIKE SECTION

NOTES:

1. THE TOTAL AREA OF THE SITE IS APPROXIMATELY 581 ACRES.
2. THE AREA OF THE PROPOSED (HACHURED) PLACEMENT AREA IS APPROXIMATELY 281 ACRES.
3. THE AREA OF THE PROPOSED MITIGATION AREA IS APPROXIMATELY 300 ACRES.

U.S. ARMY ENGINEER DISTRICT, DETROIT
CORPS OF ENGINEERS
DETROIT, MICHIGAN

UPPER SAGINAW RIVER, MICHIGAN

PROPOSED DREDGED MATERIAL PLACEMENT SITE (WEST)

SITE PLAN

DRAWN BY: PJO	CHECKED BY: KJW
DATE: 10 MAY 2004	FIGURE 5

...\uppersag\fig5west.dgn 07/07/2004 08:06:48 AM

OPERATIONAL MANAGEMENT PLAN

UPPER SAGINAW RIVER
DREDGED MATERIAL DISPOSAL FACILITY
SAGINAW RIVER, MICHIGAN
JUN 2008

APPENDIX B

SITE PHOTOGRAPHS

OPERATIONAL MANAGEMENT PLAN

UPPER SAGINAW RIVER
DREDGED MATERIAL DISPOSAL FACILITY
SAGINAW RIVER, MICHIGAN
JUN 2008

APPENDIX B - PHOTOGRAPHS

Photo #1 – Aerial photograph of entire site prior to construction of the new DMDF

OPERATIONAL MANAGEMENT PLAN

UPPER SAGINAW RIVER
DREDGED MATERIAL DISPOSAL FACILITY
SAGINAW RIVER, MICHIGAN
JUN 2008

APPENDIX B - PHOTOGRAPHS

Photo #2 – Aerial photograph of entire site prior to construction of the new DMDF

OPERATIONAL MANAGEMENT PLAN

UPPER SAGINAW RIVER
DREDGED MATERIAL DISPOSAL FACILITY
SAGINAW RIVER, MICHIGAN
JUN 2008

APPENDIX B - PHOTOGRAPHS

Photo #3 – picture taken from the top of the exterior dike looking at the borrow area.

OPERATIONAL MANAGEMENT PLAN

UPPER SAGINAW RIVER
DREDGED MATERIAL DISPOSAL FACILITY
SAGINAW RIVER, MICHIGAN
JUN 2008

APPENDIX B - PHOTOGRAPHS

Photo #4 – picture taken along the top of an interior cross-dike

OPERATIONAL MANAGEMENT PLAN

UPPER SAGINAW RIVER
DREDGED MATERIAL DISPOSAL FACILITY
SAGINAW RIVER, MICHIGAN
JUN 2008

APPENDIX B - PHOTOGRAPHS

Photo #5 – picture taken of outfall into Saginaw River.

OPERATIONAL MANAGEMENT PLAN

UPPER SAGINAW RIVER
DREDGED MATERIAL DISPOSAL FACILITY
SAGINAW RIVER, MICHIGAN
JUN 2008

APPENDIX B - PHOTOGRAPHS

Photo#6 – picture of perimeter dike outlet weir.

OPERATIONAL MANAGEMENT PLAN

UPPER SAGINAW RIVER
DREDGED MATERIAL DISPOSAL FACILITY
SAGINAW RIVER, MICHIGAN
JUN 2008

APPENDIX C

PERIODIC INSPECTION CHECKLIST AND INSPECTION AND MAINTENANCE ACTIVITIES

Operation and Maintenance Manual
Inspection Checklist

Date: _____

Inspector: _____

Upper Saginaw Dredged Material Disposal Facility
Saginaw River, Michigan

CONTAINMENT DIKES

Rated Item	Rating	Rating Guidelines		Location/ Remarks/ Recommendations
1. Unwanted Vegetation Growth		**A**	The dike has little or no unwanted vegetation (trees, brush, or tall weeds).	
		M	Minimal vegetation growth (brush, tall weeds, or trees 2 inches in diameter or smaller) is present within the zones described above. This vegetation must be removed but does not currently threaten the operation or integrity of the dike.	
		U	Significant vegetation growth (brush, tall weeds, or any trees greater than 2 inches in diameter) is present within the zones described above and must to be removed to reestablish or ascertain dike integrity.	
2. Sod Cover		**A**	There is good coverage of sod over the dike.	
		M	Approximately 25% of the sod cover is missing or damaged over a significant portion or over significant portions of the dike embankment. This may be the result of over-grazing or feeding on the dike, unauthorized vehicular traffic, chemical or insect problems, or burning during inappropriate seasons.	
		U	Over 50% of the sod cover is missing or damaged over a significant portion or portions of the dike embankment.	
3. Encroach-ments		**A**	No trash, debris, unauthorized farming activity, structures, excavations, or other obstructions present within the easement area.	
		M	Trash, debris, unauthorized farming activity, structures, excavations, or other obstructions present, or inappropriate activities noted that should be corrected but will not inhibit operations and maintenance or emergency operations.	
		U	Unauthorized encroachments or inappropriate activities noted are likely to inhibit operations and maintenance, emergency operations, or negatively impact the integrity of the dike.	
4. Slope Stability		**A**	No slides, sloughs, tension cracking, slope depressions, or bulges are present.	
		M	Minor slope stability problems that do not pose an immediate threat to the dike embankment.	
		U	Major slope stability problems (ex. deep seated sliding) identified that must be repaired to reestablish the integrity of the dike embankment.	
5. Erosion/ Bank Caving		**A**	No erosion or bank caving is observed on the landward or riverward sides of the dike that might endanger its stability.	
		M	There are areas where minor erosion is occurring or has occurred on or near the dike embankment, but dike integrity is not threatened.	
		U	Erosion or caving is occurring or has occurred that threatens the stability and integrity of the dike. The erosion or caving has progressed into the dike section or into the extended footprint of the dike foundation and has compromised the dike foundation stability.	

Key: A = Acceptable. M = Minimally Acceptable; Maintenance is required. U = Unacceptable.

Operation and Maintenance Manual
Inspection Checklist

Date: _____

Inspector: _____

Upper Saginaw Dredged Material Disposal Facility
Saginaw River, Michigan

CONTAINMENT DIKES, Continued

Rated Item	Rating	Rating Guidelines		Location/ Remarks/ Recommendations
6. Settlement		**A**	No observed depressions in crown. Records exist and indicate no unexplained historical changes.	
		M	Minor irregularities that do not threaten integrity of dike. Records are incomplete or inclusive.	
		U	Obvious variations in elevation over significant reaches. No records exist or records indicate that design elevation is compromised.	
7. Depressions/ Rutting		**A**	There are scattered, shallow ruts, pot holes, or other depressions on the dike that are unrelated to dike settlement. The dike crown, embankments, and access road crowns are well established and drain properly without any ponded water.	
		M	There are some infrequent minor depressions less than 6 inches deep in the dike crown, embankment, or access roads that will pond water.	
		U	There are depressions greater than 6 inches deep that will pond water.	
8. Cracking		**A**	Minor longitudinal, transverse, or desiccation cracks with no vertical movement along the crack. No cracks extend continuously through the dike crest.	
		M	Longitudinal and/or transverse cracks up to 6 inches in depth with no vertical movement along the crack. No cracks extend continuously through the dike crest. Longitudinal cracks are no longer then the height of the dike.	
		U	Cracks exceed 6 inches in depth. Longitudinal cracks are longer than the height of the dike and/or exhibit vertical movement along the crack. Transverse cracks extend through the entire dike width.	
9. Animal Control		**A**	Continuous animal burrow control program in place that includes the elimination of active burrowing and the filling in of existing burrows.	
		M	The existing animal burrow control program needs to be improved. Several burrows are present which may lead to seepage or slope stability problems, and they require immediate attention.	
		U	Significant maintenance is required to fill existing burrows, and the dike will not provide reliable flood protection until this maintenance is complete.	
10. Seepage		**A**	No evidence or history of unrepaired seepage, saturated areas, or boils.	
		M	Evidence or history of minor unrepaired seepage or small saturated areas at or beyond the landside toe but not on the landward slope of dike. No evidence of soil transport.	
		U	Evidence or history of active seepage, extensive saturated areas, or boils.	
4. Fencing and Gates		**A**	Fencing is in good condition and provides protection against falling or unauthorized access. Gates open and close freely, locks are in place, and there is little corrosion on metal parts.	
		M	Fencing or gates are damaged or corroded but appear to be maintainable.	
		U	Fencing and gates are damaged or corroded to the point that replacement is required, or locks are missing or non functional.	

Key: A = Acceptable. M = Minimally Acceptable; Maintenance is required. U = Unacceptable.

OPERATIONAL MANAGEMENT PLAN

UPPER SAGINAW RIVER
DREDGED MATERIAL DISPOSAL FACILITY
SAGINAW, MICHIGAN
MAY 2008

APPENDIX C - INSPECTION AND MAINTENANCE ACTIVITIES

Feature(s)	Inspection Activity	Recommended Maintenance
Exterior and Containment		
Cross Dike Weirs	• Condition of CMP Pipes	• Repair/Replace
	• Condition of stop logs and channel guides	• Repair/Replace
	• Cover	• Repair/Replace
Perimeter Dike Weir Steel Walkway	• Condition of metal: Grating, Framing, Handrails	• Repair/Repaint
Sluicegate	• Vertical Gate & Guides	• Remove Debris
	• Manhole	• Remove Debris
	• Handwheel	• Make sure mech works freely
Concrete Weir	• Stoplog & Guides	• Remove Debris Repair/Replace
	• Cover & Lid	• Make sure hinges work freely

	• Manhole Sump	• Remove Debris
Final Cover and Side Slopes	• Wash out, rills • Settlement, slumping • Vegetation bare spots or distressed vegetation • Erosion exposing cover soils	• Repair as necessary to maintain the integrity of the final cover
Surface Water Drainage Ditches	• Washouts/erosion, siltation, undercutting of banks • Vegetation distress or die outs (ditches) •	• Repair eroded/washed out areas • Rework, reseed, fertilize and mulch vegetated areas • Refill, regrade and reseed, etc. washouts • Install additional erosion control (e.g., erosion control matting) as needed
Vegetated Surfaces	• Inspect for washout, rills, vegetation dieouts, bare spots, etc. • Inspect for sprouting trees and brush with deep root systems	• Refill, regrade, rework seed, fertilizer and mulch • Install erosion control matting or other measure, if required • Remove
Surface Water Monitoring	• Label	

Point		
Rodent Damage	• Severity • Location • Estimate Frequency/Population	• Repair final cover if damage becomes significant • Trap if numbers become excessive
Avian Species	• Species Present • Activity of each species • Relative numbers of each species	

OPERATIONAL MANAGEMENT PLAN

UPPER SAGINAW RIVER
DREDGED MATERIAL DISPOSAL FACILITY
SAGINAW RIVER, MICHIGAN
JUN 2008

APPENDIX D

PROJECT COOPERATION AGREEMENT

PROJECT COOPERATION AGREEMENT
BETWEEN
THE DEPARTMENT OF THE ARMY
AND
COUNTY OF SAGINAW, MICHIGAN
FOR CONSTRUCTION OF
DREDGED OR EXCAVATED MATERIAL DISPOSAL FACILITIES FOR
DISPOSAL OF MATERIAL FROM THE EXISTING GENERAL NAVIGATION FEATURES
AT
UPPER SAGINAW RIVER, MICHIGAN

THIS AGREEMENT entered into this 28th day of September, 2005, by and between the Department of the Army (hereinafter the "Government") represented by the U.S. Army District Engineer, Detroit District and County of Saginaw, Michigan (hereinafter the "Non-Federal Sponsor"), represented by its Public Works Commissioner.

WITNESSETH, THAT:

WHEREAS, construction, operation, and maintenance of the general navigation features of the Saginaw River at Saginaw, Michigan was authorized by
River and Harbor Act, June 25, 1910;
River and Harbor Act, July 3, 1930;
River and Harbor Act, August 26, 1937;
River and Harbor Act, June 20, 1938;
River and Harbor Act, September 3, 1954;
River and Harbor Act, October 23, 1962;
River and Harbor Act, October 27, 1965.
(hereinafter the "*existing general navigation features*", as defined in Article I.A. of this Agreement);

WHEREAS, the Government and the Non-Federal Sponsor desire to enter into a Project Cooperation Agreement (hereinafter the "Agreement") for construction of *dredged or excavated material disposal facilities* (hereinafter the "*Project*", as defined in Article I.B. of this Agreement) to enable continued operation and maintenance of the *existing general navigation features*;

WHEREAS, Section 101 of the Water Resources Development Act of 1986, Public Law 99-662, as amended (33 U.S.C. 2211), specifies the cost-sharing requirements applicable to the *Project*;

WHEREAS, Section 217(a) of the Water Resources Development Act of 1996, Public Law 104-303 (33 U.S.C. 2326a(a)), provides that the Government may provide additional capacity at a dredged or excavated material disposal facility constructed by the Government beyond the capacity that would be required for water resources project purposes, if a non-Federal sponsor agrees to pay all costs associated with the construction of the additional capacity;

WHEREAS, Section 221 of the Flood Control Act of 1970, Public Law 91-611, as amended (42 U.S.C. 1962d-5b), and Section 101 of the Water Resources Development Act of 1986, Public Law 99-662, as amended (33 U.S.C. 2211), provide, *inter alia*, that the Secretary of the Army shall not commence construction of any water resources project, or separable element thereof, until each non-Federal interest has entered into a written agreement to furnish its required cooperation for the project or separable element;

WHEREAS, the Government and the Non-Federal Sponsor have the full authority and capability to perform as hereinafter set forth and intend to cooperate in cost-sharing and financing of the *Project* in accordance with the terms of this Agreement; and

WHEREAS, the Government and the Non-Federal Sponsor, in connection with this Agreement, desire to foster a "partnering" strategy and a working relationship between the Government and the Non-Federal Sponsor through a mutually developed formal strategy of commitment and communication embodied herein, which creates an environment where trust and teamwork prevent disputes, foster a cooperative bond between the Government and the Non-Federal Sponsor, and facilitate the successful implementation of the *Project*.

NOW, THEREFORE, the Government and the Non-Federal Sponsor agree as follows:

ARTICLE I - DEFINITIONS AND GENERAL PROVISIONS

A. The term "*existing general navigation features*" shall mean the existing Saginaw River, Michigan, maintenance project at Saginaw, Michigan, as generally described in paragraph 11 of "A letter from the Chief of Engineers" contained in House Document 576 from the 3rd Session of the 75th Congress, dated 20 June, 1938. The term does not include any lands, easements, rights-of-way, *relocations*; *removals*; *betterments*; aids to navigation; or *local service facilities*.

B. The term "*Project*" shall mean the *general navigation features*; all *removals* accomplished in accordance with Article II of this Agreement; and all lands, easements, rights-of-way, and *relocations* that the Government, in accordance with Article III of this Agreement, determines to be necessary for construction or operation and maintenance of the *general navigation features*, but shall not include aids to navigation or *local service facilities*.

C. The term "*general navigation features*" shall mean the *initial general navigation features* and the *subsequent dredged or excavated material disposal facilities*. The *general navigation features* shall consist of the *dredged or excavated material disposal facilities* at Saginaw, Michigan, as generally described in the Phase II Report, Dredged Material Management Plan Study, Upper Saginaw River, Michigan, dated July 2004 and approved by the Commander, Great Lakes & Ohio River Division on April 8, 2005 and Addendum, Phase II Report, Dredged Material Management Plan Study, dated September 2005 and approved by the Commander, Great Lakes & Ohio Division on September 20, 2005. The term does not include any lands, easements, rights-of-way, *relocations*; *removals*; *betterments*; any capacity provided pursuant to II.L.3. of this Agreement; aids to navigation; or *local service facilities*.

D. The term "*initial general navigation features*" shall mean the Upper Saginaw River, Michigan *dredged or excavated material disposal facilities* other than the *subsequent dredged or excavated material disposal facilities*.

E. The term "*subsequent dredged or excavated material disposal facilities*" shall mean any *dredged or excavated material disposal facilities* that will be constructed after the conclusion of the *initial period of construction*.

F. The term "*initial period of construction*" shall mean the time from the date that the Government either issues the solicitation for the first construction contract for the *initial general navigation features* or commences construction of the *initial general navigation features* using the Government's own forces, whichever is earlier, to the date that construction of the *initial general navigation features* is complete, as determined by the Government, or the date that this Agreement is terminated in accordance with Article XIV or Article XV.C. of this Agreement, whichever is earlier.

G. The term "*subsequent period of construction*" shall mean the time during which the engineering and design or construction is performed on a *subsequent dredged or excavated material disposal facility*. The commencement of each *subsequent period of construction* shall be the date that the Government issues the solicitation for the first contract for any work on such facility, or the date that the Government makes the first financial obligation for the Government's own forces to perform any work on such facility, whichever is earlier. The end of each *subsequent period of construction* shall be the date that construction of such facility is complete, as determined by the Government, or the date that this Agreement is terminated in accordance with Article XIV or Article XV.C. of this Agreement, whichever is earlier.

H. The term "*total costs of construction of the general navigation features*" shall mean all costs incurred by the Non-Federal Sponsor or the Government in accordance with the terms of this Agreement directly related to construction of the *general navigation features*. Subject to the provisions of this Agreement, the term shall include, but is not necessarily limited to: the Government's Preconstruction Engineering and Design costs; the Government's engineering and design costs during construction; the costs of investigations to identify the existence and extent of hazardous substances in accordance with Article XV.A. of this Agreement; the costs of historic preservation activities in accordance with Articles XVIII.A.1. and XVIII.C.1. of this Agreement; the Government's actual construction costs (including the costs of alteration, lowering, raising, or replacement and attendant demolition of any *bridge over navigable waters of the United States*); the Government's supervision and administration costs; costs of participation in the Project Coordination Team in accordance with Article V of this Agreement; the Government's costs of contract dispute settlements or awards; incidental costs of *removals* accomplished by the Non-Federal Sponsor in accordance with Article II.K.3. of this Agreement; direct and incidental costs of *removals* accomplished by the Government in accordance with Article II.J. of this Agreement; and costs of audit in accordance with Articles X.B. and X.C. of this Agreement. The term does not include the value of any lands, easements, rights-of-way, or *relocations*; any costs of *removals* accomplished by the Non-Federal Sponsor other than incidental costs; any financial obligations for operation and maintenance of the *general*

navigation features; any costs of additional work under Articles II.L.2. and II.L.3. of this Agreement; or any costs of dispute resolution under Article VII of this Agreement

I. The term "*total costs of initial construction*" shall mean that portion of *total costs of construction of the general navigation features* incurred for the *initial general navigation features*.

J. The term "*total costs of subsequent construction*" shall mean that portion of *total costs of construction of the general navigation features* incurred for the *subsequent dredged or excavated material disposal facilities*.

K. The term "*financial obligation for initial construction*" shall mean a financial obligation of the Government that results or would result in a cost that is or would be included in *total costs of initial construction*.

L. The term "*financial obligation for subsequent construction*" shall mean a financial obligation of the Government that results or would result in a cost that is or would be included in *total costs of subsequent construction*.

M. The term "*non-Federal proportionate share of financial obligations for initial construction*" shall mean the ratio of the Non-Federal Sponsor's total contribution of funds required by Article II.D. of this Agreement to total *financial obligations for initial construction*, as projected by the Government.

N. The term "*non-Federal proportionate share of financial obligations for subsequent construction*" shall mean the ratio of the Non-Federal Sponsor's contribution of funds required by Article II.E. of this Agreement to *financial obligations for subsequent construction*, as projected by the Government.

O. The term "*highway*" shall mean any public highway, roadway, street, or way, including any bridge thereof.

P. The term "*bridge over navigable waters of the United States*" shall mean a lawful bridge over the navigable waters of the United States, including approaches, fenders, and appurtenances thereto, which is used and operated for the purpose of carrying railroad traffic, or both railroad and *highway* traffic, or if a state, county, municipality, or other political subdivision is the owner or joint owner thereof, which is used and operated for the purpose of carrying *highway* traffic.

Q. The term "*relocation*" shall mean providing a functionally equivalent facility to the owner of a utility, cemetery, *highway*, railroad (including any bridge thereof), or public facility, excluding any *bridge over navigable waters of the United States*, when such action is authorized in accordance with applicable legal principles of just compensation or providing a functionally equivalent facility when such action is specifically provided for, and is identified as a *relocation*, in the authorizing legislation for the *Project* or any report referenced therein. Providing a

functionally equivalent facility may take the form of alteration, lowering, raising, or replacement and attendant demolition of the affected facility or part thereof.

R. The term "*removal*" shall mean eliminating an obstruction (other than a *bridge over the navigable waters of the United States*) where the Government determines, after consultation with the Non-Federal Sponsor, that: 1) elimination is necessary for construction or operation and maintenance of the *general navigation features*, including the borrowing of material or the disposal of dredged or excavated material associated therewith; and 2) the Non-Federal Sponsor, the State of Michigan, or the Government has the legal capability to accomplish elimination of the obstruction at the expense of the owner or operator thereof.

S. The term "*betterment*" shall mean a difference in the engineering and design or construction of an element of the *general navigation features* that results from the application of standards that the Government determines exceed those that the Government would otherwise apply to the engineering and design or construction of that element. The term does not include features in addition to the *general navigation features*, nor does it include capacity provided, pursuant to Article II.L.3. of this Agreement, at any *dredged or excavated material disposal facility* for disposal of dredged or excavated material from outside the *existing general navigation features*.

T. The term "*dredged or excavated material disposal facility*" shall mean improvements necessary on lands, easements, or rights-of-way to enable the disposal of dredged or excavated material associated with operation and maintenance of the *existing general navigation features*. Such improvements may include, but are not necessarily limited to, retaining dikes, waste weirs, bulkheads, embankments, monitoring features, stilling basins, or de-watering pumps or pipes. The term also includes modifications to a dredged or excavated material disposal facility to increase capacity beyond that created by regularly recurring operation and maintenance activities. Such modifications may include, but are not limited to, major raising of dikes, expansion of the dredged or excavated material disposal facility, or a significant investment in dewatering facilities.

U. The term "*over-depth*" shall mean additional dimensions associated with a given depth that are required to accomplish advanced maintenance, if any, and to compensate for dredging inaccuracies at that depth.

V. The term "*utility*" shall mean that which is defined as a public utility pursuant to generally applicable law of the State of Michigan.

W. The term "*Federal program funds*" shall mean funds provided by a Federal agency, other than the Department of the Army, plus any non-Federal contribution required as a matching share therefor.

X. The term "*fiscal year*" shall mean one year of the Government beginning on October 1 and ending on September 30.

Y. The term "*local service facilities*" shall mean those facilities that the Non-Federal Sponsor must construct or operate and maintain to realize the benefits of the *existing general navigation features*.

ARTICLE II - OBLIGATIONS OF THE GOVERNMENT AND THE NON-FEDERAL SPONSOR

A. The Government, subject to receiving funds appropriated by the Congress of the United States (hereinafter the "Congress") and using those funds and funds provided by the Non-Federal Sponsor, shall expeditiously construct the *general navigation features* (including alteration, lowering, raising, or replacement and attendant demolition of any *bridge over navigable waters of the United States*), applying those procedures usually applied to Federal projects, in accordance with Federal laws, regulations, and policies.

1. The Government shall afford the Non-Federal Sponsor the opportunity to review and comment on the solicitations for all contracts, including relevant plans and specifications, prior to the Government's issuance of such solicitations. The Government shall not issue the solicitation for the first construction contract for the *initial general navigation features* or commence construction of the *initial general navigation features* using the Government's own forces until the Non-Federal Sponsor has confirmed in writing its willingness to proceed with the *Project*. To the extent possible, the Government shall afford the Non-Federal Sponsor the opportunity to review and comment on all proposed contract modifications, including change orders. In any instance where providing the Non-Federal Sponsor with notification of a contract modification is not possible prior to execution of the contract modification, the Government shall provide such notification in writing at the earliest date possible. To the extent possible, the Government also shall afford the Non-Federal Sponsor the opportunity to review and comment on all contract claims prior to resolution thereof. The Government shall consider in good faith the comments of the Non-Federal Sponsor, but the contents of solicitations, award of contracts or commencement of construction using the Government's own forces, execution of contract modifications, resolution of contract claims, and performance of all work on the *general navigation features* shall be exclusively within the control of the Government.

2. At the time the U.S. Army Engineer for the Detroit District (hereinafter the "District Engineer") furnishes the contractor with the Government's Written Notice of Acceptance of Completed Work for each contract for the *general navigation features*, the District Engineer shall furnish the Non-Federal Sponsor with a copy thereof.

B. In accordance with Article III of this Agreement, the Non-Federal Sponsor shall provide all lands, easements, and rights-of-way that the Government determines the Non-Federal Sponsor must provide for construction or operation and maintenance of the *general navigation features*, including the borrowing of material or the disposal of dredged or excavated material associated therewith, and shall perform or ensure performance of all *relocations* that the Government determines to be necessary for construction or operation and maintenance of the *general navigation features*.

C. The Government shall allocate *total costs of construction of the general navigation features* between *total costs of initial construction* and *total costs of subsequent construction* and shall allocate *total costs of subsequent construction* among the *subsequent periods of construction*. The Government also shall allocate *total costs of initial construction* and *total costs of subsequent construction* to the final dredged depth of the *existing general navigation features*, excluding associated *over-depth* and entrance channel wave allowances.

D. The Non-Federal Sponsor shall contribute 25 percent of *total costs of initial construction*. If the Government projects that the Non-Federal Sponsor's contributions under paragraph K.3. of this Article and under Articles V, X.B., X.C., and XV.A. of this Agreement that are allocated by the Government to *total costs of initial construction* will be less than the Non-Federal Sponsor's share required by this paragraph, the Non-Federal Sponsor, in accordance with Article VI.B. of this Agreement, shall provide additional funds in the amount necessary to meet the Non-Federal Sponsor's share required by this paragraph.

E. The Non-Federal Sponsor shall contribute 25 percent of *total costs of subsequent construction* incurred for each *subsequent period of construction*. If the Government projects that the Non-Federal Sponsor's contributions under paragraph K.3. of this Article and under Articles V, X.B., X.C., and XV.A. of this Agreement that are allocated by the Government to *total costs of subsequent construction* for that *subsequent period of construction* will be less than the Non-Federal Sponsor's share required by this paragraph for that *subsequent period of construction*, the Non-Federal Sponsor, in accordance with Article VI.B. of this Agreement, shall provide additional funds in the amount necessary to meet the Non-Federal Sponsor's share required by this paragraph for that *subsequent period of construction*.

F. In accordance with Article VI.E. of this Agreement, the Non-Federal Sponsor shall pay an additional amount equal to 10 percent of *total costs of construction of the general navigation features* less the amount of credit afforded by the Government for the value of the lands, easements, rights-of-way, and *relocations* provided or performed pursuant to Article III of this Agreement, plus interest thereon except as provided by Article VI.E.7. of this Agreement. The Non-Federal Sponsor shall not be entitled to reimbursement for any value of such lands, easements, rights-of-way, and *relocations* that exceed 10 percent of *total costs of construction of the general navigation features*.

G. The District Engineer shall promptly notify the Non-Federal Sponsor in writing of the conclusion of the *initial period of construction* and the conclusion of each *subsequent period of construction*. Upon providing each notification, the Government shall conduct an accounting, in accordance with Article VI of this Agreement, and furnish the results to the Non-Federal Sponsor.

H. The Government, subject to the availability to funds and as it deems necessary, shall operate and maintain the *general navigation features* in accordance with Article VIII of this Agreement. The Government shall be responsible for all financial obligations for operation and maintenance of the *general navigation features*.

I. The Non-Federal Sponsor shall not use *Federal program funds* to meet any of its obligations for the *Project* under this Agreement unless the Federal agency providing the Federal portion of such funds verifies in writing that expenditure of funds for such purpose is expressly authorized by Federal law.

J. The Government shall accomplish all *removals* that neither the Non-Federal Sponsor nor the State of Michigan has the legal capability to accomplish where both the Non-Federal Sponsor and the State of Michigan make a written request for the Government to accomplish such *removals*, and shall accomplish all *removals* that the Government is expressly required to accomplish in the authorizing legislation for the *Project* or any report referenced therein.

1. In the event a court determines that the owner of an obstruction is entitled to payment of just compensation as the result of elimination of the obstruction, such *removal* shall be reclassified as part of the Non-Federal Sponsor's responsibility to provide lands, easements, and rights-of-way, or to perform or ensure performance of *relocations*, as appropriate, pursuant to Article II.B. of this Agreement.

2. All costs incurred by the Government in accomplishing removals shall be included in *total costs of construction of the general navigation features* and shared in accordance with the provisions of this Agreement.

K. The Non-Federal Sponsor shall accomplish all *removals*, other than those *removals* specifically assigned to the Government by paragraph J. of this Article, in accordance with the provisions of this paragraph.

1. The Government in a timely manner shall provide the Non-Federal Sponsor with general written descriptions, including maps as appropriate, of such *removals*, in detail sufficient to enable the Non-Federal Sponsor to fulfill its obligations under this paragraph, and shall provide the Non-Federal Sponsor with a written notice to proceed with accomplishing such *removals*. Unless the Government agrees to a later date in writing, prior to the issuance of the solicitation for each Government contract for construction or operation and maintenance of the *general navigation features*, or prior to the Government incurring any financial obligation for construction or operation and maintenance of the *general navigation features* using the Government's own forces, the Non-Federal Sponsor shall accomplish all *removals* set forth in such descriptions that the Government determines to be necessary for that work.

2. In the event a court determines that the owner of an obstruction is entitled to payment of just compensation as the result of elimination of the obstruction, such *removal* shall be reclassified as part of the Non-Federal Sponsor's responsibility to provide lands, easements, and rights-of-way, or to perform or ensure performance of *relocations*, as appropriate, pursuant to Article II.B. of this Agreement.

3. The documented incidental costs incurred by the Non-Federal Sponsor in accomplishing *removals* shall be included in *total costs of construction of the general navigation features*, subject to an audit in accordance with Article X.C. of this Agreement to determine reasonableness, allocability, and allowability of costs, and shared in accordance with the

provisions of this Agreement. Incidental costs may include legal and administrative costs (such as owner or operator notification costs, public notice or hearing costs, attorney's fees, and litigation costs) incurred by the Non-Federal Sponsor in accomplishing *removals*, but shall not include any costs that the Non-Federal Sponsor or the State of Michigan has the legal capability to require of, assign to, or recover from the owner or operator of the obstruction.

L. The Non-Federal Sponsor may request the Government to perform or provide, on behalf of the Non-Federal Sponsor, one or more of the services (hereinafter the "additional work") described below. Such requests shall be in writing and shall describe the additional work requested to be performed or provided. If in its sole discretion the Government elects to perform or provide the requested additional work or any portion thereof, it shall so notify the Non-Federal Sponsor in a writing that sets forth any applicable terms and conditions, which must be consistent with this Agreement. In the event of conflict between such a writing and this Agreement, this Agreement shall control. The Non-Federal Sponsor shall be solely responsible for all costs of the additional work performed or provided by the Government under this paragraph and shall pay all such costs in accordance with Article VI.F. of this Agreement.

1. Acquisition of lands, easements, or rights-of-way or performance of *relocations* for the *general navigation features* only. Notwithstanding the acquisition of lands, easements, or rights-of-way or performance of *relocations* by the Government, the Non-Federal Sponsor shall be responsible, as between the Government and the Non-Federal Sponsor, for any costs of cleanup and response in accordance with Article XV.C. of this Agreement.

2. Inclusion of *betterments* in the engineering and design or construction of the *general navigation features*. In the event the Government elects to include any *betterments*, the Government shall allocate the costs of constructing the *general navigation features* that include *betterments* between *total costs of construction of the general navigation features* and the costs of the additional work.

3. Provision of capacity at a *dredged or excavated material disposal facility* for dredged or excavated material from outside the *existing general navigation features*. In the event the Government elects to provide such capacity, the Government shall allocate the costs of engineering and design and construction of the *dredged or excavated material disposal facility* between *total costs of construction of the general navigation features* and the costs of the additional work. The Government also shall allocate any operation and maintenance costs of the *dredged or excavated material disposal facility* between the costs of operation and maintenance for the *general navigation features* and the costs of the additional work.

ARTICLE III - LANDS, RELOCATIONS, AND COMPLIANCE WITH PUBLIC LAW 91-646, AS AMENDED

A. The Government, after consultation with the Non-Federal Sponsor, shall determine the lands, easements, and rights-of-way necessary for construction or operation and maintenance of the *general navigation features*, including those lands, easements, and rights-of-way necessary for the borrowing of material, the disposal of dredged or excavated material, and *relocations*, and

including those lands, easements, and rights-of-way that the Government determines to be subject to the navigation servitude. The Government shall indicate which of the required lands, easements, and rights-of-way are necessary for the *initial general navigation features* and which are necessary for the *subsequent dredged or excavated material disposal facilities*. The Government in a timely manner shall provide the Non-Federal Sponsor with general written descriptions, including maps as appropriate, of the lands, easements, and rights-of-way that the Government determines the Non-Federal Sponsor must provide, in detail sufficient to enable the Non-Federal Sponsor to fulfill its obligations under this paragraph, and shall provide the Non-Federal Sponsor with a written notice to proceed with acquisition of such lands, easements, and rights-of-way. Prior to the issuance of the solicitation for each Government contract for construction or operation and maintenance of the *general navigation features*, or prior to the Government incurring any financial obligation for construction or operation and maintenance of a *general navigation feature* using the Government's own forces, the Non-Federal Sponsor shall acquire all lands, easements, and rights-of-way the Government determines the Non-Federal Sponsor must provide for that work and shall provide the Government with authorization for entry thereto. Furthermore, prior to the end of the *initial period of construction*, or prior to the end of any *subsequent period of construction*, as applicable, the Non-Federal Sponsor shall acquire all lands, easements, and rights-of-way necessary for construction or operation and maintenance of the applicable *general navigation features*, as set forth in such descriptions and shall provide the Government with authorization for entry thereto. For so long as the *Project* remains authorized, the Non-Federal Sponsor shall ensure that lands, easements, and rights-of-way that the Government determines to be required for the operation and maintenance of the *general navigation features* and that were provided by the Non-Federal Sponsor are retained in public ownership for uses compatible with the authorized purposes of the *Project*.

B. The Government, after consultation with the Non-Federal Sponsor, shall determine the *relocations* necessary for construction or operation and maintenance of the *general navigation features*, including those necessary to enable the borrowing of material or the disposal of dredged or excavated material. The Government shall indicate which of such *relocations* are necessary for the *initial general navigation features* and which are necessary for the *subsequent dredged or excavated material disposal facilities*. The Government in a timely manner shall provide the Non-Federal Sponsor with general written descriptions, including maps as appropriate, of such *relocations* in detail sufficient to enable the Non-Federal Sponsor to fulfill its obligations under this paragraph, and shall provide the Non-Federal Sponsor with a written notice to proceed with such *relocations*. Prior to the issuance of the solicitation for each Government contract for construction or operation and maintenance of the *general navigation features*, or prior to the Government incurring any financial obligation for construction or operation and maintenance of a *general navigation feature* using the Government's own forces, the Non-Federal Sponsor shall prepare or ensure the preparation of plans and specifications for, and perform or ensure the performance of, all *relocations* the Government determines to be necessary for that work.

C. The Non-Federal Sponsor shall comply with the applicable provisions of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, Public Law 91-646, as amended (42 U.S.C. 4601-4655), and the Uniform Regulations contained in 49 C.F.R. Part 24, in acquiring lands, easements, and rights-of-way necessary for construction or operation and

maintenance of the *general navigation features*, including those necessary for *relocations*, the borrowing of material, or the disposal of dredged or excavated material, and shall inform all affected persons of applicable benefits, policies, and procedures in connection with said Act.

ARTICLE IV - CREDIT FOR VALUE OF LANDS AND RELOCATIONS

A. To determine the additional amount, the Government shall afford credit toward an amount equal to 10 percent of *total costs of construction of the general navigation features* for the value of the lands, easements, and rights-of-way that the Non-Federal Sponsor must provide pursuant to Article III of this Agreement, and for the value of the *relocations* that the Non-Federal Sponsor must perform or for which it must ensure performance pursuant to Article III of this Agreement. However, no credit shall be afforded for the value of any lands, easements, rights-of-way, or *relocations* that have been provided previously as an item of cooperation for another Federal project. In addition, no credit shall be afforded for the value of lands, easements, rights-of-way, or *relocations* that were acquired or performed using *Federal program funds* unless the Federal agency providing the Federal portion of such funds verifies in writing that affording credit for the value of such items is expressly authorized by Federal law.

B. The Non-Federal Sponsor in a timely manner shall provide the Government with such documents as are sufficient to enable the Government to determine the value of any contribution provided pursuant to paragraph A. or B. of Article III of this Agreement. Upon receipt of such documents, the Government in a timely manner shall determine the value of such contribution for the purpose of determining the amount of credit to be afforded toward an amount equal to 10 percent of *total costs of construction of the general navigation features*.

C. For the sole purpose of determining the amount of credit to be afforded for the value of lands, easements, and rights-of-way, including those necessary for the *relocations*, borrowing of material, and the disposal of dredged or excavated material, other than those the Government acquires on behalf of the Non-Federal Sponsor pursuant to Article II.L.1. of this Agreement, shall be the fair market value of the real property interests, plus certain incidental costs of acquiring those interests, as determined in accordance with the provisions of this paragraph.

1. Date of Valuation. The fair market value of lands, easements, or rights-of-way owned by the Non-Federal Sponsor on the effective date of this Agreement shall be the fair market value of such real property interests as of the date the Non-Federal Sponsor provides the Government with authorization for entry thereto. The fair market value of lands, easements, or rights-of-way acquired by the Non-Federal Sponsor after the effective date of this Agreement shall be the fair market value of such real property interests at the time the interests are acquired.

2. General Valuation Procedure. Except as provided in paragraph C.3., C.4., or C.5. of this Article, the fair market value of lands, easements, or rights-of-way shall be determined in accordance with paragraph C.2.a. of this Article, unless thereafter a different amount is determined to represent fair market value in accordance with paragraph C.2.b. of this Article.

a. The Non-Federal Sponsor shall obtain, for that real property interest, an appraisal that is prepared by a qualified appraiser who is acceptable to the Non-Federal Sponsor and the Government. The Non-Federal Sponsor shall provide the Government with the appraisal no later than 6 months after the Non-Federal Sponsor provides the Government with an authorization for entry for such real property interest. The appraisal must be prepared in accordance with the applicable rules of just compensation, as specified by the Government. The fair market value shall be the amount set forth in the Non-Federal Sponsor's appraisal, if such appraisal is approved by the Government. In the event the Government does not approve the Non-Federal Sponsor's appraisal, the Non-Federal Sponsor may obtain a second appraisal, and the fair market value shall be the amount set forth in the Non-Federal Sponsor's second appraisal, if such appraisal is approved by the Government. In the event the Government does not approve the Non-Federal Sponsor's second appraisal, the Non-Federal Sponsor chooses not to obtain a second appraisal, or the Non-Federal Sponsor does not provide the first appraisal as required in this paragraph, the Government shall obtain an appraisal, and the fair market value shall be the amount set forth in the Government's appraisal, if such appraisal is approved by the Non-Federal Sponsor. In the event the Non-Federal Sponsor does not approve the Government's appraisal, the Government, after consultation with the Non-Federal Sponsor, shall consider the Government's and the Non-Federal Sponsor's appraisals and determine an amount based thereon, which shall be deemed to be the fair market value.

b. Where the amount paid or proposed to be paid by the Non-Federal Sponsor for the real property interest exceeds the amount determined pursuant to paragraph C.2.a. of this Article, the Government, at the request of the Non-Federal Sponsor, shall consider all factors relevant to determining fair market value and, in its sole discretion, after consultation with the Non-Federal Sponsor, may approve in writing an amount greater than the amount determined pursuant to paragraph C.2.a. of this Article, but not to exceed the amount actually paid or proposed to be paid. If the Government approves such an amount, the fair market value shall be the lesser of the approved amount or the amount paid by the Non-Federal Sponsor, but no less than the amount determined pursuant to paragraph C.2.a. of this Article.

3. Eminent Domain Valuation Procedure. For lands, easements, or rights-of-way acquired by eminent domain proceedings instituted after the effective date of this Agreement, the Non-Federal Sponsor, prior to instituting such proceedings, shall submit to the Government notification in writing of its intent to institute such proceedings and an appraisal of the specific real property interests to be acquired in such proceedings. The Government shall have 60 days after receipt of such a notice and appraisal within which to review the appraisal, if not previously approved by the Government in writing.

a. If the Government previously has approved the appraisal in writing, or if the Government provides written approval of, or takes no action on, the appraisal within such 60-day period, the Non-Federal Sponsor shall use the amount set forth in such appraisal as the estimate of just compensation for the purpose of instituting the eminent domain proceeding.

b. If the Government provides written disapproval of the appraisal, including the reasons for disapproval, within such 60-day period, the Government and the Non-Federal Sponsor shall consult in good faith to promptly resolve the issues or areas of

disagreement that are identified in the Government's written disapproval. If, after such good faith consultation, the Government and the Non-Federal Sponsor agree as to an appropriate amount, then the Non-Federal Sponsor shall use that amount as the estimate of just compensation for the purpose of instituting the eminent domain proceeding. If, after such good faith consultation, the Government and the Non-Federal Sponsor cannot agree as to an appropriate amount, then the Non-Federal Sponsor may use the amount set forth in its appraisal as the estimate of just compensation for the purpose of instituting the eminent domain proceeding.

c. For lands, easements, or rights-of-way acquired by eminent domain proceedings instituted in accordance with paragraph C.3. of this Article, fair market value shall be either the amount of the court award for the real property interests taken, to the extent the Government determined such interests are necessary for construction or operation and maintenance of the *general navigation features*, or the amount of any stipulated settlement or portion thereof that the Government approves in writing.

4. Incidental Costs. For lands, easements, or rights-of-way acquired by the Non-Federal Sponsor within a five-year period preceding the effective date of this Agreement, or at any time after the effective date of this Agreement, the value of the interest shall include the documented incidental costs of acquiring the interest, as determined by the Government, subject to an audit in accordance with Article X.C. of this Agreement to determine reasonableness, allocability, and allowability of costs. In the event the Government modifies its determination made pursuant to Article III.A. of this Agreement, the Government shall afford credit for the documented incidental costs associated with preparing to acquire the lands, easements, or rights-of-way identified in the original determination, subject to an audit in accordance with Article X.C. of this Agreement to determine reasonableness, allocability, and allowability of costs. Such incidental costs shall include, but not necessarily be limited to, closing and title costs, appraisal costs (including appraisals required for crediting purposes pursuant to Article IV.C.2. of this Agreement), survey costs, attorney's fees, plat maps, and mapping costs, as well as the actual amounts expended for payment of any relocation assistance benefits provided in accordance with Article III.C. of this Agreement.

5. Waiver of Appraisal. Except as required by paragraph C.3. of this Article, the Government may waive the requirement for an appraisal for the purpose of determining the value of a real property interest for crediting purposes if it determines that an appraisal is unnecessary because the valuation problem is uncomplicated and that the estimated fair market value of the real property interest is $10,000 or less based upon a review of available data. In such event, the Government and the Non-Federal Sponsor must agree in writing to the value of such real property interest in an amount not in excess of $10,000.

D. For the sole purpose of determining the amount of credit to be afforded for the value of lands, easements, and rights-of-way, including those necessary for *relocations*, the borrowing of material, and the disposal of dredged or excavated material that the Government acquires on behalf of the Non-Federal Sponsor pursuant to Article II.L.1. of this Agreement shall be the fair market value of the real property interests, plus certain incidental costs of acquiring those interests, as determined in accordance with the provisions of this paragraph.

1. The fair market value of such real property interests shall be the amount paid by the Government.

2. The value of the interest shall include the documented incidental costs of acquiring the interest. Such incidental costs shall include, but not necessarily be limited to, closing and title costs, appraisal costs, survey costs, attorney's fees, plat maps, and mapping costs, as well as the actual amounts expended for payment of any relocation assistance benefits in accordance with Public Law 91-646, as amended.

E. After consultation with the Non-Federal Sponsor, the Government, for the sole purpose of determining the amount of credit to be afforded, shall determine the value of *relocations* in accordance with the provisions of this paragraph.

1. For a *relocation* other than a *highway* or a *utility*, the value shall be only that portion of *relocation* costs that the Government determines is necessary to provide a functionally equivalent facility, reduced by depreciation, as applicable, and by the salvage value of any removed items.

2. For a *relocation* of a *highway*, the value shall be only that portion of *relocation* costs that would be necessary to accomplish the *relocation* in accordance with the design standard that the State of Michigan would apply under similar conditions of geography and traffic load, reduced by the salvage value of any removed items.

3. For a *relocation* of a *utility*, the value shall be only that portion of *relocation* costs borne by the Non-Federal Sponsor that the Government determines is necessary to provide a functionally equivalent facility, reduced by depreciation, as applicable, and by the salvage value of any removed items.

4. *Relocation* costs shall include, but not necessarily be limited to, actual costs of performing the *relocation*; planning, engineering and design costs; supervision and administration costs; and documented incidental costs associated with performance of the *relocation*, as determined by the Government. *Relocation* costs shall not include any additional cost of using new material when suitable used material is available. *Relocation* costs shall be subject to an audit in accordance with Article X.C. of this Agreement to determine reasonableness, allocability, and allowability of costs.

F. Any credit afforded for the value of *relocations* performed within the Project boundaries is subject to satisfactory compliance with applicable Federal labor laws covering non-Federal construction, including, but not limited to, applicable Federal labor standards in 40 U.S.C. 3141-3148 and 40 U.S.C. 3701-3708 (revising, codifying and enacting without substantive change the provisions of the Davis-Bacon Act (formerly 40 USC 276a *et seq.*), the Contract Work Hours and Safety Standards Act (formerly 40 USC 327 *et seq.*) and the Copeland Anti-Kickback Act (formerly 40 USC 276c)). Crediting may be withheld, in whole or in part, as a result of the Non-Federal Sponsor's failure to comply with its obligations under these laws.

ARTICLE V - PROJECT COORDINATION TEAM

A. To provide for consistent and effective communication, the Non-Federal Sponsor and the Government, not later than 30 days after the effective date of this Agreement, shall appoint named senior representatives to a Project Coordination Team. Thereafter, the Project Coordination Team shall meet regularly until the end of the *initial period of construction* and during each *subsequent period of construction*. The Government's Project Manager and a counterpart named by the Non-Federal Sponsor shall co-chair the Project Coordination Team.

B. The Government's Project Manager and the Non-Federal Sponsor's counterpart shall keep the Project Coordination Team informed of the progress of construction and of significant pending issues and actions, and shall seek the views of the Project Coordination Team on matters that the Project Coordination Team generally oversees.

C. Until the end of the *initial period of construction* and during each *subsequent period of construction*, as applicable, the Project Coordination Team shall generally oversee the *Project*, including but not necessarily limited to matters related to: engineering and design; plans and specifications; scheduling; real property, *relocation*, and *removal* requirements; real property acquisition; contract awards or modifications; contract costs; the application of and compliance with 40 U.S.C. 3141-3148 and 40 U.S.C. 3701-3708 (revising, codifying and enacting without substantive change the provisions of the Davis-Bacon Act (formerly 40 USC 276a *et seq.*), the Contract Work Hours and Safety Standards Act (formerly 40 USC 327 *et seq.*) and the Copeland Anti-Kickback Act (formerly 40 USC 276c)) for *relocations*; the Government's cost projections; final inspection of the entire *Project* or functional portions of the *Project*; anticipated requirements for operation and maintenance of the *general navigation features*; and other matters related to the *Project*. The Project Coordination Team shall also generally oversee the coordination of schedules for the *Project*. Oversight of the *Project* shall be consistent with a project management plan developed by the Government after consultation with the Non-Federal Sponsor.

D. The Project Coordination Team may make recommendations that it deems warranted to the District Engineer on matters related to the *Project* that the Project Coordination Team generally oversees, including suggestions to avoid potential sources of dispute. The Government in good faith shall consider the recommendations of the Project Coordination Team. The Government, having the legal authority and responsibility for construction of the *general navigation features*, has the discretion to accept or reject, in whole or in part, the Project Coordination Team's recommendations.

E. The costs of participation in the Project Coordination Team shall be included in *total costs of construction of the general navigation features* and shared in accordance with the provisions of this Agreement.

ARTICLE VI - METHOD OF PAYMENT

A. In accordance with the provisions of this paragraph, the Government shall maintain current records of, and provide to the Non-Federal Sponsor current projections of, costs,

financial obligations, contributions provided by the parties, and credit afforded for the value of lands, easements, rights-of-way, and *relocations*. As of the effective date of this Agreement, *total costs of construction of the general navigation features* are projected to be $ 2,350,000, *total costs of initial construction* are projected to be $ 2,350,000, the Non-Federal Sponsor's contribution of funds required by Article II.D. of this Agreement is projected to be $ 587,500, the *non-Federal proportionate share of financial obligations for initial construction* is projected to be 25 percent, the Government's total financial obligations for additional work to be incurred through the end of the *initial period of construction* and the Non-Federal Sponsor's contribution of funds for such obligations required by Article II.L. of this Agreement are projected to be $0, 10 percent of *total costs of construction of the general navigation features* as of the end of the *initial period of construction* is projected to be $235,000, the credit to be afforded for the value of lands, easements, rights-of-way, and *relocations* to be provided or performed through the end of the *initial period of construction* is projected to be $757,000, the additional amount required by Article II.F. of this Agreement as of the end of the *initial period of construction* is projected to be $235,000, *total costs of subsequent construction* are projected to be $0, the Non-Federal Sponsor's total contribution of funds required by Article II.E. of this Agreement for all *subsequent periods of construction* is projected to be $0 and the Government's total financial obligations for the additional work to be incurred after the *initial period of construction* and the Non-Federal Sponsor's contribution of funds for such costs required by Article II.L. of this Agreement are projected to be $0. These amounts are estimates subject to adjustment by the Government, after consultation with the Non-Federal Sponsor, and are not to be construed as the total financial responsibilities of the Government and the Non-Federal Sponsor.

1. By November 2005, the Government shall provide the Non-Federal Sponsor with a report setting forth all contributions provided to date and the current projections of the following: *total costs of construction of the general navigation features*; *total costs of initial construction*; the Non-Federal Sponsor's total contribution of funds required by Article II.D. of this Agreement; the *non-Federal proportionate share of financial obligations for initial construction*; the Government's total financial obligations for additional work incurred through the end of the *initial period of construction* and the Non-Federal Sponsor's contribution of funds for such obligations required by Article II.L. of this Agreement; 10 percent of *total costs of construction of the general navigation features* as of the date of the final accounting for the *initial period of construction*; the credit to be afforded for the value of lands, easements, rights-of-way, and *relocations* to be provided or performed through the end of the *initial period of construction*; the additional amount required by Article II.F. of this Agreement as of the end of the *initial period of construction*; the annual installments calculated in accordance with paragraph E. of this Article; *total costs of subsequent construction*; the Non-Federal Sponsor's total contribution of funds required by Article II.E. of this Agreement for all *subsequent periods of construction*; and the Government's total financial obligations for additional work incurred after the *initial period of construction* and the Non-Federal Sponsor's contribution of funds for such costs required by Article II.L. of this Agreement.

2. By November 2005, the Government shall provide the Non-Federal Sponsor with a report setting forth all contributions provided to date and the current projections of the following: *total costs of construction of the general navigation features*; *total costs of initial construction*; *total costs of subsequent construction*; the Non-Federal Sponsor's contribution of

funds required by Article II.E. of this Agreement for all *subsequent periods of construction*; *total costs of subsequent construction* incurred for that *subsequent period of construction*; the Non-Federal Sponsor's contribution of funds required by Article II.E. of this Agreement for that *subsequent period of construction*; the *non-Federal proportionate share of financial obligations for subsequent construction* for that *subsequent period of construction*; the Government's total financial obligations for additional work incurred during that *subsequent period of construction* and the Non-Federal Sponsor's contribution of funds for such costs required by Article II.L. of this Agreement; 10 percent of *total costs of construction of the general navigation features* as of the date of the final accounting for that *subsequent period of construction*; the credit to be afforded for the value of lands, easements, rights-of-way, and *relocations* to be provided or performed through the end of that *subsequent period of construction*; and the additional amount required by Article II.F. of this Agreement as of the end of that *subsequent period of construction.*

B. The Non-Federal Sponsor shall provide the contributions of funds required by Articles II.D. and II.E. of this Agreement in accordance with the provisions of this paragraph.

1. Not less than 30 calendar days prior to the scheduled date for either issuance of the solicitation for the first contract for construction of the *initial general navigation features* or commencement of construction of the *initial general navigation features* using the Government's own forces, the Government shall notify the Non-Federal Sponsor in writing of such scheduled date and the funds the Government determines to be required from the Non-Federal Sponsor to meet its projected share under Article II.D. of this Agreement. Not later than such scheduled date, the Non-Federal Sponsor shall provide the Government with the full amount of the required funds by delivering a check payable to "FAO, USAED, Detroit " to the District Engineer, or verifying to the satisfaction of the Government that the Non-Federal Sponsor has deposited the required funds in an escrow or other account acceptable to the Government, with interest accruing to the Non-Federal Sponsor, or presenting the Government with an irrevocable letter of credit acceptable to the Government for the required funds, or providing an Electronic Funds Transfer of the required funds in accordance with procedures established by the Government.

2. Not less than 30 calendar days prior to the scheduled date for either issuance of the solicitation for the first contract for any engineering and design work on a *subsequent dredged or excavated material disposal facility* or commencement of engineering and design work on a *subsequent dredged or excavated material disposal facility* using the Government's own forces, the Government shall notify the Non-Federal Sponsor in writing of such scheduled date and of the funds the Government determines to be required from the Non-Federal Sponsor to meet its projected share under Article II.E. of this Agreement for the applicable *subsequent period of construction.* Not later than such scheduled date, the Non-Federal Sponsor shall provide the Government with the full amount of the required funds through any of the payment mechanisms specified in paragraph B.1. of this Article.

3. The Government shall draw from the funds provided by the Non-Federal Sponsor such sums as the Government deems necessary to cover: (a) the *non-Federal proportionate share of financial obligations for initial construction* incurred prior to the commencement of the *initial period of construction*; (b) the *non-Federal proportionate share of*

financial obligations for initial construction as *financial obligations for initial construction* are incurred; and (c) the *non-Federal proportionate share of financial obligations for subsequent construction* as *financial obligations for subsequent construction* are incurred. If at any time the Government determines that additional funds will be needed from the Non-Federal Sponsor to cover the Non-Federal Sponsor's share of such financial obligations, the Government shall notify the Non-Federal Sponsor in writing of the additional funds required and provide an explanation of why additional funds are required. Within 30 calendar days from receipt of such notice, the Non-Federal Sponsor shall provide the Government with the full amount of the additional required funds through any of the payment mechanisms specified in paragraph B.1. of this Article.

C. Upon conclusion of the *initial period of construction* and resolution of all relevant claims and appeals and all eminent domain proceedings, the Government shall conduct a final accounting for the *initial period of construction* and furnish the Non-Federal Sponsor with written notice of the results of such final accounting. If due to outstanding relevant claims and appeals or eminent domain proceedings a final accounting for the *initial period of construction* cannot be conducted in a timely manner, the Government shall conduct an interim accounting for the *initial period of construction* and furnish the Non-Federal Sponsor with written notice of the results of such interim accounting. Once all outstanding relevant claims and appeals and all eminent domain proceedings for the *initial period of construction* are resolved, the Government shall amend the interim accounting for the *initial period of construction* to complete the final accounting for the *initial period of construction* and furnish the Non-Federal Sponsor with written notice of the results of such final accounting. The final or interim accounting for the *initial period of construction*, as applicable, shall determine *total costs of initial construction* and the costs allocated by the Government to operation and maintenance of any pre-existing non-Federal navigation project as of the date of such accounting. For each set of costs, the final or interim accounting for the *initial period of construction*, as applicable, also shall determine each party's required share thereof and each party's total contributions thereto as of the date of such accounting.

1. In the event the final or interim accounting for the *initial period of construction*, as applicable, shows that the Non-Federal Sponsor's total required shares for *total costs of initial construction* and the costs allocated by the Government to operation and maintenance of any pre-existing non-Federal navigation project exceed the Non-Federal Sponsor's total contributions provided thereto, the Non-Federal Sponsor, no later than 90 calendar days after receipt of written notice, shall make a payment to the Government of an amount equal to the excess by delivering a check payable to "FAO, USAED, Detroit " to the District Engineer or providing an Electronic Funds Transfer in accordance with procedures established by the Government.

2. In the event the final or interim accounting for the *initial period of construction*, as applicable, shows that the total contributions provided by the Non-Federal Sponsor for *total costs of initial construction* and the costs allocated by the Government to operation and maintenance of any pre-existing non-Federal navigation project exceed the Non-Federal Sponsor's total required shares thereof, the Government, subject to the availability of funds, shall refund the excess to the Non-Federal Sponsor no later than 90 calendar days after

providing written notice. In the event funds are not available to refund the excess to the Non-Federal Sponsor, the Government shall seek such appropriations as are necessary to make the refund. To the extent that such appropriations are not received, the Government shall apply the excess toward the Non-Federal Sponsor's upcoming installment payment, if any, in accordance with paragraph E. of this Article.

D. Upon conclusion of each *subsequent period of construction* and resolution of all relevant claims and appeals and all eminent domain proceedings, the Government shall conduct a final accounting for such *subsequent period of construction* and furnish the Non-Federal Sponsor with written notice of the results of such final accounting. If due to outstanding relevant claims and appeals or eminent domain proceedings a final accounting for such *subsequent period of construction* cannot be conducted in a timely manner, the Government shall conduct an interim accounting for such *subsequent period of construction* and furnish the Non-Federal Sponsor with written notice of the results of such interim accounting. Once all outstanding relevant claims and appeals and all eminent domain proceedings for such *subsequent period of construction* are resolved, the Government shall amend the interim accounting for such *subsequent period of construction* to complete the final accounting for such *subsequent period of construction* and furnish the Non-Federal Sponsor with written notice of the results of such final accounting. The final or interim accounting for such *subsequent period of construction*, as applicable, shall determine *total costs of subsequent construction* for that *subsequent period of construction*, each party's required share thereof, and each party's total contributions thereto as of the date of such accounting.

1. In the event the final or interim accounting for such *subsequent period of construction*, as applicable, shows that the Non-Federal Sponsor's total required share for *total costs of subsequent construction* for that *subsequent period of construction* exceed the Non-Federal Sponsor's total contributions provided thereto, the Non-Federal Sponsor, no later than 90 calendar days after receipt of written notice, shall make a payment to the Government of an amount equal to the excess by delivering a check payable to "FAO, USAED, Detroit " to the District Engineer or providing an Electronic Funds Transfer in accordance with procedures established by the Government.

2. In the event the final or interim accounting for such *subsequent period of construction*, as applicable, shows that the total contributions provided by the Non-Federal Sponsor for *total costs of subsequent construction* for that *subsequent period of construction* exceed the Non-Federal Sponsor's total required share thereof, the Government, subject to the availability of funds, shall refund the excess to the Non-Federal Sponsor no later than 90 calendar days after providing written notice. In the event funds are not available to refund the excess to the Non-Federal Sponsor, the Government shall seek such appropriations as are necessary to make the refund. To the extent that such appropriations are not received, the Government shall apply the excess toward the Non-Federal Sponsor's upcoming installment payment, if any, in accordance with paragraph E. of this Article.

E. The Non-Federal Sponsor shall pay any additional amount plus any interest thereon required by Article II.F. of this Agreement in accordance with the provisions of this paragraph.

1. Each time the Government conducts a final or interim accounting for the *initial period of construction* and for each *subsequent period of construction*, the Government shall determine:

a. an amount equal to 10 percent of *total costs of construction of the general navigation features* as of the date of such accounting;

b. the value, in accordance with Article IV of this Agreement, of the lands, easements, rights-of-way, and *relocations* provided or performed pursuant to Article III of this Agreement as of the date of such accounting; and

c. the additional amount to be paid by the Non-Federal Sponsor as of the date of such accounting. The additional amount is equal to the amount determined in accordance with paragraph E.1.a. of this Article less the amount of credit afforded by the Government for the value of the lands, easements, rights-of-way, and *relocations* , determined in accordance with paragraph E.1.b. of this Article. In the event the result of the aforesaid calculation is a negative number, the additional amount shall be zero.

2. The first time the Government determines that the additional amount is greater than zero, the Government shall calculate annual installments for payment of the additional amount that shall be substantially equal. To calculate the annual installments, the Government shall amortize the additional amount over a period of 30 years (hereinafter the "payment period"), beginning on the date the Government notifies the Non-Federal Sponsor of the additional amount, using an interest rate determined by the Secretary of the Treasury, taking into consideration the average market yields on outstanding marketable obligations of the United States with remaining periods of maturity comparable to the payment period during the month preceding the *fiscal year* in which the *initial period of construction* or *subsequent period of construction*, as applicable, commences, plus a premium of one-eighth of one percentage point for transaction costs. The Government shall notify the Non-Federal Sponsor in writing of the additional amount and the annual installments.

3. For all subsequent occurrences where the Government determines the additional amount is greater than zero, and the payment period has not elapsed, the Government shall recalculate the annual installments by amortizing the outstanding portion of the additional amount over the remaining portion of the payment period using an interest rate determined by the Secretary of the Treasury, taking into consideration such average market yields on outstanding marketable obligations of the United States with remaining periods of maturity comparable to the remaining portion of the payment period during the month preceding the *fiscal year* in which the recalculation is made, plus a premium of one-eighth of one percentage point for transaction costs. The Government shall notify the Non-Federal Sponsor in writing of the recalculated additional amount and the recalculated annual installments and the Non-Federal Sponsor shall pay the recalculated annual installments in lieu of the previous annual installments.

4. For all subsequent occurrences where the Government determines the additional amount is greater than zero, and the payment period has elapsed, the Government shall notify the Non-Federal Sponsor in writing of the recalculated additional amount. The Non-Federal Sponsor, not later than 90 days from receipt of such notice, shall pay to the Government

the outstanding portion of the additional amount by delivering a check payable to "FAO, USAED, Detroit " to the District Engineer or providing an Electronic Funds Transfer in accordance with procedures established by the Government.

5. In addition to any recalculation of the annual installments in accordance with paragraph E.3. of this Article, the Government shall recalculate the annual installments at five year intervals by amortizing the outstanding portion of the additional amount over the remaining portion of the payment period using an interest rate determined by the Secretary of the Treasury, taking into consideration such average market yields on outstanding marketable obligations of the United States with remaining periods of maturity comparable to the payment period during the month preceding the *fiscal year* in which the *initial period of construction* or *subsequent period of construction*, as applicable, commences, plus a premium of one-eighth of one percentage point for transaction costs. The Government shall notify the Non-Federal Sponsor in writing of the recalculated annual installments and the Non-Federal Sponsor shall pay the recalculated annual installments in lieu of the previous annual installments.

6. Subject to paragraphs C.2, D.2., and F.3.b. of this Article, the Non-Federal Sponsor shall pay the installments calculated or recalculated pursuant to paragraphs E.2., E.3., or E.5. of this Article each year on the anniversary of the date the Government notifies the Non-Federal Sponsor of the additional amount, over a period not to exceed the payment period, by delivering a check payable to "FAO, USAED, Detroit " to the District Engineer or providing an Electronic Funds Transfer in accordance with procedures established by the Government.

7. Notwithstanding paragraph E.6. of this Article, the Non-Federal Sponsor, in its sole discretion, may prepay the additional amount, in whole or in part, at any time. Notwithstanding paragraphs E.2., E.3., or E.5. of this Article, there shall be no charges for interest on any portion of the additional amount that is prepaid within 90 days after the Government notifies the Non-Federal Sponsor of the additional amount, nor shall there be interest charges on any portion of an increase to the additional amount that is caused by recalculation of the additional amount and that is prepaid within 90 days after the Government notifies the Non-Federal Sponsor of such recalculated additional amount.

8. If the Government determines that the Non-Federal Sponsor has made payments towards the additional amount that exceed the additional amount, the Government, subject to the availability of funds, shall refund the amount of the excess, without interest. In the event funds are not available to make such refund, the Government shall seek such appropriations as are necessary to make such refund.

F. The Non-Federal Sponsor shall provide the contribution of funds required by Article II.L. of this Agreement in accordance with the provisions of this paragraph.

1. Not less than 30 calendar days prior to the scheduled date for the first financial obligation for additional work, the Government shall notify the Non-Federal Sponsor in writing of such scheduled date and of the full amount of funds the Government determines to be required from the Non-Federal Sponsor to cover the costs of the additional work. No later than 30 calendar days prior to the Government incurring any financial obligation for additional work, the

Non-Federal Sponsor shall provide the Government with the full amount of the funds required to cover the costs of such additional work through any of the payment mechanisms specified in paragraph B.1. of this Article.

2. The Government shall draw from the funds provided by the Non-Federal Sponsor such sums as the Government deems necessary to cover the Government's financial obligations for such additional work as they are incurred. If at any time the Government determines that the Non-Federal Sponsor must provide additional funds to pay for such additional work, the Government shall notify the Non-Federal Sponsor in writing of the additional funds required and provide an explanation of why additional funds are required. Within 30 calendar days from receipt of such notice, the Non-Federal Sponsor shall provide the Government with the full amount of the additional required funds through any of the payment mechanisms specified in paragraph B.1. of this Article.

3. At the time the Government conducts the final or interim accounting for the *initial period of construction*, as applicable, or the final or interim accounting for each *subsequent period of construction*, as applicable, or at the end of each *fiscal year* in which the Government incurs costs for additional work provided or performed prior to the *initial period of construction* or after all *subsequent periods of construction*, the Government shall conduct an accounting of the Government's financial obligations for additional work incurred during the applicable period and furnish the Non-Federal Sponsor with written notice of the results of such accounting. Such accounting shall determine the Government's total financial obligations for additional work incurred during the applicable period and the Non-Federal Sponsor's contribution of funds provided thereto.

a. In the event such accounting shows that the total obligations for additional work incurred during the applicable period exceed the total contribution of funds provided by the Non-Federal Sponsor for such additional work, the Non-Federal Sponsor, no later than 90 calendar days after receipt of written notice, shall make a payment to the Government of an amount equal to the excess by delivering a check payable to "FAO, USAED, Detroit " to the District Engineer or providing an Electronic Funds Transfer in accordance with procedures established by the Government.

b. In the event such accounting shows that the total contribution of funds provided by the Non-Federal Sponsor for additional work during the applicable period exceeds the total obligations for such additional work, the Government, subject to the availability of funds, shall refund the excess to the Non-Federal Sponsor no later than 90 calendar days after providing written notice. In the event funds are not available to refund the excess to the Non-Federal Sponsor, the Government shall seek such appropriations as are necessary to make the refund. To the extent that such appropriations are not received, the Government shall apply the excess toward the Non-Federal Sponsor's upcoming installment payment, if any, in accordance with paragraph E. of this Article.

ARTICLE VII - DISPUTE RESOLUTION

As a condition precedent to a party bringing any suit for breach of this Agreement, that party must first notify the other party in writing of the nature of the purported breach and seek in good faith to resolve the dispute through negotiation. If the parties cannot resolve the dispute through negotiation, they may agree to a mutually acceptable method of non-binding alternative dispute resolution with a qualified third party acceptable to both parties. The parties shall each pay an equal share of any costs for the services provided by such a third party as such costs are incurred. The existence of a dispute shall not excuse the parties from performance pursuant to this Agreement.

ARTICLE VIII - OPERATION AND MAINTENANCE

A. The Government, subject to the availability of funds and as it determines necessary, shall operate and maintain the *general navigation features*.

B. The Non-Federal Sponsor hereby authorizes the Government to enter, at reasonable times and in a reasonable manner, upon property that the Non-Federal Sponsor now or hereafter owns or controls for the purpose of operating and maintaining the *general navigation features*. However, nothing contained herein shall convey to the Government any interest in real property owned or controlled by the Non-Federal Sponsor.

C. The Non-Federal Sponsor hereby authorizes the Government to perform all activities on the lands, easements, and rights-of-way provided by the Non-Federal Sponsor that, in the Government's sole discretion, are necessary for the operation and maintenance of the *general navigation features*. Such activities include, but are not necessarily limited to management of disposal of dredged or excavated material associated with operation and maintenance of the *existing general navigation features*. In addition, as between the Government and the Non-Federal Sponsor, for so long as a *dredged or excavated material disposal facility* is required for operation and maintenance of the *existing general navigation features* as determined by the Government, the Government shall have the full authority and exclusive right to operate and maintain or manage such facility including the exclusive right to place, remove, use, or reuse the materials therein for any purpose without charge to the Government.

ARTICLE IX - HOLD AND SAVE

The Non-Federal Sponsor shall hold and save the Government free from all damages arising from construction or operation and maintenance of the *Project* and any *betterments*, and the provision of capacity pursuant to Article II.L.3. of this Agreement, except for damages due to the fault or negligence of the Government or its contractors.