PROJECT COMPLETION REPORT

PROJECT NAME **Freshwater Introduction South of Hwy 82**

CWPPRA/STATE PROJECT NO. **ME-16**

PURCHASE ORDER: No. 3934145

Report Date: June 18, 2007 **BY: USFWS and LA DNR/CRD**

1. Project Managers/Contracting Officer:

DNR Project Manager	Pat Landry	Telephone 337-482-0680
DNR Construction Project Manager	Dewey Billedeau	Telephone 337-482-0664
Federal Agency Project Manager	Darryl Clark	Telephone 337-291-3111

2. Location and description of projects as approved for construction by the Task Force.

The ME-16 project is located in the central and eastern portions of the Rockefeller Wildlife Refuge. The project site is bounded on the west by a canal west of Little Constance Bayou and south of Deep Lake, on the south by the Gulf of Mexico shoreline, on the east by Rollover Bayou, and on the north by White Lake. The federal sponsor for this project is the U.S. Fish and Wildlife Service (USFWS) and the local sponsor is the Louisiana Department of Natural Resources (LADNR). Implementation of the project allows an increased freshwater flow from the Grand Lake and White Lake systems into the brackish marshes located in the southeastern portion of Rockefeller Refuge. This additional flow will help to reduce salinities and attenuate salinity spikes. The project not only provides freshwater induction to the marshes south of Hwy 82, but also reduces watershed flooding due to severe storm events in the upper reaches of the watershed. The project featured channel enlargements, freshwater induction structures, and terraces.

The project consists of construction of 4 new structures, revisions to one structure, channel enlargements, removal of an earthen plug in the Rockefeller Refuge, and installation of terraces. The structures involved are:

- **Structure 1:** 4S – New Dyson Structure
- **Structure 2:** 5S – New Cop-Cop Structure
- **Structure 3:** 6SW – Structure No. 10
- **Structure 4:** 6SE – Structure No. 12
- **Structure 5:** 3S – Little Constance Structure Alteration
- **Structure 6:** 1S – Removal of Earthen Plug

- **Channel 1:** 1C – Louisiana Highway 82
- **Channel 2:** 2CN – Grand Volle North
- **Channel 3:** 2CS – Grand Volle South
- **Channel 4:** 3C – Boundary Line

- **Terrace:** Creation of approximately 26,000 feet of terraces

3. Final, as-built features, boundaries and resulting acreage (use attachments if necessary).

<u>As Built Features</u>

Structure No. 1 – New Dyson Structure

- Installation of four 48" diameter culverts with flap-gates and stop-logs at Dyson Bayou, north of an existing structure near the northwestern portion of a small lake. Approximately 887 cubic yards of native material was removed from the structure site by bucket dredge, and placed in a temporary spoil disposal area. The removed spoil was returned to its pre-project location after the culverts were installed. Approximately 508 cubic yards of native material was removed from the water bottom measuring approximately 80 linear feet of inlet channel, and discharged in an adjacent spoil disposal area using a bucket dredge. Approximately 2,269 cubic yards of native material was removed from the water bottom measuring approximately 300 linear feet of outlet channel, and discharged in an adjacent spoil disposal area using a bucket dredge. Approximately 233 cubic yards (350 tons) of riprap was transported to the project site by barge, and used to construct an erosion control mat adjacent to the structure.

Structure No. 2 – New Cop-Cop Structure

- Installation of four 48" diameter culverts with flap-gates and stop-logs at Cop-Cop Bayou, alongside the existing structure at Cop-Cop Bayou. Approximately 793 cubic yards of native material was removed from the structure site by bucket dredge, and placed in a temporary spoil disposal area. The removed spoil was returned to its pre-project location after the culverts were installed. Approximately 472 cubic yards of native material was removed from the water bottom measuring approximately 80 linear feet of inlet channel, and discharged in an adjacent spoil disposal area using a bucket dredge. Approximately 2,244 cubic yards of native material was removed from the water bottom measuring approximately 275 linear feet of outlet channel, and discharged in an adjacent spoil disposal area using a bucket dredge. Approximately 233 cubic yards (350 tons) of riprap was transported to the project site by barge and used to construct an erosion control mat adjacent to the structure.

Structure No. 3 – Structure No. 10

- Installation of three 48" diameter culverts with flap-gates and stop-logs along the Boundary Line Canal, south of Unit 14. Approximately 508 cubic yards of native material was removed from the structure site by bucket dredge, and placed in a temporary spoil disposal area. The removed spoil was returned to its pre-project location after the culverts were installed. Approximately 296 cubic yards of native material was removed from the water bottom measuring approximately 45 linear feet of inlet channel, and discharged in an adjacent spoil disposal area using a bucket dredge. Approximately 779 cubic yards of native material was removed from the water bottom measuring approximately 200 linear feet of outlet channel, and discharged in an adjacent spoil disposal area using a bucket dredge. Approximately 200 cubic yards (300 tons) of riprap was transported to the project site by barge and used to construct an erosion control mat adjacent to the structure.

Structure No. 4 – Structure No. 12

- Installation of three 48" diameter culverts with flap-gates and stop-logs along the Boundary Line Canal, south of Unit 14. Approximately 549 cubic yards of native material was removed from the structure site by bucket dredge and placed in a temporary spoil disposal area. The removed spoil was returned to its pre-project location after the culverts were installed. Approximately 335 cubic yards of native material was removed from the water bottom measuring approximately 45 linear feet of inlet channel, and discharged in an adjacent spoil disposal area using a bucket dredge. Approximately 948 cubic yards of native material was removed from the water bottom measuring approximately 200 linear feet of outlet channel, and discharged in an adjacent spoil disposal area using a bucket dredge. Approximately 200 cubic yards (300 tons) of riprap was transported to the project site by barge and used to construct an erosion control mat adjacent to the structure.

Structure No. 5 – Little Constance Structure Alteration

- Replaced three existing 10' x 10' radial arm gates with flap-gates to the south and stop-logs to the north of the Little Constance Bayou Structure to allow fresh water to flow south when conditions permit.

Structure No. 6 – Removal of Earthen Plug

- Removed the existing plug in the branch of Superior Canal that forms the eastern boundary of Rockefeller Unit 13, at the northeastern portion of

Unit 13/Unit 6 boundary line canal. Approximately 4,922 cubic yards of native material was removed from the water bottom of this channel, and discharged in an adjacent spoil disposal area using a bucket dredge.

Channel 1C

- Widened and deepened the existing 8' wide x 1' deep canal, connecting Superior Canal to the Highway 82 northern borrow canal, to a 20' bottom width, 44' top width, and 4' deep canal. Enlarged the Hwy 82 northern borrow canal to 44' top width x 4' deep x 13,565' long. Approximately 42,245 cubic yards of native material was removed from the water bottom of this channel and discharged in an adjacent spoil disposal area using a spray dredge.

Channel 2CN

- Widened and deepened the Grand Volle Channel on the north side of Louisiana Highway 82 from 10' wide, 1' to 2' deep, and 4' bottom width to 28' top width, 4' deep, with 3:1 side slope by 15,316' long. Approximately 34,449 cubic yards of native material was removed from the water bottom of this channel and discharged in an adjacent spoil disposal area using a spray dredge. Approximately 3,333 cubic yards (5,000 tons) of riprap was transported to the project site by barge, and used to construct approximately 4,882 linear feet of rock dike along the upper reach of the channel in Grand Volle Lake.

Channel 2CS

- Widened and deepened the Grand Volle Channel on the south side of Louisiana Highway 82 from 10' wide, 1' to 2' deep, and 4' bottom width, to 28' top width, 4' deep, with 3:1 side slope by 7,412' long. Approximately 25,274 cubic yards of native material was removed from the water bottom of this channel, and discharged in an adjacent spoil disposal area using a spray dredge.

Channel 3C

- Deepened the existing the channel that follows the exterior boundary of the Rockefeller Refuge near the Cameron / Vermillion Parish line, south of Highway No. 82 to 60' wide, 1' to 5' deep, with 3:1 side slope by 13,850' long. Approximately 39,432 cubic yards of native material was removed from the water bottom of this channel and discharged in an adjacent spoil disposal area using a bucket dredge.

Items of Work Construction in Base Bid of ME-16 Freshwater Introduction South of LA Highway 82

BASE BID

Item No	Description	Unit Price	Extension
1	**Mobilization, pertains to items 1-1 through 1-11 below, per Lump Sum**		
1-1	LA Hwy 82 Channel Enlargement (1C) **Twenty Thousand** Dollars Lump Sum in Words		**$20,000**
1-2	Grand Volle North Channel Enlargement (2CN) **Eleven Thousand** Dollars Lump Sum in Words		**$11,000**
1-3	Grand Volle South Channel Enlargement (2CS) **Two Thousand** Dollars Lump Sum in Words		**$2,000**
1-4	Boundary Line Canal (3S) **Eighteen Thousand** Dollars Lump Sum in Words		**$18,000**
1-5	Terraces (1T) **Thirty Four Thousand** Dollars Lump Sum in Words		**$34,000**
1-6	Removal of Earthen Plug (1S) **Two Thousand** Dollars Lump Sum in Words		**$2,000**
1-7	New Dyson Structure (4S) **Sixty Thousand** Dollars Lump Sum in Words		**$60,000**
1-8	New Cop-Cop Structure (5S) **Sixty Thousand** Dollars Lump Sum in Words		**$60,000**
1-9	Structure Number 10 (6SW) **Fifty Thousand** Dollars Lump Sum in Words		**$50,000**
1-10	Structure Number 12 (6SE) **Fifty Thousand** Dollars Lump Sum in Words		**$50,000**
1-11	Little Constance Structure (3S) **Thirty Eight Thousand** Dollars Lump Sum in Words		**$38,000**

2	**Channel Excavation-** **-- by Spray Dredge, pertains to items 2-1 through 2-3 below, per Lump Sum** **-- by Bucket Dredge, pertains to item 2-4 below, per Lump Sum**		
2-1	(1C) LA Hwy 82 Channel Enlargement , 13,500 LF **Two Hundred Five Thousand Four Hundred and Thirty** Dollars Lump Sum in Words	**$15.22**	**$205,430**
2-2	(2CN) Grand Volle North Ch Enlargement, 12,815 LF **One Hundred Seventeen Thousand Seven Hundred and Twelve** Dollars Lump Sum in Words	**$9.19**	**$117,712**
2-3	(2CS) Grand Volle South Ch Enlargement , 3,400 LF **Twenty Two Thousand Two Hundred Forty Nine** Dollars Lump Sum in Words	**$6.54**	**$22,249**
2-4	(3S) Boundary Line Canal, 13,850 LF **Two Hundred Ninety Six Thousand and Eight One** Dollars Lump Sum in Words	**$21.38**	**$296,081**
3	**Terrace Construction (1T) (26,000LF) per Linear Ft** **Three Hundred Forty Nine Thousand One Hundred and Eighty** Dollars Unit Price in Words	**$13.43**	**$349,180**
4	**Water Control Structures, pertains to items 4-1 through 4-5 below, per Lump Sum**		
4-1	Removal of Earthen Plug (1S), per Lump Sum **Twenty Thousand** Dollars Lump Sum in Words		**$20,000**
4-2	New Dyson Structure (4S), per Lump Sum **Five Hundred Ninety One Thousand Eight Hundred and Fifty** Dollars Lump Sum in Words		**$591,850**
4-3	New Cop-Cop Structure (5S), per Lump Sum **Five Hundred Ninety One Thousand Eight Hundred and Fifty** Dollars Lump Sum in Words		**$591,850**
4-4	Structure Number 10 (6SW), per Lump Sum **Four Hundred Eighty Eight Thousand Seven Hundred Eighty** Dollars Lump Sum in Words		**$488,780**

4-5	Structure Number 12 (6SE), per Lump Sum **Four Hundred Eighty Eight Thousand Seven Hundred Eighty** Dollars Lump Sum in Words		**$486,780**
4-6	Little Constance (3S), per Lump Sum **Three Hundred Seventy Thousand Four Hundred and Five** Dollars Lump Sum in Words		**$370,405**
5	**Rock Rip-Rap, pertains to items 5-1 through 5-4 below, per Ton**		
5-1	New Dyson Structure (4S), 340 Tons **Seventeen Thousand** Dollars Unit Price in Words	**$50.00**	**$17,000**
5-2	New Cop-Cop Structure (5S), 340 Tons **Seventeen Thousand** Dollars Unit Price in Words	**$50.00**	**$17,000**
5-3	Structure Number 10 (6SW), 265 Tons **Thirteen Thousand Two Hundred and Fifty** Dollars Unit Price in Words	**$50.00**	**$13,250**
5-4	Structure Number 12 (6SE), 265 Tons **Thirteen Thousand Two Hundred and Fifty** Dollars Unit Price in Words	**$50.00**	**$13,250**

TOTAL BASE BID:

Three Million Nine Hundred Forty Three Thousand Eight Hundred and Seventeen Dollars and Zero Cents .
(Written in words)

$ 3,943,817 .
(Written in figures)

4. Construction and construction oversight

Prime Construction Contractor	**Wilco Industrial Services, LLC**
Subcontractor	**Aucoin & Associates, M & C Oilfield Services, Sweatman Chainsaw Company, Inc., Wilco Marsh Buggies, Inc.**
Original Construction Contract	**$3,943,817.00**
Change Orders	**One ($0.00)**
Over/Under runs	**$ 0.00**
Final Construction Contract	**$3,943,817.00**

Oversight and Administration

Construction Oversight Contractor **Lonnie G. Harper & Associates, Inc.**

Construction Oversight /Admin. Agency **Coastal Restoration Division/LA DNR**

5. Major equipment used.

The construction contactor utilized a custom-built spray dredge, airboat, marsh buggy, track hoe, bulldozer, and other miscellaneous small tools to complete the project. The dredge used on this project was an 8" swinging ladder amphibious dredge measuring 20'6" in width, 67' in length, with a 4' draft. The airboat was 21' long, 7' wide and powered by a 454 cubic inch engine with 500 HP. The marsh buggies consisted of:

- a Caterpillar 325 Long-Reach Marsh buggy (18'6" wide, 40' long with a 5' draft and 70' reach) and mounted on 6' tall pontoons.
- A Link-Belt 4300 series Long Reach Marsh buggy (18'6" wide, 40' long with a 5' draft and 70' reach) mounted on 6' tall pontoons.
- A Caterpillar 330 Long Reach Marsh buggy (25' wide, 40' long with a 7' draft and 55' reach) mounted on 8' tall pontoons.

The construction equipment as well as materials was transported to and from the construction site utilizing marine equipment, consisting of :

- NS26 Spud Barge, 35' wide, 120' long with a 2' draft when emply
- Push boat, 8' wide and 24'10" long, powered by a 471 Detroit Diesel engine.

6. Discuss construction sequence and activities, problems encountered, solution to problems, etc.

Construction contractor began construction of this project on September 7, 2005. A summary of the various construction activities is as follows:

a. 08-25-2005: Pre-construction meeting at Rockefeller Refuge with DNR personnel and Wilco personnel

b. 08-29-2005: Hurricane Katrina makes landfall in New Orleans damaging contractor's office in Marerro.

c. 09-06-2005: Wesley Pitre Met received 6 copies plans and met with Lonnie Harper.

d. 09-07-2005: James Douglas located existing survey monuments "Lake 13" and "Lake 14." "Lake 14" found to be in good condition, "Lake 13" was found to be disturbed.

e. 09-08-2005: Survey crew verified horizontal and vertical positions of monument "Lake 13", and control at plug removal site, structures #10 and #2 and new cop-cop structure. Survey crew began setting cane poles with flagging at survey points for terraces.

f. 09-24-2005: Hurricane Rita Hits Cameron Parish (No Construction Performed)

g. 10-03-2005: Received call from Dewey Billodeau requesting Lonnie G, Harper & Associates, Inc. to arrange for a post hurricane inspection to assess damage to project.

h. 10-04-2005: Lonnie Harper contacted Guthrie Perry at refuge and discussed inspection. LGH requested that inspection be performed in the next week.

i. 10-13-2005: Survey crew inspected project site and set temporary benchmark monument along HWY. 82 at S. corner of long ditch bridge.

j. 10-17-2005: Survey crew inspected laterals along HWY. 82 and Grand Volle N and S canals. Channels were open with approximately 2.5 – 3.0 feet of water.

k. 10-18-2005: Began marking areas with signs "Do not place dredge material here"

l. 10-20-2005: Wilco crew mobilized to site to begin stake-out of project features.

m. 10-21-2005: Wilco spray dredge equipment arrives on site

n. 10-26-2005: Wilco begins construction along HWY. 82

o. 11-22-2005: Wilco marsh buggy crew moved in and loaded equipment onto barge at Joseph's Harbor's boat launch and headed to boundary line levee

p. 11-25-2005: Terrace field work began

q. 11-29-2005: Boundary line levee clearing was completed. Mr. Dewey Billodeau inspected spray dredge, terrace field, and boundary line levee.

r. 11-30-2005: Subcontractor (Aucoin & Assoc.) began staking survey flags in terrace field.

s. 12-08-2005: Dredging on Grand Volle N. begins

t. 12-18-2005: Lonnie G, Harper & Associates, Inc. received request from Roger Vincent to adjust east end of the terrace field to allow hunters to continue to use a trenasse located along the boundary

u. 12-21-2005: Survey crew begins profiling Grand Volle channel.

v. 12-26-2005: Survey crew begins profiling canal 1-C along Hwy 82

w. 01-23-2006: Sub-contractor (M & C Construction) moved in a barge at Joseph Harbor boat launch.

x. 01-26-2006: M & C Construction began driving sheet piles at Little Constance Structure.

y. 02-14-2006: LADNR Personnel inspected Little Constance structure

z. 03-01-2006: Wilco completes terrace field and begins moving equipment to new cop-cop structure.

aa. 03-07-2006: Wilco continues working on earthen plug and boundary line canal. M & C completes Little Constance structure.

bb. 03-08-2006: LADNR personnel, Lonnie Harper, and James Duddleston inspect Little Constance structure.

cc. 03-10-2006: Wilco completes Boundary Line Canal.

dd. 03-12-2006: Wilco completes work on earthen plug
ee. 04-28-2006: M & C Construction hooks up hammer and tested piles
ff. 05-27-2006: M & C Construction begins cleaning cop-cop structure
gg. 06-04-2006: New Dyson Structure completed
hh. 06-09-2006: M & C Construction begins work on cop-cop structure
ii. 07-08-2006: M & C Construction completes cop-cop structure
jj. 07-12-2006: M & C Construction moved equipment to structure #12 to begin work.
kk. 08-12-2006: M & C Construction begin working on structure # 12
ll. 08-17-2006: M & C Construction begin working on structure # 10
mm. 09-26-2006: M & C Construction completes work on structure # 10
nn. 10-11-2006: M & C Construction arrives a marine barrier
oo. 10-17-2006: M & C Construction completes marine barrier
pp. 10-31-2006: Wilco, LADNR, Lonnie Harper inspect structure sites and terrace field and marine barrier for "punch list"
qq. 12-14-2006: Final Inspection by Wilco, LADNR, and Inspector

7. Construction change orders and field changes
One change order to extend the contract time 120 days was necessary due to the mandatory evacuation required by Hurricane Rita.

8. Pipeline and other utility crossings: None

Structure	Owner	Representative to Contact

9. Safety and Accidents: No accidents

10. Additional comments pertaining to construction, completed project, etc.
The contractor experienced unusual weather conditions in the form hurricane Rita. However, their performance and corporation was found to be above average. The workmanship and quality of the service provided for this project were found to be exceptional.

11. <u>Significant construction dates:</u> To be filled out by DNR Construction Project Manager or Contracting Officer for construction for Agency responsible for construction.

Contract Number	Date
Bid Opening	14 June 2005
Construction Contract Award	01 September 2005
Pre-construction Conference	25 August 2005
Notice to Proceed	07 September 2005
Mobilization	07 September 2005
Construction Start	07 September 2005
Construction Complete	17 October 2006
Final Acceptance	14 December 2006