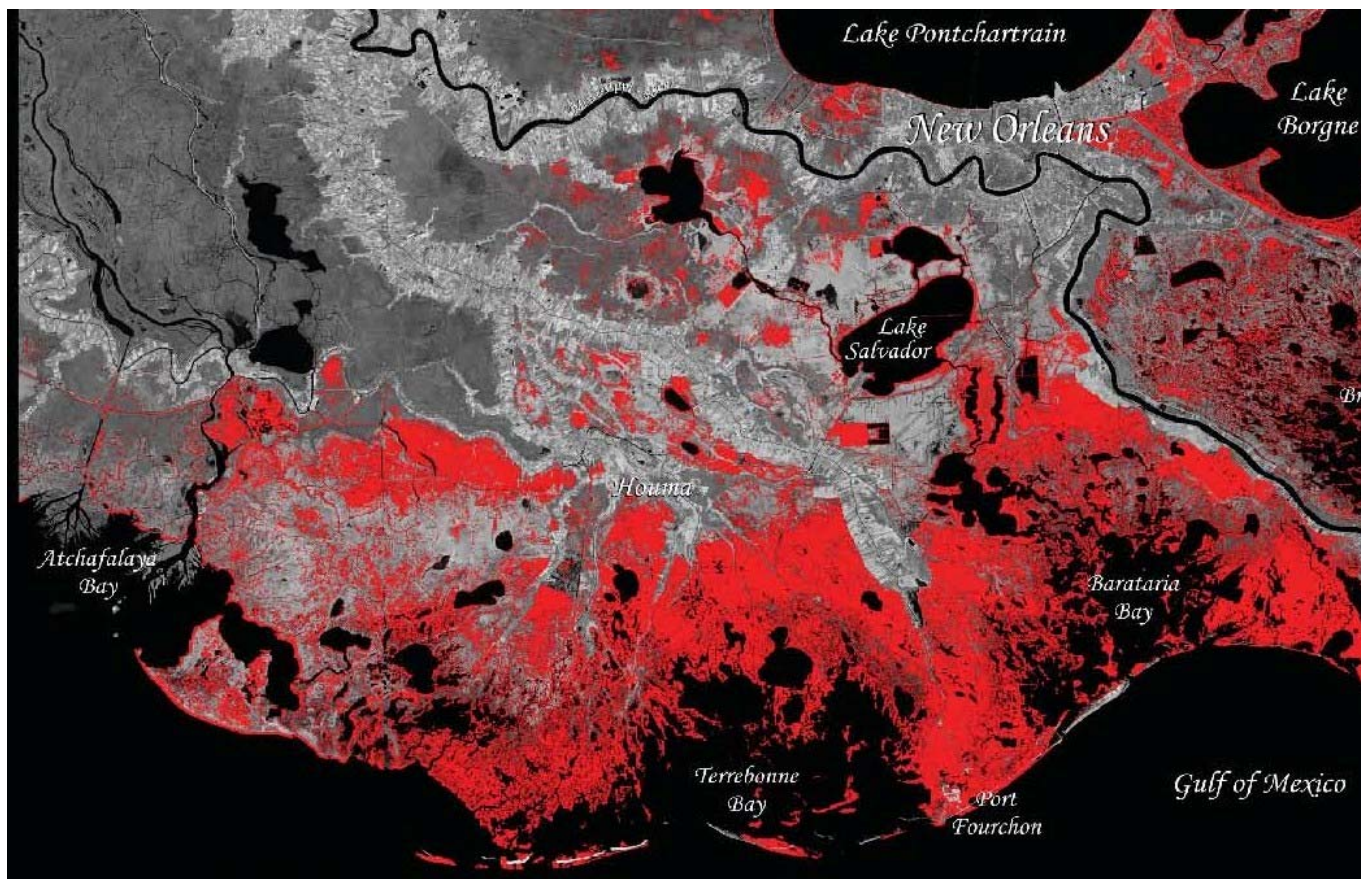


**APPENDIX H:  
Value Engineering Report**

**Attached is a brief summary of the Value Engineering Study conducted for this feasibility investigation. A complete version of the document is on file and available at the US Army Corps of Engineers, New Orleans District**

# Value Engineering Study Report

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## ***Terrebonne Basin Barrier Shoreline Restoration Multipurpose Operation of Houma Navigation Lock Convey Atchafalaya River Water to Northern Terrebonne Marshes***

CEMVN-VE-09-04

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**US Army Corps  
of Engineers®**

*June 2009*

*Prepared by*

**Value Management Strategies, Inc.**



**Value Management Strategies, Inc.**

## INTRODUCTION

This Value Engineering (VE) Study Report summarizes the events of the VE workshop conducted May 5 – 8, 2009 for the U.S. Army Corps of Engineers (USACE), New Orleans District, by Value Management Strategies, Inc. The subject of the study was the Houma Navigation Gate Operations Plan, and the Convey Atchafalaya River Water to Northern Terrebonne Marshes project. This study was conducted at the Feasibility Scoping Report/Preliminary Draft EIS, an early stage of project development, and as such is the beginning of plan formulation.

## VE STUDY RESULTS

The VE team developed alternative concepts which are intended to assist the USACE in better formulating plans to carry forward into the next phase of development. These recommendations are categorized per subject project as well as those that pertain to general plan formulation.

Major findings of the workshop are summarized as follows:

### **Multipurpose Operation of Houma Navigation Lock**

The Houma Navigation Canal (HNC) lock and floodgate were planned over a decade ago. The possible addition of a year-round significant freshwater flow into the HNC from the proposed Atchafalaya River Diversion Project would significantly affect the operation of the lock and floodgate and perhaps even warrant reconsideration of the facility design. The lock and gate complex will have to balance the impacts to navigation with the necessity of protecting the interior from tidal surge and salinity. Finally, the potential future global sea level (GSL) rise impacts what type of facility should be constructed.

Key VE Alternatives identified to address these issues are as follows:

- ◆ Optimize holistic system by balancing HNC flow rate capacity with gate and lock design and operation plan – **Response:** *The proposed HNC Gate/Lock complex is a feature of the authorized Morganza to the Gulf Hurricane Risk Reduction Project (currently undergoing a Post-Authorization Change (PAC)). While assumptions were made during the feasibility investigation of the proposed LCA ARTM project, more detailed opportunistic operation usage of the complex will be looked into. The capacity of the gate and lock is a part of the Morganza to the Gulf project.*
- ◆ Develop a set of guidelines for when gate will be shut and install monitors and controls to automatically close gate – **Response:** *An operations plan will be developed. However, implementation of an automated system may or may not be suitable.*
- ◆ Configure proposed 250-foot floodgate such that an additional gate could be added in the future in order to upgrade to a lock to accommodate a possible higher than expected future sea level – **Response:** *WRDA 2007 does not provide authority for the LCA ARTM study to alter the design of the proposed Morganza to the Gulf gate/lock complex on the HNC.*

## Convey Atchafalaya River Water to Northern Terrebonne Marshes

Issues with this project are that freshwater and sediment has poor delivery to the wetlands due to 1) alterations in natural hydrologic flow (canals, etc.), 2) constrictions in the Gulf Intracoastal Waterway (GIWW) that reduce freshwater flow to the subunit, and 3) freshwater delivered to the HNC bypasses adjacent wetlands and delivers to the Gulf of Mexico. The project is also having to identify where the freshwater needed should be derived from and how it should be delivered to the areas that need it.

Finally, seasonal differences in the need for freshwater and nutrients, and the locations from which freshwater can be recruited and distributed, may have conflicting parameters (i.e., freshwater is particularly needed during periods of low flow in the rivers).

Key VE alternatives identified to address these issues are as follows:

### ◆ GIWW Constriction at Houma

- Louisiana Department of Transportation and Development (LADOTD) to build a high-rise bridge and take the tunnel out of service – **Response:** *While removal of the tunnel in Houma is an alternative, the LADOTD has not prepared any studies or estimates for the removal of the tunnel and construction of an overpass in its place.*
- Install a channel section through the Twin Span bridge – **Response:** *This recommendation has been utilized.*

### ◆ Address Freshwater Quantity Limitations

- Alter Old River Control Structure to divert more than 70/30 allocation – **Response:** *determined to be beyond the scope of the LCA ARTM study.*
- Develop a seasonal freshwater management plan – **Response:** *this effort would require more time and funding than currently available in the LCA ARTM investigation.*
- Install wicker gates on HNC cuts into the marsh – **Response:** *unsure technology for use in coastal marsh*

### ◆ Address Freshwater Source and Transport

- Use Bayou Lafourche to convey freshwater to the northern Terrebonne marshes – **Response:** *investigations showed higher salinity gulf water being pulled up Bayou Lafourche. Assumptions based on other project investigations that Bayou Lafourche cannot currently carry enough water to reach the GIWW in amounts required to see tangible benefits.*

## General/Plan Formulation

◆ Develop Plan Strategies that account for much higher levels of GSL rise

One issue addressed by the VE team spans all three projects and has ramifications throughout the Louisiana Coastal Area (LCA) program. All three projects are currently assuming a minimum amount of relative sea level rise (combination of sea level rise and subsidence). Currently, work is underway by the USACE, National Oceanic and Atmospheric Administration (NOAA), and United States Geological Survey (USGS) to investigate the glacial melt contribution to future GSL rise. Project benefits depend upon habitats maintained above sea level. Consequently, benefits beyond the 50-year planning horizon will be lost if subsidence and GSL rise exceed the current assumptions. The rate of GSL rise in the future is currently unknown, but could be much greater than the current assumptions. As such, the projects should develop specific Plan Strategies that consider the range of possible future GSL rates. – ***Response:*** *low, medium, and high sea level rates were employed in the analysis of ecosystem benefits. At medium and high sea level rise rates, most if not all measures are lost or the benefits derived are significantly reduced.*