# Basis of Engineer's Estimate of Probable Construction Cost

## Mobilization/Demobilization

The cost estimate for mobilization/demobilization includes all costs associated with movement of the dredge, support vessels, and dredge pipeline. These costs have been developed through analysis of historic and recent restoration costs. Recent projects have been bid out using three bid items for mobilization/demobilization: Hydraulic Dredge Mobilization and Demobilization; Dredge Pipeline Mobilization, Installation & Demobilization and a General Mobilization/Demobilization. The intent is to track costs of specific items of the demobilization and mobilization process. Recent bid tabs are shown in the cost estimate.

The cost for all three is an estimated $2,500,000. This cost assumes the use of a 24" hydraulic cutterhead dredge, 6,200 feet of pipeline, a bucket dredge contractor, and 6 marsh excavators. The breakdown is shown in the cost estimate.

## Marsh Creation/Hydraulic Dredging

The cost for marsh creation/hydraulic dredging includes all costs associated with the hydraulic dredging of the marsh creation fill material from the borrow site and transport to the marsh creation fill area. This cost is largely dependent on borrow area material characteristics, dredge pipeline length, and quantity of material to be dredged. This estimate was produced by utilizing CPRA's database of past hydraulic dredging projects to produce a correlation of dredge unit cost vs. pipeline distance. The marsh creation/hydraulic dredging will be paid on a per cubic yard basis. The TV-63 unit price of $3.50 provides the most up to date expected cost for a project most similar to P0-169. However, with multiple marsh creation cells in multiple bodies of water, a unit cost of $4.00 per cubic yard was used.

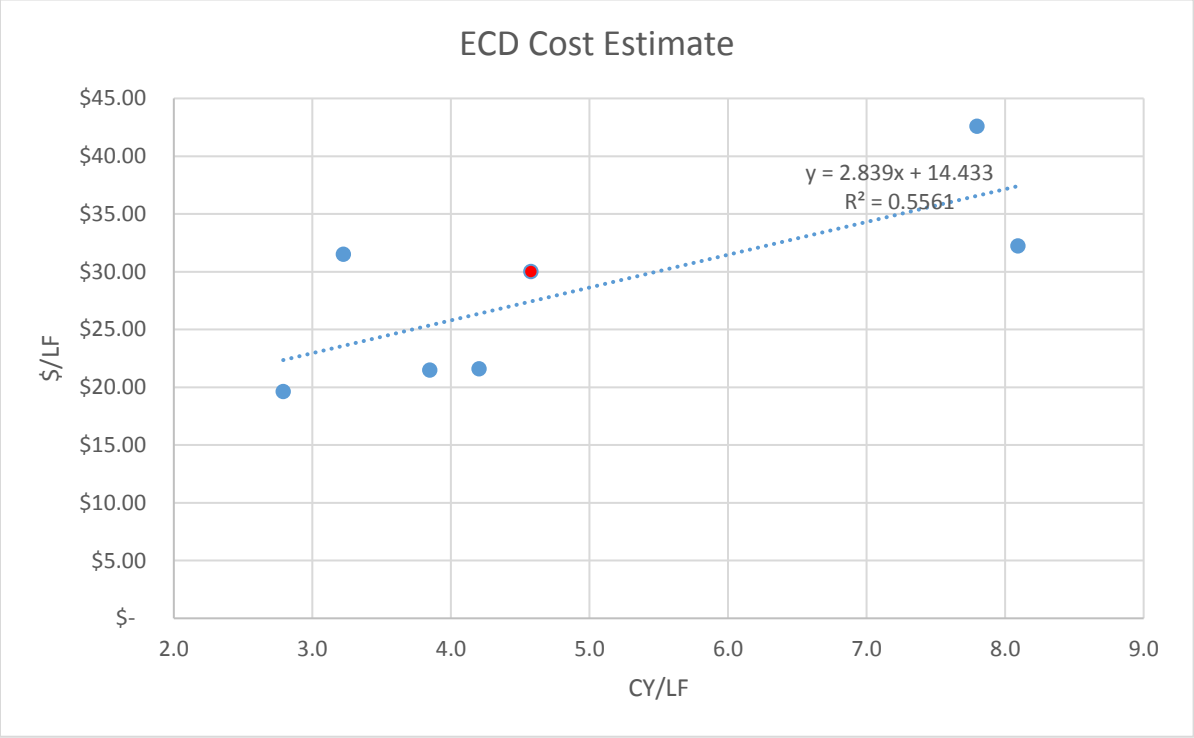
| Project Number | Project | Borrow Source | Restoration Type | Pump Distance | Bid Price | Year | Bid Price 2017 |
|---|---|---|---|---|---|---|---|
| **TV-21** | East Marsh Island Marsh Creation | Offshore Mix Sediment | Marsh | 4.2 | $5.92 | 2010 | $6.63 |
| **TE-50** | Whiskey Back Bay Marsh Creation | Offshore Mix Sediment | Marsh | 4.6 | $6.78 | 2009 | $7.56 |
| **BA-42** | Lake Hermitage Marsh Creation | MR Sand | Marsh | 7.2 | $6.75 | 2012 | $7.06 |
| **BA-68** | Grand Liard Marsh and Ridge Restoration | Offshore Mix Sediment | Marsh | 9.9 | $7.90 | 2014 | $8.14 |
| **BA-36** | Barataria Basin Landbridge | Inshore Mix Sediment | Marsh | 3.7 | $4.82 | 2008 | $5.37 |
| **TE-44** | North Lake Mechant | Inshore Mix Sediment | Marsh | 3.2 | $6.18 | 2008 | $7.15 |
| **PO-33** | Goose Point | Inshore Mix Sediment | Marsh | 2.8 | $4.98 | 2008 | $5.76 |
| **CS-59** | Oyster Bayou | Offshore Mix Sediment | Marsh | 5.6 | $5.20 | 2016 | $5.27 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **TE-72** | Lost Lake | Inshore Mix Sediment | Marsh | 4.5 | $4.74 | 2016 | $4.80 |
| **PO-104** | Bayou Bonfuca | Inshore Mix Sediment | Marsh | 4.0 | $6.20 | 2016 | $6.28 |
| **CS-54** | Cameron Creole Marsh Creation | Inshore Mix Sediment | Marsh | 4.4 | $4.30 | 2017 | $4.30 |
| **TV-63** | Cole's Bayou | Inshore Mix Sediment | Marsh | 6.1 | $3.50 | 2018 | NA |

Earthen Containment Dikes

The cost for earthen containment dikes includes all costs associated with the initial construction of the containment dike to the lines and grades shown in the construction plans and maintenance of the dikes throughout the duration of construction. The cost estimate is based on the quantity of material to be dredged, however, payment is made on a per linear foot basis.

This estimate was produced by utilizing CPRA's database of recent containment dike construction costs (see graph below). This database compares the quantity of in place (fill) material per linear foot of dike for past projects. The containment dikes for the PO-0169 project require approximately 4.6 CY of material per linear foot of containment dike. The relationship of quantity of material per linear foot of dike produces a cost of $30.00 per linear foot (red data point).



Articulated Concrete Mats & Geotextile Fabric

The cost for the articulated concrete mats and geotextile fabric is based off of the average bids from Cole's Bayou. The average bid cost for the ACMS was $112.50 per square yard and the average bid cost for the geotextile fabric was $7.12 per square yard. For this cost estimate unit costs of $7.25 and $115 per square yard respectively.

Settlement Plates

The cost for the settlement plates includes all costs associated with the fabrication and installation of the settlement plates. The unit cost is established based on the database of past settlement plate costs. Settlement plates are paid on a per unit (each) basis. The estimated cost for this project is $3,000 each.

| Average Bid | Bonfouca | Lost Lake | Oyster Bayou | Grand Liard | Cole's Bayou | **Combined Average** |
|---|---|---|---|---|---|---|
| Settlement Plates | $2,625 | $2,231 | $3,525 | $3,025 | $1,483 | **$2,577** |

Instrumented Settlement Plates

The cost for the instrumented settlement plates includes all costs associated with the fabrication, instrumentation and installation of the settlement plates. The unit cost is established based on the database of past instrumented settlement plate costs. Instrumented settlement plates have historically been paid on a per unit (each) basis. However, for this project costs are estimated on a per unit (each) basis.

Through trial and error on several projects, the instrumentation setup has been fine-tuned removing several of the instruments, thus reducing potential bid costs. The estimated cost for this project is $10,000 each.

| Average Bid | Bayou Dupont III | Bonfouca | Lost Lake | Cole's Bayou | **Combined Average** |
|---|---|---|---|---|---|
| ISPs | $10,000 | $10,000 | $8,856 | $14,765 | **$10,905** |

Grade Stakes

The cost for the grade stakes includes all costs associated with the fabrication and installation of the grade stakes. The unit cost is established based on the database of past grade stake costs. Grade stakes are paid on a per unit (each) basis. The estimated cost for this project is $250 each.

| Average Bid | Bonfouca | Lost Lake | Oyster Bayou | Grand Liard | Cole's Bayou | **Combined Average** |
|---|---|---|---|---|---|---|
| Grade Stakes | $206 | $306 | NA | NA | $213 | **$241** |

Construction Surveys

The cost for the construction surveys includes all costs associated with the completion of pre-construction topographic, bathymetric and hazard survey, construction progress surveys of marsh creation area and fill area, and post-construction As-Built surveys of all project features. The construction surveys are calculated as a 2.5% of total construction cost, excluding mobilization costs. The estimated cost is $297,861.

Construction Contingency

A construction cost contingency of 20% is being applied to the Estimate of Probably Construction Cost. The intent of the cost contingency is to account for uncertainty associated with the design of the project. At this time, the project team is still quite uncertain about the construction methodology of the ECDs along the shoreline. The inclusion of this cost contingency will help to mitigate for the potential impacts.