

USACE KISSIMMEE RIVER RESTORATION C-38 REACH 3 BACKFILL AND BASS EMBANKMENT DEGRADE

CLIENT	BCPeabody Construction Services, Inc.
LOCATION	Okeechobee & Highlands Counties, Florida
VALUE	\$ 4M
DATE	October 2015 – October 2016
SAFETY	Zero OSHA Recordables



The project was designated as Service-Disabled Veteran-Owned Small Business Set-Aside by the US Army Corps of Engineers Jacksonville District. NorthStar strategically teamed with BCPeabody Construction Services Inc. (a Service-Disabled Veteran-Owned Small Business) as their primary subcontractor on the project, using NorthStar's 30 years of experience on large civil earthwork and USACE project to execute the project and provide mentorship to BCPeabody.

The following project synopsis details for you the Kissimmee River Restoration C-38 Reach 3 Backfill and Bass Embankment Degrade project scope of work.

History

The project area covers 3,000 square miles, stretching from the southern Orlando area south to Lake Okeechobee. Restoration is divided into the Upper Basin (referred to as the Kissimmee Headwaters Revitalization Project) and the Lower Basin (referred to as the Kissimmee Restoration Project). The river's upper basin includes the Upper Chain of Lakes and extends south through Lake Kissimmee to State Road 60. The lower basin includes the area from Lake Kissimmee to Lake Okeechobee. The Kissimmee River Restoration project is intended to restore over 40 square miles of river and floodplain ecosystem including 43 miles of meandering river channel and 27,000 acres of wetlands.

Project Scope

The scope of work for the project was to backfill approximately 7,000 LF (approximately 2.1M cubic yards of backfill) of the C-38 canal within Reach 3 of the Kissimmee River Basin as well as degrade the Bass

embankment located within the Pool D floodplain. The material used for the backfill of the C-38 was sourced from existing spoil mounds located along the adjacent canal banks. The canal was backfilled starting at the downstream location of Reach 3 South (Station 1042+38) continuing north to the upstream limits of Reach 3 North Backfill (Station 1112+47). The work also included turbidity monitoring and landscaping. The Bass embankment, located east of the C-38 and south of U.S. Highway 98, was degraded with resultant material used to backfill the borrow ditches adjacent to the embankment. Approximately 18,500 LF of the embankment was degraded.



Details to Work Scope Items

Clearing & Grubbing

The project included clearing and grubbing of the limits of backfill for the Bass Embankment and the four soil stockpile areas. The Bass Embankment clearing included 18,500 linear feet and required the use of swamp mats to work through areas of muck. While clearing the Bass Embankment NorthStar encountered two unknown abandoned in place pump stations. The pump stations included abandoned pumps and piping, as well as fuel tanks with fuel within them. NorthStar coordinated with the USACE and South Florida Water Management District, operator of the facility, to have the pump station removed cost effectively, environmental responsibly, and within impact to the project schedule.

Clearing of the four soil stockpile areas included more than 165 acres of land. The equipment that NorthStar utilized for clearing and grubbing included low ground pressure (LGP) bull dozers, excavators, front-end loader with rakes, and off road dump trucks. Debris from clearing and grubbing operations was stockpiled within the construction work limits and burned.

Turbidity & Erosion Control

During the construction, NorthStar utilized best management techniques for turbidity and erosion control and took all reasonable precautions to minimize the suspension and transport of soils into water adjacent to or downstream of the restoration site. Water samples were obtained and analyzed for turbidity and all sampling was conducted in accordance with the Florida Department of Environmental Protection Standard Operating Procedure FT 1600 Field Measurement of Turbidity. Routine turbidity monitoring occurred throughout the construction process. Turbidity monitoring locations were chosen during meetings with USACE representatives for both compliance and background turbidity sampling locations.

The NorthStar site management staff implemented various methods within certain operational areas and construction zones. The means and methods to control erosion and turbidity included:

- Installation of silt fence and staked turbidity barriers;
- Installation of turbidity control barriers;

- Installation of berms, settlement trap;
- Re-establishment of surface vegetation.

Excavation Methodology

NorthStar excavated, hauled and placed approximately 2.1M cubic yards of dirt from stockpiles along the banks of the C-38 canal to backfill the canal. NorthStar utilized over 20 pieces of heavy equipment and personnel to move over 15,000 cubic yards of soil per day to backfill the C-38 canal.

Beginning with the construction of the earthen plug at the southern section of the backfill to stop the flow of water through the C-38 canal. NorthStar then constructed additional intermediate plugs to re-route the water into the historic oxbows while containing all silts and turbidity on-site. The intermediate plugs zero out of the flow of water between plugs and reduce the amount of loss due to erosion and turbidity. Additionally this approach captures the silts that surge up from the existing bottom of canal encapsulating into small cells, which maintaining the bearing capacity of the backfill soils to allow the off-road dump trucks to operate efficiently.



The northern stockpile of soils is located on an island that is inaccessible to equipment. NorthStar designed and constructed a temporary floating bridge for access to the stockpile utilizing sectional barges to create the bridge that met the requirements of the USACE EM385-1-1 and OSHA. The bridge was designed to allow access for equipment, construction vehicles, fuel, and loaded off-road dump trucks hauling material. The floating bridge allows for water to continue to flow through the oxbow while allowing continual access for equipment.