HOUMA NAVIGATION CANAL (HNC) LOCK COMPLEX (TE-113)

2014 STATE OF THE COAST

MARCH 19, 2014

committed to our coast
A FEW FEATURES TO KNOW

Morganza to Gulf of Mexico (TE-64)
Large Series of Flood Protection Projects in Terrebonne Parish

Bubba Dove Flood Gate
Flood/Barge gate built by Terrebonne Levee Conservation District

Morganza To Gulf of Mexico USACE Design Documentation Report.
USACE analysis and selection of preferred HNC Lock Complex

Increase Atchafalaya Flow to Eastern Terrebonne (TE-110).
Project to get freshwater into Terrebonne Parish.
What is the HNC Lock Complex (TE-113)?

The Houma Navigation Canal (HNC) Lock Complex is a hydrologic project consisting of a lock, floodgate, and floodwall. The complex is a part of the Morganza to the Gulf Project (TE-64) and the Increase Atchafalaya Flow to Eastern Terrebonne Project (TE-110).

Purposes:

1) Reduce salt water intrusion.

2) Distribute freshwater within the Terrebonne Basin.

3) Provide storm surge protection as a part of the Morganza to Gulf project.

4) Continue navigation in the HNC for commercial and recreational uses.
WHAT IS THE HNC?

• Provides marine access from Houma/GIWW to Gulf of Mexico for Oil & Gas Industry, commercial shipping, commercial and recreational fishing.

• Constructed: 1958-1962

• Depth: -15 NGVD
  • Width: 150 FT.

• Port of Terrebonne works closely with Port Fourchon.
committed to our coast
Importance of the Houma Navigation Channel
Morganza to the Gulf of Mexico Hurricane Protection Project (TE-64)

- **PROJECT PURPOSE:** Provide Storm Surge Protection in Terrebonne and parts of Lafourche Parishes
- **PROJECT FEATURES:** levees, T-walls, navigation structures, water control structures, and floodgates.
- **PROJECT LENGTH:** 98 miles
Increase Atchafalaya Flow to Eastern Terrebonne (TE-110)

• PROJECT PURPOSE: Divert freshwater from the Atchafalaya River into Terrebonne Basin.

• PROJECT FEATURES: Water control structures, channel modifications.
Suggested Flows by Increase Atchafalaya Flow To Terrebonne Parish

Arrows:
- USGS Station - Continuous
- USGS Station - Discrete
- LCA Station

Values:
- Mean
- ± STD
- Rating curve extrapolation

ATCHAFALAYA RIVER

HNC LOCK COMPLEX
Design of HNC Lock Complex (TE-113)

SITE REQUIREMENTS

• Unrestricted land access from east to all features.
• Maintain flood protection during Construction.
• Keep HNC open for navigation all times during Construction.
• Keep existing Bubba Dove barge gate.
• Design for 1% (100 year/22.5 ft) & 2% (50 year/21.0 ft) elevations.
• Minimize the area of wetland impacts.
• Proposed structures provide environmental benefits.
ALTERNATIVE 1 MAIN FEATURES:

1. NEW 11' WIDE x 480' LONG LOCK TO BE CONSTRUCTED ON THE EAST BANK. RESERVOIR AREA TO INCLUDE 2' OF FLOOD PROTECTION ELEVATION (PHASE 3).
2. EXISTING MARINA AND ELEVATION 20' TO BE IMPROVED.
3. ENLARGED EXISTING LOCK GATE TO BE BUILT.
Alternative 1 CONSIDERATIONS

PROS:

• Utilizes Bubba Dove Receiving Structure.
• Lock on east side of HNC (land access).
• HNC Open during construction (bypass channel not required).
• Phased Construction.

CONS:

• Does not meet HSDRRS standards - not certifiable.
• Need new barge.
• Likely needs a modified EIS.
ALTERNATIVE 2 OVERVIEW MAP

ALTERNATIVE 2 MAIN FEATURES:
1. NEW 11' DETENTION DYE LOCK TO BE CONSTRUCTED ON EAST BANK (PHASE 1).
2. EXISTING BARGE GATE IN BYPASS CHANNEL TO BE REPLACED WITH A NEW BARGE GATE IN BYPASS CHANNEL. NEW 14' STAINLESS STEEL WALL TO BE CONSTRUCTED. BURBIA AVE COMPLEX TO BE DEMOLISHED (PHASE 2).

LEGEND
- PHASE 1
- PHASE 2
Alternative 2 CONSIDERATIONS

PROS:

- HNC Open during construction.
- Lock on east side of HNC.
- Meets HSDRRS standards – certifiable.

CONS:

- Likely needs a modified EIS.
- Higher environmental impacts.
- Need permanent by-pass channel (HNC demolition for Phase II).
- Reach F levee will require relocation.
Alternative 3 CONSIDERATIONS

PROS:

• Meets HSDRRS standards – certifiable.
• Minimal environmental impacts.
• Single Phase construction.
• HNC Open during construction, maintain flood protection at all times.
• Lock on east side of HNC (land access).
• No bypass channel needed.

CONS:

• More Expensive.
• Likely needs a modified EIS.
ALTERNATIVE 4 OVERVIEW MAP

- Existing Access Bridge to be replaced
- Inland Side (Protected Side)
- Gulf Side (Flood Side)
- Existing Marina
- existing channel
- Reservation Area
- PSS Lake
- Yolanda navigational canal
- Proposed bypass channel
- F-1 levee system to be enlarged, not part of project
- 1.5' wide lock gate
- 25' wide sector gate
- Existing barge gate to be removed
- Section Lines (Type III)
- G-1 levee system (under construction) to be enlarged, not part of project
- Existing sheet pile flood wall
- Permanent tie-in wall incorporated into permanent wall

ALTERNATIVE 4 MAIN FEATURES:

1. New 110' wide barge lock to be constructed on the east bank, reservation area location on east bank (Phase 1)
2. Existing barge structure to be demolished with closure dam on flood wall (Phase 2)

LEGEND

- RED: PHASE I
- BLUE: PHASE II
Alternative 4 CONSIDERATIONS

PROS:

• USACE Preferred Option.
• Meets HSDRRS standards – certifiable.
• EIS is approved.
• Single Phase construction.
• HNC Open during construction.

CONS

• Least preferred by TLCD.
• Highest environmental impacts.
• Reach F levee will require relocation.
• Lock on west side of HNC, no land access.
CONCLUSIONS AND RECOMMENDATION

Alternative 3 is recommended (Construct lock and barge gate to 1% AEP Elev.)

- Meets HSDRRS standards – certifiable.
- Likely one-time funding opportunity.
- Minimal environmental impacts.
- Single Phase construction.
- HNC Open during construction, maintain flood protection at all times.
- Lock on east side of HNC (land access).
- No bypass channel needed.
HNC Lock Complex (TE-113) Operations

• The Operations of the HNC Lock Complex will be important to the success of the project.
HNC Lock Complex (TE-113) Status:

- Begin Engineering and Design 2014.
- Engineering and Design to take 3-4 years. Construction to follow.
- Meet with stakeholders.
- Coordinate with Increase Atchafalaya Flow To Eastern Terrebonne project.
QUESTIONS/DISCUsSION???