Appendix O

QUALITY CONTROL

Quality Control Plan
for
PREPARATION OF
The FEASIBILITY SECTION 203
For The
INTEGRATED FEASIBILITY REPORT AND ENVIRONMENTAL IMPACT STATEMENT FOR THE HOUMA NAVIGATION CANAL DEEPENING PROJECT
IN
TERREBONNE PARISH, LOUISIANA

Prepared for:

Louisiana Department of Transportation and Development

Prepared by:

Gulf Engineers & Consultants

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Submittal: 7/13/17

1. Project Description:

Project Name: Integrated Feasibility Report and Environmental Impact Statement (IFR/EIS)

Project Location: Terrebonne Parish, LA.

Project Description and Purpose: On behalf of The Louisiana Department of Transportation and Development (DOTD), GEC has developed this Section 203 study to determine the feasibility of deepening the Houma Navigation Canal Federal project and to identify the National Economic Development (NED) plan. The NED plan has the greatest net economic benefits consistent with protection of the Nation's environment. This feasibility study has been developed together with an EIS as required by the National Environmental Policy Act of 1969.

2. Product Description:

The HNC Deepening Project IFR/EIS follows the United States Army Corps of Engineers (USACE) six-step planning process specified in the USACE Planning Guidance Notebook (ER 1105-2-100, dated 22 April 2000). The planning process identifies and responds to problems and opportunities associated with Federal objectives and specifies state and local concerns. These steps include:

- Specify water resources problems and opportunities;
- Inventory, forecast, and analyze the water and related land resource conditions within the study area;
- Formulate alternative plans which address the identified problems and take advantage of the opportunities;
- Evaluate the effect of alternative plans;
- Compare alternative plans; and
- Select the recommended plan.

3. Purpose and Scope of Quality Control Plan (QCP):

Purpose: This QCP outlines the professional expertise, technical criteria and technical review processes that will be used to produce a quality product satisfying technical, functional, legal, safety and environmental requirements.

Scope: The QCP quality control effort will include the following considerations:

Consequences of a failure:

At present, the depth of the channel causes marine interests to use less efficient methods to service the offshore oil and gas facilities located in the Gulf of Mexico. These inefficiencies manifest themselves as light loading and/or use of more remote harbors with deeper channels. Deepening the channel would eliminate these inefficiencies.

Many and varied businesses are located along the approximately 41 miles of the HNC south of Hwy 661. The navigation needs of many of these firms are not being fully met by the existing dimensions of the channel. Most of the current traffic on the canal is composed of motorized boats used for support of the offshore oil and gas industry, including support vessels, tug/tow boats, as well as local area commercial fishing vessels. Almost all of the remaining tonnage on the HNC is composed of petroleum barges and barges carrying gravel. Over a 3-year period of 1996 through 1998, vessel traffic declined an average of 7.5 percent annually. However, offshore oil and gas activity grew during this same period. This trend implies that activity on the HNC will stabilize and remain there well into the future if no changes are made to the channel because inefficiencies in navigation manifest themselves as light loading and/or use of more remote harbors with deeper channels. Therefore, quality control of all design, analysis and development of plans and specifications are critical to achieve the successful completion of the deepening of the HNC to reduce future waterborne transportation costs and allow the efficient passage of large oil and gas sector barges, new vessels built at the Houma shipyards, and vessels working in the Gulf of Mexico.

Nature of work: This quality control effort will include:

- Quality Control reviews of all reports, plans, and specifications by the Project Delivery Team (PDT).

- Quality Assurance reviews of reports, plans, and specifications by the A/E Quality Review (AEQR) team.

Risks inherent in the project:
The proposed project does not appear to involve any significant challenges. Dredging methods are standard and have been applied numerous times at HNC for past dredging projects and Operations and Maintenance dredging. All institutional requirements are in place and have been utilized for past projects. No social impacts or challenges are anticipated.

Any crucial design features: The proposed access routes used to pipe material from the channel to disposal sites will be reviewed.

Lessons Learned incorporated: All lessons learned during the study phase of this project will be documented throughout the development of the combined Feasibility Report and EIS to provide information which could improve future projects.

4. Deliverables:

- Integrated Feasibility Report and Environmental Impact Statement

All deliverables shall be compiled and provided in electronic form.

5. Technical Criteria and References:

Technical Criteria:

a. Cost Estimates and Risk Analysis:

- ER 1110-1-1300, Cost Engineering Policy and General Requirements, Mar 1993
- ER 1110-1-8, Vol. 3, Construction Equipment Ownership and Operating Expense Schedule (Region III), Nov 2009
- ER 1110-1-8, Vol. 3, Construction Equipment Ownership and Operating Expense Schedule (Region III), Errata #1, Sep 2007
- ER 1110-2-1302, Engineering and Design - Civil Works Cost Engineering, Sep 2008

6. Product Delivery Team:

The PDT is led by an experienced leader who has designed or led PDTs in the successful completion of similar work. Other PDT members have extensive professional experience in their assigned responsibilities. Should future requirements require the application of different skills or experience, appropriate personnel will be added to the PDT.

PDT					
Name	**Registration (EI, PE, Etc.)**	**Registration Discipline**	**Job Title**	**PDT Area of Responsibility**	**Years of Experience**
Jonathan Puls	PE (LA)	Civil	Project Manager	Project Manager/Civil/Environmental	8
Eddy Carter	PE (LA)	Civil	V.P./Project Manager	Project Management	31
Nicole Forsyth	EI (LA)	Civil	Project Engineer	Civil/NEPA	5

6.1 Technical Review Procedure:

- PDT teams will review and verify information provided by the Government and other agencies.

- A thorough review of plans, specifications, planning procedures, and recommended plans will be conducted at each stage before submitting for A/E Quality Review process.

- Any comments originated through the AEQR process, which will be addressed before submission of the combined document to ASA.

7. Customer Involvement:

The PDT will engage and involve other appropriate USACE organizations, Federal agencies, state and local governments, local utility and infrastructure agencies and local citizens groups & associations, to keep them informed and to solicit their feedback and assistance. This involvement includes formal meetings and presentations, formal reviews, informal meetings and discussions, teleconferences, emails and telephone conversations. Customer involvement at all levels is vital to instill confidence that the customers' needs are being addressed and the recovery efforts are of high quality. The PDT is strongly encouraged to include personnel from the Local Sponsor's staff and from other Federal agencies. Partnering with the Local Sponsor is a key element during the design of a project. Our customers are key members of the PDT. Partnering shall occur during all phases of project development.

Customers/Key PDT Members*		
Organizational/Assigned PDT Member	**Title/Organization**	**Contact Information**
Sharon Balfour*	Waterways Program Director	sharon.balfour@la.gov
Molly Bourgoyne*	LADOTD	Molly.Bourgoyne@LA.GOV
David Rabalais*	Executive Director TPC	davidr@terrebonneport.com
Chris Collins*	LADOTD	Christopher.Collins@LA.GOV
Phil Jones*	LADOTD - Deputy Assistant Secretary	Phil.Jones@LA.GOV
Marti Lucore*	USACE	martha.m.lucore@usace.army.mil
John Eblen	USACE	John.L.Eblen@usace.army.mil
Eric Salamone	USACE	Benjamin.E.Salamone@usace.army.mil
Miguel Ramos	USACE	Miguel.A.Ramos@usace.army.mil
Sandra Stiles	Environmental - USACE	Sandra.E.Stiles@usace.army.mil
Erin Clark	USACE	Erin.A.Clark@usace.army.mil
Patricia Leroux	Environmental - USACE	patricia.leroux@usace.army.mil
Austin Feldbaum	CPRA	Austin.Feldbaum@la.gov
Ronnie Paille	Biologist - USFWS	Ronald_Paille@fws.gov

* These customers are key members of the PDT.

8. A/E Quality Review (AEQR):

- The review shall be performed by a qualified person or team not involved in the day-to-day production of the project/product.

AEQR Team					
Name	**Registration (EI, PE, Etc.)**	**Registration Discipline**	**Job Title**	**PDT Area of Responsibility**	**Years of Experience**
George Hudson	PE (LA)	Civil	Technical Lead	Techical Lead	30
Lee Walker	N/A	N/A	Environmental	Environmental	15
Jay Richardson	PE (LA)	Civil	Civil	Civil Engineering	12

- All the comments from AEQR will be documented. Comments will be structured to give clear statement of the concern, the basis of the concern and, when appropriate, necessary actions will be taken to resolve the concern. Comments will cite appropriate references. The PDT will evaluate and respond to each comment, with responses clearly stating concurrence or non-concurrence with the comment. Concurrences shall include what the corrective action is and where and when it will be done. Non-concurrences shall include an explanation or proposed alternative action.

- The AEQR will be done as continuous throughout the planning process and prior to DOTD review of the product being submitted not concurrent with the DOTD review.

- All changes resulting from the AEQR team will be accomplished prior to initiation of submittal to the ASA.

- Documentation will be provided for all AEQRs, consisting of a completed (signed) statement of technical review and certification, to which is attached all review comments (identified by the Reviewer) and the response of the designer to the comment. Documentation will be submitted concurrently with the final design product.

9. DOTD Reviews

GEC, Inc. will support the following DOTD reviews.

- Submittal Reviews.

Support will consist of the following activities.

- Respond and resolve review comments.
- Revise product design and documentation as needed based on resolution of review comments.

10. [(1)]Schedule/Checklist:

	ITEM	SCHEDULE DATE	ACTUAL DATE	COMMENTS
1	Quality Control Plan	July,2017	July, 2017	
2	Agency Technical Review (ATR) Completion	July, 2017	N/A	
3	IEPR	August, 2017	November, 2017	
4	ATR of Cost by Cost DX	August, 2017	N/A	
5	Feasibility Report and Environmental Impact Statement to ASA	September, 2017	TBD	

(1) See Attachment 1 for complete Schedule/Checklist

11. Record Maintenance:

a. All reviewed and accepted documents, contract drawings and other project-related materials shall be provided in electronic form upon request for purposes of PDT review during project development and delivery and in order to compile the Feasibility Report which will compile all project information for future reference and retrieval.

b. The following QC documentation will be provided to the Government, in both hard copy and electronic format:

- The initial QCP and any changes during the design process.
- AEQR review comments, resolution of comments, and statement of technical review and certification (concurrent with final submittal of design product).

12. Certification Processes

<u>Agency Technical Reviews</u>

Two Agency Technical Reviews (ATR) were conducted on the combined document. Prior to the non-Federal sponsor assuming the study as Section 203 effort, ATR was conducted in January 2010 by the Deep Draft Center of Expertise at the USACE Mobile District. Comments from this review were partially addressed and documented in Dr. Checks. Subsequent to this review the study was converted to a Section 203 study. Due to changes made to the original report, an incomplete prior ATR, and the significant passage of time, a second ATR was initiated with the Mobile District in June

2014. All comments provided by the Mobile District were tracked in Dr. Checks and addressed and are provided in Annex I of this Appendix.

Cost DX Review

All required cost estimating documentation was submitted to the Walla Walla District for Cost DX review in July 2017. After all MII and Cost and Schedule Risk Analysis documentation was reviewed, a total of 27 comments were received. All comments provided by Cost DX were tracked in Dr. Checks and addressed and are provided in Annex I of this Appendix. All Cost DX comment and the responses are located in Annex II of this Appendix.

Economic Model Certification

The documentation required to obtain certification of the Economic Model (Appendix D) is included in Appendix D.

13. Signatures:

Eddy Carter, P.E.
Vice President
A/E PDT Team Leader

7/13/17
Date

George Hudson, P.E.
A/E AEQR Team Leader

7/13/17
Date

R. Scott Knaus
Executive Vice President
A/E Principal

7/13/17
Date

A/E QUALITY REVIEW (AEQR)

1. Performance:

a. The AEQR team will be representative of all disciplines involved in the planning process. Each reviewer will be personally experienced in the type of analyses for which they have review responsibility. They will not be personally associated with the development of the product under review. Discussion of the qualifications of reviewers need not be included in the QCP, however the designer will provide such information to the Government upon request.

b. The AEQR team will confirm the proper application of clearly established criteria, regulations, laws, codes, principles and professional practices. The team will verify that:

(1) The concepts, features, methods, analyses and details are appropriate, fully coordinated, and correct.

(2) An appropriate range of feasible alternatives are evaluated

(3) The problems/issues are properly defined and scoped

(4) The analytical methods used are appropriate and yield reliable results

(5) The results and recommendations are reasonable, within policy guidelines, and supported by the presentation

(6) Any deviations from policy, guidance, and standards are appropriately identified and have been properly approved.

2. AEQR Documentation: ***Documentation of the AEQR will consist of a completed (signed) Statement of Technical Review, to which is attached all review comments (each identified by the reviewer) and the response to the comment.***

3. Submittal Requirements: AEQR Completion Certificate (attached) shall be submitted with Feasibility Report and Decision Document.

STATEMENT OF COMPLETION OF A/E QUALITY REVIEW (AEQR)

GEC, Inc. has completed the Integrated Feasibility Report and Environmental Impact Statement for the Houma Navigation Canal Deepening Project in Terrebonne Parish, LA. Notice is hereby given that an independent quality review, that is appropriate to the level of risk and complexity inherent in the project, has been conducted as defined in the QCP. The AEQR included review of: assumptions; methods, procedures, and material used in analyses; alternatives evaluated; the appropriateness of data used and level obtained; and reasonableness of the result, including whether the product meets the customer's needs. The AEQR was accomplished by an independent team from **GEC, Inc.** All comments resulting from the review have been resolved and documented.

George W Hudson 7/13/17

George Hudson, P.E. Date
AEQR Team Leader

7/13/17

Jonathan Puls, P.E. Date
A/E Project Manager

CERTIFICATION OF A/E QUALITY REVIEW

Significant concerns and the explanation of the resolution are as follows:

None.

As noted above, all concerns resulting from independent technical review of this engineering product have been fully resolved.

R. Scott Knaus 7/13/17

R. Scott Knaus Date
Executive Vice President
A/E Principal

QUALITY CONTROL COMMENTS

George Hudson

Executive Summary

1) Needs a better description on the disposal plan in the upland reach for the TRP. On the upper reach the disposal plan for all deepening alternatives will have beneficial use (BU) of the dredge material. The disposal plan has beneficial use of the disposal material by creating marsh. May need to define the Lower reaches. Open water of bay and off shore.

   Concur - Additional language was added to the Executive Summary

2) Page ES-ii the 2nd paragraph "tentatively recommended plan" needs to be in caps

   Concur – The referenced phrase was corrected

3) Page ES-ii the 4th paragraph Tentatively Recommended Plan needs to be TRP

   Concur – The referenced phrase was replaced with an acronym

4) Page ES-iii the 4th paragraph Existing open water would be converted into marsh …… With the placement excavated dredge material in the designated disposal sites on the upland reach open water bottom would be converted to marsh.

   Concur – The referenced language was replaced with additional language similar to what was provided.

Section 4 Formulation and Evaluation of Alternative Plans

1) Section 4 is called HNC section 5 The Text is section 4 and the Title at the bottom of the page calls it section 3 (see bottom of Page 4-1

   Concur – The referenced footer language was modified appropriately

2) Page 4-14 at the bottom of the page Move "The study objectives are:" to the top of page 4-15

   Concur - The referenced language was relocated as suggested.

3) Section 4.2.5.2.1 (page 4-17) second sentence consider changing "placement measures" to beneficial use of dredge material.

   Concur – The referenced language was modified as suggested

4) Section 4.4.4 Tables 4-10 to 4-14 should be consistent in line weights and shading

Concur – The table formatting was corrected

5) Section 4.4.5.1 Figure 4-1 is not labeled

Concur – The labels on all tables were corrected or added

6) Section 4.13.2 Figures 4-2 and 4-3 are not labeled. Should Figure 4-3 (South End) show the Beneficial Use Alternatives? It is not part of the TRP

Concur – The beneficial use areas were omitted from the referenced figure.

7) Section 4.13.2.2.1 the text As a result of **HET** screening process… Has **HET** been defined?

Information Provided – Yes, HET has been previously defined.

8) All Figures should be labeled as 4-1, 4-2 ect

Concur – All Figures were updated with similar formatting

9) Tables 4-27 and 4-28 should be consistent in line weights and shading

Concur – All Figures were updated with similar formatting

10) Table 4-28 in the last column the last 5 rows should line up

Concur – All Figures were updated with similar formatting

11) Section 4.13.2.6.1 what is LER Requirements?

Concur – LER was modified to be "LERRDS" as previously defined.

Section 5 Affective Environment

1) Section 5.1.2 2nd paragraph returning to levels seen in 2005 and 2996 (should be 2006)

Concur – The referenced date was modified

2) These Tables 5-16, 5-17 and 5-18 don't match the match the disposal sites in section 4 (Figures 4-2 and 4-3)

Concur – The referenced tables were corrected to show the correct disposal sites

Section 6 Environmental Consequences

1) Page 6-35 Section Alternative 1A 2nd paragraph needs the Date

Information Provided – The appropriate date will be added once the refenced acceptance is received.

2) Page 6-42 Section 6.4.13.1 Are the construction dates and future dates the most current date?

   Information Provided – All dates shown are correct.

3) Page 6-47 Table 6-9 - Are the dates current?

   Information Provided – All dates shown are correct.

4) Section 6.91 last paragraph does apply? TRP does not use these disposal sites

   Information Provided – All dates shown are correct.

Jay Richardson

1) Section 3.3.5.1- Is there a plan of how/when salinity management will go into effect?

   Information Provided – The management plan for the lock is not currently available. An operation plan will be developed during the Engineering and Design phase by the Corps. The lock is an authorized project and therefore, is being treated as an existing condition.

2) Section 4.2 - Is the 2mph constraint due to low water, or wakes from high water situations?

   Information Provided – The speed was chosen as a typical transportation speed for a barge of the specified size. This would allow for the efficiency of transportation to be adequately evaluated when determining the benefits associated with each proposed alternative.

3) Section 5.2 - Will there be a geotechnical study in the design of the Rock Dikes?

   Information Provided – Yes, there will be additional geotechnical studies conducted during the Engineering and Design phase of the project to adequately determine the settlement rate and the associated maintenance quantities/requirements. The need for additional data was taken into account when completing the Cost and Schedule Risk Analysis.

4) Section 5.2 - Why not fill in excavated flotation channels when rock dike construction is complete?

5) Section 6.3 - Will there be a geotechnical study in the design of the Earthen Dikes?

   Information Provided – Yes, See the response to comment # 3 above.

Lee Walker

1) Executive Summary - It isn't quite clear how this ties in to the channel. Maybe add a sentence explaining where the lock is in relation to the area to be deepened to show a more direct link between the projects?
   Concur – Additional language was added to this referenced portion of the report to describe where the lock is located in relation to the project area.

2) Executive Summary Page ES-ii - The mention of fabrication benefits here is confusing when used before the discussion of what the fabrication benefits are two paragraphs down.

   Concur – The referenced paragraph was relocated to the discussion of benefits below.

3) Executive Summary - Bentos Impacts - Temporarily or long term? Once dredged, would the benthos re-establish at the deeper channel bottom?

   Concur – The qualifier "temporary" was added to the referenced sentence.

4) Executive Summary - Is the lock, or a changed use of the lock part of the proposed action? If not, this is a cumulative impact rather than a direct impact. It doesn't look like you are discussing cumulative impacts in this executive summary for any of the other relevant resources.

   Concur – The reference to the lock and the potential future impacts resulting from the use of the lock was removed from the Executive Summary language.

5) Section 1 - In some cases you summarize a given authority and in other cases you just quote it. I think it is more reader-friendly to summarize rather than quote. I would take out the quotes and replace with a summary like you did for Section 206. I recommend the same for the quotes you have for the study authorization above.

   Concur – Quotes were removed for a majority of the authority descriptions and replaced with additional language describing each authority and it's applicability to the project. The quoted Section 203 language was left in the report, since this is the most pertinent authority to the project.

6) Section 1 - The Corps tends to use "tentatively" prior to "selected plan" because the Chief's Report and ROD haven't yet been signed and, therefore, the plan hasn't technically been selected. They may have given you guidance otherwise, but that is what I've typically been directed to use. Also, if this is technically not a USACE document, I'm not sure if this is the tentatively selected plan or the non-federal sponsor's preferred plan. Have they given you specific guidance on this?

   Information Only – The guidance we've received is to use "Recommended Plan" only. However, based on your comment, we went through the report to ensure that this usage is consistent throughout the document. The use of the word tentatively selected

plan was used in the referenced paragraph as it refers to selection of a plan before it becomes the recommended plan.

7) Section 2.1 - What is "there"? 1998 levels? Is there more recent data? It seems like there would be more recent navigation statistics available from the port or USACE Navigation Statistic Center. Given the volatility of the oil and gas market, I don't think you can reasonably use data this old. I see the logic being used here…even if oil and gas activity goes up, vessel traffic doesn't go up because it is too shallow, but I think some might still question the age of the data and ask whether this trend has remained the same in recent years.

   Information Only - The USACE prefers to see a time series of traffic statistics (vessels and cargo) for a ten-year period of time. When the original economics appendix was first drafted, May 2007, traffic statistics extending back into the 1990's were presented as part of a ten year old time series. As the economics appendix has been updated, 2010, 2012 and 2016, more recent traffic statistics have been incorporated in some instances deleting the older statistics where economy of presentation was warranted. However, in some instances data older than ten years has been retained for illustrative purposes of a generally stagnant traffic base over a relatively long term exceeding ten years.

   The most recent update, January 2016, used the most recent available Waterborne Commerce Statistics then available for calendar year 2013. In this context traffic data from 1998 is purely for historical reference purposes.

8) Section 2.4 - *The development of alternatives was also limited to the existing channel alignment. No changes to the existing channel alignment were considered or proposed* - Can you provide a justification? Even if it is as simple as realignment would have cause undue socioeconomic impact due to extensive development on both sides of the canal?

   Information only – There is no specific justification I can provide other than the fact that the specified project goals and objectives could be obtained without having to alter the channel alignment, thereby increasing the costs of the project significantly.

9) Section 2.4 - *The lock and floodgate design depends on the depth of the channel. Therefore, changes in the authorized depth of the HNC could affect the lock sill depth and require modification to the ongoing lock design* - This seems counter to the local sponsor's preference. If the depth of the channel influences the lock design, shouldn't the channel depth be set first and then the lock designed?

   Information only – That is correct. However, the potential deepening has been limited to – 20 feet NAVD88 by the local sponsors. Therefore, the lock only needs to accommodate -20 feet to accommodate the channel. It is my understanding that the lock will be designed to a depth greater than that. Regardless, I agree that the statement does not seem to fit the way it is presented. Therefore, the referenced statement was removed from Section 2 of the report.

10) Section 3 - It would be helpful to put these in chronological order.

Concur – The order of the projects was rearranged accordingly.

11) Section 3 - I've seen this act (in its various years of enactment/amendment) as the Rivers and Harbors Act, not singular River and Harbor Act. Do you know if there is a difference? It might be worth asking the Corps (if you have a contact that you're working with there, what they want you to refer to it as. In all the Corps docs I've written, I've used the plural form and it was accepted.

Concur – The name of the Act was modified throughout the report to the "River and Harbors Act"

12) Section 3 - I don't believe this is still before congress. This bill was passed by the Senate on May 15, 2013 but was never passed by the House. Provisions of this bill were incorporated into other bills. This sentence should be updated to give the current status.

Concur – Additional language was added to show that the project passed through the House of Representatives on May 15th, 2013.

13) Section 3 - This information is what's missing in the explanation of the desire to build the lock first in the last chapter. Maybe add a sentence or two explaining the intent to build the deeper lock in the last chapter.

Concur – Additional language was added to the referenced portion of Section 2.

14) Section 3 - I'm thinking that this might be more appropriate in the Coastal Restoration section. Even though the lock is a HSDRRS component, the study looked at how it could be used to improve water quality, right?

Concur – The language identified was moved to the Coastal Restoration Section (Section 3.3).

15) Section 3 - Is this a separate project or part of Convey Atchafalaya River Water to Northern Terrebonne Marshes and Multipurpose Operation of Houma Navigation Lock? Not clear here.

Concur – The heading for the referenced project was modified to indicate that it was indeed a separate project.

16) Section 4.3 - Shouldn't the discussion of impact analysis of alternatives be discussed after the combination of measures to derive alternative plans?

Concur – The referenced discussion was relocated to Section 4.5 of the report.

17) Section 4.3 - This information is usually provided in the introduction to the impacts discussion. Would it fit better there in this case?

Concur – The referenced discussion was relocated to Section 6 of the report.

18) Section 4.5.1 - How can GEC be the source of this data if GEC is writing this report? If this citation is referring to a different GEC report? If so, it needs a year in the citation.

Concur – The referenced tables was modified to present the citation more accurately.

19) Section 4.5.3 - Might be useful to state that these disposal plans are the same as those for the -18 depth alternatives, if that's the case. And what about disposal from the Inland Reaches? Is there a reason that isn't mentioned here?

Concur – Additional language was added stating that the disposal plans were the same for both the -18 and -20 foot deepening alternatives.

20) Section 4.5.4 - Are you missing a step here? Did the HET rank the sites? What were the criteria they used to rank them?

Concur – The referenced language was modified to correctly present the process utilized for selecting the disposal sites. This included coordination with both state and Federal agencies that had extensive knowledge of the proposed disposal sites.

21) Section 4.5.6 - If mitigation isn't required do you think it might be better to remove this and any others that don't require mitigation? Since the previous sentence says "Mitigation requirements include the following:"?

Concur – The sentence preceding this section was modified to state that the following information included both mitigation requirements and the self-mitigating characteristics of the project.

22) Section 4.5.6 - The use of the intermediate estimate should probably be mentioned in the paragraph which introduces the use of WVAs for this analysis rather than here. You can state up there that the WVAs looked at the low, intermediate and high RSLR scenarios, and that the results of the intermediate runs are cited below in the mitigation discussion. If FWS and NMFS endorsed the use of the intermediate in determining impacts, it would be goof to mention that up there too.

Concur – Additional language was added to Section 4.5.6 to clarify that all three levels of relative sea level rise we considered in the WVA model, but the intermediate level was utilized for benefit evaluation, as suggested by the USFWS.

23) Section 4.8.9 - Bald eagles are no longer listed under ESA; but they are still protected under other laws. If you leave this discussion under T&E, you may want to change section title to include “protected species.” Or just move eagles to the wildlife section.

Concur – The discussion of bald eagles was relocated to the Wildlife Section.

24) Section 5.1.1 - Since not all of this is built; I don’t think we can consider it part of the existing conditions. I think it would be more accurate to describe which portions have been constructed to date.

Non-Concur – The project is authorized, therefore it can be treated as FWOP conditions.

25) Section 5.3.1 - Are you referring to the design or original channel width? If so, state that, because otherwise the next sentence seems to contradict it.

Concur – The width referred to is design channel width. Clarification was added to the referenced paragraph.

26) Can you list the number of primary and secondary schools in the Parish or provide some other such statistic? This statement sounds more subjective than objective.

Concur – The referenced statement was removed.

27) Section 5.5.10 - What about the percent minority population?

Concur – The requested information was added to Section 5.5.10.

28) Section 5.7 - Since this statistic is from 45 years ago, I don’t know that it is still relevant.

Concur – The referenced statement was removed.

29) Section 5.8.1 - In several places in this section there is discussion of impact rather than existing condition. I recommend moving those discussions to the impact section.

Concur – The referenced statement was removed.

30) Section 5.9 - Should this be 3? Birchett and Pearson, Pearson, and Lynn Ryan?

Concur – The referenced statement was corrected.

31) Section 5.9 - These two paragraphs seem to repeat earlier paragraphs; not sure that they are needed.

Concur – The redundant information was removed from Section 5.9

32) Section 5.9 - It isn't clear why this says Section 106 consultation is ongoing, when it states that it is complete earlier in this section.

Concur – The referenced statement was removed.

33) Section 5.11.2 - This paragraph doesn't seem to belong here.

Concur – The referenced paragraph was removed.

34) Section 6 – Since these two features are not part of the proposed action but are instead separate projects (right?), would it be better to discuss the combined effects of these two features in the cumulative impacts section rather than the impacts section for the proposed action and alternatives? As I read through this section, the introduction of the lock impacts created a little confusion and made it seem as though the lock is part of the proposed action.

Concur – The discussion of the lock was rem oved from the introduction.

35) Section 6.1.2 - Can there be more explanation on why these are different? I know it is probably intuitive that a higher cost alternative with the same benefit makes a different BCR, but you might need to spell that out with something like "these differences in BCR demonstrate the difference in cost of the different alternatives to achieve the same level of benefit."

Concur – The referenced statement was added.

36) Section 6.2.3 - Would all disposal sites identified for each alternative eventually be used for their respective alternatives? If not, the language in the impact sections regarding disposal sites may need to be tweaked to make them more representative of the uncertainty of use.

Information Only – It is anticipated that all disposal locations identified for the alternatives evaluated will be utilized during construction and/or maintenance.

37) Section 6.6.1 - Is this sentence referring to actions implemented for maintenance dredging? If so, would be good to state that. But I thought the description of alts said no new dikes or foreshore protection would be constructed under the no action.

Concur – Foreshore protection is not included in the No-Action plan. The referenced statement was removed.

38) Section 6.7.1 - The discussion of salinity in a lot of these sections is a bit confusing without more quantitative or qualitative comparison? If the discussion of the lock impacts is not moved to the cumulative impact section, I think it would help to add to the discussion of salinity impacts by explaining whether the lock reduction in salinities negates the otherwise expected increase in salinity intrusion? Or will the lock just reduce the level of intrustion? And the last sentence in the paragraph suggests that there would be an overall reduction. But I don't know that it is safe to say that the cypress would recover. I would imagine subsidence and other issues, in addition to salinity intrusion, are causing problems with cypress, so this statement might be too bold.

Concur –The referenced statements regarding cypress tree recovery and foreshore protection were removed. The discussion of salinity impacts and how they relate to the construction and operation of the Houma lock will remain in the impact section for each element of the project. The connectivity between the two projects is a little more unique of a situation than typical cumulative impacts from other projects, so it would be best to keep the discussions where they are. Since the design and operation plan for the lock has not been completed, no quantification can be provided.

39) Section 6.9.2 - Is it more accurate to say that the addition of foreshore protection and retention dikes as part of this alternative, rather than the deepening itself, would be the cause of this decreased shoaling?

Concur – The language was modified to reflect the impacts foreshore protection and rock retention would have on shoaling rates.

40) Section 6.13.2 - Were all of the alternatives coordinated? If only the proposed action was coordinated, this write-up should be moved to 2A.

Concur – The language was relocated to the portion of the section that describes impacts for the proposed action (Alternative 2A).

41) Section 6.34 - Recommend also listing the present and reasonably foreseeable future projects which were considered in the cumulative impact analysis.

Concur – Additional projects were added to the temporal boundaries listed.

Annex I

ATR Comments

Comment Report: All Comments
Project: Houma Navigation Canal - Section 203
Review: Houma Navigation Canal - Draft ATR
Displaying 84 comments for the criteria specified in this report.

Id	Discipline	Section/Figure	Page Number	Line Number
5687602	Economics	n/a	n/a	n/a

Comment Classification: **For Official Use Only (FOUO)**
(Document Reference: EC 1165-2-214) [**Critical/Flagged.**]

Review Concern: There was no District Quality Control (DQC) Report submitted for the economic analysis.

Basis of Concern: A DQC Report is a requirement according to EC 1165-2-214 (15 Dec 2012). Sec 8a: "All work products and reports, evaluations, and assessments shall undergo necessary and appropriate District Quality Control/Quality Assurance (DQC). The home district shall manage DQC. Documentation of DQC activities is required and should be in accordance with the Quality Manual of the District and the responsible MSC; product issues identified via DQC should be resolved prior to ATR and IEPR. The DQC of products and reports shall also cover any necessary National Environmental Policy Act (NEPA) documents and other environmental compliance products and any in-kind services provided by local sponsors". Although the Houma Navigation Canal is a Section 203 (WRDA 1986) Study, undertaken by the non-Federal Sponsor (via Consultant) and submitted to the Corps for review, the New Orleans District (MVN) is the proponent district for the study. It appears that MVN initially had a role in the scoping guidance of the initial report submittal, prior to the date of the EC; there was an Independent Technical Review (ITR) comments (as known at the time) that resulted in subsequent analyses. The reanalysis DQC process needs to be in compliance with EC 1165-2-214.

Significance of Concern: Section 8d of mentioned EC states "For each Agency Technical Review (ATR) event, the ATR team will examine, as part of its ATR activities, relevant DQC records and provide written comment in the ATR report as to the apparent adequacy of the DQC effort for the associated product or service". The DQC report would be the basis as part of the ATR process.

Probable action: Provide documentation of DQC, ideally a DQC report.

Submitted By: Daniel Abecassis (904-232-1703). Submitted On: Jun 18 2014

Revised Jul 17 2014.

1-0 Evaluation **Concurred**
Headquarters recommended that documentation should be consistent with what is normally provided as if the Corps has done this project. A DQC-type of report will be prepared based on quality assurance measures performed on the study. Past Corps documentation, if available, on the project will be included.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 31 2014

1-1 Backcheck Recommendation **Open Comment**
A DQC report needs to be provided prior to closeout.

Submitted By: Daniel Abecassis (904-232-1703) Submitted On: Aug 01 2014

2-0 Evaluation **Concurred**
The QC Report has been developed for the HNC Deepening project and is attached. The comments associated with the review of the Combined Feasibility Report and Environmental Impact Statement as listed in the report as well.

Submitted By: Jonathan Puls (225-612-4249) Submitted On: Jul 17 2017 (Attachment: Appendix_O_-_Quality_Control.pdf)

Backcheck not conducted

Current Comment Status: **Comment Open**

5687678 Economics n/a n/a n/a

Comment Classification: **For Official Use Only (FOUO)**
(Document Reference: EC 1105-2-412) [**Critical/Flagged.**]

Review Concern: There is no documentation that a model review was done.

Basis of Concern: EC 1105-2-412, Assuring Quality of Planning Models, 31 March 2011, requires the economic evaluation to use either a certified model (i.e., HarborSym) or a one time-approval for use model (which includes spreadsheet models). Section 6 states "Use of certified or approved models for all planning activities is mandatory. This policy is applicable to all planning models currently in use, models under development and new models". Specifically, as related to the Houma Navigation Canal, Section 5c applies: "Approved model. A planning model that has been reviewed and approved by the appropriate PCX and HQ in accordance with the rules and procedures specified in this Circular. Models will be considered for approval (rather than certification) if they have been developed by an entity outside the Corps. Models will also be considered for approval in cases where a model has been developed by the Corps and is viewed by the vertical team (including the District, MSC, PCX, and HQ) as single-use or study-specific (which will include many ecosystem output models). Model approval is a corporate determination that the model is a technically and theoretically sound and functional tool that can be applied during the planning process by knowledgeable and trained staff for purposes consistent with the model's purposes and limitations".

Significance of Concern: It is a DDN-PCX requirement and is necessary to confirm correctness of calculations and validate plan selection.

Probalble Action: The model review process should be initiated with respect to the evaluation of benefits and benefit cost analysis. Prior to doing so, it should be verified that data gaps in the time series are filled to update projections.

Submitted By: Daniel Abecassis (904-232-1703). Submitted On: Jun 18 2014

Revised Jul 17 2014.

1-0 Evaluation **Concurred**
Because HarborSym is not an appropriate model for the HNC, a one-time use model certification will be coordinated with the Corps for review and approval for this project.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 31 2014

1-1 Backcheck Recommendation **Open Comment**
It is recommended that the process for one-time model certification be initiated with the Deep Draft Planning Center of Expertise ASAP. The comment will be closed when the one time approved for use model certification is complete.

Submitted By: Daniel Abecassis (904-232-1703) Submitted On: Aug 01 2014

2-0 Evaluation **Concurred**
The economic model utilized for the project has be reviewed and certified. The appropriate certification documentation has been added to Appendix D of the report (Attached).

Submitted By: Jonathan Puls (225-612-4249) Submitted On: Mar 08 2017 (Attachment: Appendix_D_-_Economic_Benefits.pdf)

Backcheck not conducted

Current Comment Status: **Comment Open**

5690661 Operations n/a n/a n/a

Comment Classification: **For Official Use Only (FOUO)**

My review of the Houma Navigation Canal documents indicates that dredging deepening and the future O&M dredging of the deepened project appear to be based on sound analysis and understanding of the current project conditions, and reasonable conclusions of future project condtions. There do not appear to be project plan areas which would present obstacles to satisfactory execution and completion of the proposed project plan.

Submitted By: Thomas Beckham (251-694-4535). Submitted On: Jun 20 2014

1-0 Evaluation **Concurred**
Thanks

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 11 2014

1-1 Backcheck Recommendation **Close Comment**
Item closed.

Submitted By: Thomas Beckham (251-694-4535) Submitted On: Jul 21 2014

Current Comment Status: **Comment Closed**

5690999 Geotechnical Appendix A, Engineering, Plate G2 & G3 n/a n/a

Comment Classification: **For Official Use Only (FOUO)**

The thick black lines make it hard to read the profile. Change the line type.

Submitted By: Ben Lackey (910-251-4546). Submitted On: Jun 20 2014

1-0 Evaluation **Concurred**
The line type will be changed.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 29 2014

1-1 Backcheck Recommendation **Close Comment**
Closed without comment.

Submitted By: Ben Lackey (910-251-4546) Submitted On: Aug 01 2014
Current Comment Status: **Comment Closed**

5691001	Geotechnical	Appendix A, Engineering, Plate G2 & G3	n/a	n/a

Comment Classification: **For Official Use Only (FOUO)**

Add the letter abbreviations on the profile to the legend.

Submitted By: Ben Lackey (910-251-4546). Submitted On: Jun 20 2014

1-0 Evaluation **Concurred**
Letter abbreviations will be added to the legend.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 29 2014

1-1 Backcheck Recommendation **Close Comment**
Closed without comment.

Submitted By: Ben Lackey (910-251-4546) Submitted On: Aug 01 2014
Current Comment Status: **Comment Closed**

5691003	Geotechnical	Appendix A, Engineering, Plate G47 through G53.	n/a	n/a

Comment Classification: **For Official Use Only (FOUO)**

The stability analysis plates do not appear to include the Disposal Retention and Erosion Control Dikes. Show the dike location and include in the stability analysis.

Submitted By: Ben Lackey (910-251-4546). Submitted On: Jun 20 2014

1-0 Evaluation **Concurred**
The top width of the channel on the inland reach varies from 450 to 1000 feet. The rock dikes for retention of dredge material and foreshore protection dikes are aligned along the existing or historical bank line. The existing or historical channel is wide enough that the overall channel stability is not affected by the rock dikes.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 31 2014

1-1 Backcheck Recommendation **Close Comment**
Closed without comment.

Submitted By: Ben Lackey (910-251-4546) Submitted On: Aug 01 2014
Current Comment Status: **Comment Closed**

5691006	Geotechnical	Appendix A, Engineering, Plate G17, Image 3.	n/a	n/a

Comment Classification: **For Official Use Only (FOUO)**

Dimension the flood side berm at elevation -2.

Submitted By: Ben Lackey (910-251-4546). Submitted On: Jun 20 2014

1-0 Evaluation **Concurred**
Can you provide more information on this comment? We are unclear on it.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 31 2014

1-1 Backcheck Recommendation **Open Comment**
The width of the berm at el. -2 on the right side needs a dimension.

Submitted By: Ben Lackey (910-251-4546) Submitted On: Aug 01 2014

2-0 Evaluation **Concurred**
Berm was fixed (see attached) on Plate C17.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Aug 07 2014 (Attachment: PLATEC17_update_8-7-14.pdf)

2-1 Backcheck Recommendation **Close Comment**
Closed without comment.

Submitted By: Ben Lackey (910-251-4546) Submitted On: Aug 13 2014

Current Comment Status: **Comment Closed**

5691009 Geotechnical Appendix A, Engineering, Table A-1. n/a n/a

Comment Classification: **For Official Use Only (FOUO)**

The notes for a and b are not included.

Submitted By: Ben Lackey (910-251-4546). Submitted On: Jun 20 2014

1-0 Evaluation **Concurred**
A=adjacent disposal, B=earthen containment for lung and bayside East Island, C=rock containment for lung and bayside East Island

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 31 2014

1-1 Backcheck Recommendation **Close Comment**
Closed without comment.

Submitted By: Ben Lackey (910-251-4546) Submitted On: Aug 01 2014

Current Comment Status: **Comment Closed**

5691012 Geotechnical Appendix A, Engineering, Sect 5.2.1.e.1 n/a n/a

Comment Classification: **For Official Use Only (FOUO)**

location of 6.2.1 should be 5.2.1.e.1.

Submitted By: Ben Lackey (910-251-4546). Submitted On: Jun 20 2014

1-0 Evaluation **Concurred**
Section was moved

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 31 2014

1-1 Backcheck Recommendation **Close Comment**
Closed without comment.

Submitted By: Ben Lackey (910-251-4546) Submitted On: Aug 01 2014
Current Comment Status: **Comment Closed**

5691017 Geotechnical Appendix A, Engineering, Sect 5.2.1.e.4 n/a n/a

Comment Classification: **For Official Use Only (FOUO)**

State the assumptions or experience that lead to the decision to use the 20% for settlement.

Submitted By: Ben Lackey (910-251-4546). Submitted On: Jun 20 2014

1-0 Evaluation **Concurred**
A value of 20 percent settlement was used for cost estimating purposes. The geotechnical data cannot provide an accurate estimate of settlement; therefore, 20 percent seemed reasonable to proceed with the cost estimates. Subsidence values were not added to the calculated dike settlement, since a regional subsidence rate of 1.74 feet in 100 years is not significant when compared to acute construction-related settlement due to increased load within an alignment. Additional geotechnical analysis would be necessary to determine the settlement value and actual value would be determined during P&S.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 31 2014

1-1 Backcheck Recommendation **Close Comment**
Add this to the document text.

Submitted By: Ben Lackey (910-251-4546) Submitted On: Aug 01 2014
Current Comment Status: **Comment Closed**

5691018 Geotechnical Appendix A, Engineering, Sect 5.2.2 n/a n/a

Comment Classification: **For Official Use Only (FOUO)**

Stability analyses do not include the 1V on 5H cut slopes. Results of critical sections should be included.

Submitted By: Ben Lackey (910-251-4546). Submitted On: Jun 20 2014

1-0 Evaluation **Concurred**
The report uses 1V on 5H on the upland reach where spoil material has been stacked to an elevation has high as 10 feet and the report recommends grading the bank at a 1V to 5H to stabilize the bank. Section 5.2.2 is called Channel Stability. The 1V and 5H bank slope and rock dike for foreshore protection is for bank stabilization. (See response to comment 5691003)

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 31 2014

1-1 Backcheck Recommendation **Close Comment**
Closed without comment.

Submitted By: Ben Lackey (910-251-4546) Submitted On: Aug 01 2014
Current Comment Status: **Comment Closed**

5691020	Geotechnical	Appendix A, Engineering, Sect 5.2.2, last sentence	n/a	n/a

Comment Classification: **For Official Use Only (FOUO)**

Provide the stability analysis results which show that the rock dikes to not affect the overall channel stability.

Submitted By: Ben Lackey (910-251-4546). Submitted On: Jun 20 2014

1-0 Evaluation **Concurred**
Channel bank erosion is apparent in many locations along the Inland Reach (Mile 36.3 to 10.1). The original canal dimensions were an approximately 250-foot-wide canal. The banks are now as much as 450 to 1,000 feet apart in many reaches of the canal. The average top width of the 20-foot channel is 23 feet wider than the existing channel. The 23-foot increase in top width corresponds to a 15 percent increase in top width at the mud line. Plate C16 shows the typical section of the 20 foot navigation channel. On the inland reach, the top width of the actual navigation channel varies from approximately 150 feet to 200 feet. The channel bank where bank stabilization is recommended is a minimum distance of 125 feet from the navigation channel. The actual HNC bank top width is 450-1000 ft. In some cases, generally in the lower portion of the Inland Reach, the rock would be placed along the historic bankline. The addition of rock dikes for foreshore protection and retention would not affect the overall channel stability. References to the navigation channel versus the actual bankline will be clarified in the report.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 31 2014

1-1 Backcheck Recommendation **Close Comment**
Closed without comment.

Submitted By: Ben Lackey (910-251-4546) Submitted On: Aug 01 2014
Current Comment Status: **Comment Closed**

5691023	Geotechnical	Appendix A, Engineering, Sect 6.1.3, Table A-16	n/a	n/a

Comment Classification: **For Official Use Only (FOUO)**

Note a, states that all slopes are 3H to 1V. Add the location of the 1V on 5H slopes.

Submitted By: Ben Lackey (910-251-4546). Submitted On: Jun 20 2014

1-0 Evaluation **Concurred**
Table A-16 is in reference to the navigation channel. 3H to 1V is correct for the navigation channel. The 1V to 5H is for bank stabilization, not for the navigation channel.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 31 2014

1-1 Backcheck Recommendation **Close Comment**
Closed without comment.

Submitted By: Ben Lackey (910-251-4546) Submitted On: Aug 01 2014
Current Comment Status: **Comment Closed**

5691027 Geotechnical Appendix A, Engineering, Sect 6.3 n/a n/a
Comment Classification: **For Official Use Only (FOUO)**

Include a discussion of the condition of the soil to be used for fill, including classification, moisture content, Atterbeg limits, etc.

Submitted By: Ben Lackey (910-251-4546). Submitted On: Jun 20 2014

1-0 Evaluation **Concurred**
For this phase of the study, soil borings were not taken from within the proposed disposal areas. This type of analysis will be conducted during the Plans & Specifications phase of the project.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 31 2014

1-1 Backcheck Recommendation **Close Comment**
Closed without comment.

Submitted By: Ben Lackey (910-251-4546) Submitted On: Aug 01 2014
Current Comment Status: **Comment Closed**

5691030 Geotechnical Appendix A, Engineering, Sect 5.2.1.d n/a n/a
Comment Classification: **For Official Use Only (FOUO)**

State the method used for the stability analysis.

Submitted By: Ben Lackey (910-251-4546). Submitted On: Jun 20 2014

1-0 Evaluation **Concurred**
Soil Stability with Uplift program using the Method of Planes, ID FS004.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 31 2014

1-1 Backcheck Recommendation **Close Comment**
Add this to the document text.

Submitted By: Ben Lackey (910-251-4546) Submitted On: Aug 01 2014
Current Comment Status: **Comment Closed**

5691032 Geotechnical Appendix A, Engineering, Sect 5.2.1.d n/a n/a
Comment Classification: **For Official Use Only (FOUO)**

Add a brief discussion of the computer program (or hand analysis) used to perform the stability analyses.

Submitted By: Ben Lackey (910-251-4546). Submitted On: Jun 20 2014

1-0 Evaluation **Concurred**
Soil Stability with Uplift program using the Method of Planes, ID FS004.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 31 2014

1-1 Backcheck Recommendation **Close Comment**
Closed without comment.

Submitted By: Ben Lackey (910-251-4546) Submitted On: Aug 01 2014
Current Comment Status: **Comment Closed**

5691035 Geotechnical Appendix A, Engineering, Sect 5.2.1.d n/a n/a
Comment Classification: **For Official Use Only (FOUO)**

Consider including a table documenting the minimum factor of safety for each condition analyzed.

Submitted By: Ben Lackey (910-251-4546). Submitted On: Jun 20 2014

1-0 Evaluation **Concurred**
The only FOS utilized for the geotechnical analysis was 1.3 as stipulated for the low water condition by the USACE. This condition is for the navigation channel only.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 31 2014

1-1 Backcheck Recommendation **Open Comment**
A table with the minimum FS for each section could be added to show that they are above the required FS=1.3.

Submitted By: Ben Lackey (910-251-4546) Submitted On: Aug 01 2014

2-0 Evaluation **Concurred**
This was done (see attached)

Submitted By: Donna Rogers (225-612-4285) Submitted On: Aug 07 2014 (Attachment: Inserted_Table_A-16.docx)

2-1 Backcheck Recommendation **Close Comment**
Closed without comment.

Submitted By: Ben Lackey (910-251-4546) Submitted On: Aug 13 2014
Current Comment Status: **Comment Closed**

5691037 Geotechnical Appendix A, Engineering, General n/a n/a
Comment Classification: **For Official Use Only (FOUO)**

Be consistent throughout the report and drawings with the name used for the rock dikes.

Submitted By: Ben Lackey (910-251-4546). Submitted On: Jun 20 2014

1-0 Evaluation **Concurred**
There are two types of rock construction: Rock retention dikes are designed to retain the material in a disposal site. Foreshore protection is a rock dike designed for bank stabilization. On the inland reach the rock retention dikes will also provide bank stabilization benefits. This will be clarified in the report.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 31 2014

1-1 Backcheck Recommendation **Close Comment**
Closed without comment.

Submitted By: Ben Lackey (910-251-4546) Submitted On: Aug 01 2014
Current Comment Status: **Comment Closed**

5691038	Geotechnical	Appendix A, Engineering, General	n/a	n/a

Comment Classification: **For Official Use Only (FOUO)**

Include the datum used for each elevation.

Submitted By: Ben Lackey (910-251-4546). Submitted On: Jun 20 2014

1-0 Evaluation **Concurred**
Elevations in this report are referenced to NAVD88 (2004.65) unless otherwise noted. This is noted in the 3rd paragraph in section 1.1

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 31 2014

1-1 Backcheck Recommendation **Close Comment**
Closed without comment.

Submitted By: Ben Lackey (910-251-4546) Submitted On: Aug 01 2014
Current Comment Status: **Comment Closed**

5692049	Environmental	Sec 4.10.2.1 Environmental Output (Benefits) and Section 4.10.2.2 Environmental Costs.	n/a	n/a

Comment Classification: **For Official Use Only (FOUO)**

Review Concern: Main Report: Environmental Output benefits. A Cost Effectiveness/Incremental Cost Analysis was used to establish the Best Buy plan for beneficial use of dredged material for marsh creation.

Basis of Concern: It should be stated if the Corps certified model" IWR-Plan" was used or if a spreadsheet model was used. If the latter, see comment 5687678 for guidance governing single-use or study-specific (which will include ecosystem output models). It is also stated that the average annual equivalent cost amortized the cost of construction with interest during construction at a 4.655 percent interest rate. What was the source of that rate? (The Federal FY12 discount rate was 4.00%, the FY13 discount rate was 3.75%, and the current FY14 discount rate is 3.50%). The analysis should be updated to the current FY14 discount rate of 3.50%.

Significance of Concern: Model review is a DDN-PCX requirement and is necessary to validate plan selection. The discount rate in modeling should reflect the FY14 discount rate.

Probable Action: Initiate model review and use the FY14 discount rate of 3.50%.

Submitted By: Daniel Abecassis (904-232-1703). Submitted On: Jun 22 2014

Revised Jul 17 2014.

1-0 Evaluation **Concurred**
Once we have the AAHUs from the updated WVAs, we'll run it though IWR-Plan and update the discount rate.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 31 2014

1-1 Backcheck Recommendation **Open Comment**
IWR-Plan is a Corps approved certified model. However, the habitat unit evaluation would need to go through the ECO-PCX (MVD) for approval, if a HU methology is being used that is not certified or has ECO-PCX approval.

The comment will be closed when HU issue addressed and IWR-Plan runs complete at updated discount rate.

Submitted By: Daniel Abecassis (904-232-1703) Submitted On: Aug 01 2014

2-0 Evaluation **Concurred**
The updated combined document no longer utilizes NER benefits as a means of justifying the selected plan. The combined document has been rewritten as a NED only document. Therefore, IWR-Plan is not utilized in the evaluation of alternative plans. An updated document will be provided for review.

Submitted By: Jonathan Puls (225-612-4249) Submitted On: Sep 21 2016

Backcheck not conducted

Current Comment Status: **Comment Open**

5692057	Economics	Preface memo to Economics Appendix, Executive Summary, and HNC Reported Vessel Trips and Drafts Trends, p.42	n/a	n/a

Comment Classification: **For Official Use Only (FOUO)**

Review Concern: Preface -- GEC Memorandum dated April 15, 2014: Houma Navigation Canal revisions to Benefits and Costs (Dec 2012):

(a) The analysis has been done in FY12 discount rate of 4.0% and updated for costs. The discount rate is referenced as 3.75% for FY14 which is not correct. The 3.75% rate was in affect for FY13; the FY14 rate is 3.5%.

(b) It is stated in memo that the NED benefits has not changed. It should be explained how that was concluded since last data year for sailing draft distribution appears to be 2009 and there is data gap for vessel trips and drafts for 2010 and 2011.

Basis of Concern: The executive summary refers to updated benefits done in 2012 contained in chapters V and VI. Page 42 (HNC Reported Vessel Trips and Drafts Trends) states concern about volume of commercial vessel traffic entering the HNC channel. According to Sec V, p42, since 2009 no additional data was collected until 2012 for which 4 months was used to extrapolate vessel transits for the entire year which has been inferred from first 4 months of 2012 then multiplied by 3 to get estimate for 2012.

Significance of Concern: It does not appear that the benefit analysis has been updated to reflect data for 2010, 2011, and 2012 so to bring the NED analysis up to date. The BCR was updated for revised costs but not the benefit analysis.

Probable Action: The missing data years need to be collected and reflected in an updated analysis.

Submitted By: Daniel Abecassis (904-232-1703). Submitted On: Jun 22 2014

Revised Jul 17 2014.

1-0 Evaluation **Concurred**

(a) The analysis should be updated to reflect the most current and future discount rate which is likely FY 15. At this time, near end of July FY 14, it does not seem prudent to "update" to FY 14 discount rate, 3.5%, when the rate could change (decline?) shortly for FY 15 and again require "updating".
(b)The benefits were updated for 2012 for a report date of September 2012. Some revisions to the costs resulted in a revised report dated December 2012. At the time that the benefits analysis was compiled, mid-2012, vessel trip and draft data were not available for CY 2010 and 2011.

There had been concern expressed locally that the compilations of vessel trips may be understated (report, page 42). To address that concern the Terrebonne Port Commission began to collect vessel transits at the north and south end of the HNC from a commercial reporting service, Ship Tracker, starting January 31, 2012. A total of four complete months of data had been compiled by May 31, 2012. This was used as noted above to estimate CY 12 vessel traffic at the time that the analysis was done, mid CY 12.

The 2012 benefits can be updated to reflect data that is now available such as vessel trips and drafts, 2010, 2011 and 2012, and more complete and current coverage of the Ship Tracker data as compiled by the Terrebonne Port Commission for CY 2012, 2013 and part of 2014, respectively (assuming that this data is still compiled by the Terrebonne Port Commission).

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 28 2014

1-1 Backcheck Recommendation **Open Comment**

The evaluation implies that a discount rate update will not be done until after October 1st 2014 (start of FY15). This appears to affect all the analysis and scheduling and should be coordinated with the Project Manager for acceptability. This comment will be closed when the data gap is completed and provided for review confirmation, as well as update to the discount rate.

Submitted By: Daniel Abecassis (904-232-1703) Submitted On: Aug 01 2014

2-0 Evaluation **Concurred**

Discount rates were updated from 2012 to 2016 in Appendix D of the report and throughout the report(Economic Benefits and Section 4; Attached).

Submitted By: Jonathan Puls (225-612-4249) Submitted On: Mar 08 2017 (Attachment: Appendix_D_-_Economic_Benefits1.pdf)

Backcheck not conducted

Current Comment Status: **Comment Open**

5692078 Economics n/a ES-ii n/a

Comment Classification: **For Official Use Only (FOUO)**
(Document Reference: Executive Summary)

Review Concern: Executive Summary -- It is referenced that the Offshore Supply Vessel (OSV) had a length of 180 ft. length the 2006 analysis updates that market preference was 250 to 260 ft length. In Section 4.6.2, Design Vessel it states "In order for businesses to be competitive for fabrication contracts, the design vessel is a special offshore petroleum industry barge that is 100 feet wide by 400 feet long, with a design draft of 20 feet (Table 4-1). Movements of this design vessel are constrained to several times per year at approximately two miles per hour (mph) under with-project conditions". The description of the parameters of the design vessel update should be consistent in executive summary with the main report.

Basis of Concern: The main report and executive summary need to be consistent.

Significance of Concern: The design vessel size impacts channel desgin and costs, and ultimately BCR.

Probable Action: The design vessel should be verified, be consistent between executive summary and economics appendix. It should be in response if the analysis has been impacted.

Submitted By: Daniel Abecassis (904-232-1703). Submitted On: Jun 22 2014

Revised Jul 17 2014.

1-0 Evaluation **Concurred**
The executive summary discusses the OSV shipbuilding market because this is a major source of NED benefits from a deeper channel that can accommodate these vessels.

The executive summary will be expanded to specifically discuss the design vessel as noted in section 4.6.2 of the report for the sake of consistency.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 28 2014

1-1 Backcheck Recommendation **Open Comment**
This comment will be closed after the changes to the executive summary is completed.

Submitted By: Daniel Abecassis (904-232-1703) Submitted On: Aug 01 2014

2-0 Evaluation **Concurred**
Discussion of the OSV shipbuilding market was removed from the Executive Summary.

Submitted By: Jonathan Puls (225-612-4249) Submitted On: Sep 27 2016
Backcheck not conducted
Current Comment Status: **Comment Open**

5692084 Economics n/a n/a n/a

Comment Classification: **For Official Use Only (FOUO)**
(Document Reference: GEC April 15, 2014 memo, ES-iii, Ecomomics Appx Table 34, and Main Report Table 7-11)

Review Concern: GEC April 15, 2014 memo and ES-iii. It is stated in executive summary p. iii "The total NED benefits (transportation cost savings) of the -18-ft. project are slightly more than 20 percent of the total NED benefits for the -20-ft. project. Consequently, the benefit cost ratio (BCR) for the -20-ft. project is substantially higher than the corresponding BCR for the -18-ft. project." According to the text of the economics appendix the NED plan is the 20 ft depth under alternative 2A (Table 34). It appears that the

results for alternative 2A that results in a BCR of 5.45 (GEC Apr 15, 2014 memo and Table 7-11, NED Plan Benefit Analysis... Alt 2A) does not appear in the economics appendix in Table 34 (which displays results of the previous analysis). The supporting analysis that appears in summary form in the main report and referenced in GEC memo needs to be captured in the economics appendix.

Basis of Concern: There appears to have been several iteration of the analysis over the years. ER 1105-2-100 Sec. F-10f(2): Decision Document Requirements. The minimum decision document and supporting documentation requirements are: a clear description of the recommended plan; demonstration of the project justification based on standard Corps project justification criteria for the particular project purpose in accordance with the general guidance applicable to the project purpose(s).

Signficance of Concern: The economics appendix report needs to reflect the documentation of the analysis for statements made in the executive summary.

Probable Action: Update the economics appendix, as it appears the executive summary reflects the updated analysis.

Submitted By: Daniel Abecassis (904-232-1703). Submitted On: Jun 22 2014

Revised Jul 17 2014.

1-0 Evaluation **Concurred**
The Economics appendix needs to be updated to reflect the GEC April 15, 2014 memo and Table 7-11, NED Plan Benefit Analysis ... Alt 2A).

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 28 2014

1-1 Backcheck Recommendation **Open Comment**
The comment will be closed after the update to the economics appendix.

Submitted By: Daniel Abecassis (904-232-1703) Submitted On: Aug 01 2014

2-0 Evaluation **Concurred**
The economic benefit information was updated and replaced throughout the report, including the Executive Summary, Section 4, and Appendix D.

Submitted By: Jonathan Puls (225-612-4249) Submitted On: Mar 08 2017 (Attachment: HNC_-_Combined_Document.pdf)

Backcheck not conducted

Current Comment Status: **Comment Open**

5692732 Hydraulics n/a n/a n/a

Comment Classification: **For Official Use Only (FOUO)**

Concern: Overdepth and advance maintenance are incorporated into the design depth.

Basis: On page A-34 of the Engineering Report it is stated "For this project, three feet of additional underkeel clearance will be provided by advanced maintenance and overdepth during dredging." The functions of advanced maintenance and overdepth are different than design depth. Advance maintenance and overdepth cannot be incorporated into the design depth. Advanced maintenance is additional dredging to extend the time between dredging. Advance maintenance is a sacrificial depth used to extend the time the

design depth is available. Overdepth is a depth which compensates for inaccuracies in the dredging process by allowing the dredger to dredge below the design depth to ensure the design depth is achieved. The dredger will be paid for the amount of overdepth dredged. Overdepth is not a required depth in a dredging contract.

Significance: The report is incorporating depths into the design depth which may never be attained or be attained for a limited time between maintenance operations.

Suggestion: Re-analyze the amount of under keel clearance required or change the design depth.

Submitted By: Michael Wutkowski (910-251-4669). Submitted On: Jun 23 2014

1-0 Evaluation **Concurred**

The report is incorporating depths into the design depth which may never be attained or be attained for a limited time between maintenance operations.
The Engineering Report will be revised to remove all discussion of channel depths other than the design depth that are related to maintenance dredging. The economics appendix correctly identifies the desired underkeel clearance to be two feet and omits any discussion or otherwise reference to maintenance dredging practices such as advanced maintenance, overdepth, etc. which have nothing to do with the design draft for which the channel is authorized. As edited the Engineering Report will have no references to maintenance dredging or related channel depths other than the design depth which maintenance supports but does not augment for purposes of vessel movements and channel deepening (change of design depth) economic benefits and costs related specifically thereto.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 28 2014

1-1 Backcheck Recommendation **Close Comment**

Concur

Submitted By: Michael Wutkowski (910-251-4669) Submitted On: Aug 01 2014

Current Comment Status: **Comment Closed**

5692736 Hydraulics n/a n/a n/a

Comment Classification: **For Official Use Only (FOUO)**

Concern: Maximum vessel drafts for proposed channel depths does not match the design vessel draft.

Basis: On page A-34 of the Engineering Report, Table A-13 gives a maximum vessel draft of 18 feet for a 20 foot channel. Table A-10 lists the draft for the design vessel of 20 feet.

Significance: The maximum vessel draft is less than the design vessel draft.

Suggestion: Re-analyze to make the maximum vessel draft consistent with the design vessel.

Submitted By: Michael Wutkowski (910-251-4669). Submitted On: Jun 23 2014

1-0 Evaluation **Concurred**
Table A-10 describes "typical vessels" including a dry cargo barge specified as the design draft. The typical drafts for these vessels are identified including the dry cargo barge of 20 feet. This should not be interpreted to over ride the 20 foot channel with would result in an underkeel clearance of two feet and a maximum vessel draft of 18 feet as per Table A-13.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 28 2014

1-1 Backcheck Recommendation **Close Comment**
Concur

Submitted By: Michael Wutkowski (910-251-4669) Submitted On: Aug 01 2014
Current Comment Status: **Comment Closed**

5692738 Hydraulics n/a n/a n/a
Comment Classification: **For Official Use Only (FOUO)**

Concern: There is no analysis presented to determine the amount of advanced maintenance required.

Basis: Advanced maintenance is used throughout the report but there is no information presented on the shoaling rates, maintenance cycle or economic efficiencies of advanced maintenance.

Significance: Advanced maintenance is assumed without a justification.

Suggestion: Present the advance maintenance analysis or justification.

Submitted By: Michael Wutkowski (910-251-4669). Submitted On: Jun 23 2014

1-0 Evaluation **Concurred**
Similar to the response to comment 5692731 there should be no references to any channel depths in the report other than the current design depth and the alternative design depths that would result from channel deepening which is a capital investment not related to operating expenses associated with maintenance dredging or resulting depths than may be greater than the design depth such as advanced maintenance or overdepth. Consequently, the report should be edited to completely remove any depths or discussions of depths that result from maintenance dredging other than the design depth.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 28 2014

1-1 Backcheck Recommendation **Close Comment**
Concur.

Submitted By: Michael Wutkowski (910-251-4669) Submitted On: Aug 01 2014
Current Comment Status: **Comment Closed**

5692740 Hydraulics n/a n/a n/a
Comment Classification: **For Official Use Only (FOUO)**

Concern: It is not clearly stated that the design criteria for with project conditions is for one way traffic.

Basis: on page A-29 of the Engineering Report section 4.1 without project conditions it discusses one-way traffic restrictions for the dry cargo barge. Nothing is mentioned in section 4.2 (with project conditions) even though the same restrictions apply. In addition, the one-traffic restriction would apply to all but the

crew/service vessel in table A-10 which list typical vessels.

Significance: It is not clear if there is an assumption of two-way traffic for with project conditions.

Suggestion: State the design parameters for with project conditions.

Submitted By: Michael Wutkowski (910-251-4669). Submitted On: Jun 23 2014

1-0 Evaluation **Concurred**

For without-project and with-project conditions the design parameters allow for a two way passage of traffic for all the vessels correctly specified in Table A-10. The "Tow Boat" identified in Table A-10 is incorrectly specified with dimensions of 250 by 90 which is indicative of a flotilla on the Gulf Intracoastal Waterway instead of a much smaller tow boat. Tow boats without barges would have a beam not exceeding 50 feet.

As corrected, Table A-10 would allow for two way traffic for all vessels, except for the design vessel (dry cargo barge) which would be used once or twice a year for special movements of deck laden vessels or deep water fabricated structures. While these very special annual or bi-annual movements occur normal two way transit could be impaired. Otherwise, the channel will have two way transits both for without-project and with-project conditions.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 28 2014

1-1 Backcheck Recommendation **Close Comment**

Concur

Submitted By: Michael Wutkowski (910-251-4669) Submitted On: Aug 01 2014

Current Comment Status: **Comment Closed**

5692741 Hydraulics n/a n/a n/a

Comment Classification: **For Official Use Only (FOUO)**

Concern: It is not clear what size vessels use the canal without project conditions and if larger vessels are assumed to use the canal with project conditions even though the channel width will not be changed.

Basis: on page A-30 of the Engineering Report table A-9 lists the maximum vessels using the canal. However, table A-10 which lists typical vessel dimensions has larger dimensions than the table of maximum dimensions.

Significance: Vessel dimensions are not presented clearly or are contradictory.

Suggestion: Clarify the apparent discrepancy between tables A-9 and A-10.

Submitted By: Michael Wutkowski (910-251-4669). Submitted On: Jun 23 2014

1-0 Evaluation **Concurred**
Table A-10 as previously noted (refer to response to comment 5692740) should be corrected for the mistake of the "tow boat" dimensions which reflect a tow (flotilla of tow boat and barges) operating on the Gulf Intracoastal Waterway. Although the design vessel has a maximum draft of 20-ft it would be ballasted down to a depth of 18 ft for the 20 ft. projection design depth. A foot note to Table A-10 to clarify that the 20-ft depth of the "design vessel" is not intended to be fully utilized but tempered by the two foot underkeel clearance that these vessels require.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 28 2014

1-1 Backcheck Recommendation **Close Comment**
Concur

Submitted By: Michael Wutkowski (910-251-4669) Submitted On: Aug 01 2014

Current Comment Status: **Comment Closed**

5692744	Hydraulics	n/a	n/a	n/a

Comment Classification: **For Official Use Only (FOUO)**

Concern: The design vessel is different than the vessel cited in the tow simulation waiver.

Basis: On page A-30 of the Engineering Report section 4.2 Design Vessel (With-Project) the design vessel is given as having a 100 ft. beam and a length of 400 ft. These are not the dimensions of the Intermac 650 referred to in the waiver.

Significance: While the dimensions of the design vessel are smaller than the waiver vessel, the difference should be explained to insure that the difference is intentional and not an error.

Suggestion: Explain the difference between the design vessel and the waiver vessel.

Submitted By: Michael Wutkowski (910-251-4669). Submitted On: Jun 23 2014

1-0 Evaluation **Concurred**
The waiver vessel has clearance restrictions transiting through the Dulac pontoon bridge so a smaller vessel with similar capabilities was utilized.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 28 2014

1-1 Backcheck Recommendation **Close Comment**
Concur

Submitted By: Michael Wutkowski (910-251-4669) Submitted On: Aug 01 2014

Current Comment Status: **Comment Closed**

5693042	Economics	Introduction (p.1) and main report, section 4.10.1.2	n/a	n/a

Comment Classification: **For Official Use Only (FOUO)**

Review Concern: It is stated that the original analysis was done in 2006 and subsequently revised in 2010 to reflect a change in the forecast of growth of benefitting traffic as a result of being too low in the years leading up to and slightly beyond the with-project conditions then projected to exist in 2012 and too high in the later years of the project after 2016. The 2010 revision assumed a later start year for with-project conditions, 2024 as opposed to 2012 for the 2007 report. As a results benefits start much later, 2024 versus

2012 with a larger fleet owing to projected growth between 2006 and 2024.

Basis of Concern: The main report, section 4.10.1.2, Equivalent Average Costs states the construction period to be 10 years without specifying a base year (a) It should be explained why the base year changed from 2012 to 2024 with such an extended construction duration. (b) the construction period should be reconciled between economics appendix and main report for consistency. (c) Is the 20 ft project also justified with a base year of 2012 or was it necessary to claim growth to 2024 then use that a starting point for an additional 50 years of growth (would the additional benefits claimed by Edison Chouest Offshore (LA Ship) in Houma been ample to justify project with base year of 2012 or is growth until 2024 as start of base year necessary for justification of the 20-ft project from the currently authorized 15 ft project depth)?

Significance of Concern: ER 1105-2-100 Sec 2-4b(1) states: The without-project condition is the most likely condition expected to exist in the
future in the absence of a proposed water resources project. Proper definition and forecast of thefuture without-project condition are critical to the success of the planning process. The future without-project condition constitutes the benchmark against which plans are evaluated.
Forecasts of future without-project conditions shall consider all other actions, plans and programs that would be implemented in the future to address the problems and opportunities in
the study area in the absence of a Corps project. Forecasts should extend from the base year (the year when the proposed project is expected to be operational) to the end of the period of analysis.

Probable Action: Answer question raised in basis of concern and show Sensitivity analysis showing BCR without growth starting at 2012 for 50 yr period of analysis.

Submitted By: Daniel Abecassis (904-232-1703). Submitted On: Jun 23 2014

Revised Jul 17 2014.

1-0 Evaluation **Concurred**
See attached

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 28 2014 (Attachment: Comment_5693042_response.docx)

1-1 Backcheck Recommendation **Open Comment**
The evaluation (attachment) states that the 20 ft project is also justified with a base year of 2012. The evaluation makes a good point that accrual of benefits is subject to various construction prerequisites that result in completion of construction in 2028. Therefore, the BCR should explicitly be stated for the fleet held constant at 2012 no-growth scenario (ie, no fleet growth between 2012 and 2028) but with completion of construction at the base year 2028.

The results are also subject to satisfactory (one time approved for use) certification of a model review.

Submitted By: Daniel Abecassis (904-232-1703) Submitted On: Aug 01 2014

2-0 Evaluation **Concurred**
All periods of economic analysis has been updated in Section 4 and Appendix D of the report (Attached).

Submitted By: Jonathan Puls (225-612-4249) Submitted On: Mar 08 2017 (Attachment: HNC_-_Section_4_Formulation_and_Evaluation_of_Alternative_Plans2.pdf)

Backcheck not conducted

Current Comment Status: **Comment Open**

5693088 Economics Corps Report Section Page 4 n/a

Comment Classification: **For Official Use Only (FOUO)**

Review Concern: There was an original ITR (as what ATRs were called at the time) concern in the draft March 2005 Houma Navigation Canal Deepening Reevaluation Report (URS) that justification for benefits is heavily driven by user input and is not an acceptable measuring technique. Subsequent survey methods (done in 2006-2007 and updated in 2010) also relied on personal interviews with potential beneficiaries. It was concluded that none of the changes in ownership or operations are material to the benefits of deepening as formulated in 2006-2007 and updated in 2010.

Basis of Concern: This especially of concern when a base year of 2028 is the project starting point for a period of analysis 2028-2077.

Significance of Concern: The justifation may be dependent on growth that may or may not occur between now and 2028 based on interviews with potential beneficiaries.

Probable Action: Sensitivity analysis requested for comment 5693042 (BCR with no growth starting at 2012) will help assess the impact to the justification for projected growth from 2012 to base year of 2028.

Submitted By: Daniel Abecassis (904-232-1703). Submitted On: Jun 23 2014

Revised Jul 17 2014.

1-0 Evaluation **Concurred**

The very long period of time between the analysis, even if updated to 2014, and the start of construction and then the ten year interval to the completion of construction and commencement of with-project conditions, 2028, suggests that the benefits will have to be periodically updated with regard to such things as changes in ownership and operations which were done when the benefits were updated in 2012.

The revised economics appendix can indicate the BCR for any number of years that would be consistent with a current construction schedule undeterred by other with-project conditions such as Morganza Lock completion. Ideally, a BCR for 2012 does not seem reasonable at this year, 2014, since 2012 is history and the projected completion would need a construction time frame. If the ten year construction time frame is maintained (refer to Table 31), then a BCR base year ten years from now, for example from 2014, would have with-project conditions commencing in 2024/2025 which is not too materially different from year 2028. In short, it does not seem reasonable to develop a BCR for a historical year, 2012, or even for a current year, 2014, without considering the construction schedule (developed by the New Orleans District) that would allow a reasonable base year for commencement of with-project conditions.

With regard to "no growth" refer to response (c) to comment 5693042 and discussion of comparisons between "growth forecasts" for benefitting vessel trips, NED benefits and net present value benefits in tables 13, 14 and 15, respectively, compared to "no growth forecasts" for benefitting vessel trips, NED benefits and net present value benefits in tables 16, 17 and 18, respectively, and ensuing discussion thereof in the economics appendix on page 62.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 28 2014

1-1 Backcheck Recommendation **Open Comment**

The BCR for the no-growth scenario should be explicitly documented (not just say it is economically justified) after all data adjustments are made. It should also be confirmed that the no growth scenario sensitivity analysis is for static fleet (per last update, 2012) and base year 2028.

Submitted By: Daniel Abecassis (904-232-1703) Submitted On: Aug 01 2014

2-0 Evaluation **Concurred**

See attached for response to comment.

Submitted By: Jonathan Puls (225-612-4249) Submitted On: Jul 13 2017 (Attachment: 5693088_Response_-_KH.doc)

Backcheck not conducted

Current Comment Status: **Comment Open**

5693166 Economics n/a Page 38 n/a

Comment Classification: **For Official Use Only (FOUO)**
(Document Reference: Economics Appendix)

Review Concern: The historical trend for HNC reported cargo tons in Table 5 has been uneven to flat, for the time series between 1995 and 2004. However, beginning in 2005 and reoccurring in subsequent years except 2009 there was a relatively large increase in waterborne tonnage, primarily from increases in petroleum and to a lesser extent crude materials, with total annual cargo tonnage close to 1.0 million tons. To the degree that the benefits are a function of this commodity, it is imperative that the trend be shown through 2012 based on actual historical data, and that the projections include actual data set through 2012 (not projected data).

Basis of Concern: Step 2 of the Planning Process separates inventory and forecast. Projections should not be used for historical data gaps.

Significance of Concern: Data gaps that were projected and now historical may be divergent.

Probable Action: Display the actual historical time series instead of projections that are now historical data.

Submitted By: Daniel Abecassis (904-232-1703). Submitted On: Jun 23 2014

Revised Jul 17 2014.

1-0 Evaluation **Concurred**

Tables 5 and 6 related to commodity tonnages and vessel trips, respectively, were updated in 2012 to reflect the most current waterborne commerce data currently available at that time which was for calendar year 2009. Now in year 2014 it is reasonable to update these tables to include years 2010, 2011 and 2012. A perusal of this more current data reveals that the total annual cargo tons and the total annual tons of petroleum and petroleum products reported and compiled for the Houma Navigation Canal have declined to 0.447 million and 0.411 million in 2010, respectively; 0.465 and 0.404 million in 2011, respectively; and 0.473 and 0.382 million in 2012, respectively. These cargoes are carried by existing vessels for without-project conditions and are not reflective of most of the categories of benefitting vessels that cannot use the HNC in without-project conditions but only in with-project conditions.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 28 2014

1-1 Backcheck Recommendation **Open Comment**
The updates to Tables 5 and 6 need to be provided prior to closeout of comment.

Submitted By: Daniel Abecassis (904-232-1703) Submitted On: Aug 01 2014

2-0 Evaluation **Concurred**
The referenced tables have been updated to show more current data in Appendix D - Economic Benefits (Attached).

Submitted By: Jonathan Puls (225-612-4249) Submitted On: Mar 08 2017 (Attachment: Appendix_D_-_Economic_Benefits2.pdf)

Backcheck not conducted

Current Comment Status: **Comment Open**

5693643	Real Estate	n/a		C-2 in REP	Pg 4-42 in Main, Section 4.9.2.5

Comment Classification: **Public (Public)**

Section 4.9.2.5 (Real Estate) in the Main Report states that navigational servitude will be used for 4 dredge sites, as well as the dredging of the channel itself and the placement of rocks and dredge along the shoreline, below the waterline. The REP states (on Page C-2) that the TPCG will provide right-of-entry to the US to the work. Which one is correct for the channel work?

I first read the REP and them the Main Report. Initial reading of the REP generated a comment that if nav serv can be used for a dredge area, why not the channel itself? The Main Report answered that question (if that is the correct answer - nav serv to be used on the channel itself and placement below the water line). The Main Report and the REP should match, whatever the actual answer is.

The REP also indicates that nav serv will only be invoked for 1 site, but the Main Report RE Section states 4 sites.

Submitted By: Heather Sachs (410-962-4648). Submitted On: Jun 23 2014

1-0 Evaluation **Concurred**
The main report and REP have been updated to match:
There are 33 possible disposal sites including 7 SPD's and a beach nourishment site. Easements would be necessary for 24 of these possible sites. The remaining sites are located within the navigable waters of Terrebonne Bay or the Gulf of Mexico. The 24 sites located within privately owned land encompass approximately 5,713.4 acres. A perpetual disposal material easement would be required over these areas. Fifteen of the proposed sites are not located adjacent to the channel and would require a 100-foot-wide pipeline access corridor. A perpetual utility and/or pipeline easement would be required over approximately 16.9 acres to provide pipeline access to these sites.

Navigation Servitude would be applicable for the bay side of East Island disposal site in Terrebonne Bay. The Navigation Servitude would also be applicable on the existing channel for accomplishing the dredging necessary to deepen the HNC and for placement of rock retention and foreshore protection structures along the banks. The rock structures would be placed on land that is below the ordinary high water mark.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 15 2014

1-1 Backcheck Recommendation **Close Comment**
Closed without comment.

Submitted By: Heather Sachs (410-962-4648) Submitted On: Jul 30 2014
Current Comment Status: **Comment Closed**

5693653 Real Estate n/a n/a n/a

Comment Classification: **Public (Public)**

There is no discussion of responsibility for Operations and Maintenance of the completed project in the REP. If it is to be included/assumed under the current Federal O&M maintenance of the channel, if should be included.

Submitted By: Heather Sachs (410-962-4648). Submitted On: Jun 23 2014

1-0 Evaluation **Concurred**
The following has been added to the REP:
There is no incremental increase in OMRR&R costs above maintaining the existing Federal project for the Houma Navigation Channel, which is 100 percent Federal. The Tentatively Recommended Plan is also not greater than ?20 feet. Accordingly, the Federal Government will continue to provide 100 percent of the cost for maintaining the channel provided by the Tentatively Recommended Plan.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 15 2014

1-1 Backcheck Recommendation **Close Comment**
Closed without comment.

Submitted By: Heather Sachs (410-962-4648) Submitted On: Jul 30 2014
Current Comment Status: **Comment Closed**

5693660 Real Estate n/a n/a n/a

Comment Classification: **Public (Public)**

Mitigation is mentioned in the REP but not discussed. It is not clear what is being mitigated and which sites are required for mitigation. It is discussed in the Main Report, but not discussed in the REP. A brief discussion of the requirement and which areas are affected would help to clarify the need for the wetlands easement listed under NSE.

Submitted By: Heather Sachs (410-962-4648). Submitted On: Jun 23 2014

1-0 Evaluation **Concurred**
Mitigation was detailed further in the REP. The sites being mitigated and the sites required and available for mitigation are presented in the summary table that was added to the REP. The required easements are also listed in the table. Mitigation requirements will be finalized once the WVAs are rerun.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 15 2014

1-1 Backcheck Recommendation **Close Comment**
Closed without comment.

Submitted By: Heather Sachs (410-962-4648) Submitted On: Jul 30 2014
Current Comment Status: **Comment Closed**

5693666 Real Estate n/a n/a n/a

Comment Classification: **Public (Public)**

Since there is no ownership/tract list included in the REP (due to the nature of the report), suggest adding a column for publicly/privately-owned designation. Also, a summary chart would be helpful for the lands required/easement-type required - even though all of the info was stated in the text of the REP.

I got pinged for insufficient charts by HQ on one of my REPs, even though the info was in the text - just thought I would pass that on to you.

Submitted By: Heather Sachs (410-962-4648). Submitted On: Jun 23 2014

1-0 Evaluation **Concurred**
A table was added to the REP listing the Tentatively Recommended Plan Disposal Sites, Uses of Material, Ownership, and Easements.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 15 2014 (Attachment: Table_for_comment_5693666.docx)

1-1 Backcheck Recommendation **Close Comment**
Closed without comment.

Submitted By: Heather Sachs (410-962-4648) Submitted On: Jul 30 2014
Current Comment Status: **Comment Closed**

5693670 Real Estate n/a C-3 n/a

Comment Classification: **Public (Public)**

Chart reads 4811.3 acres; corresponding number in text above chart states 4,811.4 acres.

Submitted By: Heather Sachs (410-962-4648). Submitted On: Jun 23 2014

1-0 Evaluation **Concurred**
This was corrected.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 15 2014

1-1 Backcheck Recommendation **Close Comment**
Closed without comment.

Submitted By: Heather Sachs (410-962-4648) Submitted On: Jul 30 2014
Current Comment Status: **Comment Closed**

5693684 Real Estate n/a Main Repot - 4-42 REP: C-9

Comment Classification: **Public (Public)**

Main Report states that 6 oyster leases will be affected by project. REP states that 15 oyster leases will be affected.

Submitted By: Heather Sachs (410-962-4648). Submitted On: Jun 23 2014

1-0 Evaluation **Concurred**

The main report was revised:
Fifty oyster leases have been identified that currently exist in the proposed disposal areas. The leaseholders would be compensated for these leases.
The REP was revised:
The project is expected to impact approximately 50 oyster leases, encompassing approximately 1,500 acres.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 15 2014

1-1 Backcheck Recommendation **Close Comment**

Closed without comment.

Submitted By: Heather Sachs (410-962-4648) Submitted On: Jul 30 2014

Current Comment Status: **Comment Closed**

5693685 Real Estate n/a n/a n/a

Comment Classification: **Public (Public)**

Would like to have seen Table 7-3. Summary of Facilities and Relocation Status for HNC Channel Deepening in the REP as an exhibit to the REP.

Submitted By: Heather Sachs (410-962-4648). Submitted On: Jun 23 2014

Revised Jun 23 2014.

1-0 Evaluation **Concurred**

Table of facilities requiring relocation was added to the REP

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 15 2014

1-1 Backcheck Recommendation **Close Comment**

Closed without comment.

Submitted By: Heather Sachs (410-962-4648) Submitted On: Jul 30 2014

Current Comment Status: **Comment Closed**

5693694 Real Estate n/a n/a n/a

Comment Classification: **Public (Public)**

The Main Report states that there are 31 proposed dredged material areas required for the project (Page 7-15, Section 7.2.6.1 LER Requirements). The REP states that there are 23 disposal areas proposed for the project.

Submitted By: Heather Sachs (410-962-4648). Submitted On: Jun 23 2014

1-0 Evaluation **Concurred**
The REP and main report sections have been adjusted to match each other. A total of 24 sites would be required for the project.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 15 2014

1-1 Backcheck Recommendation **Close Comment**
Closed without comment.

Submitted By: Heather Sachs (410-962-4648) Submitted On: Jul 30 2014
Current Comment Status: **Comment Closed**

5693700 Real Estate n/a n/a n/a

Comment Classification: **Public (Public)**

The disposal land type charts do not match (Table 7-5 and the chart on page C-2).

Submitted By: Heather Sachs (410-962-4648). Submitted On: Jun 23 2014

1-0 Evaluation **Concurred**
Table 7-5 and the chart on Page C-2 have been corrected to match.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 15 2014

1-1 Backcheck Recommendation **Close Comment**
Closed without comment.

Submitted By: Heather Sachs (410-962-4648) Submitted On: Jul 30 2014
Current Comment Status: **Comment Closed**

5693712 Real Estate n/a n/a n/a

Comment Classification: **Public (Public)**

Please review section 7.2.6 Real Estate of the Main Report. While it appears that the dollar amounts are correct, almost none of the other numbers match the REP: acreages, charts, disposal sites, etc.

Submitted By: Heather Sachs (410-962-4648). Submitted On: Jun 23 2014

1-0 Evaluation **Concurred**
The tables listing disposal sites have been revised and the figures showing the disposal sites have been revised so Section 7.2.6. matches the REP.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 15 2014

1-1 Backcheck Recommendation **Close Comment**
Closed without comment.

Submitted By: Heather Sachs (410-962-4648) Submitted On: Jul 30 2014
Current Comment Status: **Comment Closed**

5693724 Real Estate n/a n/a n/a

Comment Classification: **Public (Public)**

Review Main Report Section 7.2.6. Real Estate and REP for agreement in text assertions, as well. The navigational servitude sections do not match, for example.

Submitted By: Heather Sachs (410-962-4648). Submitted On: Jun 23 2014

1-0 Evaluation **Concurred**
The main report Section 7.2.6. and REP have been revised to match, including the navigation servitude sections.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 15 2014

1-1 Backcheck Recommendation **Close Comment**
Closed without comment.

Submitted By: Heather Sachs (410-962-4648) Submitted On: Jul 30 2014
Current Comment Status: **Comment Closed**

5694078 Cost Engineering n/a n/a n/a

Comment Classification: **For Official Use Only (FOUO)**

1. It is my understanding that The Selected Plan has not yet been determined (even though I have a .mlp file that appears to represent the selected plan) and that the purpose of this cost review is to consider the alternative estimates. Please verify that.

Submitted By: Gary Smith (651 260 1819). Submitted On: Jun 23 2014

1-0 Evaluation **Concurred**
Project development and plan formulation changes resulted in a modified Tentatively Recommended Plan. Therefore, the previously tentatively selected plan was no longer valid. Once the ATR review process is finalized and a Recommended Plan is agreed upon, all appropriate cost estimates and cost-related requirements will be included in the report and provided for review by Cost DX (MII, Full CSRA, etc.).

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 15 2014

1-1 Backcheck Recommendation **Close Comment**
So then, I Understand that the purpose of this cost review is to consider the alternative estimates. Comment Closed.

Submitted By: Gary Smith (651 260 1819) Submitted On: Jul 16 2014
Current Comment Status: **Comment Closed**

5694081 Cost Engineering n/a n/a n/a

Comment Classification: **For Official Use Only (FOUO)**

2. I am concerned that the cost engineering alternative estimate files are not ready for a Cost Engineering ATR because the documents appear to be more than 4 years old. As part of the plan formulation, since the selected plan has not been identified, the alternative plan cost data needs to be updated to current price levels.
2.1. Reference Filename HNC - Volume I-Main Report.pdf indicates : As part of this submittal for ATR

review, specific portions of the report have not been updated, due to a lack of information. Below is a summary of the sections that are awaiting additional information: 3) MCACES Estimate – The original MCACES cost estimate has been provided for this submittal, but the estimate will be updated through coordination with the Corps. 4) Construction Schedule – The construction schedule associated with the more detailed MCACES estimate will be updated. 5) Cost and Schedule Risk Analysis – The original Cost and Schedule Risk Analysis has been provided for this submittal, this information will be updated through coordination with the Corps.
2.2. Reference Filename 16-Complete-Appendix P-Report from Jonathan-HNC_Cost Engineering Report_April 24 2014.pdf includes the documents noted above in a section titled "Cost Engineering Report February, 2010". The documents are dated February 2010.

Submitted By: Gary Smith (651 260 1819). Submitted On: Jun 23 2014

1-0 Evaluation **Concurred**
All planning-level costs will be updated with 2014 unit costs and included in the report. The unit costs are being provided through an updated CEDEP run by MVN. An abbreviated CSRA is being provided for the TSP. Once a recommended plan is agreed upon, all pertinent material will be added to the report and provided to Cost DX for review (MCACES estimate, Construction Schedule, CSRA).

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 25 2014

1-1 Backcheck Recommendation **Open Comment**
BACK CHECK. This comment will remain open until the cost engineering alternative estimate files are provided for review. Note that the comparison of alternative costs should include contingencies based on an abbreviated risk analysis for each alternative. Comment remains open.

Submitted By: Gary Smith (651 260 1819) Submitted On: Aug 04 2014

2-0 Evaluation **Concurred**
The cost and schedule documentation for the project have been updated and the requested documentation has been attached. This includes updated planning-levels costs, MII costs, abbreviated risk analysis, Cost and Schedule Risk Analysis, and estimated project schedule. The required documentation has also been submitted to Cost DX for review in Walla Walla.

Submitted By: Jonathan Puls (225-612-4249) Submitted On: Jun 06 2017 (Attachment: Cost_Backcheck_Documentation.zip)

Backcheck not conducted

Current Comment Status: **Comment Open**

5694083 Cost Engineering n/a n/a n/a

Comment Classification: **For Official Use Only (FOUO)**

3. I understand that the Options considered are the No Action (-15-foot depth) and three variations of disposal for an 18- and 20-foot deep channel (adjacent disposal, earthen retention, and rock retention). This gives a total of six alternatives plus the No-Action alternative. Other features of the project include foreshore protection to eliminate bank degradation and the potential for some beneficial use in the offshore reach. In order to complete the review, I will need to get the following documents in their original format, updated to current price levels, for each of the alternative plans:
3.1.1. Alternative Estimates and Development of Unit Costs
3.1.2. CEDEP Files .xlsx
3.1.3. Abbreviated risk analysis

3.1.4. Quantity Development
3.1.5. Record of District Quality Control for Cost Engineering
3.1.6. O&M dredging cost estimates .

Submitted By: Gary Smith (651 260 1819). Submitted On: Jun 23 2014

1-0 Evaluation **Concurred**
Please refer to Comment #5694083. All referenced materials will be updated and/or provided for review. This information will also be added to the report, where pertinent.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 25 2014

1-1 Backcheck Recommendation **Open Comment**
BACK CHECK. This comment will remain open until the cost engineering alternative estimate files are provided for review. Note that the comparison of alternative costs should include contingencies based on an abbreviated risk analysis for each alternative. Comment remains open.

Submitted By: Gary Smith (651 260 1819) Submitted On: Aug 04 2014

2-0 Evaluation **Concurred**
The requested planning-level documentation has been attached. This includes planning-levels cost estimates for both construction and O&M, the abbreviated risk analysis, CEDEP results, and all pertinent quantities.

Submitted By: Jonathan Puls (225-612-4249) Submitted On: Jun 06 2017 (Attachment: 5694083.zip)

Backcheck not conducted

Current Comment Status: **Comment Open**

5694086 Cost Engineering n/a n/a n/a

Comment Classification: **For Official Use Only (FOUO)**

4. It is important that we have a common understanding of the ATR processes:
4.1. If Federal dollars are involved, USACE and the geographic district are the Federal proponents to ASA and Congress for the funding request.
4.2. Federal dollars require ATR which is how USACE addresses the OMB law requiring independent review (EC 1165-2-214).
4.3. To achieve technical and cost certification as the USACE proponents, the study and documents must meet Corps processes and regs. For the Cost ATR that means:
4.3.1. Cost products must meet key regs: ER 1110-2-1150, ER 1110-2-1302, ETL 1165-2-573, EC 1165-2-214.
4.3.2. Cost products must be no more than 2 years old. Eric Salamone played a MVN estimating role in 2010, but nothing more recent.
4.3.3. MVN Cost Chief and shop play a QC role related to cost (CEDEP would be developed by MVN Cost due to software proprietary issues).
4.3.4. TPCS signatures on the federal document would still include PM, Real Estate and Cost Chief by regulation.
4.3.5. Cost cert would be based on current Corps requirements and confident costs/risks.

Submitted By: Gary Smith (651 260 1819). Submitted On: Jun 23 2014

1-0 Evaluation **Concurred**
All required regulations and requirements will be adhered to.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 25 2014

1-1 Backcheck Recommendation **Open Comment**
BACK CHECK. This comment will remain open until the cost engineering alternative estimate files are provided for review. Note that the comparison of alternative costs should include contingencies based on an abbreviated risk analysis for each alternative. Comment remains open.

Submitted By: Gary Smith (651 260 1819) Submitted On: Aug 04 2014

1-2 Backcheck Recommendation **Close Comment**
Closed without comment.

Submitted By: Gary Smith (651 260 1819) Submitted On: Aug 04 2014
Current Comment Status: **Comment Closed**

5694088 Cost Engineering n/a n/a n/a
Comment Classification: **For Official Use Only (FOUO)**

5. I understand that there have been some questions about the schedule that need to be addressed for Construction and O&M before the documents can be revised. Please verify this and include schedule considerations in the cost data.

Submitted By: Gary Smith (651 260 1819). Submitted On: Jun 23 2014

1-0 Evaluation **Concurred**
The construction and maintenance schedules for all proposed alternatives and the TSP are being updated, added to the report, and will be provided for review.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 25 2014

1-1 Backcheck Recommendation **Open Comment**
BACK CHECK. This comment will remain open until the cost engineering alternative estimate files are provided for review. Note that the comparison of alternative costs should include contingencies based on an abbreviated risk analysis for each alternative. Comment remains open.

Submitted By: Gary Smith (651 260 1819) Submitted On: Aug 04 2014

2-0 Evaluation **Concurred**
The construction and O&M schedules were updated during development of the MII estimate, which is attached, along with references to the schedules in Sections 4 and 9.

Submitted By: Jonathan Puls (225-612-4249) Submitted On: Jun 06 2017 (Attachment: 5694088.zip)
Backcheck not conducted
Current Comment Status: **Comment Open**

5694089 Cost Engineering n/a n/a n/a

Comment Classification: **For Official Use Only (FOUO)**

6. I have received 19 construction CEDEP estimates titled similar to HNCMile0toMile35.xls. Are these for the selected plan?

Submitted By: Gary Smith (651 260 1819). Submitted On: Jun 23 2014

1-0 Evaluation **Concurred**
Updated CEDEP estimates for all six proposed alternatives will be provided for review. The referenced CEDEP estimate is dated and no longer valid. Please refer to Comment #5694081

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 25 2014

1-1 Backcheck Recommendation **Open Comment**
BACK CHECK. This comment will remain open until the cost engineering alternative estimate files are provided for review. Note that the comparison of alternative costs should include contingencies based on an abbreviated risk analysis for each alternative. Comment remains open.

Submitted By: Gary Smith (651 260 1819) Submitted On: Aug 04 2014

2-0 Evaluation **Concurred**
The CEDEP output used in development of the planning-level costs have been attached. The CEDEP output utilized for development of the MII estimate has been submitted to Cost DX for review and must be obtained from CEMVN for review.

Submitted By: Jonathan Puls (225-612-4249) Submitted On: Jun 06 2017 (Attachment: 5694092.zip)

Backcheck not conducted

Current Comment Status: **Comment Open**

5694092 Cost Engineering n/a n/a n/a

Comment Classification: **For Official Use Only (FOUO)**

7. I have received 16 CEDEP O&M estimates with titles similar to HNCMile0toMile35O&M.xls. Are these for the selected plan?

Submitted By: Gary Smith (651 260 1819). Submitted On: Jun 23 2014

1-0 Evaluation **Concurred**
Updated CEDEP estimates for all six proposed alternatives will be provided for review. The referenced CEDEP estimate is dated and no longer valid. Please refer to Comment #5694081.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 25 2014

1-1 Backcheck Recommendation **Open Comment**
BACK CHECK. This comment will remain open until the cost engineering alternative estimate files are provided for review. Note that the comparison of alternative costs should include contingencies based on an abbreviated risk analysis for each alternative. Comment remains open.

Submitted By: Gary Smith (651 260 1819) Submitted On: Aug 04 2014

2-0 Evaluation **Concurred**
The CEDEP output used in development of the planning-level costs have been attached. The CEDEP output utilized for development of the MII estimate has been submitted to Cost DX for review and must be obtained from CEMVN for review.

Submitted By: Jonathan Puls (225-612-4249) Submitted On: Jun 06 2017 (Attachment: 56940921.zip)

Backcheck not conducted

Current Comment Status: **Comment Open**

5694094 Cost Engineering n/a n/a n/a

Comment Classification: **For Official Use Only (FOUO)**

8. Tracking costs between files is difficult. For example, 07 Construction 2B Earthen Retention -20.xlsx 36-22 tab item 4B HNC Mile 36.3 to HNC Mile 34.0 CY 325,000 $5.91 $1,920,750. HNC_DRAFT Cost Estimate_20100208.mlp (I assume is for alternative 2B) Mile 36.3 to Mile 34.0, Hydraulic Dredging direct cost = 5.58 1,812,929. Tracking cost could be facilitated by constructing table to identify sources of costs for the various parts of each alternative estimate.

Submitted By: Gary Smith (651 260 1819). Submitted On: Jun 23 2014

1-0 Evaluation **Concurred**
A table providing a reference between cost components and cost estimate files will be provided.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 25 2014

1-1 Backcheck Recommendation **Open Comment**
BACK CHECK. This comment will remain open until the cost engineering alternative estimate files are provided for review. Note that the comparison of alternative costs should include contingencies based on an abbreviated risk analysis for each alternative. Comment remains open.

Submitted By: Gary Smith (651 260 1819) Submitted On: Aug 04 2014

2-0 Evaluation **Concurred**
The updated planning-level cost estimates are attached.

Submitted By: Jonathan Puls (225-612-4249) Submitted On: Jun 06 2017 (Attachment: Appendix_K_-_Alternative_Costs.pdf)

Backcheck not conducted

Current Comment Status: **Comment Open**

5694289 Environmental n/a n/a n/a

Comment Classification: **For Official Use Only (FOUO)**

Coordination with agencies not complete. Coordination with USFWS via Coordination Act Report was not available for this ATR review. Neither was there any coordination documentation from NMFS. There was no mention of the Gulf Regional Biological Opinion or if a project specific B.O. was expected. Water Quality Certification and CZM has not been obtained. EFH coordination was not discussed, whether there would be a EFH assessment prepared.

Submitted By: Lekesha Reynolds (251-690-3260). Submitted On: Jun 23 2014

1-0 Evaluation **Concurred**

Concur. The GRBO covers maintenance dredging using a hopper dredge. Deepening would be covered through a Section 7 consultation, which will be initiated by the Corps and will likely either result in a BO or a Supplemental BO. The USFWS will draft a CAR. Species protection measures outlined in the BO or CAR will be incorporated into the report. Formal agency consultation will begin soon. A hydraulic cutterhead dredge would likely be used. Water Quality Certification and CZM will be obtained (a Section 404(b)(1) evaluation and a consistency determination that will be added to the report in appendices). EFH coordination is ongoing with NMFS.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 22 2014

1-1 Backcheck Recommendation **Close Comment**

Closed without comment.

Submitted By: Lekesha Reynolds (251-690-3260) Submitted On: Jul 23 2014

Current Comment Status: **Comment Closed**

5694303 Environmental n/a n/a n/a

Comment Classification: **For Official Use Only (FOUO)**

It is mentioned that USFWS is updating the WVA. The following needs to be addressed in the document: How are they updating the WVA, when will it be available, what is changing, and how would those changes affect mitigation, alternative impact discussions, borrow areas, etc. When was the last WVA performed and will the Deepwater horizon oil spill and its affects have any affect on the new WVA analysis.

Submitted By: Lekesha Reynolds (251-690-3260). Submitted On: Jun 23 2014

1-0 Evaluation **Concurred**

The last WVA runs were performed in 2008 (the Deepwater Horizon spill occurred in 2010). The WVAs are being run based on a certified model, new quantities, and additional disposal areas and will be run for three sea level rises based on updated USACE guidance (ETL 1100-2-1 and EC 1165-2-212). Changes in WVA results would affect mitigation. The oil spill primarily affected the lower portion of the project (Cat Island Pass and Terrebonne Parish Reaches) and is not anticipated to affect the WVA analysis.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 22 2014

1-1 Backcheck Recommendation **Close Comment**

Closed without comment.

Submitted By: Lekesha Reynolds (251-690-3260) Submitted On: Jul 23 2014

Current Comment Status: **Comment Closed**

5694319 Environmental n/a n/a n/a

Comment Classification: **For Official Use Only (FOUO)**

How often will maintenance dredging be required for the deepening alternatives compared to No-Action, what are those effects on the environment?

Submitted By: Lekesha Reynolds (251-690-3260). Submitted On: Jun 23 2014

1-0 Evaluation **Concurred**

Tables A-26 to A 32. No change in maintenance dredging schedule. Report has been revised to clarify this.

Main Report:

Deepening the channel to 18 feet could cause minor short-term impacts to navigation during the initial construction, utility relocation, and maintenance dredging; however, delays due to dredging would not significantly impact navigation. Deepening would have positive indirect impacts to navigation. No additional maintenance dredging events are anticipated with the deepening. Deepening the channel to 20 feet could cause minor short-term impacts to navigation during the initial construction, utility relocation, and maintenance dredging; however, delays due to dredging would not significantly impact navigation. Deepening would have positive indirect impacts to navigation. No additional maintenance dredging events are anticipated with the deepening.
Engineering Appendix:
The construction volumes and annual maintenance volumes for the No Action Alternative and the proposed channel depths, in approximate 2-mile increments, are presented in Tables A-26 to A 32. No additional maintenance cycles would be necessary for the 18- or 20- foot depths.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 11 2014

1-1 Backcheck Recommendation **Close Comment**

Closed without comment.

Submitted By: Lekesha Reynolds (251-690-3260) Submitted On: Jul 23 2014

Current Comment Status: **Comment Closed**

5694334 Environmental n/a n/a n/a

Comment Classification: **For Official Use Only (FOUO)**

Is there a figure that shows the locations of the relocations (pipeline, bridges,) that can be referenced in the main report. What impacts will the relocations of bridges, pipelines have, if any on the environment? (traffic, water quality, fisheries, T&E).

Submitted By: Lekesha Reynolds (251-690-3260). Submitted On: Jun 23 2014

1-0 Evaluation **Concurred**

Locations of relocations are in Plates C2-C12 in Annex V of Appendix A (and have been referenced in the text)-see attachment

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 11 2014 (Attachment: 5694334_Environmental_Response.docx)

1-1 Backcheck Recommendation **Close Comment**

Closed without comment.

Submitted By: Lekesha Reynolds (251-690-3260) Submitted On: Jul 23 2014

Current Comment Status: **Comment Closed**

5694353 Economics 4.9.2.1 n/a n/a

Comment Classification: **For Official Use Only (FOUO)**

The report mentions that the projected number of vessel trips under FWOP in 2012 is 18,289, and with project, it is 19,009 in 2012. Has this estimated 3.9 increase changed for 2014? Please update this section.

Submitted By: Lekesha Reynolds (251-690-3260). Submitted On: Jun 23 2014

1-0 Evaluation **Concurred**
The economics appendix can be updated for 2014 to reflect the benefitting vessel trips.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 28 2014

1-1 Backcheck Recommendation **Close Comment**
Closed without comment.

Submitted By: Lekesha Reynolds (251-690-3260) Submitted On: Aug 01 2014
Current Comment Status: **Comment Closed**

5694376	Environmental	Table 4-25, Water Quality, Alternative 1B	n/a	n/a

Comment Classification: **For Official Use Only (FOUO)**

Water Quality, Please state why in the text, the bay and Gulf sides of East Island would not result in point source discharges into the HNC. Also, will there be any turbidity monitoring and Best management practices to minimize impacts to Water Quality/ EFH (i.e. Thin layer disposal?)Please add to text.

Submitted By: Lekesha Reynolds (251-690-3260). Submitted On: Jun 23 2014

1-0 Evaluation **Concurred**
Additional text on the ambient water quality sampling was added to Section 2. A Section 404 (b)(1) evaluation will be added to report. Results of the chemical analyses on the samples indicated no cause for concern. Barium and TOC were the only detected compounds in the water and elutriate samples. Detected compounds in the sediment were not noticeably different from the reference samples and no trends were apparent. With the exception of TOC, no organics were detected in any sediment sample. Survival of organisms exposed to test sediments in the solid phase bioassays was not significantly different from survival of organisms exposed to the solid phase of the reference control. The water quality report stated that the results provided reasonable assurance that dredging and discharge of the material from the test sites would not cause unacceptable impacts to the water column or to benthic organisms found in disposal areas in the Gulf of Mexico. It is not anticipated that additional contaminant sampling will be necessary.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 22 2014

1-1 Backcheck Recommendation **Open Comment**
The response provided does not address the comment. Instead, this response addressed comment No. 5694405. Please try to address the comment again.

Submitted By: Lekesha Reynolds (251-690-3260) Submitted On: Jul 23 2014

1-2 Backcheck Recommendation **Close Comment**
This is a satisfactory response. Please ensure this information is in the EIS.

Submitted By: Lekesha Reynolds (251-690-3260) Submitted On: Aug 01 2014

2-0 Evaluation **Concurred**
The placement of dredge material in the bay and Gulf sides of East Island would not result in point source discharges into the HNC. The dredged material would discharge into the disposal sites, and the suspended material would settle out in the receiving areas in Terrebonne Bay and nearshore Gulf waters with probable runoff of the supernatant into adjoining water bodies and marsh/wetland areas. The proposed marsh creation sites on the bay side of East Island would be semi-confined. Material placed on the Gulf side of East Island will be deposited upcurrent of the island, allowing movement by longshore transport processes.

Standard best management practices (BMPs) would be used to minimize the introduction of suspended solids into surrounding waters. These BMPs may include such practices as the use of siltation fences to reduce erosion at construction sites. Requirements to comply with BMPs would be included in construction contracts.

Storm Water Pollution Prevention Plans (SWPPPs) would be prepared in accordance with good engineering practices emphasizing storm water BMPs and complying with Best Available Technology Economically Achievable (BAT) and Best Conventional Pollutant Control Technology (BCT). The SWPPP would identify potential sources of pollution, which may reasonably be expected to affect storm water discharges associated with the construction activity. In addition, the SWPPP shall describe and ensure the implementation of practices which are to be used to reduce pollutants in storm water discharges associated with the construction activity and to assure compliance with the terms and conditions of this permit.

The mixing zone requirements would be met for all Confined Disposal Facilities (CDFs) with appropriately sized weirs. The weirs for each CDF would be designed to meet these minimum requirements. The weirs would be placed to ensure no overlapping of the mixing zones as required by LDEQ.

Through coordination with Houma Drinking Water Plant, CEMVN would utilize appropriate dredging operations/techniques, such as dredging the northern water quality subsegment (LA120509) (Appendix A, Annex II, Plate H-1) during high fresh water flows, to avoid potential contaminant migration toward the drinking water intake.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 24 2014

Backcheck not conducted

Current Comment Status: **Comment Closed**

5694394 Environmental n/a n/a n/a

Comment Classification: **For Official Use Only (FOUO)**

Suggest that there is a short discussion of the Deepwater Horizon Oil Spill that occurred and discussion of any impacts to the resources within the project area.

Submitted By: Lekesha Reynolds (251-690-3260). Submitted On: Jun 23 2014

1-0 Evaluation **Concurred**
Section 2.7.2 in HTRW detailed the oil spill. We have added some generic statements related to potential effects of the spill based on initial observations and results of other spills; however, unfortunately much of the data from the oil spill effects hasn't been released due to the lawsuits.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 22 2014

1-1 Backcheck Recommendation **Close Comment**
Closed without comment.

Submitted By: Lekesha Reynolds (251-690-3260) Submitted On: Jul 23 2014

Current Comment Status: **Comment Closed**

5694402	Economics	Economics Appendix Summary of Deepening Benefits by Project Depth, and Main Report Sec 4.6.3.3. Channel Depth	n/a	n/a

Comment Classification: **For Official Use Only (FOUO)**
(Document Reference: Economics Appendix and Main Report)

Review Concern: The economics appendix states that underkeel clearance is assumed to be two feet (Economics Appendix, Summary of Deepening Benefits, p 79), whereas the main report assumes a 1 ft underkeel clearance (Table 4-2, Weight Draft Relationship). Table 4-4 displays a two ft underkeel clearance for the without project condition, and the proposed 18 ft and 20 ft depth. It is then assumed that there will be two additional ft provided for underkeel clearance from overdepth dredging and an additional three feet of underkeel clearance provided by advanced maintenance.

Basis of Concern: EM 1110-2-1611 is referenced as consideration to provide 25% of additional underkeel clearance. Was a ship simulation model done that included underkeel clearance as a parameter?

Significance of Concern: IWR Report 10?R?4 April 2010 (Part I, Chapt 5) states that underkeel clearances can be imposed by harbor and port authorities, Bar Pilots, or the Coast Guard as a safety measure, but they are not "hard rules." However, some vessels may still sail at less than the imposed amount, especially if the underkeel clearance is greater than two feet.

Probable Action: Confirm actual underkeel clearance practices. As related to project depth, the underkeel clearance referenced in the main report and economics appendix should be consistent, as well as be consistent within reference in the main report.

Submitted By: Daniel Abecassis (904-232-1703). Submitted On: Jun 23 2014

Revised Jul 17 2014.

1-0 Evaluation **Concurred**
The prevailing practice of vessel operators is for a two foot underkeel clearance. The actual sailing draft can be tempered by tidal conditions, approximately one foot, depending on the season, which should not be confused with the desired practice of a two foot underkeel clearance. Accordingly, the main report should be corrected to reflect the prevailing practice of two feet underkeel clearance. There should be no other discussion of possible additional underkeel clearance resulting from periodic dredging cycles that may reflect advance maintenance. The material relating to channel depths from maintenance other than design depth should be deleted from the main report to be consistent the omission of any discussion of maintenance dredging

depths in the economics appendix.

The main report will be edited to be consistent with the economics appendix and the stated practices of the vessel operators for a two foot underkeel clearance.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 28 2014

1-1 Backcheck Recommendation **Close Comment**
Closed without comment.

Submitted By: Daniel Abecassis (904-232-1703) Submitted On: Aug 01 2014
Current Comment Status: **Comment Closed**

5694405 Environmental n/a n/a n/a

Comment Classification: **For Official Use Only (FOUO)**

Please provide in the text some background on the ambient water analysis. When was the ambient water analysis done and where were samples taken, what was included in the analysis. Will there be any testing of dredged material for contaminants prior to placement?

Submitted By: Lekesha Reynolds (251-690-3260). Submitted On: Jun 23 2014

1-0 Evaluation **Concurred**
Additional text on the ambient water quality sampling was added to Section 2. A Section 404 (b)(1) evaluation will be added to report. Results of the chemical analyses on the samples indicated no cause for concern. Barium and TOC were the only detected compounds in the water and elutriate samples. Detected compounds in the sediment were not noticeably different from the reference samples and no trends were apparent. With the exception of TOC, no organics were detected in any sediment sample. Survival of organisms exposed to test sediments in the solid phase bioassays was not significantly different from survival of organisms exposed to the solid phase of the reference control. The water quality report stated that the results provided reasonable assurance that dredging and discharge of the material from the test sites would not cause unacceptable impacts to the water column or to benthic organisms found in disposal areas in the Gulf of Mexico. It is not anticipated that additional contaminant sampling will be necessary.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 22 2014

1-1 Backcheck Recommendation **Close Comment**
Good. Please add this information to the text.

Submitted By: Lekesha Reynolds (251-690-3260) Submitted On: Jul 23 2014
Current Comment Status: **Comment Closed**

5694411 Environmental n/a n/a n/a

Comment Classification: **For Official Use Only (FOUO)**

Please explain in the main report why there is a 3-yr waiting before you can breach the dikes to allow fish access. How will this waiting period affect the existing fisheries population?

Submitted By: Lekesha Reynolds (251-690-3260). Submitted On: Jun 23 2014

1-0 Evaluation **Concurred**
That sentence was removed from the text and replaced with: Containment dikes would be designed and constructed to degrade after dewatering to maximize fishery access. Any dikes that fail to degrade would be breached after settling, consolidation, and initial subsidence.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 22 2014

1-1 Backcheck Recommendation **Close Comment**
Closed without comment.

Submitted By: Lekesha Reynolds (251-690-3260) Submitted On: Jul 23 2014

Current Comment Status: **Comment Closed**

5694435 Economics Sec 4.6.3.3 of main report n/a n/a

Comment Classification: **For Official Use Only (FOUO)**
(Document Reference: Main Report)

Review Concern: Sec 4.6.3.3 of the main report (Channel Depth) states that three feet of additional under-keel clearance will be provided by advance maintenance and overdepth during dredging.

Basis of Concern: ER 1105-2-100 Sec E-64c(2)Advance maintenance strategy. Advance maintenance consists of expenditures in excess of routine O&M that reduces the likelihood of some emergency repairs and temporary service losses, or the rate of service degradation. Under this scenario, one must evaluate the effect that probabilities and consequences of the strategy have on expected service disruptions and reliability. Is adequate underkeel clearance relying on advance maintenance?

Significance of Concern: What is the economic justification from an incremental benefit, incremental cost, and incremental BCR standpoint for advanced maintenance dredging? There is no mention of advanced maintenance or an advanced maintenance analysis in the economics appendix.

Probable Action: Discuss and display analysis for justification for advance maintenance.

Submitted By: Daniel Abecassis (904-232-1703). Submitted On: Jun 23 2014

Revised Jul 17 2014.

1-0 Evaluation **Concurred**
Similar to the response to comment 5694402 above, the main report will be edited to remove any discussion of advanced maintenance which is not in the purview of the economic analysis of channel deepening which is a capital investment rather than and operating expense that characterizes maintenance dredging and related over dredging. The economic appendix correctly and purposely omits any discussion of over dredging (advanced maintenance) which presumably has been already optimized as an operating expense and unrelated to the capital investment of deepening.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 28 2014

1-1 Backcheck Recommendation **Open Comment**
It should be confirmed that advance maintenance is not actually a project feature prior to removal of discussion. If it is a project feauture it needs an incremental evaluation.

Submitted By: Daniel Abecassis (904-232-1703) Submitted On: Aug 01 2014

2-0 Evaluation **Concurred**
All references to advanced maintenance and overdredging were removed from Section 4 of the report (Attached).

Submitted By: Jonathan Puls (225-612-4249) Submitted On: Mar 08 2017 (Attachment: HNC_-_Section_4_Formulation_and_Evaluation_of_Alternative_Plans1.pdf)

Backcheck not conducted

Current Comment Status: **Comment Open**

5694441	Environmental	n/a	n/a	n/a

Comment Classification: **For Official Use Only (FOUO)**

What type of dredge(s) will be used? Table 4-25 mentions mechanical and the T&E section of the text mentions a hydraulic dredge. The T&E section of the text, states that no direct impact to T&E should occur if these guidelines are followed. What guidelines? From NMFS? Also, there is no mention of the Gulf Regional Biological Opinion (GRBO), which has guidelines for minimizing impacts when using a hopper dredge. Will there be any use of a hopper dredge?

Submitted By: Lekesha Reynolds (251-690-3260). Submitted On: Jun 23 2014

1-0 Evaluation **Concurred**
A hydraulic cutterhead dredge would likely be used. The GRBO covers maintenance dredging using a hopper dredge. Deepening would be covered through a Section 7 consultation, which will be initiated by the Corps and will likely either result in a BO or a Supplemental BO. The USFWS will draft a CAR. Species protection measures outlined in the BO or CAR will be incorporated into the report. Project would implement all Reasonable and Prudent Measures to minimize incidental take on USACE-conducted dredging. Formal agency consultation will begin soon.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 22 2014

1-1 Backcheck Recommendation **Close Comment**
Closed without comment.

Submitted By: Lekesha Reynolds (251-690-3260) Submitted On: Jul 23 2014

Current Comment Status: **Comment Closed**

5696442	Planning - Plan Formulation	n/a	TBD Statement, Number 6	n/a

Comment Classification: **For Official Use Only (FOUO)**
[**Critical/Flagged.**]

General concern over indication that economic information needed to justify the NED Plan and Tentatively Selected Plan is incomplete in the draft report.

This calls into question the overall adherence to the USACE Plan Formulation. Further assessment would be required once all of the missing documentation is provided.

Submitted By: Jonas White (251-690-2243). Submitted On: Jun 24 2014

1-0 Evaluation **Concurred**
Economic information is being updated, as necessary.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 29 2014

1-1 Backcheck Recommendation **Close Comment**
After the economic infomation is provided, another plan formulation review will be required to determine if alternatives were appropriately evaluated, the correct NED Plan was selected, and the NED Plan is Justified.

Submitted By: Johnny Grandison ((251) 694-3804) Submitted On: Jul 31 2014

Current Comment Status: **Comment Closed**

5696443	Planning - Plan Formulation	Section1.3	Page 1-7	n/a

Comment Classification: **For Official Use Only (FOUO)**

It is apparent that a combination of NEPA specific content and USACE Feasibility Report format is intended. Purpose and need (or purpose and need statement) should be placed in Introduction Section with title changed to Study Purpose, Need and Scope. The Needs section should be moved from Section 3.2, Page 3-4 to this section.

Submitted By: Jonas White (251-690-2243). Submitted On: Jun 24 2014

1-0 Evaluation **Concurred**
Section 3.2 was moved to Section 1.3.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 19 2014

1-1 Backcheck Recommendation **Close Comment**
Closed without comment.

Submitted By: Johnny Grandison ((251) 694-3804) Submitted On: Jul 28 2014

Current Comment Status: **Comment Closed**

5696444	Planning - Plan Formulation	n/a	n/a	n/a

Comment Classification: **For Official Use Only (FOUO)**

Executive Summary is missing. This section is essential for Plan Formulation reviewer to ensure that the story is being told properly for upwards USACE reporting and approval.

Submitted By: Jonas White (251-690-2243). Submitted On: Jun 24 2014

1-0 Evaluation **Concurred**
Executive summary will be added to the report.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 29 2014

1-1 Backcheck Recommendation **Close Comment**
Closed without comment.

Submitted By: Johnny Grandison ((251) 694-3804) Submitted On: Jul 31 2014
Current Comment Status: **Comment Closed**

5696446 | Planning - Plan Formulation | Section 3.0 | n/a | n/a

Comment Classification: **For Official Use Only (FOUO)**

Problems, Needs and Opportunities, Section 3.0. The identification of problems and opportunities are also a part of the Six-step planning process (the first step). This section should be renamed as Plan Formulation with problems and opportunities presented in this section. USACE Regulation ER 1105-2-100.

Submitted By: Jonas White (251-690-2243). Submitted On: Jun 24 2014

1-0 Evaluation **Concurred**
This was done.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 19 2014

1-1 Backcheck Recommendation **Open Comment**
Please provide evidence of the problems and opportunities" statements that you indicate have been added to the Plan Formulation Section of the report.

Submitted By: Johnny Grandison ((251) 694-3804) Submitted On: Jul 28 2014

2-0 Evaluation **Concurred**
The current Federal channel depth is insufficient and there are opportunities to improve navigation in the channel.

The insufficient channel depth results in waterway users light-loading larger vessels, using smaller vessels, rerouting larger vessels to deeper ports, and detouring along longer routes to avoid the HNC, and there are opportunities to reduce transportation costs.

Bank erosion occurs along the channel and there are opportunities to reduce shoaling and reduce maintenance dredging in the Federal channel.

Bank erosion and wetland loss occurs in the area and there are opportunities to reduce erosion and create wetlands in the area.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Aug 01 2014

2-1 Backcheck Recommendation **Close Comment**
Closed without comment.

Submitted By: Johnny Grandison ((251) 694-3804) Submitted On: Aug 06 2014
Current Comment Status: **Comment Closed**

5696447 | Planning - Plan Formulation | Section 3.1 | Page 3-1 | n/a

Comment Classification: **For Official Use Only (FOUO)**

Problems and Opportunities should be statements expressed in terms of desired outputs. See the IWR Planning Manual (IWR Report 96-R-21, Nov 1996) and Principles and Guidelines ((P&G) Chapter I, Section II) for examples of problem/opportunity statements.

Submitted By: Jonas White (251-690-2243). Submitted On: Jun 24 2014

1-0 Evaluation **Concurred**

The current Federal channel depth is insufficient and there are opportunities to improve navigation in the channel.

The insufficient channel depth results in waterway users light-loading larger vessels, using smaller vessels, rerouting larger vessels to deeper ports, and detouring along longer routes to avoid the HNC, and there are opportunities to reduce transportation costs.

Bank erosion occurs along the channel and there are opportunities to reduce shoaling and reduce maintenance dredging in the Federal channel.

Bank erosion and wetland loss occurs in the area and there are opportunities to reduce erosion and create wetlands in the area.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Aug 01 2014

1-1 Backcheck Recommendation **Close Comment**

Closed without comment.

Submitted By: Johnny Grandison ((251) 694-3804) Submitted On: Aug 01 2014

Current Comment Status: **Comment Closed**

5696448	Planning - Plan Formulation	Section 4.5.1	Page 4-7	n/a

Comment Classification: **For Official Use Only (FOUO)**

Non-Structural Measures should be bulletized in the same manner as the structural measures are and considered as viable project features. Why they are eliminated from further consideration should be fully described.

Submitted By: Jonas White (251-690-2243). Submitted On: Jun 24 2014

1-0 Evaluation **Concurred**

4.5.1 Non-Structural Measures

Non-structural measures available for the HNC include:
• Light loading vessels
• Diverting to deeper ports

Port of Terrebonne shippers are already using non-structural measures such as light loading vessels or diverting deeper draft movements through deeper ports, when necessary. However, these non-structural management measures will not address the study objectives by improving the efficiency of HNC navigation or allowing Port of Terrebonne fabricators to be more competitive

because these measures are more costly and make use of alternate ports or waterways. In addition, the continued bank erosion along the HNC cannot be reduced by non-structural means.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 14 2014

1-1 Backcheck Recommendation **Close Comment**
Closed without comment.

Submitted By: Johnny Grandison ((251) 694-3804) Submitted On: Jul 31 2014
Current Comment Status: **Comment Closed**

5696449	Planning - Plan Formulation	Section 4.6	Page 4-8	n/a

Comment Classification: **For Official Use Only (FOUO)**

Design considerations are premature at this stage in the plan formulation process. Entire section text should be removed from this section of the formulation process. May be more appropriately placed in Section 7.2 of the report.

Submitted By: Jonas White (251-690-2243). Submitted On: Jun 24 2014

1-0 Evaluation **Concurred**
Section was moved.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 19 2014

1-1 Backcheck Recommendation **Close Comment**
Closed without comment.

Submitted By: Johnny Grandison ((251) 694-3804) Submitted On: Jul 31 2014
Current Comment Status: **Comment Closed**

5696451	Planning - Plan Formulation	Section 4.7	Page 4-14	n/a

Comment Classification: **For Official Use Only (FOUO)**

It is unclear what this section is intended to present. Some text would be more appropriate in the Existing Conditions section of the report or removed totally as it has no bearing on the plan formulation process.

Submitted By: Jonas White (251-690-2243). Submitted On: Jun 24 2014

1-0 Evaluation **Concurred**
Much of Section 4.7 was moved to existing navigation features in Affected Environment.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 29 2014

1-1 Backcheck Recommendation **Close Comment**
Closed without comment.

Submitted By: Johnny Grandison ((251) 694-3804) Submitted On: Jul 31 2014
Current Comment Status: **Comment Closed**

5696452 | Planning - Plan Formulation | Section 4.5.2 | Page 4-8 | n/a

Comment Classification: **For Official Use Only (FOUO)**
[**Critical/Flagged.**]

Structural measures should be presented as a feature or activity at a particular project location. See the IWR Planning Manual (IWR Report 96-R-21, Nov 1996) for examples of measures. Then the measure should be detailed, i.e. channel deepening, channel widening, channel maintenance, etc. (See second sentence of Section 4.8.1, Page 4-20).

Section 4.8, Page 4-20 should be moved to this section after the general description of structural measures is presented.

Submitted By: Jonas White (251-690-2243). Submitted On: Jun 24 2014

1-0 Evaluation **Concurred**
Section 4.8 was moved to structural measures section and the remaining structural measures included channel deepening, foreshore protection, and beneficial use containment.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Aug 01 2014

1-1 Backcheck Recommendation **Open Comment**
Please provide for review the revised section on structural measures.

Submitted By: Johnny Grandison ((251) 694-3804) Submitted On: Aug 01 2014

2-0 Evaluation **Concurred**
See attached. Also included in revised plan form section submitted for previous comment.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Aug 29 2014 (Attachment: structural_measures_section.docx)

Backcheck not conducted

Current Comment Status: **Comment Open**

5696453 | Planning - Plan Formulation | Sec. 2.4.1.2 | Page 2-17 | n/a

Comment Classification: **For Official Use Only (FOUO)**

Dredging history more appropriate to be placed in Existing Conditions section of the report.

Submitted By: Jonas White (251-690-2243). Submitted On: Jun 24 2014

1-0 Evaluation **Concurred**
This section was moved.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 14 2014

1-1 Backcheck Recommendation **Close Comment**
Closed without comment.

Submitted By: Johnny Grandison ((251) 694-3804) Submitted On: Jul 31 2014

Current Comment Status: **Comment Closed**

5696454	Planning - Plan Formulation	Section 5.0	Page 5-1	n/a

Comment Classification: **For Official Use Only (FOUO)**

Future Without Project Condition (or No Action) should be presented after the Affected Environment section. Reference can be made to this description when discussing measures and alternatives later in the plan formation process.

Submitted By: Jonas White (251-690-2243). Submitted On: Jun 24 2014

1-0 Evaluation **Concurred**
This section was relocated.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 14 2014

1-1 Backcheck Recommendation **Close Comment**
Closed without comment.

Submitted By: Johnny Grandison ((251) 694-3804) Submitted On: Jul 31 2014

Current Comment Status: **Comment Closed**

5696455	Planning - Plan Formulation	Section 4.0	Page 4-1	n/a

Comment Classification: **For Official Use Only (FOUO)**
[**Critical/Flagged.**]

Section should be re-titled to Formulation and Evaluation of Alternative Plans. The section should begin with Planning Rationale, i.e. Formulation process description and then plan evaluation criteria.

Submitted By: Jonas White (251-690-2243). Submitted On: Jun 24 2014

1-0 Evaluation **Concurred**
This was done.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 19 2014

1-1 Backcheck Recommendation **Open Comment**
Please provide for review a copy of the revised Plan Formulation Section of the report. It is important that this section provide the framework for sound project development.

Submitted By: Johnny Grandison ((251) 694-3804) Submitted On: Jul 31 2014

2-0 Evaluation **Concurred**
Revised plan formulation section is attached for framework review. Note that until the economics, cost, and WVAs are finished, this section cannot be completed. There are placeholders for final values.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Aug 29 2014 (Attachment: HNC_-_Section_3_Plan_Form_and_Development_of_Alternative_Plans-April_2014.docx)

Backcheck not conducted

3-0 Evaluation **Concurred**
The combined document has been reorganized based on recommendations provided by the Corps MVD. The new format adheres to the Corps SMART Feasibility guidelines. As part of this, Section 4 has been renamed as requested by the ATR comment. The Planning Rationale process is found toward the beginning of this section, just after the Future without project conditions are described. An updated document will be provided for review, once completed.

Submitted By: Jonathan Puls (225-612-4249) Submitted On: Sep 21 2016
Backcheck not conducted
Current Comment Status: **Comment Open**

5696457 | Planning - Plan Formulation | Section 4.4 | Page 4-6 | n/a

Comment Classification: **For Official Use Only (FOUO)**

Constraints should be bulletized, brief specific statements expressed in terms of desired results and in terms of things to avoid. See the IWR Planning Manual (IWR Report 96-R-21, Nov 1996) for examples of objective/constraint statements.

Submitted By: Jonas White (251-690-2243). Submitted On: Jun 24 2014

1-0 Evaluation **Concurred**
Planning constraints:

Maximum depth considered would be ?20 feet

Project would not be implemented until the HNC Lock is constructed

Dredged material should be beneficially used to the extent practicable

Submitted By: Donna Rogers (225-612-4285) Submitted On: Aug 01 2014

1-1 Backcheck Recommendation **Close Comment**
Closed without comment.

Submitted By: Johnny Grandison ((251) 694-3804) Submitted On: Aug 01 2014
Current Comment Status: **Comment Closed**

5696458 | Planning - Plan Formulation | Sec 4.18 | Page 4-75 | n/a

Comment Classification: **For Official Use Only (FOUO)**

It is not clear why the section on Value Engineering appears in this section. Does not appear that any of the alternatives were discussed or presented in the alternative formulation section of the report. Recommend that this section be removed from the report or placed in the Engineering Appendix.

Submitted By: Jonas White (251-690-2243). Submitted On: Jun 24 2014

1-0 Evaluation **Concurred**
Value engineering section was removed; this section was already present in the Engineering Appendix.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 14 2014

1-1 Backcheck Recommendation **Close Comment**
Closed without comment.

Submitted By: Johnny Grandison ((251) 694-3804) Submitted On: Jul 31 2014
Current Comment Status: **Comment Closed**

5696459	Planning - Plan Formulation	Sec 8.6	Page 8-3	n/a

Comment Classification: **For Official Use Only (FOUO)**

Reference is made to Agency Technical Review (ATR) and Independent External Peer Review (IEPR) of the study results. Recommend this section be removed as no prior ATR or IEPR has been performed on this study nor study results.

Submitted By: Jonas White (251-690-2243). Submitted On: Jun 24 2014

1-0 Evaluation **Concurred**
Section was originally used as a placeholder, but has been removed. IEPR will be conducted after the ATR is completed.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 14 2014

1-1 Backcheck Recommendation **Close Comment**
Closed without comment.

Submitted By: Johnny Grandison ((251) 694-3804) Submitted On: Jul 31 2014
Current Comment Status: **Comment Closed**

5696460	Planning - Plan Formulation	Table 4-8	Page 4-23	n/a

Comment Classification: **For Official Use Only (FOUO)**

Table needs to be better defined to clearly delineate which components/features of the measures were combined in order to form the alternatives. Each alternative should be given a respective number, including the No Action Alternative.

Submitted By: Jonas White (251-690-2243). Submitted On: Jun 24 2014

1-0 Evaluation **Concurred**
This was done

Submitted By: Donna Rogers (225-612-4285) Submitted On: Aug 01 2014 (Attachment: Old_Table_4-8.docx)

1-1 Backcheck Recommendation **Close Comment**
Closed without comment.

Submitted By: Johnny Grandison ((251) 694-3804) Submitted On: Aug 01 2014
Current Comment Status: **Comment Closed**

5696463 | Planning - Plan Formulation | Sec. 4.5.2 | Page 4-8 | n/a

Comment Classification: **For Official Use Only (FOUO)**
[**Critical/Flagged.**]

It is unclear how many structural measures were determined. Appears to be three in this section (deepening, stabilization, and placement). However, in Section 4.8.1, 2nd sentence, it appears that there are four. Further in Sections 4.8.1, there appear to be eleven.

Section 4.7.4 also indicates disposal measures that were eliminated prior to them being evaluated and screened. A clearer presentation is required.

Submitted By: Jonas White (251-690-2243). Submitted On: Jun 24 2014

Revised Jun 24 2014.

1-0 Evaluation **Concurred**
Structural measures included channel deepening, foreshore protection, and beneficial use containment. Screening of disposal areas is summarized in a different section as this screening was done prior to this study.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Aug 01 2014

1-1 Backcheck Recommendation **Open Comment**
Please provide evidence that displays the screening and evaluation of the disposal measures.

Submitted By: Johnny Grandison ((251) 694-3804) Submitted On: Aug 06 2014

2-0 Evaluation **Concurred**
See attached. Moved to section 2.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Aug 29 2014 (Attachment: screening_and_evaluation_of_disposal_measures.docx)
Backcheck not conducted
Current Comment Status: **Comment Open**

5696464 | Planning - Plan Formulation | Section 4.13.3 | Page 4-71 | n/a

Comment Classification: **For Official Use Only (FOUO)**
[**Critical/Flagged.**]

There appears to be a great deal of confusion of the type of benefits sought to justify the project. Is the project an NED, NER, or combined NED/NER. NED had been presented in several locations throughout the report as the purpose for the project, however, NER benefits were brought to determination of the TSP (Section 3, page 1-7).

If NED is the justification, then references to NER should be removed from the study. Section 7.4.2, Page

7-40 indicates NED being the justification with environmental benefits being incidental.

Paragraph 2, pg 4-48, makes the argument for a combined NED/NER project. If combined NED/NER benefits are to be used to justify the project, the report must be revised to reflect this. In either case, a significant revision to the report would be necessary.

Submitted By: Jonas White (251-690-2243). Submitted On: Jun 24 2014

Revised Jun 24 2014.

1-0 Evaluation **Concurred**
NED is the justification for the project. However, beneficial use of dredged material was also incorporated based on PGL No.56 (a disposal method that is not the least cost (NED) option may be selected provided the incremental costs of the selected disposal method are "reasonable" in relation to environmental benefits to be realized). Any references to NER were removed.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Aug 01 2014

1-1 Backcheck Recommendation **Close Comment**
Although this comment is being closed at this time, a review of the final draft report is needed to verify that the evaluation, and screening of measures and alternatives was appropriately applied to this study.

Submitted By: Johnny Grandison ((251) 694-3804) Submitted On: Aug 06 2014

Current Comment Status: **Comment Closed**

5696468	Planning - Plan Formulation	n/a	Page 4-71	n/a

Comment Classification: **For Official Use Only (FOUO)**
[**Critical/Flagged.**]

There appears to be some confusion on the alternative that was selected as the TSP, which lends towards a misunderstanding of the plan formulation process. Numerous locations in the report leads the reader to draw the conclusion that Plan 2A is the NED Plan. Paragraph 2, page 4-47 indicates that Alternative 2A was eliminated from further analysis.

Later in the report on pg 4-71, Section 4.13.1 and 4.13.2, Plan 2A is indicated as the plan that maximizes net economic benefits, hence the NED Plan. Confusingly Plan 2B is then identified as the next NED Plan and selected due to its maximizing of net national economic development and ecosystem restoration benefits. This again, leads to the conclusion that a combined NED/NER plan was the intent of the study.

Submitted By: Jonas White (251-690-2243). Submitted On: Jun 24 2014

1-0 Evaluation **Concurred**
Alternative 2A is the NED Plan. Alternative 2B was selected as per PGL No.56 (a disposal method that is not the least cost (NED) option may be selected provided the incremental costs of the selected disposal method are "reasonable" in relation to environmental benefits to be realized). This was clarified in the text.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Aug 01 2014

1-1 Backcheck Recommendation **Close Comment**
A complete review of the plan formulation for this study is required during ATR of the final draft report to insure that Corps feasibility study requirements are met.

Submitted By: Johnny Grandison ((251) 694-3804) Submitted On: Aug 06 2014
Current Comment Status: **Comment Closed**

5696469	Planning - Plan Formulation	Tables 4-19 and 4-20	Pages 4-44 and 4-45	n/a

Comment Classification: **For Official Use Only (FOUO)**
[**Critical/Flagged.**]

A true determination of the NED Plan cannot be obtained with missing information regarding costs, benefits, B/C ratios, AAEQ and AAEQ. These tables require correcting.

Submitted By: Jonas White (251-690-2243). Submitted On: Jun 24 2014

Revised Jun 24 2014.

1-0 Evaluation **Concurred**
These tables will be corrected once the economic analysis is updated and the WVAs are rerun.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Aug 01 2014

1-1 Backcheck Recommendation **Open Comment**
Please provide all revised information on costs, benefit, B/C ratios, and average annual benefits and costs.

Submitted By: Johnny Grandison ((251) 694-3804) Submitted On: Aug 06 2014

2-0 Evaluation **Concurred**
The requested cost and benefit information has been updated and added to the revised report in Section 4 (attached).

Submitted By: Jonathan Puls (225-612-4249) Submitted On: Mar 08 2017 (Attachment: HNC_-_Section_4_Formulation_and_Evaluation_of_Alternative_Plans.pdf)
Backcheck not conducted
Current Comment Status: **Comment Open**

5696487	Planning - Plan Formulation	Section 7.0	n/a	n/a

Comment Classification: **For Official Use Only (FOUO)**

The Tentatively Selected Plan should appear in the report before the Environmental Consequences Section. Environmental Consequences typically discusses the impacts/effects of the TSP on the environment.

Submitted By: Jonas White (251-690-2243). Submitted On: Jun 24 2014

1-0 Evaluation **Concurred**
These sections were swapped.

Submitted By: Donna Rogers (225-612-4285) Submitted On: Jul 14 2014

1-1 Backcheck Recommendation **Close Comment**
Closed without comment.

Submitted By: Johnny Grandison ((251) 694-3804) Submitted On: Jul 31 2014
Current Comment Status: **Comment Closed**

Annex II

Cost DX Comments

Comment Report: All Comments
Project: HNC 203 Cost Review
Review: HNC203 cost
Displaying 27 comments for the criteria specified in this report.

Id	Discipline	Section/Figure	Page Number	Line Number
7073038	Cost Engineering	n/a	n/a	n/a

Comment Classification: **Unclassified\\For Official Use Only (U\\FOUO)**
(Document Reference: O&M MII Estimate)

1. O&M MII Estimate – CONCERN: The MII estimate folders refer to FY years up to FY51. But the title also refers to Maintenance Years such as Year 51. The TPCS Contract 50 indicates FY2077. Some MII folders refer to FY 05 and 06 which suggest the work is already complete. There seems to be a reference error between FY and maintenance year in the folder titles. There must be confidence that all years are captured. SIGNIFICANCE: VERY HIGH. RESOLUTION: In the MII folders, list each maintenance year separately and sequentially. Correct any labels that refer to FY and Maintenance Year. Recommend focus on maintenance year rather than FY.

Submitted By: Jim Neubauer (509-527-7332). Submitted On: Jul 20 2017

1-0 Evaluation **Concurred**
The MII file was reorganized to reflect each year, along with the maintenance/construction year and contract number.

Submitted By: Jonathan Puls (225-612-4249) Submitted On: Aug 24 2017
(Attachment: Cost_Files2.zip)

1-1 Backcheck Recommendation **Close Comment**
Confirmed.

Submitted By: Jim Neubauer (509-527-7332) Submitted On: Aug 28 2017
Current Comment Status: **Comment Closed**

7073039	Cost Engineering	n/a	n/a	n/a

Comment Classification: **Unclassified\\For Official Use Only (U\\FOUO)**
(Document Reference: TPCS Forms)

2. TPCSs (CG & OM) – CONCERN: The TPCS for both initial construction and O&M indicate multiple contracts are planned. Multiple contracts can increase workload for design, contracting and construction management. It is unclear if the 30/31 accounts have sufficient funds to involve both Corps and Sponsor. SIGNIFICANCE: MODERATE. RESOLUTION: Jointly ensure 30/31 accounts are sufficiently funded to develop and administer multiple contracts.

Submitted By: Jim Neubauer (509-527-7332). Submitted On: Jul 20 2017

1-0 Evaluation **Concurred**
The design and award of multiple contracts was fully considered in the development of the 30 and 31 account cost estimates, by both the Federal and local sponsors.

Submitted By: Jonathan Puls (225-612-4249) Submitted On: Aug 24 2017
(Attachment: Cost_Files3.zip)

1-1 Backcheck Recommendation **Close Comment**
Position accepted.

Submitted By: Jim Neubauer (509-527-7332) Submitted On: Aug 28 2017
Current Comment Status: **Comment Closed**

7073040 Cost Engineering n/a n/a n/a

Comment Classification: **Unclassified\\For Official Use Only (U\\FOUO)**
(Document Reference: TPCS Forms)

3. TPCSs (CG & OM): The Project First Cost is set at FY17. I believe this in error. It should be FY18.

Submitted By: Jim Neubauer (509-527-7332). Submitted On: Jul 20 2017

1-0 Evaluation **Concurred**
The construction and O&M TPCS were modified to reflect the updated Program year.

Submitted By: Jonathan Puls (225-612-4249) Submitted On: Aug 24 2017
(Attachment: HNC_TPCS_-_Construction_-_Rev_1.xlsm)

1-1 Backcheck Recommendation **Close Comment**
Correction noted.

Submitted By: Jim Neubauer (509-527-7332) Submitted On: Aug 28 2017
Current Comment Status: **Comment Closed**

7073043 Cost Engineering n/a n/a n/a

Comment Classification: **Unclassified\\For Official Use Only (U\\FOUO)**
(Document Reference: CSRA General Comments (CG & O&M))

4. Contingency Values – CONCERN: The recommended contingency values of 13% and 12% respectively seem unrealistically low. Generally, these projects have been coming in around 25%. SIGNIFICANCE: VERY HIGH. RESOLUTION: Consider the CSRA review comments for model rework.

Submitted By: Jim Neubauer (509-527-7332). Submitted On: Jul 20 2017

1-0 Evaluation **Concurred**
The Risk Register was reworked and a new contingency value of 21% and 22% were calculated for Construction and O&M, respectively.

Submitted By: Jonathan Puls (225-612-4249) Submitted On: Aug 24 2017
(Attachment: Risk_Registers.zip)

1-1 Backcheck Recommendation **Close Comment**
Confirmed.

Submitted By: Jim Neubauer (509-527-7332) Submitted On: Aug 28 2017
Current Comment Status: **Comment Closed**

7073044 Cost Engineering n/a n/a n/a

Comment Classification: **Unclassified\\For Official Use Only (U\\FOUO)**
(Document Reference: CSRA General Comments (CG & O&M))

5. Section 203 Feasibility Study (CG & OM) - CONCERN: The CSRA Attendance tab indicates limited PDT involvement in the risk discussions. The risk attendance lists just 6 personnel on an estimated $170M(CG) & $451M(OM) construction. There seems to be a lack of inclusion from Corps PM, Real Estate, Geotech, technical designers for quantity development, Contracting and Construction. Also noting this is a Section 203 Feasibility Study, it is unclear to this reviewer how much shared involvement there will be between Corps and Sponsor in way of PM, design, contract solicitation and construction management. SIGNIFICANCE: HIGH, suggesting risk discussions might not have been adequately covered. RESOLUTION: Provide further inclusion of key personnel to ensure the risks and resulting models cover project concerns. Explain the plan relative to shared responsibilities between Corps and Sponsor.

Submitted By: Jim Neubauer (509-527-7332). Submitted On: Jul 20 2017

1-0 Evaluation **Concurred**
Additional personnel that participated in the development of the CSRA were added to the attendance list. The final Risk Register will be attached once completed.

Submitted By: Jonathan Puls (225-612-4249) Submitted On: Jul 28 2017

1-1 Backcheck Recommendation **Open Comment**
Still seems insufficient in technical design participation (templates and quantities) and construction management.

Submitted By: Jim Neubauer (509-527-7332) Submitted On: Aug 28 2017

2-0 Evaluation **Concurred**
Mr. George Hudson (PE) and Mr. Brian Buckel (Const. Mgmt) reviewed the Risk Registers for both Construction and Maintenance and gave some feedback on the risks identified for the project. Some of the discussion involved the need for additional testing, which is accounted for in the Dredging Quantities risk, while other risks discussed involved Contract Modifications and Competition (both accounted for). After the discussions, it was determined that for a dredging project in South Louisiana, the contingency given is adequate. Both individuals were added to the Meeting

attendance Tab.

Submitted By: Jonathan Puls (225-612-4249) Submitted On: Sep 05 2017

2-1 Backcheck Recommendation **Close Comment**
Accepted.

Submitted By: Jim Neubauer (509-527-7332) Submitted On: Sep 08 2017
Current Comment Status: **Comment Closed**

7073045 Cost Engineering n/a n/a n/a

Comment Classification: **Unclassified\\For Official Use Only (U\\FOUO)**
(Document Reference: CSRA General Comments (CG & O&M))

6. Risk Registers (CG & OM) - CONCERN: There is an overuse of impact terms "critical" and "crisis." The associated risks are not project killers, especially when the contingency outcome is low. Further, those terms bring unwanted and misleading attention to risks that are significant but not earth shattering. SIGNIFICANCE: HIGH. RESOLUTION: Limit use of terms Crisis and Critical. They are not significant enough to warrant such a high impact. Relabel them "Significant" and still include them in the model run.

Submitted By: Jim Neubauer (509-527-7332). Submitted On: Jul 20 2017

1-0 Evaluation **Concurred**
The risk items labeled Critical and Crisis were changed to significant and the Risk Register was reworked with a new contingency.

Submitted By: Jonathan Puls (225-612-4249) Submitted On: Aug 24 2017
(Attachment: Risk_Registers2.zip)

1-1 Backcheck Recommendation **Close Comment**
Confirmed.

Submitted By: Jim Neubauer (509-527-7332) Submitted On: Aug 28 2017
Current Comment Status: **Comment Closed**

7073047 Cost Engineering n/a n/a n/a

Comment Classification: **Unclassified\\For Official Use Only (U\\FOUO)**
(Document Reference: CSRA General Comments (CG & O&M))

7. Model Run – CONCERN: The risk registers are devoted to Lands & Damages and estimated Construction costs. But the Lands and Damages cost already includes a 25% contingency. And the risk register ignores 30/31 account concerns but then includes the associated costs in the contingency % baseline, which is a logic flaw. Also note that 30/31 estimated costs are based on a % of construction so any contingency increased on construction would naturally add that same % onto 30/31 accounts outside of the risk analysis. SIGNIFICANCE: HIGH. RESOLUTION: Run the models on the estimated construction costs only of $126M and $451M respectively. Exclude the Lands and Damages and 30/31 account values from the denominator.

Submitted By: Jim Neubauer (509-527-7332). Submitted On: Jul 20 2017

1-0 Evaluation **Concurred**
The Risk Registers (Construction attached) were modified to reflect only the construction costs as requested.

Submitted By: Jonathan Puls (225-612-4249) Submitted On: Jul 27 2017 (Attachment: HNC_Risk_Register_Construction_7-27-17.xlsm)

1-1 Backcheck Recommendation **Close Comment**
Confirmed.

Submitted By: Jim Neubauer (509-527-7332) Submitted On: Aug 28 2017
Current Comment Status: **Comment Closed**

7073051 Cost Engineering n/a n/a n/a

Comment Classification: **Unclassified\\For Official Use Only (U\\FOUO)**
(Document Reference: CSRA General Comments (CG & O&M))

8. Risk LD1 Added Real Estate (CG & OM) – CONCERN: The risk register suggests a possible added real estate need with associated cost increase. The model includes cost decreases, which conflicts with the Concerns and Discussions. How could there be a cost decrease for added real estate? Further the risk discusses potential of added work (deepen inland reach) but this added cost does not appear to have been addressed/included in the model. SIGNIFICANCE: MODERATE. RESOLUTION: Remove the negative best case value. Include the added containment berm as a Yes/No risk in the model.

Submitted By: Jim Neubauer (509-527-7332). Submitted On: Jul 20 2017

1-0 Evaluation **Concurred**
Risk item LD1 - Added Real Estate Costs was modified for both the Construction and O&M Risk Registers to represent only an increase in costs. The final Risk Register will be attached upon completion.

Submitted By: Jonathan Puls (225-612-4249) Submitted On: Jul 28 2017

1-1 Backcheck Recommendation **Open Comment**
Confirm if Real Estate 25% contingency includes consideration for added real estate if needed. If not, the risk should be modeled.

Submitted By: Jim Neubauer (509-527-7332) Submitted On: Aug 28 2017

2-0 Evaluation **Concurred**
After discussion with the LADOTD Real Estate estimator, he verified that the 25% contingency does include for the potential for Real Estate needs to increase.

Submitted By: Jonathan Puls (225-612-4249) Submitted On: Aug 29 2017

2-1 Backcheck Recommendation **Close Comment**
Accepted.

Submitted By: Jim Neubauer (509-527-7332) Submitted On: Sep 08 2017
Current Comment Status: **Comment Closed**

7073052 Cost Engineering n/a n/a n/a

Comment Classification: **Unclassified\\For Official Use Only (U\\FOUO)**
(Document Reference: CSRA General Comments (CG & O&M))

9. Risk Contract Modifications (CG & OM) - CONCERN: The discussions suggest a cost impact, but the risk was not modeled so a logic conflict is apparent. For the CG model the schedule impact of 12 months seems excessive when considering the time is added to a construction period of individual contracts. Any time growth would be a contract mod cost impact, which was not modeled. SIGNIFICANCE: MODERATE. RESOLUTION: Include the Modification cost impacts in the model. Reduce the schedule impacts because they have no real bearing on overall project schedule.

Submitted By: Jim Neubauer (509-527-7332). Submitted On: Jul 20 2017

1-0 Evaluation **Concurred**
Risk Item CO3 was was modified to include a cost risk of 5% (no change for low and base cost) and the schedule risk was reduced to 4 months for construction and 6 months for O&M.

Submitted By: Jonathan Puls (225-612-4249) Submitted On: Aug 24 2017

1-1 Backcheck Recommendation **Close Comment**
Confirmed.

Submitted By: Jim Neubauer (509-527-7332) Submitted On: Aug 28 2017
Current Comment Status: **Comment Closed**

7073053 Cost Engineering n/a n/a n/a

Comment Classification: **Unclassified\\For Official Use Only (U\\FOUO)**
(Document Reference: CSRA General Comments (CG & O&M))

10. Risk Adverse Weather (CG & OM) – CONCERN: The Discussions refer back to Contract Modifications, but that risk was not modeled. SIGNIFICANCE: MODERATE. RESOLUTION: Include Contract Modifications in the models as a cost impact.

Submitted By: Jim Neubauer (509-527-7332). Submitted On: Jul 20 2017

1-0 Evaluation **Concurred**
Refer to response to comment # 7073052. A cost risk was added for Risk Item CO3.

Submitted By: Jonathan Puls (225-612-4249) Submitted On: Jul 31 2017

1-1 Backcheck Recommendation **Close Comment**
Confirmed.

Submitted By: Jim Neubauer (509-527-7332) Submitted On: Aug 28 2017
Current Comment Status: **Comment Closed**

7073055 Cost Engineering n/a n/a n/a

Comment Classification: **Unclassified\\For Official Use Only (U\\FOUO)**
(Document Reference: CSRA General Comments (CG & O&M))

11. Fuel Risks (CG & OM) - CONCERN: The CEDEP set fuel at $2.25/gal. The risk model suggests a low of as little as $1.50/gal, which seems overly optimistic, especially for the 50-yrs. And for the out-years, a Worst Case of $3.50/gal seems understated. And since escalation information (CWCCIS) is not necessarily a direct correlation to fuel, there should not be much reliance on the CWCCIS for fuel increases. SIGNIFICANCE: MODERATE-HIGH. RESOLUTION: For both the CG and O&M, reassess low at $2/gal as more reasonable low value. Reassess the $3.50/gal for the O&M out-years.

Submitted By: Jim Neubauer (509-527-7332). Submitted On: Jul 20 2017

1-0 Evaluation **Concurred**
Fuel Prices over the last 5 years:

Low: $1.36 per gallon 12 Feb 2016
High: $3.95 per gallon 4 April 2012
Highest ever $4.46 7 July
Lowest ever well under $1

Current: $1.76 per gallon

We are opposed to using a low of $2.00 per gallon for the HNC project since the current cost is much lower. We are not opposed to modeling a high of $4.00. The MII and Risk Register were modified to use a high Fuel cost of $4.00 per gallon.

Submitted By: Jonathan Puls (225-612-4249) Submitted On: Aug 24 2017
(Attachment: Risk_Registers1.zip)

1-1 Backcheck Recommendation **Close Comment**
Accepted position based on added cost information for the area.

Submitted By: Jim Neubauer (509-527-7332) Submitted On: Aug 28 2017
Current Comment Status: **Comment Closed**

7073056 Cost Engineering n/a n/a n/a

Comment Classification: **Unclassified\\For Official Use Only (U\\FOUO)**
(Document Reference: CSRA Housekeeping (CG & O&M))

12. Post model run, ensure the risk register risk ratings reflect the sensitivity chart findings relative to risk level of Low-Moderate-High.

Submitted By: Jim Neubauer (509-527-7332). Submitted On: Jul 20 2017

1-0 Evaluation **Concurred**
The Risk Registers were compared to the modified cost values and the appropriate risk levels were used.

Submitted By: Jonathan Puls (225-612-4249) Submitted On: Aug 24 2017
(Attachment: Cost_Files.zip)

1-1 Backcheck Recommendation **Open Comment**
On the Cost Risk Model, the Impact columns are no longer matching the Risk Register Impact ratings.

Submitted By: Jim Neubauer (509-527-7332) Submitted On: Aug 29 2017

2-0 Evaluation **Concurred**
The Cost Risk Model tab was modified on both the Construction and O&M Risk Registers to reflect the impacts shown in the Risk Register tab. The updated files were replaced on the FTP site.

Submitted By: Jonathan Puls (225-612-4249) Submitted On: Aug 29 2017

2-1 Backcheck Recommendation **Close Comment**
Confirmed.

Submitted By: Jim Neubauer (509-527-7332) Submitted On: Sep 08 2017
Current Comment Status: **Comment Closed**

7073057 Cost Engineering n/a n/a n/a

Comment Classification: **Unclassified\\For Official Use Only (U\\FOUO)**
(Document Reference: CSRA Housekeeping (CG & O&M))

13. Ensure the latest sensitivity charts are posted on the Sensitivity Chart tab.

Submitted By: Jim Neubauer (509-527-7332). Submitted On: Jul 20 2017

1-0 Evaluation **Concurred**
The latest Sensitivity Charts were included in the Risk Registers and the CSRA Report.

Submitted By: Jonathan Puls (225-612-4249) Submitted On: Aug 24 2017

1-1 Backcheck Recommendation **Close Comment**
Confirmed.

Submitted By: Jim Neubauer (509-527-7332) Submitted On: Aug 29 2017
Current Comment Status: **Comment Closed**

7073059 Cost Engineering n/a n/a n/a

Comment Classification: **Unclassified\\For Official Use Only (U\\FOUO)**
(Document Reference: CSRA Housekeeping (CG & O&M))

14. On the Project Contingency tabs, complete/improve presentation of the confidence level "S" curves.

Submitted By: Jim Neubauer (509-527-7332). Submitted On: Jul 20 2017

1-0 Evaluation **Concurred**
The referenced graphs were improved to make them more readable.

Submitted By: Jonathan Puls (225-612-4249) Submitted On: Jul 28 2017

1-1 Backcheck Recommendation **Open Comment**
Adjust the "y" (vertical) axes to better fit the curves.

Submitted By: Jim Neubauer (509-527-7332) Submitted On: Aug 28 2017

2-0 Evaluation **Concurred**
The Y Axis was modified to include a more appropriate range of values and the labels were re-positioned. The updated Risk Registers were uploaded to the FTP site.

Submitted By: Jonathan Puls (225-612-4249) Submitted On: Aug 29 2017

2-1 Backcheck Recommendation **Close Comment**
Confirmed.

Submitted By: Jim Neubauer (509-527-7332) Submitted On: Sep 26 2017
Current Comment Status: **Comment Closed**

7073060 Cost Engineering n/a n/a n/a

Comment Classification: **Unclassified\\For Official Use Only (U\\FOUO)**
(Document Reference: CSRA Housekeeping (CG & O&M))

15. Provide a formal risk report upon completion using the recommended template available from the MCX.

Submitted By: Jim Neubauer (509-527-7332). Submitted On: Jul 20 2017

1-0 Evaluation **Concurred**
A formal Risk Report was provided as Appendix N

Submitted By: Jonathan Puls (225-612-4249) Submitted On: Aug 24 2017
(Attachment: Cost_Files4.zip)

1-1 Backcheck Recommendation **Open Comment**
Provided:

1) Report title page refers to Los Angeles District.
2) Tables 1 & 2: Make clear distinction between Initial CG and the O&M work.

Submitted By: Jim Neubauer (509-527-7332) Submitted On: Aug 28 2017

2-0 Evaluation **Concurred**
The referenced modifications were made to the CSRA Report. The updated report was placed on the FTP site.

Submitted By: Jonathan Puls (225-612-4249) Submitted On: Aug 29 2017

2-1 Backcheck Recommendation **Close Comment**
Confirmed.

Submitted By: Jim Neubauer (509-527-7332) Submitted On: Sep 26 2017
Current Comment Status: **Comment Closed**

7073119 Cost Engineering n/a n/a n/a

Comment Classification: **Unclassified\\For Official Use Only (U\\FOUO)**
(Document Reference: Receipt of Documents)

This Cost ATR review is based upon MCACES MII files for the Integrated Feasibility Report for the Houma Navigation Canal Deepening; dated 25 November 2016. The MII estimate for Construction totaled some $140.6M including 01 Lands and Damages, 02 Relocations and 09 Channels and Canals. The MII estimate for O&M totaled some $198.6M. MII estimates do not include 30 and 31 accounts or contingency. The review comments are primarily based upon the following Corps regulations and Guidance that must be adhered to:

ER 1110-2-1150, Engineering and Design for Civil Works Projects
ER 1110-2-1302, Civil Works Cost Engineering
ETL 1110-2-573, Construction Cost Estimating Guide for Civil Works

Submitted By: William Bolte (509 527 7585). Submitted On: Jul 20 2017

1-0 Evaluation **Concurred**
Concur

Submitted By: Jonathan Puls (225-612-4249) Submitted On: Jul 24 2017

1-1 Backcheck Recommendation **Close Comment**
Comment for documentation purposes only.

Submitted By: William Bolte (509 527 7585) Submitted On: Aug 30 2017
Current Comment Status: **Comment Closed**

7073120 Cost Engineering n/a n/a n/a

Comment Classification: **Unclassified\\For Official Use Only (U\\FOUO)**
(Document Reference: Receipt of Documents)

Documents received included MCACES MII files, Cost Appendix, Project Schedule and Total Project Cost Summary (TPCS).

Submitted By: William Bolte (509 527 7585). Submitted On: Jul 20 2017

1-0 Evaluation **Concurred**
Concur

Submitted By: Jonathan Puls (225-612-4249) Submitted On: Jul 24 2017

1-1 Backcheck Recommendation **Close Comment**
Comment for documentation purposes only.

Submitted By: William Bolte (509 527 7585) Submitted On: Aug 30 2017
Current Comment Status: **Comment Closed**

7073121 Cost Engineering n/a n/a n/a

Comment Classification: **Unclassified\\For Official Use Only (U\\FOUO)**
(Document Reference: Receipt of Documents)

DQC Comments. CONCERN: DQC comments have not been provided. The cost products were developed from a variety of sponsor and USACE sources. Thorough DQC performed by a reviewer familiar with the project is critical. SIGNIFICANCE: MODERATE RESOLUTION: Please provide DCQ review comments and responses.

Submitted By: William Bolte (509 527 7585). Submitted On: Jul 20 2017

1-0 Evaluation **Non-concurred**
This is a Section 203 project in which the report is developed by the sponsor with support from the Corps, as needed. The requirement for DQC does not exist for a project such as this one. The development of the cost was an integrated, iterative process between the sponsor and the Corps. Therefore the Corps had some oversight throughout the process, but no District quality control is necessary.

Submitted By: Jonathan Puls (225-612-4249) Submitted On: Jul 31 2017

1-1 Backcheck Recommendation **Open Comment**

Per ER 1110-2-1302 – Civil Works Cost Engineering, Paragraph 25a, "A DQC review is a district responsibility, which is a documented review by a technical element as a quality control measure on decision documents. The DQC is a critical element in confirming district PDT acceptance of product presentation, quality, completeness, and readiness to support the ATR and IEPR." The Feasibility Report is a decision document requiring DQC and district acceptance of the product. Paragraph 6h also states, "Quality control reviews must occur on all cost engineering products (e.g., quantities, estimates, schedules, risk analyses, total project costs, cost-related reports and appendixes, etc.), whether prepared by the cost engineering office, by other authorized offices (i.e., Area offices, Resident Offices, A-E Firms, etc.), or by contract..."

The A-E of record was likely already required to perform their own internal QC, per paragraph 6g "Cost engineering products developed by architect-engineer (A-E) contractors or by other offices (i.e., Area Offices, Resident Offices, etc.) must conform to all cost ERs, EMs, and other applicable regulations..." Recommend MVN district ask for A-E estimate review comments, evaluate those comments and assess if any additional concerns are warranted and complete DQC by Quality Assurance review of A-E's QC comments.

Submitted By: William Bolte (509 527 7585) Submitted On: Aug 30 2017

2-0 Evaluation **Concurred**

Please let me clarify my previous response; as a Section 203 project, the development of the entire study, and hence this cost estimate, is FULLY a non-Federal endeavor. There is no requirement for Corps participation on the study. In this case, the State of Louisiana (for whom we are an agent) has entered into an MOA for assistance from the New Orleans District who has provided assistance with the estimate and risk analysis. We have chosen to pursue certification through Walla Walla in the interest of developing a better product. It is not a requirement for 203's. As such, we are not subject to the same internal processes of the District. We have conducted our own quality reviews within our firm.

Submitted By: Jonathan Puls (225-612-4249) Submitted On: Aug 30 2017

2-1 Backcheck Recommendation **Open Comment**

Federal Funds are requested for the project. The Cost ATR process certifies the Total Project Cost when Federal funds are involved. OMB and WRDA have established by law Federal Funds require a quality and credibility peer review. USACE has developed the ATR process to address the legal requirement. Part of that Cost ATR process is the requirement for DQC of the cost products.

Submitted By: William Bolte (509 527 7585) Submitted On: Aug 30 2017

3-0 Evaluation **Concurred**

GEC does have an internal review process that often involves coordination with its professional staff from a variety of subject backgrounds or outside entities with knowledge of the subject matter. This is normally conducted through meetings and review of project documentation, followed by gathering and addressing comments

(either verbal or documented). However, since the Corps cost estimating procedures and regulations are intrinsically unique and because this project has already been through a multi-tiered review of the cost estimate, including IEPR, ATR, and internal MVN review, it was decided that a detailed, internal QC process should be minimal and augmented with these external reviews instead. Therefore, the QC process was engaged in through the inclusion of external resources such as ATR with the Mobile District, an IEPR with Battelle, which included cost engineer reviews, and close coordination and review with New Orleans District cost engineers with both a MII and CSRA background. This process was given extra credence since it is believed that the New Orleans District has some of the best knowledge when it comes to cost estimating of dredging projects. Since this estimate has been through this level of scrutiny, we feel that the estimate has had a sufficient QC review.

Submitted By: Jonathan Puls (225-612-4249) Submitted On: Aug 30 2017

3-1 Backcheck Recommendation **Open Comment**

In order to obtain Cost MCX ATR Certification a project must have successfully completed a District Quality Control review. DQC review is a district responsibility. DQC is a formal documented review by a technical element as a quality control measure on decision documents. The DQC is a critical element in confirming district PDT acceptance of product presentation, quality, completeness, and readiness to support the ATR and IEPR. The Cost DQC, including comment and resolution, must be formally documented and performed by a technically qualified senior cost engineer; all cost products must be addressed: quantities, estimate(s), schedules, risk analyses, total project cost and cost report.

ATR and IEPR reviews cannot be relied upon to provide the insights nor thoroughness of a critical DQC review that brings local project knowledge and experience to the review process. Without documented Technical and Cost DQC review a Cost MCX ATR Certification cannot be issued.

Submitted By: William Bolte (509 527 7585) Submitted On: Sep 12 2017

4-0 Evaluation **Concurred**

An internal Quality Control process was performed by GEC and is included in Appendix O. The report is attached. All comments were evaluated, addressed and documented.

Submitted By: Jonathan Puls (225-612-4249) Submitted On: Sep 19 2017
(Attachment: Appendix_O_-_Quality_Control.pdf)

4-1 Backcheck Recommendation **Open Comment**

Appendix O includes QC review of the Feasibility Study. Review Comments focused primarily on Feasibility Study. No QC comments directed towards the cost estimate were provided. Per ER 1168-2-209 Implementation Guidance (attached here for reference) "The non-Federal interests must certify the quality and technical accuracy of the feasibility study and the construction cost estimate for the project that would serve as the basis for the section 902 limit, if the project is subsequently authorized by Congress. This should be done by documenting the quality control, quality assurance, and technical reviews that were conducted for all information presented in the

feasibility study...A copy of the most recent Civil Works review guidance may be obtained from the local Corps of Engineers district office."

Since the Corps has limited involvement on product development, the quality control becomes a much larger necessity. The guidance specifically identifies the quality control guidance. Therefore without clear documentation of specific QC for the Cost Products, a Cost ATR Certification cannot be provided at this time. This is due to the fact, the Cost ATR assure proper procedures were used in the development and review of the products. The cost products are dependent on various products that serve as the basis.

Submitted By: William Bolte (509 527 7585) Submitted On: Sep 21 2017
(Attachment: ER_1165-2-209_-_implemetation_Guidance.pdf)
Current Comment Status: **Comment Open**

7073124 Cost Engineering n/a n/a n/a

Comment Classification: **Unclassified\\For Official Use Only (U\\FOUO)**
(Document Reference: Receipt of Documents)

Appendix M – MII Cost Estimate. CONCERN: Appendix M includes detailed MII Cost Estimate Reports including equipment, labor materials and contractor markups. Feasibility Reports are released for public review and input. Inclusion of the detailed MII estimate could give potential bidders improper information about the Government's internal budgetary position and assumptions. SIGNIFICANCE: HIGH RESOLUTION: Remove MII reports from the Cost Appendix. The TPCS included in Appendix M provide sufficient information for the within the Feasibility Report.

Submitted By: William Bolte (509 527 7585). Submitted On: Jul 20 2017

1-0 Evaluation **Concurred**
The MII reports have been removed from the cost narrative.

Submitted By: Jonathan Puls (225-612-4249) Submitted On: Aug 24 2017
(Attachment: Cost_Files5.zip)

1-1 Backcheck Recommendation **Close Comment**
Detailed cost reports have been removed.

Submitted By: William Bolte (509 527 7585) Submitted On: Aug 30 2017
Current Comment Status: **Comment Closed**

7073125 Cost Engineering n/a n/a n/a

Comment Classification: **Unclassified\\For Official Use Only (U\\FOUO)**
(Document Reference: CEDEP)

Production Rates. CONCERN: CEDEP estimates have been developed for 27" and 30" cutter suction dredges for various reaches and contracts. Production rates have been adjusted by "% of Net Pay LOSSES" based on calculations in Excel tab "Contract#Excinputs". Those calculations appear to be based on actual historical production rates. SIGNIFICANCE: MEDIUM RESOLUTION: Please explain the methodology or provide the supporting information used to

develop historic production rates.

Submitted By: William Bolte (509 527 7585). Submitted On: Jul 20 2017

1-0 Evaluation **Concurred**

A) The NET quantity provided by engineering was adjusted to a GROSS quantity by adding OVERDEPTH depending on what portion of the channel dredging is to occur. This adjustment of the NET QUANTITY by adding OVERDEPTH was applied as a percentage in CEDEP. Consequently gross production rates are used in CEDEP.
B) The construction production rates were based on dredging 100% fine sand standing material modeled in Turner Program. Our district has found that this is a good estimation of new work dredging production in our region. Rock or heavy shell is not assumed to be encountered.
C) The O&M production rates were based from historical data. This data was then modeled in Turner Program because of the varying dredging face heights and pumping distance dictated by the study. Our office has determined that this software more correctly represents dredging characteristics in our area. Turners Program can model varying dredge swing width, dredging face heights, dredge motion function (Spud Carriage or Walking Spuds) and varying pump distances. Maintenance dredging logs for the Houma Navigation Canal shall be provided for reference.
D) O&M dredging characteristics by region:
1) Mile 36.3 to Mile 12.0. Dredge Log 06-C-0138. 35% sand 65% silt modeled in Turner Program, 27-in dredge, walking spud, free flowing material with estimated gross dredging face heights.
2) Mile 12.0 to Mile 0.0. Dredge Logs: 96C97PR, 98-C-0058, 02-C-0055, 06D0001, 07-C-0071, 08-C-0074. This is basically an area of maintenance our office calls a "walking job". This is where the height of the dredge material does not impeded the motion of the dredge. Therefore dredge advance is a function of swinging the dredge and moving the anchors. A 27-in dredge is selected because it would provide the most realistic unit price for dredging. A conservative dredge advance rate of 70-ft/hr is used.
3) Mile 0.0 to Mile (-) 3.0. Dredge Logs 98-C-0058 and 06-D-0001. The stiffest material I have ever encountered in the New Orleans District Area. A 30-in dredge is selected because of the very rough seas which can be encountered. Smaller dredge plants have not been successful in this reach. Modeled in Turner Program as 12% sand and 88% medium sand standing material.

Submitted By: Jonathan Puls (225-612-4249) Submitted On: Jul 24 2017 (Attachment: Logs.zip)

1-1 Backcheck Recommendation **Close Comment**

Thank you for the supporting production information.

Submitted By: William Bolte (509 527 7585) Submitted On: Aug 30 2017

Current Comment Status: **Comment Closed**

7073128	Cost Engineering	n/a	n/a	n/a

Comment Classification: **Unclassified\\For Official Use Only (U\\FOUO)**
(Document Reference: CEDEP)

Mobilization. CONCERN: CEDEP estimates assume a 300 mile mob/demob distance. I'm unfamiliar with local conditions, is 300 miles a sufficient travel distance? SIGNIFICANCE: MEDIUM RESOLUTION: Given recent less competitive bidding climate and dredges traveling greater distances to projects, is 300 mile mobilization sufficient to include all anticipated contractors bidding on the projects?

Submitted By: William Bolte (509 527 7585). Submitted On: Jul 20 2017

1-0 Evaluation **Concurred**
A mobilization and demobilization distance of 300 miles is standard operating procedure for 27-in and 30-in cutterhead dredges in the New Orleans Area. Even in a less competitive environment, as your comment suggests, it would be advantageous to the Government to negotiate/investigate with a Contractor claiming a further mobilization distance. However, even after negotiations are complete, there is no guarantee that a dredge within 50-miles, owned by the Contractor in question, would be mobilized to the job.

Submitted By: Jonathan Puls (225-612-4249) Submitted On: Jul 24 2017

1-1 Backcheck Recommendation **Close Comment**
Reviewer will rely on local cost engineers regional knowledge. If recent weather events (Hurricane Harvey) have an impact on contractor availability (and mobilization distance), entire dredging programs may need to be evaluated and is outside the scope of this review.

Submitted By: William Bolte (509 527 7585) Submitted On: Aug 30 2017
Current Comment Status: **Comment Closed**

7073130 Cost Engineering n/a n/a n/a

Comment Classification: **Unclassified\\For Official Use Only (U\\FOUO)**
(Document Reference: MCACES MII Estimate)

Contractor Markups. CONCERN: MII estimate includes Prime Contractor Markups for HOOH (15%), Profit (10%) and bond (1.5%). SubContractor Markups are JOOH (11.6%), HOOH (7%), profit (9.6%) and bond (1.5%). Prime contractor markups appear reasonable. Bond cost is covered under prime contractor markups; including in subcontractor markups is double counting. SIGNIFICANCE: MEDIUM RESOLUTION: Remove subcontractor bond markup.

Submitted By: William Bolte (509 527 7585). Submitted On: Jul 20 2017

1-0 Evaluation **Concurred**
The bond markups have been removed from all Sub-Contractors.

Submitted By: Jonathan Puls (225-612-4249) Submitted On: Aug 24 2017
(Attachment: Cost_Files6.zip)

1-1 Backcheck Recommendation **Close Comment**
Sub-Contractor Bond has been removed from estimate.

Submitted By: William Bolte (509 527 7585) Submitted On: Aug 30 2017
Current Comment Status: **Comment Closed**

7073133 Cost Engineering n/a n/a n/a

Comment Classification: **Unclassified\\For Official Use Only (U\\FOUO)**
(Document Reference: MCACES MII Estimate)

Contractor Assignments. CONCERN: In the MII estimate, all relocation costs are assigned to the Dredging Prime Contractor. Dredging contractor is not likely to self-perform utility relocations. Relocations are likely to be contracted by the sponsor. SIGNIFICANCE: MEDIUM RESOLUTION: Please confirm expected contracting method (sponsor or Federal) and assign to appropriate utility prime or subcontractor.

Submitted By: William Bolte (509 527 7585). Submitted On: Jul 20 2017

1-0 Evaluation **Concurred**
A relocation subcontractor was created and assigned to all relocation work in the MII.

Submitted By: Jonathan Puls (225-612-4249) Submitted On: Aug 24 2017
(Attachment: Cost_Files7.zip)

1-1 Backcheck Recommendation **Close Comment**
Relocations have been assigned to a subcontractor with markups of 20% JOOH and 12% HOOH which appears reasonable.

Submitted By: William Bolte (509 527 7585) Submitted On: Aug 30 2017
Current Comment Status: **Comment Closed**

7073134 Cost Engineering n/a n/a n/a

Comment Classification: **Unclassified\\For Official Use Only (U\\FOUO)**
(Document Reference: MCACES MII Estimate)

Submarine Cable. CONCERN: MII estimate includes five (5) relocations of Submarine Cable with a user defined lump sum direct cost of $500,000 ea. (Fully burdened equals some $3.8M or 3% of total construction costs. SIGNIFICANCE: MEDIUM RESOLUTION: Please explain basis of user defined lump sum cost.

Submitted By: William Bolte (509 527 7585). Submitted On: Jul 20 2017

1-0 Evaluation **Concurred**
The referenced cost items were redeveloped with per linear foot unit costs and backup for the quote received.

Submitted By: Jonathan Puls (225-612-4249) Submitted On: Aug 24 2017
(Attachment: Cost_Files8.zip)

1-1 Backcheck Recommendation **Close Comment**
Estimate updated based on $350/LF. Submarine Cable costs have increased to some $5M.

Submitted By: William Bolte (509 527 7585) Submitted On: Aug 30 2017
Current Comment Status: **Comment Closed**

7073135 Cost Engineering n/a n/a n/a

Comment Classification: **Unclassified\\For Official Use Only (U\\FOUO)**
(Document Reference: Real Estate Report)

Real Estate Report – Appendix C. CONCERN: Exhibit D in the Real Estate Report shows a cost of $10,274,360 with $2,568,600 in contingency (25%) for a total of $12,842,960. MII estimate and TPCS both record a base cost of $12.8M and apply additional 13% contingency. SIGNIFICANCE: HIGH RESOLUTION: Remove 01-Lands and Damages from CSRA calculations. Reduce base cost to $10.3M shown in Real Estate Report and include 25% contingency on TPCS.

Submitted By: William Bolte (509 527 7585). Submitted On: Jul 20 2017

1-0 Evaluation **Concurred**
01 - Lands and Damages were removed from the CSRA calculations. The Construction TPCS was modified to include a Lands and Damages cost of $10,274,360 with a 25% contingency, which brings it to $12,843,000 (rounded).

Submitted By: Jonathan Puls (225-612-4249) Submitted On: Aug 24 2017
(Attachment: Cost_Files9.zip)

1-1 Backcheck Recommendation **Close Comment**
TPCS separates $10.2M base cost and $2.6M contingency. Lands and Damages have been removed from CSRA computations.

Submitted By: William Bolte (509 527 7585) Submitted On: Aug 30 2017
Current Comment Status: **Comment Closed**

7073137 Cost Engineering n/a n/a n/a

Comment Classification: **Unclassified\\For Official Use Only (U\\FOUO)**
(Document Reference: Total Project Cost Summary)

TPCS versus MII Costs. CONCERN: MII Construction Estimate has costs of 09-Channels & Canals $102,259K while TPCS has costs totaling $101,843K. SIGNIFICANCE: MEDIUM RESOLUTION: Ensure final TPCS matches updated MII estimate.

Submitted By: William Bolte (509 527 7585). Submitted On: Jul 20 2017

1-0 Evaluation **Concurred**
The final MII file has been compared to the Final TPCS.

Submitted By: Jonathan Puls (225-612-4249) Submitted On: Aug 24 2017
(Attachment: Cost_Files1.zip)

1-1 Backcheck Recommendation **Close Comment**
TPCS and MII file are in agreement.

Submitted By: William Bolte (509 527 7585) Submitted On: Aug 30 2017
Current Comment Status: **Comment Closed**

7073140 Cost Engineering n/a n/a n/a

Comment Classification: **Unclassified\\For Official Use Only (U\\FOUO)**
(Document Reference: Total Project Cost Summary)

CWCCIS. CONCERN: TPCS has been updated to include latest CWCCIS escalation tables dated March 2017 (see attached). In addition, 31 – Construction Management Class has been changed from to type 2 – AE Contractor to type 1 – Government Personnel. SIGNIFICANCE: MEDIUM RESOLUTION: Please confirm reviewer changes.

(Attachment: HNC_TPCS_-_Construction_-_Rev_1.xlsx)

Submitted By: William Bolte (509 527 7585). Submitted On: Jul 20 2017

Revised Jul 20 2017.

1-0 Evaluation **Concurred**
The referenced changes are confirmed.

Submitted By: Jonathan Puls (225-612-4249) Submitted On: Aug 24 2017

1-1 Backcheck Recommendation **Close Comment**
TPCS Personnel has been changed to Type 1.

Submitted By: William Bolte (509 527 7585) Submitted On: Aug 30 2017
Current Comment Status: **Comment Closed**

Annex III

IEPR Report and Comments

BATTELLE

July 10, 2017

Cade E. Carter, Jr., P.E.
Vice- President
GEC, Inc.
8282 Goodwood Boulevard
Baton Rouge, LA 70806

CONTRACT NO. 400009022
Work Order No. 01, Amendment 01
SUBMITTAL OF DELIVERABLE: *Final IEPR Report*

Dear Mr. Carter:

This letter accompanies the submission of the Final Independent External Peer Review Report for the Section 203 Draft Integrated Feasibility Report and Environmental Impact Statement for the Houma Navigation Canal Deepening Project, Terrebonne Parish, Louisiana.

Please contact me at (208) 629-2123 if you have any technical questions regarding this submittal.

Sincerely,

Rachel N. Sell

Rachel N. Sell
Project Manager

encl.

Contract No. 4400009022
Work Order No. 01, Amendment 01

Comment Response Record for the Independent External Peer Review of the Section 203 Draft Integrated Feasibility Report and Environmental Impact Statement for the Houma Navigation Canal Deepening Project, Terrebonne Parish, Louisiana

Prepared by

Battelle
505 King Avenue
Columbus, Ohio 43201

for

GEC, Inc.
8282 Goodwood Boulevard
Baton Rouge, LA 70806

August 18, 2017

Final Panel Comment 1

The cost estimates associated with foreshore rock protection and maintenance dredging are not explained or justified in sufficient detail.

Basis for Comment

The analysis of foreshore rock protection in Appendix A, Annex VI, of the FR/EIS compares the continued loss of marsh land associated with an unprotected shoreline versus the cost of adding rock protection along the HNC Inland Reach shoreline. However, the assumptions regarding unit costs, maintenance dredging volumes, and shoreline erosion rates are not clearly defined and/or sufficiently substantiated.

As presented, the "cost with rock" is only marginally lower than the "cost without rock" (ranging from about 2% to 7% lower). A relatively small change in unit cost or volume estimates may affect the results of the analysis. For example, the unit cost of the rock protection used in Appendix A, Annex VI, is $60/ton. If the rock unit cost increased to $65/ton (a reasonably small increase, considering that the cost estimate in the Appendix M Micro-Computer Aided Cost Estimating System (MCACES) Report applied a unit cost of $71.51/ton), then the total cost for foreshore protection would increase by $6.2 million ($3.1 million for construction and an additional $3.1 million for maintenance), assuming 619,800 tons of rock. The total cost for the 20-foot channel with rock would increase to $111.9 million compared to a total cost of $107.7 million without rock.

Given the level of uncertainty in the analysis, the proposed rock shoreline protection may not be economically feasible for the deepening alternatives.

Significance – Medium

The lack of detailed information to support the assumptions regarding unit costs, maintenance dredging volumes, and shoreline erosion rates increases the level of uncertainty in the cost estimate presented in Appendix A.

Recommendation for Resolution

1. Provide additional information to support the cost estimate assumptions, or summarize and reference existing reports that provide the necessary information. For both scenarios—with rock protection and without rock protection—this information should include supporting details for both unit costs and required maintenance dredging volumes.

GEC Final Evaluator Response (FPC 1)

X	**Concur**		**Non-Concur**

Explanation: It is understood that the assumptions used for development of the foreshore rock protection unit costs have some risk associated with it. That is why the costs utilized for this project feature were heavily weighted during development of the Cost and Schedule Risk Analysis (CSRA), which is used for development of the cost contingency. Disposal sites were identified through coordination with Federal and state agencies by biologist with significant field knowledge of the channel and surrounding habitat. Based on their knowledge and the land loss documentation found in the Engineering Appendix, there is no denying that erosion is taking place and that erosion protection is needed to stabilize the channel. The

land loss that would occur within the inland reach would result in the continued conversion of the inland channel to open water/bay. This is why the depiction for the inland reach has been moved from Mile 10.1 to Mile 11.0 in recent years. This would cause increased shoaling rates for the lower portion of the inland reach from approximately 231,000 to 635,000 cubic yards annually (cy/yr), while also increasing maintenance dredging costs. This equates to converting portions of the channel from a shoaling rate of approximately 243,000 cy/yr (9,605 cy/mi/yr) to 717,000 cy/yr (65,121 cy/mi/yr). Once a mile of this habitat conversion occurs, the dredging alone would cost about $2.40 per cubic yard, which would increase the cost of maintaining this converted mile by about $133,400. With a 2-year cycle for the Terrebonne Bay reach this would be an increased cost of $3,334,600. Other costs would also apply. The environmental impact resulting from these habitat conversions is quantified in the WVA model through reduced losses in Average Annual Habitat Units. For the selected plan approximately 62 AAHUs would be saved through use of the rock protection.

An additional justification for rock stabilization was the significant reduction in erosion rates that occurred after rock was added to the channel as part of a Louisiana Department of Natural Resources project that added rock on the west bank of the HNC between Miles 25.3 to 24.2. In fact, the project reduced erosion rates enough that a $7 Million CAP project was authorized in September, 2008, which added rock along the west bank between Miles 28.0 and 25.3 and along the east bank from Miles 27.7 to 23.7. The costs utilized in the CAP project were used for development of unit costs for this project.

The intent of the rock justification presented in the combined document was to quantify how much additional cost (if any) would be required to implement foreshore protection and rock retention, while also considering the environmental gains already seen due implementation within the channel. It is agreed that the rock unit costs may fluctuate, thereby altering the differences in costs between the two alternatives. The costs utilized in the CAP project were used for development of unit costs for this project. The CSRA provided an estimated contingency cost for the project at 13% of total costs for construction and 12% for O&M. This evaluation is under review and preliminary indications are that these percentages may increase. The hypothetical change in rock costs provided in the comment gives roughly a 4% shift in the cost based on fluctuations in the unit costs (which is plausible). All costs assigned during this evaluation can only be considered an estimate, while the appropriate risks are considered. The information provided above was not included in the rock justification and therefore, the comment is warranted. The language in Section 6.2.4 of Appendix A and in Section 4 will be modified to state the economic and environmental impacts described above.

The estimate of maintenance dredging volumes for the Inland and Terrebonne Bay reaches are based on the maintenance dredging history from 1965 through 2012, which were provided by the Corps of Engineers (Appendix A – Table A-23, USACE). The Cat Island Pass maintenance volumes were estimated based on the analysis by the Coastal and Hydraulic Laboratory, ERDC (Appendix A – Annex VII). It is felt by the project team that these estimates are sufficient for the purposes of this planning study. Additionally, the risk associated with dredging quantity estimates was also considered in the CSRA and is accounted for in the project contingency costs.

Recommendation 1:	**X**	**Adopt**		**Not Adopt**

Explanation: The language in Section 6.2.4 of Appendix A will be modified to state the economic and environmental impacts described above.

Panel Final BackCheck Response (FPC 1)

X	**Concur**		**Non-Concur**

Final Panel Comment 2

The design and modeling of the HNC lock and flood gate are not described or modeled in sufficient detail to assess the performance of the lock at limiting salt water intrusion.

Basis for Comment

Deepening the HNC will raise the probability of saltwater intrusion beyond what is already experienced in freshwater-dominated systems associated with the northern reaches of the navigation canal. The FR/EIS states that the HNC lock will control saltwater intrusion that could result from the implementation of the preferred alternative. Much of the impact analysis presented in this study is dependent on the lock's ability to minimize saltwater intrusion into freshwater wetlands and canals north of the lock.

While we understand that the final design of the HNC lock is dependent on the outcome of the feasibility study, the Panel cannot verify the effectiveness of the lock and flood gate in preventing saltwater intrusion based on the information presented. Specifically, the information:

- Did not provide sufficient details on operation of the lock during normal and storm events.
- Did not provide sufficient details on the data used to model the ability of the lock to control saltwater intrusion. The model may be highly dependent on the accuracy of bathymetry and datum conversions.
- Did not sufficiently analyze low-frequency, high-impact events such as tropical storms or hurricanes, where storm surge would force saltwater up the canal and heavy rains would create flooding conditions north of the lock. This potential scenario could promote saltwater intrusion via stratified estuarine circulation, where fresher flood waters would flow out of the lock and denser saltwater would flow up the canal underneath the freshwater layer to replace the volume released.

Furthermore, impacts to freshwater wetlands and hardwood bottomland habitats from saltwater intrusion are not fully quantified. While a discussion in Appendix A indicates adequate control under most conditions, it would take only one high salinity pulse to irreversibly damage the hardwood bottomlands, causing loss of that habitat.

Significance – Medium

Without the assurance of minimal saltwater intrusion from canal-deepening activities, impacts to freshwater wetlands and hardwood bottomland habitats may lead to insufficient mitigation of these resources.

Recommendation for Resolution

1. Provide more information on lock operations and likely scenarios for lock opening and closing during normal and severe weather events.
2. Clarify what bathymetry sources were used and when these data were obtained relative to maintenance dredging or significant erosional events.
3. Provide a sensitivity analysis of the datum conversions to determine the risk associated with the datum conversion uncertainty.
4. Conduct additional analysis on storm events (especially those of tropical origin) and the potential of coastal setup or storm surge to push saltwater up the canal.

5. Describe how the floodgate would be used in a flood situation and whether there is potential from saltwater intrusion through stratified flow.

GEC Final Evaluator Response (FPC 2)			
X	**Concur**		**Non-Concur**

Explanation: The design and operation of the lock is part of the Morganza to the Gulf (MTG) project and is still under development. The operational plan for the lock is not completed at this time, but some preliminary operational guidelines are provided in the MTG Final EIS. This information will be added to the report via reference to the MTG Final EIS. The modification and/or study of the operating plan is not a part of this project and is not included in the scope. Evaluation of the operating plan should be conducted as part of the MTG project. Some of the preliminary specifics behind the Lock operation are identified directly from the MTG EIS below.

The HNC lock complex would consist of a 110-foot by 800-foot lock, an adjacent 250 foot-wide sector gate, and a dam closure that ties into adjacent earthen levees to reduce the risk of storm surge traveling up the HNC (Figure 6). Vessel traffic would pass through the sector gate portion of the structure for the majority of conditions. However, when the sector gates are closed, the lock would be used. The HNC Lock Complex will be deepened to -23 feet NAVD88 to accommodate the deepening of the HNC. The HNC lock/floodgate complex will have a salinity trigger which is described in the table below. The environmental control structures would be used for drainage of isolated areas within a certain timeframe and maximum inundation of the marsh areas. The lock operation plan has two triggers based on the two purposes. First, maintaining a safe water elevation in the channel for storm control and navigation, and second, controlling chloride levels at the Houma Treatment Plant and controlling salinity to protect environmental habits upstream of the structure.

The HNC lock and floodgate would be closed for salinity control only if:

1. Flows in the Atchafalaya River are below 100,000 cfs as measured on the Simmesport gage (USGS 07381490 Atchafalaya River at Simmesport, LA) or
2. If a gage on the outside of the HNC Lock complex exceeds a salinity value that has been correlated with preventing exceedance of the maximum allowable chloride level of 250 ppm as defined in EPA's secondary drinking water standard at the Houma Treatment Plant. The structure should be closed for at least 12 hrs and fluctuations in chloride levels should be monitored and recorded hourly. This to be determined salinity value at the new gage should correlate with the value of 7.5 ppt measured at the HNC at Dulac monitoring station. The 7.5 ppt trigger would be used to perform the indirect impact analysis in this document. Once the new trigger is established the impact analysis would be redone to verify the assumptions made.

The HNC lock complex may be opened when all of the following additional criteria have been met (*The lock may be used for navigation, as soon as the hurricane and small craft warning no longer apply to the project area, and the channel has been cleared of obstructions. This may occur before the next two criteria are met****):***

1. The differential between the interior water level and exterior water level is equal to or less than the +1.0 feet as measured on the upstream and downstream staff gage respectively.
2. After monitoring chloride levels over the 12 hour period at the new gage on the outside of the HNC Lock complex drops below the salinity closure trigger described above. For the analysis of indirect impacts a salinity level of 13 ppt as measured near Cocodrie (LUMCON Station) would be used. The LUMCON station replaces the Bayou Grand Caillou USACE 76305 from the 2002 feasibility report because it has a more robust dataset. If the USACE re-evaluates the salinity trigger at the LUMCON

station and comes up with a trigger different than 13ppt, this trigger may change. Once the new trigger is established the impact analysis would be redone to verify the assumptions made. In order to operate the HNC lock according to the criteria laid out in this plan, a monitoring program must be included in the O&M manual and in place.

Under future conditions, closure frequency could increase if the closure trigger is not adjusted to account for sea level rise. For example, under existing conditions, HNC floodgate closure (based on a 2.5-ft closure stage only, not the salinity triggers) would occur approximately 1.5 days per year. If the trigger remained the same through 2085, low RSLR would require closure 5 days per year by 2035 and 168 days per year by 2085. Intermediate RSLR would require closure for 15 days per year by 2035 and 354 days per year by 2085. High RSLR would require closure for 24 days per year in 2035 and 365 days per year in 2085. To prevent frequent structure closings, operation plans would need to be re-evaluated periodically and closure trigger elevations may need to be increased if significant sea level rise occurs. *Under future conditions, closure frequency could increase if the closure trigger is not adjusted to account for sea level rise. For example, under existing conditions, HNC floodgate closure (based on a 2.5-ft closure stage only, not the salinity triggers) would occur approximately 1.5 days per year. If the trigger remained the same through 2085, low RSLR would require closure 5 days per year by 2035 and 168 days per year by 2085. Intermediate RSLR would require closure for 15 days per year by 2035 and 354 days per year by 2085. High RSLR would require closure for 24 days per year in 2035 and 365 days per year in 2085. To prevent frequent structure closings, operation plans would need to be re-evaluated periodically and closure trigger elevations may need to be increased if significant sea level rise occurs.*

Section 4.8.1 of the report provides the results of a Corps model that shows a .001 PPT increase resulting from the deepening of the channel. The study also provides the required mean and median number of days of lock closure (48 and 37 days, respectively).

Recommendation 1:	**X**	**Adopt**		**Not Adopt**
Explanation: The information contained in the MTG EIS will be referenced in Section 4 of the report and additional information regarding the lock operation will be provided in Appendix A – Engineering.				
Recommendation 2:	**X**	**Adopt**		**Not Adopt**
Explanation: The datum used for development of the preliminary lock operation will be provided in the same section at for Recommendation #1.				
Recommendation 3:		**Adopt**	**X**	**Not Adopt**
Explanation: Any additional modeling or evaluation of the lock operation and performance is not within the scope of this project. The design and operation of the structure is within the MTG scope. The ERDC study described in Section 4.8.1 provides the results of salinity modeling conducted for the 20-foot scenario.				
Recommendation 4:		**Adopt**	**X**	**Not Adopt**
Explanation: The modeling of storm events to determine the impacts associated with such scenarios is not within the scope of this study. Additionally, the modeling of such events would require budget and time that this project does not have allocated.				
Recommendation 5:	**X**	**Adopt**		**Not Adopt**
Explanation: The information contained in the MTG EIS will be referenced in Section 4 of the report and additional information regarding the lock operation will be provided in Appendix A – Engineering. This will include a schedule of lock openings as described in the EIS, which dictates that once the 13 ppt criteria is met, the lock will remain open until the 12-hour period of evaluation at the LUMCON gage falls below that				

criteria. At this time no additional timing mechanism is included in the preliminary operational plan, but the plan will be continually developed during the PED phase of the project. Opening timing and gage usage will also be reevaluated as changes occur due to RSLR.

Panel Final BackCheck Response (FPC 2)			
X	**Concur**		**Non-Concur**

Final Panel Comment 3

It is unclear whether chemical characterization of proposed dredge material has been conducted to confirm its suitability for beneficial use.

Basis for Comment

The current navigation canal is subject to periodic dredging for navigational purposes. Deepening the canal would presumably remove material not currently subject to this practice, with the assumption that this material will be beneficially reused for habitat/marsh creation to offset project-related impacts. Using potentially contaminated (based on human health risk) sediments to create habitat could create a pathway for these contaminants to enter the food web and potentially be consumed by humans through local fisheries.

It is recognized that some samples have been taken to characterize the chemical constituents of the sediment and that these samples have been tested either directly or through elutriation with subsequent testing of the elutriate. Minor to moderate exceedances in certain analytes were detected in several samples. However, it is not clear whether these sediment samples are surficial only or are sampled throughout the proposed dredge prism. If these samples are surficial only (depths normally subject to maintenance dredging), then it cannot be assumed that all dredged sediments are suitable for beneficial reuse and that human health risk is minimized. This concern is further complicated by the presence of a Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) site near the canal alignment.

The assumption of beneficial reuse of all dredge material is crucial for the following:

- Minimizing the handling and disposal costs of dredge materials
- Creating marsh habitat through strategic placement of dredge materials.

Significance – Medium

If the dredge material cannot be used as proposed, the alternatives are likely not economically viable or self-mitigating.

Recommendation for Resolution

1. Clarify the extent of chemical characterization performed on the proposed dredge material (depth, timeframe, analytes tested).
2. State clear guidance on the point of compliance for beneficial reuse for each constituent potentially encountered (e.g., a table of potential contaminants and concentrations levels where beneficial reuse would be allowed).
3. Provide assurance that a human health risk assessment has been performed for the area.

GEC Final Evaluator Response (FPC 3)			
X	**Concur**		**Non-Concur**
Explanation: The HNC is a manmade channel that does not receive influxes of sediment from upstream. The GIWW, which is located north of the channel, has not required dredging in decades. Rather, shoaling within the inland reach occurs mostly due to erosion of the channel bank which is local material that does not migrate from additional areas. Therefore, material found within the channel bottom is representative of material located along the channel banks and within proposed disposal areas. As indicated in the report, the USACE performs maintenance dredging within the channel on a periodic basis and disposes of this material within the project area. The channel is dredged enough so that the channel bottom can be considered virgin material and no adverse impacts have resulted from the placement of the material. Soil borings indicate that most of the channel depths to be dredged consist of clay with intermittent silt lenses, with no significant anomalies. The depth of the sediment sampling is undetermined at this time, but we're looking into it.			
Recommendation 1:	X	**Adopt**	**Not Adopt**
Explanation: Additional background information for the sediment makeup will be added to Appendix A – Engineering. Any past and current sediment testing information performed by the Corps during maintenance dredging will be described and referenced as well.			
Recommendation 2:		**Adopt**	X **Not Adopt**
Explanation: Sediment testing is conducted by the Corps during periodic maintenance dredging operations. To date no adverse impacts have been identified due to the placement of the material. A request has been made for pertinent sediment sampling data and procedures, but none have been provided. If any sediment testing data or descriptions become available, additional language will be added to the report.			
Recommendation 3:		**Adopt**	X **Not Adopt**
Explanation: A HTRW evaluation of the HNC study area has been conducted, as is required by the Corps. This evaluation was conducted twice over the course of this study and each evaluation showed that it is unlikely that any environmental impacts are present within the HNC study area. Sediment testing has been conducted by the Corps during periodic maintenance dredging operations. To date no adverse impacts have been identified due to the placement of the material. A request has been made for pertinent sediment sampling data and procedures, but none have been provided. If any sediment testing data or descriptions becomes available, additional language will be added to the report.			

Panel Final BackCheck Response (FPC 3)		
X	**Concur**	**Non-Concur**
Explanation: If there is a maintenance dredging program in place, it would be ideal to cite that document or permit number in the report to illustrate the permitted actions and guidelines currently in place.		

Final Panel Comment 4

The FR/EIS does not provide a plan to verify the ecological and physical performance of the proposed created marshlands and to identify the potential for adaptive management.

Basis for Comment

The FR/EIS proposes the beneficial reuse of dredge material to create marshland habitat. Typically, when proposing mitigation/restoration activities that provide for ecological lift or provide shoreline protection, a verification process is agreed upon *a priori*. This is often in the form of a mitigation plan that incorporates two areas of focus: the analysis for "no net loss" and the monitoring and adaptive management strategy that ensures that performance assumptions are being met and identifies what actions to take should they not be met within an agreed-upon timeframe. These strategies often contain milestones, performance measures, and other critical points of compliance that are usually agreed upon through negotiations with the project owner and relevant regulators.

The Panel did not find evidence of a plan of action that will be implemented to ensure the ecological/physical performance of the created marshlands. In addition, if an issue arose and the created habitats failed to perform their intended function (for example, if they failed to recruit marsh vegetation or recruited less desirable, lower-functioning vegetation), there is no provision for corrective action.

Significance – Medium

Without implementing a plan to verify the performance of the created habitats, the self-mitigating nature of the Tentatively Selected Plan (TSP) cannot be assumed throughout the design life of the project.

Recommendation for Resolution

1. Provide a conservation/mitigation monitoring plan if one has been drafted for consultation with Federal regulatory agencies, or describe steps being taken in lieu of this type of monitoring plan.
2. Provide an adaptive management plan if one has been drafted, or discuss how corrective steps may be implemented should the created marsh fail to meet its design life or fail to provide full habitat value.
3. If neither a monitoring plan nor an adaptive management plan can be provided, consult the most current CPRA Master Plan for coastal restoration to derive points of compliance for marsh creation performance and appropriate adaptive management actions.

GEC Final Evaluator Response (FPC 4)

	Concur	**X**	**Non-Concur**

Explanation: This is a transportation project that utilizes National Economic Development benefits for evaluation, when compared to other transportation projects. Guidance dictates that the Federal Standard alternative is adhered to if effective, with no adverse environmental impacts. In the case of the HNC Deepening project, the Federal Standard was chosen, but environmental benefits were still gained through Beneficial Use of the dredged material. Adaptive Management is typically utilized for environmental restoration projects and under NED guidelines, there is no authority for conducting such an evaluation. Therefore, it is believed that this type of evaluation is not warranted for the dredged

material disposal of a transportation project. While the project does show environmental benefits associated with the disposal of the dredged material, these benefits are presented to show that the project is self-mitigating and to evaluate the ancillary environmental benefits for some structures such as rock stabilization. In fact, the benefits given by the Wetland Value Assessment model results far exceed any adverse impacts identified. The results also showed that a significant loss in accrued beneficial use would be necessary before a net gain in benefits would not occur. Therefore, it is believed that a full Adaptive Management or Monitoring Plan would be considered an unnecessary expense for this project, with limited value added. Within the upper reaches of the inland reach, no opportunity for beneficial use existed. Therefore, material to be disposed of in Site 3 would require mitigation, which would be accommodated by using a mitigation bank.

Recommendation 1:	**X**	**Adopt**		**Not Adopt**

Explanation: Additional language will be added to Section 4.7.2 (TRP Disposal) stipulating that the site will be monitored after disposal and the lessons learned will be utilized during future maintenance dredging operations.

Recommendation 2:		**Adopt**	**X**	**Not Adopt**

Explanation: This is a transportation project that utilizes National Economic Development benefits for evaluation, when compared to other transportation projects. Guidance dictates that the Federal Standard alternative is adhered to if effective, with no adverse environmental impacts. In the case of the HNC Deepening project, the Federal Standard was chosen, but environmental benefits were still gained. Adaptive Management is typically utilized for environmental restoration projects. It is believed that this type of evaluation is not warranted for the dredged material disposal plan.

Recommendation 3:	**X**	**Adopt**		**Not Adopt**

Explanation: Both state and Federal environmental goals and criteria will be considered when monitoring/evaluating disposal sites created through dredged material placement.

Panel Final BackCheck Response (FPC 4)

X	**Concur**		**Non-Concur**

Explanation: Concur with the assumption that monitoring variables (at least suggested) will be listed in section 4.7.2 and admission that this project will be compliant with NEPA.

Final Panel Comment 5

The lack of documentation and sources for various economic assumptions increases the degree of risk and uncertainty as the project progresses.

Basis for Comment

Many assumptions in text and tables (such as traffic, costs, projections, growth, etc.) do not have adequate documentation, which increases the amount of risk and uncertainty for the project going forward.

For example:

1. The FR/EIS (page 4-5) states: "…existing data was used to exclude unreasonable alternatives." The type of data is not specified, nor is any documentation provided to support this assertion.
2. Section 4.8 does not provide the source or rationale for Port Fourchon being regarded as a reliable indicator of the strength of offshore oil and gas sectors.
3. The data derived from the interviews and surveys are the heart of the benefits of the fabrication activity, and the FR/EIS (page 9 of the introduction) indicates that interview notes do exist. Detailed information on interview notes and documentation is not provided, yet other studies/project EISs reviewed by panel members provided transcripts and detailed notes on interviews. Why not here?
4. No sources are given for tug costs, which are critical with regard to the project's economic assumptions.

Significance – Medium

While the economic assumptions seem correct, the confidence in the analysis and findings would be greater if detailed sources and documentation were added to the report.

Recommendation for Resolution

1. Review the FR/EIS main report plus the economic appendix and identify statements or assumptions that are not currently supported by detailed sources or documentation.
2. Add those sources/documentation to the report, or explain why the unsupported statements or assumptions cannot be documented so as to increase confidence in the TSP.

GEC Final Evaluator Response (FPC 5)			
X	**Concur**		**Non-Concur**

Explanation:

For example: 2. Section 4.8 does not provide the source or rationale for Port Fourchon being regarded as a reliable indicator of the strength of offshore oil and gas sectors.

The economics appendix, "Determine Economic Study Area" page 37, discusses the proximity of Houma to major offshore operational stages to the east such as New Orleans and Fourchon. The narrative that follows discusses Fourchon as a predominant port with respect to market share of offshore oil/gas industry. Moreover, Figures 1 and 2, pages 40 and 41, display the proximity of Fourchon with regard to deep water offshore oil/gas installations.

For example 3. The data derived from the interviews and surveys are the heart of the benefits of the fabrication activity, and the FR/EIS (page 9 of the introduction) indicates that interview notes do exist. Detailed information on interview notes and documentation is not provided, yet other studies/project EISs reviewed by panel members provided transcripts and detailed notes on interviews. Why not here?

The Economics appendix has summaries of the interview notes from users and non-user beneficiaries, see pages 14 -29 for NED beneficiaries and then pages 29-36 for fabrication. These summaries are provided in lieu of the notes which might otherwise have proprietary data and or personal views of the individual participants. These notes could be provided to the IEPR in some form of confidential appendix rather than the summaries as presented in the Economics appendix. The summaries of the personal interviews in the Economics appendix reflect the essence of the information provided by each interview that is pertinent to the project economics.

For example, here are the complete unedited notes from the Interview with Caillou Island Towing on page 27 of the Economics appendix: *November 28, **Caillou Island Towing**, XXXX YYYYY (name omitted)*

He refers to a firm (Global Pipelines) that moved out of Houma due to the HNC. The firm is a pipe layer that moved to Lake Charles. The offshore vessels commonly need 18 to 20 feet of water such as the Atchafalaya River and Fourchon. The trend for platform load outs is more water. A small ship can come into the HNC. The vessels are small, such as 2,400 horsepower tugs and supply boats up to 220 feet Loa light but not loaded. Main Iron Works is one of the major prospective beneficiaries from the perspective of tug assistance trips.

His firm does a tug assistance trip on the HNC about once every 35 to 45 days or about 10 times a year. They will use a 1,200 and a 900 horsepower tug (about $380 per hour) and take six to eight hours down light and about 18 hours loaded back up. Major tug assistance players are Delta Towing, Central Gulf at Larose, and Crosby Tugs. They also tow out new boats to avoid having them started up because of low water and possible damage to the cooling systems.

These summarized "notes" as edited are on page 27 of the Economics appendix essentially reflect the second paragraph of the interview notes. Additional reviews of the interview notes would similarly show that most of the pertinent information therein is contained in the Economics appendix at noted.

For example 4. No sources are given for tug costs, which are critical with regard to the project's economic assumptions.

The interview summaries in the Economics appendix contain references to tug costs as provided and used in the port. For example, page 21, Manson Gulf, "The escort tugs cost $400 to $500 per hour (each)."; page 27, Caillou Island Towing, "They use 1,200 and 900 horsepower tugs (about $380 per hour)"; page 28, Global International Marine, "The tugs cost from $4,000 to $5,000 per day plus fuel".

Recommendation 1:	**X**	**Adopt**		**Not Adopt**

Explanation: Assumptions throughout the report will be reviewed and updated as needed. A statement will be added to Section 4.4.1 of the report, stating that interview summaries are used in lieu of specific quotes to protect confidential information.

Recommendation 2:		**Adopt**	**X**	**Not Adopt**

Explanation: The assumptions provided in the comment are believed to be sufficient. As described in the response to Recommendation #2, other assumptions will be reviewed and sources will be provided as needed.

Panel Final BackCheck Response (FPC 5)

X	**Concur**		**Non-Concur**

Final Panel Comment 6

The array of alternatives considered is not robust and does not fully evaluate all relevant options.

Basis for Comment

The report considers six alternatives in addition to the no-action alternative: the combinations of two channel depths (18 feet and 20 feet) and three alternatives for dredged material management in the lower reaches (adjacent disposal, beneficial use earthen containment, and beneficial use rock containment). Two specific concerns with the current alternatives:

1. Other placement alternatives in the Inland Reach are not considered. Current alternatives only consider beneficial use in the lower reach. Section 4.8.17 states that dredged sediment will be used in the Inland Reach to re-establish eroded banks, create marsh in shallow open waters, and nourish broken marsh areas. These opportunities could potentially be aggregated into beneficial use alternatives that increase project benefits in the Inland Reach. Aggregating placement between reaches to accomplish specific beneficial objectives may alleviate additional pumping costs.
2. The evaluation of containment methods for the large beneficial use areas in the lower reaches is not comprehensive. It is possible that an "optimal" containment method—specifically, other types of containment besides earthen and rock containment—would be more competitive with adjacent disposal (geotextile tubes and a combination of potential containment methods are obvious omissions).

Current alternatives consider only earthen and rock dikes for beneficial use containment. A direct comparison of these options would have shown earthen dikes to be superior (given the evaluation criteria), making Alternatives 1C and 2C superfluous.

Significance – Medium

By not considering all available placement and beneficial use options in the Inland Reach and a more comprehensive group of containment methods in the Lower Reach, the array of project alternatives may not maximize project benefits.

Recommendation for Resolution

1. Reconsider placement alternatives for the Inland Reach, including beneficial use options where plausible.
2. Re-evaluate containment methods for the beneficial use site in the lower reaches.
3. If feasible, develop a revised set of project alternatives that incorporate the results of Recommendations 1 and 2.

GEC Final Evaluator Response (FPC 6)

	Concur	**X**	**Non-Concur**

Explanation: The dredged material placement sites recommended for disposal were identified through direct coordination with Federal and state agencies. This included collaboration with agents that have significant field knowledge of the sites selected. Site selection was done in this manner to ensure that sites with the potential to increase environmental benefits were utilized. Also, it is required that the project adhere to the Federal Standard, which is the least costly alternative for deepening the channel and disposing of material. Even with this requirement, environmental benefits were primarily pursued to ensure that the navigation project, that utilizes NED benefits to evaluate the effectiveness of the project, were sufficient to offset environmental impacts. The WVA model results show that the benefits resulting from the project far exceed this criterion. Therefore, it is not believed that additional plan formulation would be warranted. Throughout the planning and design process, the project team will continue to look for a way to utilize beneficial use of the dredged material in a manner that is both cost effective and acceptable to the local sponsor. This will include identification and inclusion of potential BUDMAP disposal sites. We understand and agree with the premise that dredged material should be utilized for habitat improvement/creation as much as practicable, but the recommended plan was selected based on the project's need to maximize the Benefit-to-Cost Ratio, while in competition with other projects for Federal funding and adhering to the Federal Standard.

Rock was chosen for stabilization due to the significant reduction in erosion rates that occurred after rock was added to the channel as part of a Louisiana Department of Natural Resources project that added rock on the west bank of the HNC between Miles 25.3 to 24.2. In fact, the project reduced erosion rates enough that a $7 Million CAP project was authorized in September, 2008, which added rock along the west bank between Miles 28.0 and 25.3 and along the east bank from Miles 27.7 to 23.7. The costs utilized in the CAP project were used for development of unit costs for this project.

Recommendation 1:	**X**	**Adopt**		**Not Adopt**

Explanation: The dredged material placement sites recommended for disposal were identified through direct coordination with Federal and state agencies. This included collaboration with agents that have significant field knowledge of the sites selected. Site selection was done in this manner to ensure that sites with the potential to increase environmental benefits were utilized. Additional language will be added to Section 4.4.4 of the report, describing the process by which disposal sites were chosen, including collaboration with state and Federal agencies and the criteria used.

Recommendation 2:		**Adopt**	**X**	**Not Adopt**

Explanation: Rock was chosen for stabilization due to the significant reduction in erosion rates that occurred after rock was added to the channel as part of a Louisiana Department of Natural Resources project that added rock on the west bank of the HNC between Miles 25.3 to 24.2. In fact, the project reduced erosion rates enough that a $7 Million CAP project was authorized in September, 2008, which added rock along the west bank between Miles 28.0 and 25.3 and along the east bank from Miles 27.7 to 23.7. The use of alternative containment methods within the offshore reaches were evaluated and screened out as part of the Value Engineering process (Appendix A – Annex IX).

Recommendation 3:		**Adopt**	**X**	**Not Adopt**

Explanation: Based on the responses to Recommendations 1 and 2, it is not believed that a revised set of alternatives is warranted.

Panel Final BackCheck Response (FPC 6)			
X	**Concur**		**Non-Concur**

Final Panel Comment 7

The array of shoreline protection options considered along the Inland Reach is incomplete given the concerns raised in the FR/EIS regarding bank erosion.

Basis for Comment

The FR/EIS stresses the importance of shoreline protection along the Inland Reach of the HNC. It indicates that the historic rate of bank erosion along the Inland Reach is approximately 12.9 acres per year (Section 4.5.5). The need for shoreline protection along the reach under current conditions is noted in multiple places, as is the expanded need after channel deepening because of the increased frequency, size, and speed of vessel traffic. For example, Section 3.1 cites an authorized Continuing Authorities Program (CAP) Section 1135 project to "…stabilize the bank using a rock dike along 3.4 miles from Miles 25.3 to 28 on the west bank (to Falgout Canal), and along the east bank of the channel from HNC Miles 27.6 to 27.7 and Miles 23.7 to 24.3, approximately 5 miles south of Houma, Louisiana." Figure 4-3 shows general locations of rock dikes for shoreline protection and dredged material retention for the TSP. Section 6.22.2 refers to "…the rock dikes that would be constructed, as needed, for foreshore protection (erosion control) along Miles 36.3 to 11.0…" (for alternative 1A).

Despite the focus on its importance, the FR/EIS does not discuss alternative shoreline protection methods such as geotextile tubes, gabion mattresses, or vegetated earthen berms, nor does it refer to other studies of the HNC Inland Reach that may have concluded that rock dikes are the most effective and economical solution.

Significance – Medium

Shoreline protection methods other than rock dikes (e.g., soft measures) may provide equivalent shore protection at a lower cost as well as ecological benefits.

Recommendation for Resolution

1. Revise the evaluation of shoreline protection methods and their application to the HNC Inland Reach and provide the revised findings in the report, or summarize and reference in the report existing studies that provide the necessary information that arrive at this conclusion.

GEC Final Evaluator Response (FPC 7)

X	**Concur**		**Non-Concur**

Explanation: Rock stabilization was identified as the preferred method of bank stabilization due to the significant reduction in erosion rates that occurred after rock was added to the channel as part of a Louisiana Department of Natural Resources project that added rock on the west bank of the HNC between Miles 25.3 to 24.2. In fact, the project reduced erosion rates enough that a $7 Million CAP project was authorized in September, 2008, which added rock along the west bank between Miles 28.0 and 25.3 and along the east bank from Miles 27.7 to 23.7. It is believed that results derived from constructed projects provide more of a basis for plan formulation than modeling of systems, based on theoretical data and assumptions. Also, since portions of the channel have rock retention in place, which would only require refurbishment of those structures, it was determined that the use of rock would be more cost efficient. The use of alternative containment methods was evaluated and screened out as part

of the Value Engineering process (Appendix A – Annex IX). Based on these factors, it is felt that additional plan formulation would not provide a more cost–effective means of erosion reduction and the use of rock would be most appropriate. During the PED phase of the project, additional containment methods will be evaluated for all reaches of the HNC. Additional language will be added to Section 4.3.2 of the report to describe why rock was chosen for bank stabilization.				
Recommendation 1:	**X**	**Adopt**		**Not Adopt**
Explanation: During the PED phase of the project, additional containment methods will be evaluated for all reaches of the HNC, Additional language will be added to Section 4.3.2 of the report to describe why rock was chosen for bank stabilization and that containment will be reevaluated during PED.				
Panel Final BackCheck Response (FPC 7)				
X	**Concur**		**Non-Concur**	

Final Panel Comment 8

The assumptions related to maintenance dredging volumes for the HNC Inland Reach are unclear and appear to be conflicting throughout various sections of the report.

Basis for Comment

The FR/EIS states that bank erosion due to vessel traffic is the primary source of shoaling within the Inland Reach of the HNC and that rock foreshore protection has been proposed for the deepening alternatives to prevent that erosion. However, the shoaling rates (and required maintenance dredging volumes) for the deepening alternatives are not clearly defined and documented.

In the Engineering Appendix, historic shoaling rates were assumed for the no-action alternative; however, it is not clear how the "revised maintenance volumes (in lieu of the historical)" were determined for the deepening alternatives.

In addition, various sections of the report provide conflicting information regarding the maintenance dredging requirements for the Inland Reach of the HNC. For example:

- Section 4.9.2 (OMRR&R) states that "maintenance dredging is not expected to increase from what is currently required" for the deepening alternatives.
- Section 4.5.5 states that "foreshore protection is estimated to reduce the historic maintenance volume on the inland reach by 5%."
- Appendix A, Section 8.4, Table A-25, indicates that maintenance volumes will increase by 2% and 10%, respectively, for the 18-foot and 20-foot channels, compared to the existing channel.

Significance – Medium/Low

Maintenance dredging volumes have a direct impact on the operation and maintenance (O&M) cost of the project, which may impact the benefit-cost ratio (BCR) and ultimately the TSP.

Recommendation for Resolution

1. Provide additional information to support the shoaling rates and maintenance dredging assumptions for the Inland Reach presented in the Engineering Appendix.
2. Revise conflicting sections of the report and appendices to be consistent regarding maintenance dredging requirements for the Inland Reach.

GEC Final Evaluator Response (FPC 8)

X	**Concur**		**Non-Concur**

Explanation: The increased top width of the channel was used to determine the increased dredging volume that would occur due to deepening of the channel. Therefore an 11 percent increase in the top width resulted in an estimated 11 percent increase in dredging volumes. Also, based on the reductions in erosion rates observed from the 1995 Falgout Canal Marsh Management Project and the 2008 HNC CAP Section 1135 project, an estimate of a 5 percent reduction in required dredging volumes was estimated from implementation of the foreshore protection structures located throughout the inland reach. Since dredging occurs so infrequently, and when it does occur volumes are provided for the entire reach, there wasn't any specific data to base this assumption on. Therefore, the assumption, while considered

conservative, was based on best professional judgement and observed reductions in shoreline erosion. The majority of dredging requirements results from the wave action that erodes the HNC shoreline within the inland reach, so a direct correlation was assumed between a stabilized shoreline and reduced dredging volumes. Section 4.4.3 (formally Section 4.5.3) of the report provides some details into the assumptions used for estimating maintenance volumes for both the deepening alternatives and the No-Action Plan.

For the No-Action Plan, no additional foreshore protection or rock retention would occur, so the maintenance volumes would remain the same. For the deepening alternatives to – 18 feet, the top width of the channel would increase by 11 feet (7 percent) in the inland reach and it is assumed that foreshore protection would reduce shoaling by 5 percent. Therefore a net increase of 2 percent was applied as the revised maintenance volumes referred to in the report. Within Terrebonne Bay, the channel top width would increase by 14 feet (9 percent). Since no foreshore protection or rock retention is utilized within this reach, an increase of 9 percent was applied to the maintenance volumes. Since no channel width changes or rock protection would occur, the historic (ERDC) maintenance volumes were utilized within Cat Island Pass. For the deepening alternatives to – 20 feet, the top width of the channel would increase by 23 feet (15 percent) in the inland reach and it is assumed that foreshore protection would reduce shoaling by 5 percent. Therefore a net increase of 10 percent was applied as the revised maintenance volumes referred to in the report. Within Terrebonne Bay, the channel top width would increase by 20 feet (13 percent). Since no foreshore protection or rock retention is utilized within this reach, an increase of 13 percent was applied to the maintenance volumes. Once again, the historic maintenance volumes were utilized within Cat Island Pass. The statement referred to in Section 4.9.2 is incorrect and will be modified to state that for the deepening alternatives, maintenance volumes will increase as a result of the top width of the channel increasing. The statement from Appendix A, referring to the 2 percent and 10 percent increases is correct for the inland reach, based on the assumptions listed above. Clarifications will be added to the report, as needed, to state as such. Shoaling rates are expected to increase within the Cat Island reach, which was modeled.

Recommendation 1:	**X**	**Adopt**		**Not Adopt**

Explanation: Additional language will be added to Section 4.4.3 and in Appendix A – Annex XI, to better describe the origins of these assumptions.

Recommendation 2:	**X**	**Adopt**		**Not Adopt**

Explanation: The statement referred to in Section 4.9.2 is incorrect and will be modified to state that for the deepening alternatives, maintenance volumes will increase as a result of the top width of the channel increasing. The statement from Appendix A, referring to the 2% and 10% increases is correct for the inland reach, based on the assumptions listed above. Clarifications will be added to the report, as needed, to state as such.

Panel Final BackCheck Response (FPC 8)

X	**Concur**		**Non-Concur**

Final Panel Comment 9

The no-growth sensitivity analysis is not evaluated in sufficient detail to support the finding of substantial effect.

Basis for Comment

The sensitivity analysis indicates Present Value National Economic Development (NED) benefits of $721.4 million under the no-growth scenario, in contrast to $1,063 million of expected growth under the TSP (Tables 16-18, pages 66-68); however, few specific sources, and little documentation or detailed analysis, are presented. The last four years of petroleum traffic (Table 16) and volume in the analysis appear to have stabilized and even decreased, so more attention could be paid to the effect of the growth rates on magnitude of the benefits and therefore the BCRs. Two to three recent years of data should now be available for inclusion in the analysis of petroleum traffic projections and growth rates. These data could help strengthen the confidence in the estimation of the NED value and TSP benefits, whether they be increased or decreased (depending on the results of the analysis).

Significance – Medium/Low

The variation of the BCRs in the sensitivity analysis may be significant using the most recent data, affecting the NED benefits and choice of TSP.

Recommendation for Resolution

1. Rerun the sensitivity analysis projections with the most recent available years of data.
2. Determine the impact of the findings on the NED value and BCRs for each of the assumptions in the sensitivity analysis.
3. If Recommendations 1 and/or 2 are undertaken, insert the findings in the growth rate discussion and discuss the implications of varying growth rates on risk and uncertainty.

GEC Final Evaluator Response (FPC 9)

	Concur	**X**	**Non-Concur**

Explanation: More recent Waterborne Commerce data for the Houma Navigation Canal show a total of 0.586 million tons of cargo reported for 2014 of which 0.481 million tons was petroleum and 0.252 million tons total cargo reported for 2015 of which 0.196 million tons was petroleum. Due to the variability of the additional data it is not believed that re-running the sensitivity analysis would provide any value added with the additional cost and time required to do so. The risk associated with data collection and fluctuating markets are accounted for in the CSRA.

Recommendation 1:		**Adopt**	**X**	**Not Adopt**

Explanation: Due to the variability of the additional data it is not believed that re-running the sensitivity analysis would provide any value added with the additional cost and time required to do so.

Recommendation 2:		**Adopt**	**X**	**Not Adopt**

Explanation: Due to the variability of the additional data it is not believed that re-running the sensitivity analysis would provide any value added with the additional cost and time required to do so.				
Recommendation 3:		**Adopt**	**X**	**Not Adopt**
Explanation: Due to the variability of the additional data it is not believed that re-running the sensitivity analysis would provide any value added with the additional cost and time required to do so. The risk associated with data collection and fluctuating markets are accounted for in the CSRA. Additional language will be added to Section 4.6.3 describing the variability of recent data and how including this data in an updated sensitivity analysis would result in no conclusive results.				
Panel Final BackCheck Response (FPC 9)				
X	**Concur**		**Non-Concur**	
Explanation: The added years of data, and the indication of the continued variability suggest little value to be gained by re-running the sensitivity analysis so the Panel is in concurrence with GEC. The CSRA, and a full discussion of that variability and implications of sensitivity analysis, will serve as a substitute for rerunning the sensitivity analysis.				

Final Panel Comment 10

It cannot be determined from the descriptions provided whether the cumulative effects of the Houma project and other past, current, or future projects have been fully analyzed.

Basis for Comment

No inaccuracies or misstatements with regard to the descriptions of projects on the overall riverine system are found. But the major projects (such as the Port of Iberia, Morganza to the Gulf, the Atchafalaya River, etc., described in Section 3) when combined with the Houma project, may have continuing implications for the environment around the Houma project. Rather than just describing these projects independently (as is currently done), the implications of the combined projects for the environment (cumulative effects) should be presented and analyzed.

Significance – Medium/Low

An analysis of the potential impacts on the environment of other state/Federal projects, when combined with the Houma project, would improve the technical quality of the report.

Recommendation for Resolution

1. Review major past, present, and future projects in combination with the Houma project to determine whether they have or might result in cumulative impacts on the environment.
2. Describe those impacts in Section 3 of the FR/EIS.

GEC Final Evaluator Response (FPC 10)

X	**Concur**		**Non-Concur**

Explanation: Past and current projects and the resulting cumulative impacts are described in Section 6.34. Additional language will be added to this section of the report to expand on those impacts, especially for specific projects. Discussion of cumulative Impacts will not be added to Section 3 as it will remain in Section 6, as suggested by the USACE.

Recommendation 1:	X	**Adopt**		**Not Adopt**

Explanation: While a discussion of the Cumulative Impacts of the project does exist, Section 6.34 will be reviewed and additional language will be added, as needed.

Recommendation 2:		**Adopt**	X	**Not Adopt**

Explanation: Discussion of cumulative Impacts will not be added to Section 3 as it will remain in Section 6, as suggested by the USACE.

Panel Final BackCheck Response (FPC 10)

X	**Concur**		**Non-Concur**

Final Panel Comment 11

The logs and notes from interviews conducted to assess potential future fabrication opportunities are not included in the report, but are necessary to provide context for projected fabrication benefits.

Basis for Comment

The benefits to this project are derived from transportation savings and fabrication activities. The projected benefits from potential future fabrication opportunities associated with deep-water oil and gas sector infrastructure were based solely on information obtained from GEC's interviews with maritime industry firms. The logs and/or notes from these interviews with potential manufacturing firms likely contain contextual information that supports the analysis of projected fabrication benefits, yet the logs and notes are not included in the FR/EIS. Typically, interview documentation would be provided, at least as an exhibit or an appendix, in a decision document such as this report. Without such documentation, projected fabrication benefits cannot be adequately reviewed, and the potential for future fabrication opportunities cannot be assessed.

Significance – Medium/Low

Omitting the logs and notes from the interviews increases the level of uncertainty regarding the findings associated with projected fabrication benefits and potential future opportunities.

Recommendation for Resolution

1. Include the logs and notes from the interviews used to assess potential future fabrication opportunities as an attachment to the Economics Appendix.

GEC Final Evaluator Response (FPC 11)

	Concur	**X**	**Non-Concur**

Explanation: Responses related to the "logs and or notes" from the industry interviews see response to comment number five, example 3. Response with regard to fabrication benefits: The fabrication benefits come from very long term forecasts of deep water sea level oil and gas production platforms (topsides) as described in the Economics appendix beginning on page 68. The Economics appendix describes the few very large US Gulf of Mexico oil/gas production platform (topsides) fabricators. These firms have been interviewed and as such the notes are summarized in the Economics appendix, pages 29 through 42.

The production platform (topsides) fabricators do not make long term forecasts of GOM deepwater oil/gas exploration and production facilities. These firms bid on existing or forthcoming projects that are usually within a three year planning time horizon of the major offshore oil explorers and producers. Beyond this industry time frame for planning new investments the oil/gas production platform (topsides) fabricators have no idea and generally no interest in generic projections (other than by oil/gas exploration entities). Consequently, it was necessary to secure very long term forecasts of deep water oil/gas production facility forecasts from industry specialists such as Infield Systems and also from the US as related to the management of federal lands by Materials Management Services (MMS) as succeeded by Bureau of Ocean Management (BOEM). Infield Systems provides such forecasts for major oil/gas production world areas including the Gulf of Mexico. BOEM provides similar estimates as described in

the Economics report in conjunction with forecasts of federal oil/gas leases for the Department of Interior. The very term deep water oil/gas production platforms by Infield and BOEM provide the basis for forecasting GOM fabrication benefits for the affected fabrication firms by the with-project conditions at Houma Navigation Canal.

Recommendation 1:		**Adopt**	**X**	**Not Adopt**

Explanation: The Economics appendix has summaries of the interview notes from users and non-user beneficiaries, see pages 14 -29 for NED beneficiaries and then pages 29-36 for fabrication.

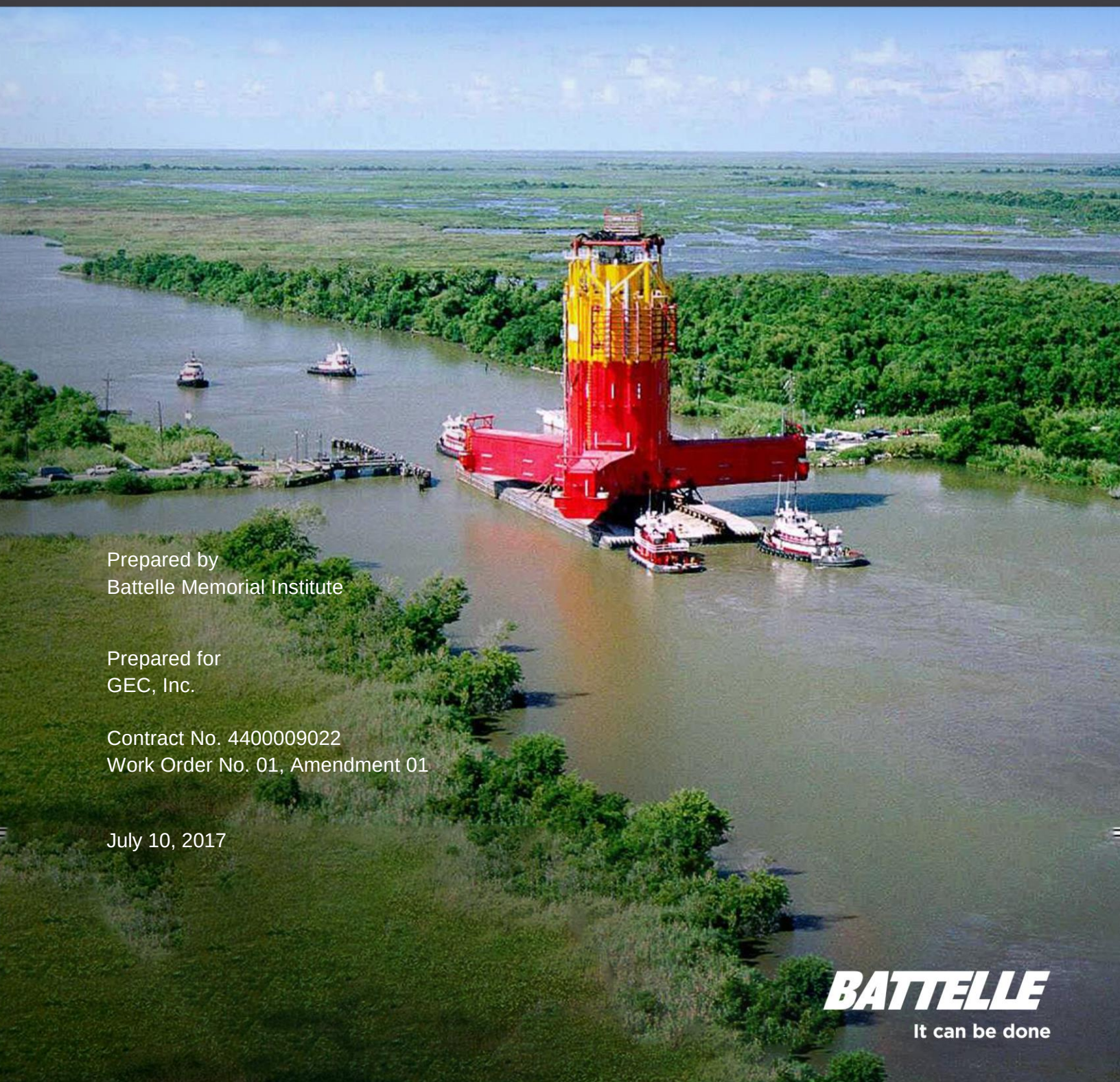
These summarized "notes" as edited are on page 27 of the Economics appendix essentially reflect the second paragraph of the interview notes. Additional reviews of the interview notes would similarly show that most of the pertinent information therein is contained in the Economics appendix at noted. A statement will be added to Section 4.4.1 of the report, stating that interview summaries are used in lieu of specific quotes to protect confidential information.

Panel Final BackCheck Response (FPC 11)

X	**Concur**		**Non-Concur**

Explanation: The Panel understands the importance of showing discretion with and limiting exposure to proprietary data and personal confidential commentary. On this basis, the Panel agrees that including the detailed interview notes in the formal report may not be appropriate. The Panel asserts that the absence of the detailed interview notes limited their ability to provide a thorough review of this section of the report. The Panel also encourages GEC to state the notes were summarized rather than providing direct quotes because it was considered proprietary or confidential information.

Final Independent External Peer Review Report Section 203 Draft Integrated Feasibility Report and Environmental Impact Statement for the Houma Navigation Canal Deepening Project, Terrebonne Parish, Louisiana



Prepared by
Battelle Memorial Institute

Prepared for
GEC, Inc.

Contract No. 4400009022
Work Order No. 01, Amendment 01

July 10, 2017

BATTELLE
It can be done

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Contract No. 4400009022
Work Order No. 01, Amendment 01

Final Independent External Peer Review Report Section 203 Draft Integrated Feasibility Report and Environmental Impact Statement for the Houma Navigation Canal Deepening Project, Terrebonne Parish, Louisiana

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Final Independent External Peer Review Report Section 203 Draft Integrated Feasibility Report and Environmental Impact Statement for the Houma Navigation Canal Deepening Project, Terrebonne Parish, Louisiana

Executive Summary

PROJECT BACKGROUND AND PURPOSE

Houma Navigation Canal (HNC) is a deep-draft navigation harbor located in Terrebonne Parish in southeast Louisiana at the northern edge of the Gulf of Mexico. The project begins at the Gulf Intracoastal Waterway (GIWW) and runs for about 41 miles from Houma, Louisiana, to the Gulf of Mexico. The study area encompasses the towns of Boudreaux, Dulac, Theriot, Mulberry, Crozier, and Cocodrie, and extends for one mile from each bank of the HNC within the Barataria-Terrebonne estuary. This estuary extends from the west bank levee of the Mississippi River (north and east) to the East Guide Levee of the Atchafalaya River (west), to the Gulf of Mexico (south) and to the Town of Morganza (north). The Terrebonne basin covers an area of about 2,063,500 acres.

The Draft Integrated Feasibility Report and Environmental Impact Statement (FR/EIS) of navigation improvements on the HNC was prepared by the Department of Transportation & Development/Coastal Protection and Restoration Authority (DOTD/CPRA) of Louisiana under the authority granted by Section 203 of the Water Resources Development Act (WRDA) of 1986 (P.L. 99-662). Section 203 of WRDA 1986 allows non-Federal interests, such as DOTD/CPRA, to undertake feasibility studies of proposed harbor projects and submit them to the Secretary of the Army. DOTD/CPRA conducted this Section 203 study to determine the feasibility of deepening the HNC.

Independent External Peer Review Process

Independent, objective peer review is regarded as a critical element in ensuring the reliability of scientific analysis. Gulf Engineers & Consultants (GEC), a prime contractor for the State of Louisiana, engaged Battelle to provide Independent External Peer Review (IEPR) services for the Section 203 HNC FR/EIS (hereinafter: HNC IEPR). As a 501(c)(3) non-profit science and technology organization, Battelle is independent, is free from conflicts of interest (COIs), and meets the requirements for an Outside Eligible Organization (OEO) per guidance described in the U.S. Army Corps of Engineers (USACE) Engineer Circular (EC) titled *Water Resources Policies and Authorities: Civil Works Review* (USACE, 2012). Battelle has experience in establishing and administering peer review panels for USACE and has coordinated this Section 203 HNC IEPR for GEC in accordance with the published procedures, methodology, and guidance of USACE. Specifically, the HNC IEPR follows USACE and Office of Management and Budget (OMB) guidance described in USACE (2012) and OMB (2004). This final report presents the Final Panel Comments of the IEPR Panel (the Panel). Details regarding the IEPR (including

the process for selecting panel members, the panel members' biographical information and expertise, and the charge submitted to the Panel to guide its review) are presented in appendices.

Based on the technical content of the decision documents and the overall scope of the project, Battelle identified potential candidates for the Panel in the following key technical areas: dredging, civil engineering, economics, plan formulation, and wetland ecology/biology. Battelle screened the candidates to identify those most closely meeting the selection criteria and evaluated them for COIs and availability. GEC was given the list of final candidates to confirm that they had no COIs, but Battelle made the final selection of the five-person Panel.

The Panel received electronic versions of the decision documents (1,902 pages in total), along with a charge that solicited comments on specific sections of the documents to be reviewed. Following guidance provided in USACE (2012) and OMB (2004), Battelle prepared the charge questions, which were included in the draft and final Work Plans and approved by GEC for this IEPR.

The GEC Project Delivery Team (PDT) briefed the Panel and Battelle during a kick-off meeting held via teleconference at the start of the review to provide the Panel an opportunity to ask questions of GEC and clarify uncertainties. Other than Battelle-facilitated teleconferences, there was no direct communication between the Panel and GEC during the peer review process. The Panel produced individual comments in response to the charge questions.

IEPR panel members reviewed the decision documents individually. The panel members then met via teleconference with Battelle to review key technical comments and reach agreement on the Final Panel Comments to be provided to GEC. Each Final Panel Comment was documented using a four-part format consisting of (1) a comment statement; (2) the basis for the comment; (3) the significance of the comment (high, medium/high, medium, medium/low, or low); and (4) recommendations on how to resolve the comment. Overall, 11 Final Panel Comments were identified and documented. Of these, none were identified as having high or medium/high significance, seven had medium significance, four had medium/low significance, and none had low significance. The panel members did not identify any high-level issues that would present an obstacle to moving forward with this project.

Battelle will receive public comments from GEC on the HNC and provide them to the IEPR panel members at a later date. The public comment review for the IEPR panel members will take place after the Final IEPR Report (this document) has been submitted to GEC and will be documented in a separate Addendum to this Final IEPR Report.

Results of the Independent External Peer Review

The panel members agreed on their "assessment of the adequacy and acceptability of the economic, engineering, and environmental methods, models, and analyses used" (USACE, 2012; p. D-4) in the HNC review documents. Table ES-1 lists the Final Panel Comment statements by level of significance. The full text of the Final Panel Comments is presented in Section 4.2 of this report. The following summarizes the Panel's findings.

Based on the Panel's review, the FR/EIS is well-written and concise, and provides excellent supporting documentation on engineering, environmental, economic, and plan formulation issues. The study considered many of the most logical measures in the development of alternatives and appears to have

substantially considered USACE environmental guidance and various Federal and local environmental laws and initiatives.

The FR/EIS provided a balanced assessment of the economic, engineering, and environmental issues of the overall project; however, the Panel identified elements of the report that should be clarified or revised or elements of the project where additional analysis are warranted and places where clarification of project findings need to be documented or revised.

Engineering: The engineering aspects of the project were clearly presented, resulting in one of the most organized reports of this type that the Panel has reviewed. While appropriate methods, models, and analyses were considered, the Panel's most important finding was that the cost estimates associated with foreshore rock protection and maintenance dredging for the Inland Reach are not fully explained or justified in sufficient detail. The lack of detailed information to support the assumptions regarding unit costs, maintenance dredging volumes, and shoreline erosion rates increases the level of uncertainty in the cost estimate. To address this concern, the Panel suggests providing additional information to support the cost estimate assumptions for both the with-rock protection and without-rock protection scenarios for the Inland Reach.

Another concern the Panel noted was that the design and modeling of the HNC lock and flood gate are not described or modeled in sufficient detail to assess the performance of the lock at limiting salt water intrusion. Without the assurance of minimal saltwater intrusion from canal-deepening activities, impacts to freshwater wetlands and hardwood bottomland habitats may lead to insufficient mitigation of these resources. This issue can be addressed by providing more information on lock operations and likely scenarios for lock opening and closing during normal and severe weather events, clarifying the bathymetry sources used, and conducting additional analysis on storm events (especially those of tropical origin) and the potential of coastal setup or storm surge to push saltwater up the canal.

Plan Formulation: The plan formulation methodology was straightforward and clear, and considered the USACE planning process; however, the Panel was concerned that dredged material placement alternatives were not evaluated for the Inland Reach and only a few containment options for the beneficial use areas in the lower reaches were considered. Considering all reasonable available placement and beneficial use options in the Inland Reach and a more comprehensive group of containment methods in the Lower Reach may identify alternatives with additional project benefits. The Panel suggests reconsidering placement alternatives for the Inland Reach, including beneficial use options where plausible, and re-evaluating containment methods in the lower reaches.

Economics: The economics section was robust in detail and documentation, notably the model certification and description of the National Economic Development (NED) worksheet models. The figures depicted excellent descriptions of the flow of the methodology to derive benefit-cost ratios (BCRs). GEC makes a strong and defensible case for the recommended plan. However, the Panel noted that a lack of documentation and sources for various economic assumptions increases the degree of risk and uncertainty as the project progresses. While the economic assumptions seem correct, the confidence in the analysis and findings would be greater if detailed sources and documentation were added to the report. To address this concern, the Panel suggests two options: 1) reviewing the FR/EIS main report plus the economic appendix and identifying statements or assumptions that are not currently supported by detailed sources or documentation, then adding those sources/documentation to the report, or 2) explaining why the unsupported statements or assumptions cannot be documented so as to increase confidence in the Tentatively Selected Plan (TSP).

Environmental: The review documents did an exemplary job of documenting all of the natural resources in the existing environment section. They presented an in-depth description of all the potentially affected ecosystem types and species contained therein. The Panel's most important finding in this area was that it is unclear whether chemical characterization of proposed dredge material has been conducted to confirm its suitability for beneficial use. If the dredge material cannot be used as proposed, the alternatives are likely not economically viable or self-mitigating. This issue can be addressed by clarifying the level of chemical characterization performed on the proposed dredge material (depth, timeframe, analytes tested), stating clear guidance on the point of compliance for beneficial reuse for each constituent potentially encountered, and providing assurance that a human health risk assessment has been performed for the area.

Another concern was that the FR/EIS does not provide a plan to verify the ecological and physical performance of the proposed created marshlands or provide for potential adaptive management should corrective measures be needed. Without implementing a plan to verify the performance of the created habitats, the self-mitigating nature of the TSP cannot be assumed throughout the design life of the project. This concern can be addressed by 1) providing a conservation/mitigation monitoring and adaptive management plan, or 2) describing steps being taken in lieu of a monitoring and adaptive management plan. In either case, the approach should be consistent with the most current Coastal Protection and Restoration Authority (CPRA) Master Plan for coastal restoration with respect to deriving points of compliance for marsh creation performance and appropriate adaptive management actions.

Table ES-1. Overview of 11 Final Panel Comments Identified by the HNC IEPR Panel

No.	Final Panel Comment
Significance – Medium	
1	The cost estimates associated with foreshore rock protection and maintenance dredging are not explained or justified in sufficient detail.
2	The design and modeling of the HNC lock and flood gate are not described or modeled in sufficient detail to assess the performance of the lock at limiting salt water intrusion.
3	It is unclear whether chemical characterization of proposed dredge material has been conducted to confirm its suitability for beneficial use.
4	The FR/EIS does not provide a plan to verify the ecological and physical performance of the proposed created marshlands and to identify the potential for adaptive management.
5	The lack of documentation and sources for various economic assumptions increases the degree of risk and uncertainty as the project progresses.
6	The array of alternatives considered is not robust and does not fully evaluate all relevant options.
7	The array of shoreline protection options considered along the Inland Reach is incomplete given the concerns raised in the FR/EIS regarding bank erosion.
Significance – Medium/Low	
8	The assumptions related to maintenance dredging volumes for the HNC Inland Reach are unclear and appear to be conflicting throughout various sections of the report.
9	The no-growth sensitivity analysis is not evaluated in sufficient detail to support the finding of substantial effect.
10	It cannot be determined from the descriptions provided whether the cumulative effects of the Houma project and other past, current, or future projects have been fully analyzed.
11	The logs and notes from interviews conducted to assess potential future fabrication opportunities are not included in the report, but are necessary to provide context for projected fabrication benefits.

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LIST OF ACRONYMS

ADDAMS	Automated Dredging and Disposal Alternatives Modeling System
ASCE	American Society of Civil Engineers
ATR	Agency Technical Review
BCR	Benefit-Cost Ratio
CAP	Continuing Authorities Program
CE/ICA	Cost Effectiveness/Incremental Cost Analysis
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CERF	Coastal and Estuarine Research Federation
COI	Conflict of Interest
CPRA	Coastal Protection and Restoration Authority
DOTD	Department of Transportation & Development
DrChecks	Design Review and Checking System
EA	Environmental Assessment
EC	Engineer Circular
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
ER	Engineer Regulation
ERDC	Engineer Research and Development Center
FR/EIS	Draft Integrated Feasibility Report and Environmental Impact Statement
GEC	Gulf Engineers & Consultants
GIWW	Gulf Intracoastal Waterway
HEP	Habitat Evaluation Procedure
HNC	Houma Navigation Canal
HTRW	Hazardous, Radioactive, and Toxic Waste
IEPR	Independent External Peer Review
IWR	Institute for Water Resources
LADNR-CMD	Louisiana Department of Natural Resources-Coastal Management Division
LDEQ	Louisiana Department of Environmental Quality
LDWF	Louisiana Department of Wildlife and Fisheries
LWRC	Louisiana Water Resources Council

MCACES	Micro-Computer Aided Cost Estimating System
NED	National Economic Development
NEPA	National Environmental Policy Act
NFS	Non-Federal Sponsor
NOAA-NMFS	National Oceanic and Atmospheric Administration-National Marine Fisheries Service
NRCS	National Resource Conservation Service
O&M	Operation and Maintenance
OEO	Outside Eligible Organization
OMB	Office of Management and Budget
PIANC	World Association for Waterborne Transport Infrastructure
PDT	Project Delivery Team
TLCD	Terrebonne Levee and Conservation District
TPC	Terrebonne Port Commission
TPCG	Terrebonne Parish Consolidated Government
TSP	Tentatively Selected Plan
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Services
WRDA	Water Resources Development Act

1. INTRODUCTION

Houma Navigation Canal (HNC) is a deep-draft navigation harbor located in Terrebonne Parish in southeast Louisiana at the northern edge of the Gulf of Mexico. The project begins at the Gulf Intracoastal Waterway (GIWW) and runs for about 41 miles from Houma, Louisiana, to the Gulf of Mexico. The study area encompasses the towns of Boudreaux, Dulac, Theriot, Mulberry, Crozier, and Cocodrie, and extends for one mile from each bank of the HNC within the Barataria-Terrebonne estuary. This estuary extends from the west bank levee of the Mississippi River (north and east) to the East Guide Levee of the Atchafalaya River (west), to the Gulf of Mexico (south) and to the Town of Morganza (north). The Terrebonne basin covers an area of about 2,063,500 acres.

The Draft Integrated Feasibility Report and Environmental Impact Statement (FR/EIS) of navigation improvements on the HNC was prepared by the Department of Transportation & Development/Coastal Protection and Restoration Authority (DOTD/CPRA) of Louisiana under the authority granted by Section 203 of the Water Resources Development Act (WRDA) of 1986 (P.L. 99-662). Section 203 of WRDA 1986 allows non-Federal interests, such as DOTD/CPRA, to undertake feasibility studies of proposed harbor projects and submit them to the Secretary of the Army. DOTD/CPRA conducted this Section 203 study to determine the feasibility of deepening the HNC.

Independent, objective peer review is regarded as a critical element in ensuring the reliability of scientific analysis. The objective of the work described here was to conduct an Independent External Peer Review (IEPR) of the Section 203 HNC FR/EIS (hereinafter: HNC IEPR) in accordance with procedures described in the Department of the Army, U.S. Army Corps of Engineers (USACE), Engineer Circular (EC) *Civil Works Review* (EC 1165-2-214) (USACE, 2012) and the Office of Management and Budget (OMB), *Final Information Quality Bulletin for Peer Review* (OMB, 2004). Supplemental guidance on evaluation for conflicts of interest (COIs) was obtained from the *Policy on Committee Composition and Balance and Conflicts of Interest for Committees Used in the Development of Reports* (The National Academies, 2003). Gulf Engineers & Consultants (GEC), a prime contractor for the State of Louisiana, engaged Battelle to conduct the HNC IEPR in accordance with the published procedures, methodology, and guidance of USACE.

This final report presents the Final Panel Comments of the IEPR Panel (the Panel) on the existing engineering, economic, environmental, and plan formulation analyses contained in the HNC review documents (Section 4). Appendix A describes in detail how the IEPR was planned and conducted, including the complete schedule followed in executing the IEPR. Appendix B provides biographical information on the IEPR panel members and describes the method Battelle followed to select them. Appendix C presents the final charge as provided to the IEPR panel members for their use during the review; the final charge was submitted to GEC in the final Work Plan according to the schedule listed in Table 1.

2. PURPOSE OF THE IEPR

To ensure that USACE decision documents (including GEC-developed documents) are supported by the best scientific and technical information, USACE has implemented a peer review process that uses IEPR to complement the Agency Technical Review (ATR), as described in USACE (2012).

In general, the purpose of peer review is to strengthen the quality and credibility of USACE decision documents for water resources projects in support of the USACE Civil Works program. IEPR provides an independent assessment of the engineering, economic, environmental, and plan formulation analyses of

the project study. In particular, the IEPR addresses the technical soundness of the project study's assumptions, methods, analyses, and calculations and identifies the need for additional data or analyses to make a good decision regarding implementation of alternatives and recommendations.

In this case, the IEPR of the HNC was conducted and managed using contract support from Battelle, which is an Outside Eligible Organization (OEO) (as defined by USACE EC 1165-2-214). Battelle, a 501(c)(3) organization under the U.S. Internal Revenue Code, has experience conducting IEPRs for USACE, for state and local agencies, and for industrial clients. Prior to contracting for the Houma IEPR, Battelle completed an internal organizational conflict of interest screening to ensure that it was free from conflicts of interest before conducting the IEPR.

3. METHODS FOR CONDUCTING THE IEPR

The methods used to conduct the IEPR are briefly described in this section; a detailed description can be found in Appendix A. Table 1 presents the major milestones and deliverables of the HNC IEPR. Due dates for milestones and deliverables are based on the award/effective date listed in Table 1. Note that the actions listed under Task 6 as well as the public comment review occur after the submission of this report. Battelle anticipates submitting the pdf printout of the USACE's Design Review and Checking System (DrChecks) project file (the final deliverable) on August 17, 2017. The actual date for contract end will depend on the date that all activities for this IEPR are conducted and subsequently completed.

Table 1. Major Milestones and Deliverables of the HNC IEPR

Task	Action	Due Date
1	Award/Effective Date	3/23/2017
	Review documents available	4/10/2017
	Public comments received from GEC *(Estimated date)*	8/1/2017
2	Battelle submits list of selected panel members[a]	5/4/2017
	GEC confirms the panel members have no COI	5/10/2017
3	Battelle convenes kick-off meeting with GEC	4/13/2017
	Battelle convenes kick-off meeting with GEC and panel members	5/18/2017
4	Panel members complete their review of the documents	6/26/2017
	Panel members provide draft Final Panel Comments to Battelle	6/30/2017
	Panel finalizes Final Panel Comments	7/7/2017
4[b]	Battelle sends public comments to Panel	8/9/2017
	Panel confirms no additional Final Panel Comment is necessary with regard to the public comments, or develops additional Final Panel Comment(s) with regard to the public comments	8/16/2017
5	Battelle submits Final IEPR Report to GEC[a]	7/10/2017
5[b]	Battelle submits Addendum to Final IEPR Report to GEC[a]	8/31/2017

Table 2. Major Milestones and Deliverables of the HNC IEPR (continued)

Task	Action	Due Date
6[c]	Battelle convenes Comment Response Teleconference with panel members and GEC	8/7/2017
	Battelle submits pdf printout of DrChecks project file[a]	8/17/2017
	Contract End/Delivery Date	3/31/2019

[a] *Deliverable.*

[b] *The public comment review and Final IEPR Report Addendum are part of Task 4 and 5, but are shaded in a different color to denote the different schedule milestones associated with this part of the review.*

[c] *Task 6 and public comment activities occur after the submission of this report. If any public comments generate a Final Panel Comment(s), the Comment Response process will be repeated.*

Battelle identified, screened, and selected five panel members to participate in the IEPR based on their expertise in the following disciplines: dredging, civil engineering, economics, plan formulation, and wetland ecology/biology. The Panel reviewed the HNC review documents and produced 11 Final Panel Comments in response to 26 charge questions provided by Battelle for the review, including two overview questions. Battelle instructed the Panel to develop the Final Panel Comments using a standardized four-part structure:

1. Comment Statement (succinct summary statement of concern)
2. Basis for Comment (details regarding the concern)
3. Significance (high, medium/high, medium, medium/low, or low; in accordance with specific criteria for determining level of significance)
4. Recommendation(s) for Resolution (at least one implementable action that could be taken to address the Final Panel Comment).

Battelle reviewed all Final Panel Comments for accuracy, adherence to USACE guidance (EC 1165-2-214, Appendix D), and completeness prior to determining that they were final and suitable for inclusion in the Final IEPR Report. There was no direct communication between the Panel and GEC during the preparation of the Final Panel Comments. The Panel's findings are summarized in Section 4.1; the Final Panel Comments are presented in full in Section 4.2.

4. RESULTS OF THE IEPR

This section presents the results of the IEPR. A summary of the Panel's findings and the full text of the Final Panel Comments are provided.

4.1 Summary of Final Panel Comments

The panel members agreed on their "assessment of the adequacy and acceptability of the economic, engineering, and environmental methods, models, and analyses used" (USACE, 2012; p. D-4) in the HNC review documents. The following summarizes the Panel's findings.

Based on the Panel's review, the FR/EIS is well-written and concise, and provides excellent supporting documentation on engineering, environmental, economic, and plan formulation issues. The study considered many of the most logical measures in the development of alternatives and appears to have substantially considered USACE environmental guidance and various Federal and local environmental laws and initiatives.

The FR/EIS provided a balanced assessment of the economic, engineering, and environmental issues of the overall project; however, the Panel identified elements of the report that should be clarified or revised or elements of the project where additional analysis are warranted and places where clarification of project findings need to be documented or revised.

Engineering: The engineering aspects of the project were clearly presented, resulting in one of the most organized reports of this type that the Panel has reviewed. While appropriate methods, models, and analyses were considered, the Panel's most important finding was that the cost estimates associated with foreshore rock protection and maintenance dredging for the Inland Reach are not fully explained or justified in sufficient detail. The lack of detailed information to support the assumptions regarding unit costs, maintenance dredging volumes, and shoreline erosion rates increases the level of uncertainty in the cost estimate. To address this concern, the Panel suggests providing additional information to support the cost estimate assumptions for both the with-rock protection and without-rock protection scenarios for the Inland Reach.

Another concern the Panel noted was that the design and modeling of the HNC lock and flood gate are not described or modeled in sufficient detail to assess the performance of the lock at limiting salt water intrusion. Without the assurance of minimal saltwater intrusion from canal-deepening activities, impacts to freshwater wetlands and hardwood bottomland habitats may lead to insufficient mitigation of these resources. This issue can be addressed by providing more information on lock operations and likely scenarios for lock opening and closing during normal and severe weather events, clarifying the bathymetry sources used, and conducting additional analysis on storm events (especially those of tropical origin) and the potential of coastal setup or storm surge to push saltwater up the canal.

Plan Formulation: The plan formulation methodology was straightforward and clear, and considered the USACE planning process; however, the Panel was concerned that dredged material placement alternatives were not evaluated for the Inland Reach and only a few containment options for the beneficial use areas in the lower reaches were considered. Considering all reasonable available placement and beneficial use options in the Inland Reach and a more comprehensive group of containment methods in the Lower Reach may identify alternatives with additional project benefits. The Panel suggests reconsidering placement alternatives for the Inland Reach, including beneficial use options where plausible, and re-evaluating containment methods in the lower reaches.

Economics: The economics section was robust in detail and documentation, notably the model certification and description of the National Economic Development (NED) worksheet models. The figures depicted excellent descriptions of the flow of the methodology to derive benefit-cost ratios (BCRs). GEC makes a strong and defensible case for the recommended plan. However, the Panel noted that a lack of documentation and sources for various economic assumptions increases the degree of risk and uncertainty as the project progresses. While the economic assumptions seem correct, the confidence in the analysis and findings would be greater if detailed sources and documentation were added to the report. To address this concern, the Panel suggests two options: 1) reviewing the FR/EIS main report plus the economic appendix and identifying statements or assumptions that are not currently supported by detailed sources or documentation, then adding those sources/documentation to the report, or 2) explaining why the unsupported statements or assumptions cannot be documented so as to increase confidence in the Tentatively Selected Plan (TSP).

Environmental: The review documents did an exemplary job of documenting all of the natural resources in the existing environment section. They presented an in-depth description of all the potentially affected ecosystem types and species contained therein. The Panel's most important finding in this area was that it is unclear whether chemical characterization of proposed dredge material has been conducted to

confirm its suitability for beneficial use. If the dredge material cannot be used as proposed, the alternatives are likely not economically viable or self-mitigating. This issue can be addressed by clarifying the level of chemical characterization performed on the proposed dredge material (depth, timeframe, analytes tested), stating clear guidance on the point of compliance for beneficial reuse for each constituent potentially encountered, and providing assurance that a human health risk assessment has been performed for the area.

Another concern was that the FR/EIS does not provide a plan to verify the ecological and physical performance of the proposed created marshlands or provide for potential adaptive management should corrective measures be needed. Without implementing a plan to verify the performance of the created habitats, the self-mitigating nature of the TSP cannot be assumed throughout the design life of the project. This concern can be addressed by 1) providing a conservation/mitigation monitoring and adaptive management plan, or 2) describing steps being taken in lieu of a monitoring and adaptive management plan. In either case, the approach should be consistent with the most current Coastal Protection and Restoration Authority (CPRA) Master Plan for coastal restoration with respect to deriving points of compliance for marsh creation performance and appropriate adaptive management actions.

4.2 Final Panel Comments

This section presents the full text of the Final Panel Comments prepared by the IEPR panel members.

Final Panel Comment 1

The cost estimates associated with foreshore rock protection and maintenance dredging are not explained or justified in sufficient detail.

Basis for Comment

The analysis of foreshore rock protection in Appendix A, Annex VI, of the FR/EIS compares the continued loss of marsh land associated with an unprotected shoreline versus the cost of adding rock protection along the HNC Inland Reach shoreline. However, the assumptions regarding unit costs, maintenance dredging volumes, and shoreline erosion rates are not clearly defined and/or sufficiently substantiated.

As presented, the "cost with rock" is only marginally lower than the "cost without rock" (ranging from about 2% to 7% lower). A relatively small change in unit cost or volume estimates may affect the results of the analysis. For example, the unit cost of the rock protection used in Appendix A, Annex VI, is $60/ton. If the rock unit cost increased to $65/ton (a reasonably small increase, considering that the cost estimate in the Appendix M Micro-Computer Aided Cost Estimating System (MCACES) Report applied a unit cost of $71.51/ton), then the total cost for foreshore protection would increase by $6.2 million ($3.1 million for construction and an additional $3.1 million for maintenance), assuming 619,800 tons of rock. The total cost for the 20-foot channel with rock would increase to $111.9 million compared to a total cost of $107.7 million without rock.

Given the level of uncertainty in the analysis, the proposed rock shoreline protection may not be economically feasible for the deepening alternatives.

Significance – Medium

The lack of detailed information to support the assumptions regarding unit costs, maintenance dredging volumes, and shoreline erosion rates increases the level of uncertainty in the cost estimate presented in Appendix A.

Recommendation for Resolution

1. Provide additional information to support the cost estimate assumptions, or summarize and reference existing reports that provide the necessary information. For both scenarios—with rock protection and without rock protection—this information should include supporting details for both unit costs and required maintenance dredging volumes.

Final Panel Comment 2

The design and modeling of the HNC lock and flood gate are not described or modeled in sufficient detail to assess the performance of the lock at limiting salt water intrusion.

Basis for Comment

Deepening the HNC will raise the probability of saltwater intrusion beyond what is already experienced in freshwater-dominated systems associated with the northern reaches of the navigation canal. The FR/EIS states that the HNC lock will control saltwater intrusion that could result from the implementation of the preferred alternative. Much of the impact analysis presented in this study is dependent on the lock's ability to minimize saltwater intrusion into freshwater wetlands and canals north of the lock.

While we understand that the final design of the HNC lock is dependent on the outcome of the feasibility study, the Panel cannot verify the effectiveness of the lock and flood gate in preventing saltwater intrusion based on the information presented. Specifically, the information:

- Did not provide sufficient details on operation of the lock during normal and storm events.
- Did not provide sufficient details on the data used to model the ability of the lock to control saltwater intrusion. The model may be highly dependent on the accuracy of bathymetry and datum conversions.
- Did not sufficiently analyze low-frequency, high-impact events such as tropical storms or hurricanes, where storm surge would force saltwater up the canal and heavy rains would create flooding conditions north of the lock. This potential scenario could promote saltwater intrusion via stratified estuarine circulation, where fresher flood waters would flow out of the lock and denser saltwater would flow up the canal underneath the freshwater layer to replace the volume released.

Furthermore, impacts to freshwater wetlands and hardwood bottomland habitats from saltwater intrusion are not fully quantified. While a discussion in Appendix A indicates adequate control under most conditions, it would take only one high salinity pulse to irreversibly damage the hardwood bottomlands, causing loss of that habitat.

Significance – Medium

Without the assurance of minimal saltwater intrusion from canal-deepening activities, impacts to freshwater wetlands and hardwood bottomland habitats may lead to insufficient mitigation of these resources.

Recommendation for Resolution

1. Provide more information on lock operations and likely scenarios for lock opening and closing during normal and severe weather events.
2. Clarify what bathymetry sources were used and when these data were obtained relative to maintenance dredging or significant erosional events.
3. Provide a sensitivity analysis of the datum conversions to determine the risk associated with the datum conversion uncertainty.
4. Conduct additional analysis on storm events (especially those of tropical origin) and the potential of coastal setup or storm surge to push saltwater up the canal.

5. Describe how the floodgate would be used in a flood situation and whether there is potential from saltwater intrusion through stratified flow.

Final Panel Comment 3

It is unclear whether chemical characterization of proposed dredge material has been conducted to confirm its suitability for beneficial use.

Basis for Comment

The current navigation canal is subject to periodic dredging for navigational purposes. Deepening the canal would presumably remove material not currently subject to this practice, with the assumption that this material will be beneficially reused for habitat/marsh creation to offset project-related impacts. Using potentially contaminated (based on human health risk) sediments to create habitat could create a pathway for these contaminants to enter the food web and potentially be consumed by humans through local fisheries.

It is recognized that some samples have been taken to characterize the chemical constituents of the sediment and that these samples have been tested either directly or through elutriation with subsequent testing of the elutriate. Minor to moderate exceedances in certain analytes were detected in several samples. However, it is not clear whether these sediment samples are surficial only or are sampled throughout the proposed dredge prism. If these samples are surficial only (depths normally subject to maintenance dredging), then it cannot be assumed that all dredged sediments are suitable for beneficial reuse and that human health risk is minimized. This concern is further complicated by the presence of a Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) site near the canal alignment.

The assumption of beneficial reuse of all dredge material is crucial for the following:

- Minimizing the handling and disposal costs of dredge materials
- Creating marsh habitat through strategic placement of dredge materials.

Significance – Medium

If the dredge material cannot be used as proposed, the alternatives are likely not economically viable or self-mitigating.

Recommendation for Resolution

1. Clarify the extent of chemical characterization performed on the proposed dredge material (depth, timeframe, analytes tested).
2. State clear guidance on the point of compliance for beneficial reuse for each constituent potentially encountered (e.g., a table of potential contaminants and concentrations levels where beneficial reuse would be allowed).
3. Provide assurance that a human health risk assessment has been performed for the area.

Final Panel Comment 4

The FR/EIS does not provide a plan to verify the ecological and physical performance of the proposed created marshlands and to identify the potential for adaptive management.

Basis for Comment

The FR/EIS proposes the beneficial reuse of dredge material to create marshland habitat. Typically, when proposing mitigation/restoration activities that provide for ecological lift or provide shoreline protection, a verification process is agreed upon *a priori*. This is often in the form of a mitigation plan that incorporates two areas of focus: the analysis for "no net loss" and the monitoring and adaptive management strategy that ensures that performance assumptions are being met and identifies what actions to take should they not be met within an agreed-upon timeframe. These strategies often contain milestones, performance measures, and other critical points of compliance that are usually agreed upon through negotiations with the project owner and relevant regulators.

The Panel did not find evidence of a plan of action that will be implemented to ensure the ecological/physical performance of the created marshlands. In addition, if an issue arose and the created habitats failed to perform their intended function (for example, if they failed to recruit marsh vegetation or recruited less desirable, lower-functioning vegetation), there is no provision for corrective action.

Significance – Medium

Without implementing a plan to verify the performance of the created habitats, the self-mitigating nature of the Tentatively Selected Plan (TSP) cannot be assumed throughout the design life of the project.

Recommendation for Resolution

1. Provide a conservation/mitigation monitoring plan if one has been drafted for consultation with Federal regulatory agencies, or describe steps being taken in lieu of this type of monitoring plan.
2. Provide an adaptive management plan if one has been drafted, or discuss how corrective steps may be implemented should the created marsh fail to meet its design life or fail to provide full habitat value.
3. If neither a monitoring plan nor an adaptive management plan can be provided, consult the most current CPRA Master Plan for coastal restoration to derive points of compliance for marsh creation performance and appropriate adaptive management actions.

Final Panel Comment 5

The lack of documentation and sources for various economic assumptions increases the degree of risk and uncertainty as the project progresses.

Basis for Comment

Many assumptions in text and tables (such as traffic, costs, projections, growth, etc.) do not have adequate documentation, which increases the amount of risk and uncertainty for the project going forward.

For example:

1. The FR/EIS (page 4-5) states: "…existing data was used to exclude unreasonable alternatives." The type of data is not specified, nor is any documentation provided to support this assertion.
2. Section 4.8 does not provide the source or rationale for Port Fourchon being regarded as a reliable indicator of the strength of offshore oil and gas sectors.
3. The data derived from the interviews and surveys are the heart of the benefits of the fabrication activity, and the FR/EIS (page 9 of the introduction) indicates that interview notes do exist. Detailed information on interview notes and documentation is not provided, yet other studies/project EISs reviewed by panel members provided transcripts and detailed notes on interviews. Why not here?
4. No sources are given for tug costs, which are critical with regard to the project's economic assumptions.

Significance – Medium

While the economic assumptions seem correct, the confidence in the analysis and findings would be greater if detailed sources and documentation were added to the report.

Recommendation for Resolution

1. Review the FR/EIS main report plus the economic appendix and identify statements or assumptions that are not currently supported by detailed sources or documentation.
2. Add those sources/documentation to the report, or explain why the unsupported statements or assumptions cannot be documented so as to increase confidence in the TSP.

Final Panel Comment 6

The array of alternatives considered is not robust and does not fully evaluate all relevant options.

Basis for Comment

The report considers six alternatives in addition to the no-action alternative: the combinations of two channel depths (18 feet and 20 feet) and three alternatives for dredged material management in the lower reaches (adjacent disposal, beneficial use earthen containment, and beneficial use rock containment). Two specific concerns with the current alternatives:

1. Other placement alternatives in the Inland Reach are not considered. Current alternatives only consider beneficial use in the lower reach. Section 4.8.17 states that dredged sediment will be used in the Inland Reach to re-establish eroded banks, create marsh in shallow open waters, and nourish broken marsh areas. These opportunities could potentially be aggregated into beneficial use alternatives that increase project benefits in the Inland Reach. Aggregating placement between reaches to accomplish specific beneficial objectives may alleviate additional pumping costs.
2. The evaluation of containment methods for the large beneficial use areas in the lower reaches is not comprehensive. It is possible that an “optimal” containment method—specifically, other types of containment besides earthen and rock containment—would be more competitive with adjacent disposal (geotextile tubes and a combination of potential containment methods are obvious omissions).

Current alternatives consider only earthen and rock dikes for beneficial use containment. A direct comparison of these options would have shown earthen dikes to be superior (given the evaluation criteria), making Alternatives 1C and 2C superfluous.

Significance – Medium

By not considering all available placement and beneficial use options in the Inland Reach and a more comprehensive group of containment methods in the Lower Reach, the array of project alternatives may not maximize project benefits.

Recommendation for Resolution

1. Reconsider placement alternatives for the Inland Reach, including beneficial use options where plausible.
2. Re-evaluate containment methods for the beneficial use site in the lower reaches.
3. If feasible, develop a revised set of project alternatives that incorporate the results of Recommendations 1 and 2.

Final Panel Comment 7

The array of shoreline protection options considered along the Inland Reach is incomplete given the concerns raised in the FR/EIS regarding bank erosion.

Basis for Comment

The FR/EIS stresses the importance of shoreline protection along the Inland Reach of the HNC. It indicates that the historic rate of bank erosion along the Inland Reach is approximately 12.9 acres per year (Section 4.5.5). The need for shoreline protection along the reach under current conditions is noted in multiple places, as is the expanded need after channel deepening because of the increased frequency, size, and speed of vessel traffic. For example, Section 3.1 cites an authorized Continuing Authorities Program (CAP) Section 1135 project to "…stabilize the bank using a rock dike along 3.4 miles from Miles 25.3 to 28 on the west bank (to Falgout Canal), and along the east bank of the channel from HNC Miles 27.6 to 27.7 and Miles 23.7 to 24.3, approximately 5 miles south of Houma, Louisiana." Figure 4-3 shows general locations of rock dikes for shoreline protection and dredged material retention for the TSP. Section 6.22.2 refers to "…the rock dikes that would be constructed, as needed, for foreshore protection (erosion control) along Miles 36.3 to 11.0…" (for alternative 1A).

Despite the focus on its importance, the FR/EIS does not discuss alternative shoreline protection methods such as geotextile tubes, gabion mattresses, or vegetated earthen berms, nor does it refer to other studies of the HNC Inland Reach that may have concluded that rock dikes are the most effective and economical solution.

Significance – Medium

Shoreline protection methods other than rock dikes (e.g., soft measures) may provide equivalent shore protection at a lower cost as well as ecological benefits.

Recommendation for Resolution

1. Revise the evaluation of shoreline protection methods and their application to the HNC Inland Reach and provide the revised findings in the report, or summarize and reference in the report existing studies that provide the necessary information that arrive at this conclusion.

Final Panel Comment 8

The assumptions related to maintenance dredging volumes for the HNC Inland Reach are unclear and appear to be conflicting throughout various sections of the report.

Basis for Comment

The FR/EIS states that bank erosion due to vessel traffic is the primary source of shoaling within the Inland Reach of the HNC and that rock foreshore protection has been proposed for the deepening alternatives to prevent that erosion. However, the shoaling rates (and required maintenance dredging volumes) for the deepening alternatives are not clearly defined and documented.

In the Engineering Appendix, historic shoaling rates were assumed for the no-action alternative; however, it is not clear how the "revised maintenance volumes (in lieu of the historical)" were determined for the deepening alternatives.

In addition, various sections of the report provide conflicting information regarding the maintenance dredging requirements for the Inland Reach of the HNC. For example:

- Section 4.9.2 (OMRR&R) states that "maintenance dredging is not expected to increase from what is currently required" for the deepening alternatives.
- Section 4.5.5 states that "foreshore protection is estimated to reduce the historic maintenance volume on the inland reach by 5%."
- Appendix A, Section 8.4, Table A-25, indicates that maintenance volumes will increase by 2% and 10%, respectively, for the 18-foot and 20-foot channels, compared to the existing channel.

Significance – Medium/Low

Maintenance dredging volumes have a direct impact on the operation and maintenance (O&M) cost of the project, which may impact the benefit-cost ratio (BCR) and ultimately the TSP.

Recommendation for Resolution

1. Provide additional information to support the shoaling rates and maintenance dredging assumptions for the Inland Reach presented in the Engineering Appendix.
2. Revise conflicting sections of the report and appendices to be consistent regarding maintenance dredging requirements for the Inland Reach.

Final Panel Comment 9

The no-growth sensitivity analysis is not evaluated in sufficient detail to support the finding of substantial effect.

Basis for Comment

The sensitivity analysis indicates Present Value National Economic Development (NED) benefits of $721.4 million under the no-growth scenario, in contrast to $1,063 million of expected growth under the TSP (Tables 16-18, pages 66-68); however, few specific sources, and little documentation or detailed analysis, are presented. The last four years of petroleum traffic (Table 16) and volume in the analysis appear to have stabilized and even decreased, so more attention could be paid to the effect of the growth rates on magnitude of the benefits and therefore the BCRs. Two to three recent years of data should now be available for inclusion in the analysis of petroleum traffic projections and growth rates. These data could help strengthen the confidence in the estimation of the NED value and TSP benefits, whether they be increased or decreased (depending on the results of the analysis).

Significance – Medium/Low

The variation of the BCRs in the sensitivity analysis may be significant using the most recent data, affecting the NED benefits and choice of TSP.

Recommendation for Resolution

1. Rerun the sensitivity analysis projections with the most recent available years of data.
2. Determine the impact of the findings on the NED value and BCRs for each of the assumptions in the sensitivity analysis.
3. If Recommendations 1 and/or 2 are undertaken, insert the findings in the growth rate discussion and discuss the implications of varying growth rates on risk and uncertainty.

Final Panel Comment 10

It cannot be determined from the descriptions provided whether the cumulative effects of the Houma project and other past, current, or future projects have been fully analyzed.

Basis for Comment

No inaccuracies or misstatements with regard to the descriptions of projects on the overall riverine system are found. But the major projects (such as the Port of Iberia, Morganza to the Gulf, the Atchafalaya River, etc., described in Section 3) when combined with the Houma project, may have continuing implications for the environment around the Houma project. Rather than just describing these projects independently (as is currently done), the implications of the combined projects for the environment (cumulative effects) should be presented and analyzed.

Significance – Medium/Low

An analysis of the potential impacts on the environment of other state/Federal projects, when combined with the Houma project, would improve the technical quality of the report.

Recommendation for Resolution

1. Review major past, present, and future projects in combination with the Houma project to determine whether they have or might result in cumulative impacts on the environment.
2. Describe those impacts in Section 3 of the FR/EIS.

Final Panel Comment 11

The logs and notes from interviews conducted to assess potential future fabrication opportunities are not included in the report, but are necessary to provide context for projected fabrication benefits.

Basis for Comment

The benefits to this project are derived from transportation savings and fabrication activities. The projected benefits from potential future fabrication opportunities associated with deep-water oil and gas sector infrastructure were based solely on information obtained from GEC's interviews with maritime industry firms. The logs and/or notes from these interviews with potential manufacturing firms likely contain contextual information that supports the analysis of projected fabrication benefits, yet the logs and notes are not included in the FR/EIS. Typically, interview documentation would be provided, at least as an exhibit or an appendix, in a decision document such as this report. Without such documentation, projected fabrication benefits cannot be adequately reviewed, and the potential for future fabrication opportunities cannot be assessed.

Significance – Medium/Low

Omitting the logs and notes from the interviews increases the level of uncertainty regarding the findings associated with projected fabrication benefits and potential future opportunities.

Recommendation for Resolution

1. Include the logs and notes from the interviews used to assess potential future fabrication opportunities as an attachment to the Economics Appendix.

5. REFERENCES

OMB (2004). Final Information Quality Bulletin for Peer Review. Executive Office of the President, Office of Management and Budget, Washington, D.C. Memorandum M-05-03. December 16.

The National Academies (2003). Policy on Committee Composition and Balance and Conflicts of Interest for Committees Used in the Development of Reports. The National Academies (National Academy of Science, National Academy of Engineering, Institute of Medicine, National Research Council). May 12.

USACE (2012). Water Resources Policies and Authorities: Civil Works Review. Engineer Circular (EC) 1165-2-214. Department of the Army, U.S. Army Corps of Engineers, Washington, D.C. December 15.

APPENDIX A

IEPR Process for the HNC Project

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A.1 Planning and Conduct of the Independent External Peer Review (IEPR)

Table A-1 presents the schedule followed in executing the Houma Navigation Canal (HNC) Section 203 Draft Integrated Feasibility Report and Environmental Impact Statement (FR/EIS) (hereinafter: HNC IEPR). Due dates for milestones and deliverables are based on the award/effective date listed in Table A-1. The review documents were provided by Gulf Engineers & Consultants (GEC) on April 10, 2017. Note that the actions listed under Task 6 and activities regarding the public comment review occur after the submission of this report and are described in more detail at the end of this Appendix.

Table A-1. HNC Complete IEPR Schedule

Task	Action	Due Date
1	Award/Effective Date	3/23/2017
	Review documents available	4/10/2017
	Public comments received from GEC	~8/1/2017
	Battelle submits draft Work Plan[a]	5/2/2017
	GEC provides comments on draft Work Plan	5/8/2017
	Battelle submits final Work Plan[a]	6/9/2017
2	Battelle requests input from GEC on the conflict of interest (COI) questionnaire	4/24/2017
	GEC provides edits, or confirms no edits, on COI questionnaire	4/26/2017
	Battelle submits list of selected panel members[a]	5/4/2017
	GEC confirms the panel members have no COI	5/10/2017
	Battelle completes subcontracts for panel members	5/17/2017
3	Battelle convenes kick-off meeting with GEC	4/13/2017
	Battelle sends review documents to panel members	5/17/2017
	Battelle convenes kick-off meeting with panel members	5/18/2017
	Battelle convenes kick-off meeting with GEC and panel members	5/18/2017
	Battelle convenes mid-review teleconference for panel members to ask clarifying questions of GEC	Not held
4	Panel members complete their review of the documents	6/26/2017
	Battelle provides talking points to panel members for Panel Review Teleconference	6/27/2017
	Battelle convenes Panel Review Teleconference	6/27/2017
	Battelle provides Final Panel Comment templates and instructions to panel members	6/27/2017
	Panel members provide draft Final Panel Comments to Battelle	6/30/2017
	Battelle provides feedback to panel members on draft Final Panel Comments; panel members revise Final Panel Comments	6/30/2017 - 7/5/2017
	Panel finalizes Final Panel Comments	7/7/2017

Table A-1. HNC Complete IEPR Schedule (continued)

Task	Action	Due Date
4[b]	Battelle receives public comments from GEC	8/8/2017
	Battelle sends public comments to Panel	8/9/2017
	Panel members complete their review of the public comments	8/16/2017
	Battelle and Panel review Panel's responses to public comments	8/17/2017
	Panel drafts Final Panel Comment on public comments, if necessary	8/18/2017
	Panel finalizes Final Panel Comment regarding public comments, if necessary	8/23/2017
5	Battelle provides Final IEPR Report to panel members for review	7/5/2017
	Panel members provide comments on Final IEPR Report	7/7/2017
	Battelle submits Final IEPR Report to GEC[a]	7/10/2017
	GEC provides decision on Final IEPR Report acceptance	7/13/2017
5[b]	Battelle provides Addendum to Final IEPR Report to panel members for review	8/25/2017
	Panel members provide comments on Addendum to Final IEPR Report	8/29/2017
	Battelle submits Addendum to Final IEPR Report to GEC[a]	8/31/2017
	GEC provides decision on Addendum to Final IEPR Report acceptance	9/8/2017
6[c]	Battelle inputs Final Panel Comments to Design Review and Checking System (DrChecks) and provides Final Panel Comment response template to GEC	7/14/2017
	Battelle convenes teleconference with GEC to review Comment Response process	7/14/2017
	Battelle convenes teleconference with Panel to review Comment Response process	7/17/2017
	GEC provides draft Evaluator Responses to Battelle for review and works with internal team regarding clarifications to responses, if needed	7/28/2017
	Battelle provides draft GEC Evaluator Responses to panel members	7/31/2017
	Panel members provide draft BackCheck Responses to Battelle	8/3/2017
	Battelle convenes teleconference with panel members to discuss draft BackCheck Responses	8/4/2017
	Battelle convenes Comment Response Teleconference with panel members and GEC	8/7/2017
	GEC inputs final Evaluator Responses to DrChecks	8/10/2017
	Battelle provides final GEC Evaluator Responses to panel members	8/11/2017
	Panel members provide final BackCheck Responses to Battelle	8/16/2017
	Battelle inputs the panel members' final BackCheck Responses to DrChecks	8/16/2017
	Battelle submits pdf printout of DrChecks project file[a]	8/17/2017
	Contract End/Delivery Date	3/31/2019

[a] *Deliverable.*

[b] *The public comment review and Final IEPR Report Addendum are part of Task 4 and 5, but are shaded in a different color to denote the different schedule milestones associated with this part of the review.*

[c] *Task 6 and public comment activities occur after the submission of this report. If any public comments generate a Final Panel Comment(s), the Comment Response process will be repeated.*

At the beginning of the Period of Performance for the HNC IEPR, Battelle held a kick-off meeting with GEC to review the preliminary/suggested schedule, discuss the IEPR process, and address any questions regarding the scope (e.g., terminology to use, access to the Design Review and Checking System [DrChecks], etc.). Any revisions to the schedule were submitted as part of the final Work Plan. The final charge consisted of 26 charge questions provided by Battelle, including two overview questions and one public comment question (all questions were included in the draft and final Work Plans), and general guidance for the Panel on the conduct of the peer review (provided in Appendix C of this final report).

Prior to beginning their review and after their subcontracts were finalized, all the members of the Panel attended a kick-off meeting via teleconference planned and facilitated by Battelle in order to review the IEPR process, the schedule, communication procedures, and other pertinent information for the Panel. Battelle planned and facilitated a second kick-off meeting via teleconference during which GEC presented project details to the Panel. Before the meetings, the IEPR Panel received an electronic version of the final charge, as well as the review documents and reference/supplemental materials listed in Table A-2.

Table A-2. Documents to Be Reviewed and Provided as Reference/Supplemental Information

Document	No. of Review Pages	Subject Experts				
		Dredging	Civil Engineer	Economics	Plan Formulation	Wetland Ecologist/ Biologist
HNC Draft Integrated Feasibility Report and Environmental Impact Statement (FR/EIS)	327	327	327	327	327	327
Appendix A - Engineering	83	83	83			
Appendix B – Non-Federal Sponsor's (NFS) Letter of Intent	16	16	16	16	16	16
Appendix C - Real Estate Plan	39	39	39	39	39	39
Appendix D - Economic Benefits	170			170	170	
Appendix E - Draft Coordination Act Report	47					47
Appendix F – Hazardous, Radioactive, and Toxic Waste (HTRW)	278	278	278			278
Appendix G - Cultural Resources	180				180	180
Appendix H - Environmental	120					120
Appendix I - Public Notice Comments	4	4	4	4	4	4
Appendix J - Public Scoping Meeting Report	18	18	18	18	18	18
Appendix K - Alternative Costs	265			265	265	
Appendix L - Abbreviated Risk Analysis	105	105	105	105	105	105
Appendix M - MII Cost Estimate	191	191	191	191	191	
Appendix N - Cost and Schedule Risk Analysis	47	47	47	47	47	47

Document	No. of Review Pages	Subject Experts				
		Dredging	Civil Engineer	Economics	Plan Formulation	Wetland Ecologist/ Biologist
Appendix O - Quality Control	12	12	12	12	12	12
Total # of review document pages	**1,902**	**1,120**	**1,120**	**1,194**	**1,374**	**1,193**
Public Comments[a]	*25*	*25*	*25*	*25*	*25*	*25*

[a] *GEC will submit public comments to Battelle upon their availability according to the schedule in Table A-1, who will in turn submit the comments to the IEPR Panel for review. A separate Addendum to the Final Report will be submitted if additional Final Panel Comments are necessary.*

In addition to the materials provided in Table A-2, the panel members were provided the following USACE guidance documents.

- USACE guidance, *Civil Works Review* (EC 1165-2-214), December 15, 2012
- Office of Management and Budget, *Final Information Quality Bulletin for Peer Review,* December 16, 2004

Near the end of the review, the Panel provided Battelle questions by discipline regarding the project. Battelle submitted panel member questions to GEC. GEC was able to provide written responses to all of the questions prior to the end of the review. Because of this, Battelle determined that a mid-review teleconference with GEC, Battelle, and the Panel was not necessary.

A.2 Review of Individual Comments

The Panel was instructed to address the charge questions/discussion points within a charge question response form provided by Battelle. At the end of the review period, the Panel produced individual comments in response to the charge questions/discussion points. Battelle reviewed the comments to identify overall recurring themes, areas of potential conflict, and other overall impressions. At the end of the review, Battelle summarized the individual comments into a preliminary list of overall comments and discussion points. Each panel member's individual comments were shared with the full Panel.

A.3 IEPR Panel Teleconference

Battelle facilitated a teleconference with the Panel so that the panel members could exchange technical information. The main goal of the teleconference was to identify which issues should be carried forward as Final Panel Comments in the Final IEPR Report and decide which panel member should serve as the lead author for the development of each Final Panel Comment. This information exchange ensured that the Final IEPR Report would accurately represent the Panel's assessment of the project, including any conflicting opinions. The Panel engaged in a thorough discussion of the overall positive and negative comments, added any missing issues of significant importance to the findings, and merged any related individual comments. At the conclusion of the teleconference, Battelle reviewed each Final Panel Comment with the Panel, including the associated level of significance, and confirmed the lead author for each comment.

A.4 Preparation of Final Panel Comments

Following the teleconference, Battelle distributed a summary memorandum for the Panel documenting each Final Panel Comment (organized by level of significance). The memorandum provided the following

detailed guidance on the approach and format to be used to develop the Final Panel Comments for the HNC IEPR:

- Lead Responsibility: For each Final Panel Comment, one Panel member was identified as the lead author responsible for coordinating the development of the Final Panel Comment and submitting it to Battelle. Battelle modified lead assignments at the direction of the Panel. To assist each lead in the development of the Final Panel Comments, Battelle distributed a summary email detailing each draft final comment statement, an example Final Panel Comment following the four-part structure described below, and templates for the preparation of each Final Panel Comment.

- Directive to the Lead: Each lead was encouraged to communicate directly with the other panel member as needed and to contribute to a particular Final Panel Comment. If a significant comment was identified that was not covered by one of the original Final Panel Comments, the appropriate lead was instructed to draft a new Final Panel Comment.

- Format for Final Panel Comments: Each Final Panel Comment was presented as part of a four-part structure:

  1. Comment Statement (succinct summary statement of concern)
  2. Basis for Comment (details regarding the concern)
  3. Significance (high, medium/high, medium, medium/low, and low; see descriptions below)
  4. Recommendation(s) for Resolution (see description below).

- Criteria for Significance: The following were used as criteria for assigning a significance level to each Final Panel Comment:

  1. **High:** Describes a fundamental issue with the project that affects the current recommendation or justification of the project, and which will affect its future success, if the project moves forward without the issue being addressed. Comments rated as high indicate that the Panel determined that the current methods, models, and/or analyses contain a “showstopper” issue.

  2. **Medium/High:** Describes a potential fundamental issue with the project, which has not been evaluated at a level appropriate to this stage in the planning process. Comments rated as medium/high indicate that the Panel analyzed or assessed the methods, models, and/or analyses available at this stage in the Planning process and has determined that if the issue is not addressed, it could lead to a “showstopper” issue.

  3. **Medium:** Describes an issue with the project, which does not align with the currently assessed level of risk assigned at this stage in the planning process. Comments rated as medium indicate that, based on the information provided, the Panel identified an issue that would raise the risk level if the issue is not appropriately addressed.

  4. **Medium/Low:** Affects the completeness of the report at this time in describing the project, but will not affect the recommendation or justification of the project. Comments rated as medium/low indicate that the Panel does not currently have sufficient information to analyze or assess the methods, models, or analyses.

5. **Low:** Affects the understanding or accuracy of the project as described in the report, but will not affect the recommendation or justification of the project. Comments rated as low indicate that the Panel identified information that was mislabeled or incorrect or that certain data or report section(s) were not clearly described or presented.

- Guidelines for Developing Recommendations: The recommendation section was to include specific actions that GEC should consider to resolve the Final Panel Comment (e.g., suggestions on how and where to incorporate data into the analysis, how and where to address insufficiencies, areas where additional documentation is needed).

Battelle reviewed and edited the Final Panel Comments for clarity, consistency with the comment statement, and adherence to guidance on the Panel's overall charge, which included ensuring that there were no comments regarding either the appropriateness of the selected alternative or U.S. Army Corps of Engineers (USACE) policy. At the end of this process, 11 Final Panel Comments were prepared and assembled. There was no direct communication between the Panel and GEC during the preparation of the Final Panel Comments. The full text of the Final Panel Comments is presented in Section 4.2 of the main report.

A.5 Conduct of the Public Comment Review

Battelle will complete the public comment review following the schedule in Table A-1. The public comment review for the IEPR panel members will take place after the Final IEPR Report (this document) has been submitted to GEC.

A.6 Final IEPR Report

After concluding the review and preparation of the Final Panel Comments, Battelle prepared a final IEPR report (this document) on the overall IEPR process and the IEPR panel members' findings. Each panel member and Battelle technical and editorial reviewers reviewed the IEPR report prior to submission to GEC for acceptance.

A.7 Comment Response Process

As part of Task 6, Battelle will enter the 11 Final Panel Comments developed by the Panel into the USACE-developed DrChecks, a Web-based software system for documenting and sharing comments on reports and design documents, so that GEC can review and respond to them. GEC will provide responses (Evaluator Responses) to the Final Panel Comments, and the Panel will respond (BackCheck Responses) to the Evaluator Responses. All GEC and Panel responses will be documented by Battelle. Battelle will provide GEC and the Panel a pdf printout of all DrChecks entries, through comment closeout, as a final deliverable and record of the IEPR results.

APPENDIX B

Identification and Selection of IEPR Panel Members for the HNC Project

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B.1 Panel Identification

The candidates for the Houma Navigation Canal (HNC) Section 203 Draft Integrated Feasibility Report and Environmental Impact Statement (FR/EIS) (hereinafter: HNC IEPR) Panel were evaluated based on their technical expertise in the following key areas: dredging, civil engineering, economics, plan formulation, and wetland ecology/biology. These areas correspond to the technical content of the review documents and overall scope of the HNC project.

To identify candidate panel members, Battelle reviewed the credentials of the experts in Battelle's Peer Reviewer Database, sought recommendations from colleagues, contacted former panel members, and conducted targeted Internet searches. Battelle evaluated these candidate panel members in terms of their technical expertise and potential conflicts of interest (COIs). Of these candidates, Battelle chose the most qualified individuals, confirmed their interest and availability, and ultimately selected five experts for the final Panel. The remaining candidates were not proposed for a variety of reasons, including lack of availability, disclosed COIs, or lack of the precise technical expertise required.

Candidates were screened for the following potential exclusion criteria or COIs. These COI questions were intended to serve as a means of disclosure in order to better characterize a candidate's employment history and background. Battelle evaluated whether scientists in universities and consulting firms that are receiving USACE-funding or State of Louisiana funding through GEC have sufficient independence from USACE and GEC to be appropriate peer reviewers. Guidance in the Office of Management and Budget's (OMB) *Final Information Quality Bulletin for Peer Review* (OMB, 2004, p. 18) states:

> "…when a scientist is awarded a government research grant through an investigator-initiated, peer-reviewed competition, there generally should be no question as to that scientist's ability to offer independent scientific advice to the agency on other projects. This contrasts, for example, to a situation in which a scientist has a consulting or contractual arrangement with the agency or office sponsoring a peer review. Likewise, when the agency and a researcher work together (e.g., through a cooperative agreement) to design or implement a study, there is less independence from the agency. Furthermore, if a scientist has repeatedly served as a reviewer for the same agency, some may question whether that scientist is sufficiently independent from the agency to be employed as a peer reviewer on agency-sponsored projects."

Panel Conflict of Interest (COI) Screening Statements for the IEPR of the Houma Navigation Canal	
1. Previous and/or current involvement by you or your firm in the Section 203 Draft Integrated Feasibility Report and Environmental Impact Statement (FR/EIS) for the Houma Navigation Canal (HNC) Deepening Project, Terrebonne Parish, Louisiana, and related projects.	
2. Previous and/or current involvement by you or your firm in flood control or deep-draft navigation projects/studies in the Terrebonne Parish, Louisiana, area.	
3. Previous and/or current involvement by you or your firm in the conceptual or actual design, construction, or operation and maintenance (O&M) of any projects related to or part of the HNC Deepening Project, Terrebonne Parish, Louisiana.	
4. Current employment by the U.S. Army Corps of Engineers (USACE).	

Panel Conflict of Interest (COI) Screening Statements for the IEPR of the Houma Navigation Canal	
5. Previous and/or current involvement with paid or unpaid expert testimony related to the HNC Deepening Project, Terrebonne Parish, Louisiana.	
6. Previous and/or current employment or affiliation with members of the cooperating agencies or local sponsors OR the non-Federal sponsors or any of the following cooperating Federal, State, County, local and regional agencies, environmental organizations, and interested groups *(for pay or pro bono).* ***Study Sponsors:*** Louisiana Department of Transportation & Development (DOTD), the Terrebonne Parish Consolidated Government (TPCG), and the Terrebonne Port Commission (TPC). ***Agency Participants:*** U.S. Environmental Protection Agency (EPA), National Oceanic and Atmospheric Administration-National Marine Fisheries Service (NOAA-NMFS), U.S. Fish and Wildlife Service (USFWS), National Resource Conservation Service (NRCS), Louisiana Department of Natural Resources-Coastal Management Division (LADNR-CMD), Louisiana Coastal Protection and Restoration Authority (CPRA), Louisiana Department of Wildlife and Fisheries (LDWF), Terrebonne Levee and Conservation District (TLCD), the U.S. Coast Guard, and the Louisiana Department of Environmental Quality (LDEQ).	
7. Past, current, or future interests or involvements (financial or otherwise) by you, your spouse, or your children related to Terrebonne Parish, Louisiana.	
8. Current personal involvement with other USACE projects, including whether involvement was to author any manuals or guidance documents for USACE. If yes, provide titles of documents or description of project, dates, and location (USACE district, division, Headquarters, Engineer Research and Development Center [ERDC], etc.), and position/role. Please highlight and discuss in greater detail any projects that are specifically with the New Orleans (CEMVN) District.	
9. Previous or current involvement with the development or testing of models that will be used for, or in support of, the HNC Deepening Project, Terrebonne Parish, Louisiana, project.	
10. Current firm involvement with other USACE projects, specifically those projects/contracts that are with the New Orleans District. If yes, provide title/description, dates, and location (USACE district, division, Headquarters, ERDC, etc.), and position/role. Please also clearly delineate the percentage of work you personally are currently conducting for the New Orleans District. Please explain.	
11. Any previous employment by USACE as a *direct* employee, notably if employment was with the New Orleans District. If yes, provide title/description, dates employed, and place of employment (district, division, Headquarters, ERDC, etc.), and position/role.	

Panel Conflict of Interest (COI) Screening Statements for the IEPR of the Houma Navigation Canal	
12. Any previous employment by USACE as a *contractor* (either as an individual or through your firm) within the last 10 years, notably if those projects/contracts are with the New Orleans District. If yes, provide title/description, dates employed, and place of employment (district, division, Headquarters, ERDC, etc.), and position/role.	
13. Any previous employment by any of the Study Sponsors as a direct employee or contractor (either as an individual or through your firm). If yes, provide title/description, dates employed, and place of employment (district, division, Headquarters, ERDC, etc.), and position/role.	
14. Pending, current, or future financial interests in contracts/awards related to the HNC Deepening Project, Terrebonne Parish, Louisiana.	
15. Significant portion of your personal or office's revenues within the last three years came from USACE contracts.	
16. Significant portion of your personal or office's revenues within the last three years came from Study Sponsors (DOTD, TPCG, and TPC) contracts.	
17. Any publicly documented statement (including, for example, advocating for or discouraging against) related to the HNC Deepening Project, Terrebonne Parish, Louisiana.	
18. Participation in prior and/or current Federal studies relevant to this project and/or the HNC Deepening Project, Terrebonne Parish, Louisiana.	
19. Previous and/or current participation in prior non-Federal studies relevant to this project and/or the HNC Deepening Project, Terrebonne Parish, Louisiana.	
20. Has your research or analysis been evaluated as part of the HNC Deepening Project, Terrebonne Parish, Louisiana?	
21. Is there any past, present, or future activity, relationship, or interest (financial or otherwise) that could make it appear that you would be unable to provide unbiased services on this project? If so, please describe.	

Providing a positive response to a COI screening question did not automatically preclude a candidate from serving on the Panel. For example, participation in previous GEC or USACE technical peer review committees and other technical review panel experience was included as a COI screening question. A positive response to this question could be considered a benefit. The term "firm" in a screening question referred to any joint venture in which a firm was involved. It applied to whether that firm serves as a prime or as a subcontractor to a prime. Candidates were asked to clarify the relationship in the screening questions.

B.2 Panel Selection

In selecting the final members of the Panel, Battelle chose experts who best fit the expertise areas and had no COIs. Table B-1 provides information on each panel member's affiliation, location, education, and overall years of experience. Battelle established subcontracts with the panel members when they indicated their willingness to participate and confirmed the absence of COIs through a signed COI form. GEC was given the list of candidate panel members, but Battelle selected the final Panel.

Table B-1. HNC IEPR Panel: Summary of Panel Members

Name	Affiliation	Location	Education	P.E.	Exp. (yrs)
Dredging Expert					
Donald Hayes	Independent Consultant	Las Vegas, NV	Ph.D. in civil engineering	P.E.	35
Civil Engineer					
Michael Giovannozzi	AquaTerra Consulting International	West Palm Beach, FL	M.S. in civil engineering	Yes	17
Economics Expert					
Kenneth Casavant	Independent Consultant	Pullman, WA	Ph.D. in agricultural economics	No	47
Plan Formulation Expert					
Steven Pugh	Independent Consultant	Frederick, MD	B.S. in natural resource management	N/A	25
Wetland Ecologist/Biologist					
Jason Stutes	GeoEngineers	Seattle, WA	Ph.D. in marine sciences	N/A	17

Table B-2 presents an overview of the credentials of the final five members of the Panel and their qualifications in relation to the technical evaluation criteria. More detailed biographical information regarding each panel member and his area of technical expertise is given in Section B.3.

Table B-2. HNC IEPR Panel: Technical Criteria and Areas of Expertise

Technical Criterion	Hayes	Giovannozzi	Casavant	Pugh	Stutes
Dredging Expert					
The Panel Member will be a dredged material disposal expert and should be a registered P.E. with a minimum of 10 years of experience from academia or an Architect-Engineer or Consulting Firm. The panel member should have demonstrated experience in deep draft navigation channels, dredging, dredged material disposal, erosion, coastal currents, channel modifications, with a minimum MS degree or higher in Civil, Hydraulic or related Engineering field. Active participation in related professional societies is encouraged.	X				
Civil Engineer					
The Panel Member should be a registered P.E. with a minimum of 10 years of experience, from academia or an architect-engineer consulting firm. The Panel Member should have demonstrated experience in deep draft navigation channels, dredged material disposal, erosion, coastal currents, channel modifications, with a minimum MS degree or higher in Civil, Hydraulic or related Engineering field. Active participation in related professional societies is encouraged.		X			
Economics Expert					
The Panel Member should be a scientist from academia, a public agency, a non-governmental entity, or an Architect-Engineer or Consulting Firm with at least a Bachelor's degree. Member must have at least 10 years of experience in economic analysis, with project experience including evaluating and conducting multi-objective public works projects or transportation-related projects. Deep-draft navigation experience is encouraged. Experience directly working for or with USACE is highly recommended.			X		
Plan Formulation Expert					
The Panel Member should be a scientist from academia, public agency, non-governmental entity, or an Architect-Engineer or Consulting Firm with a minimum 10 years demonstrated experience in analyzing, evaluating and comparing alternative plans for USACE. Panel Member must be very familiar with USACE plan formulation process, procedures, and standards. Panel Member should also be familiar with USACE navigation and ecosystem restoration projects. The panel member shall have a minimum of five years of experience dealing directly with the USACE six-step planning process, which is governed by Engineer Regulation (ER) 1105-2-100, Planning Guidance Notebook.				X	

Technical Criterion	Hayes	Giovannozzi	Casavant	Pugh	Stutes
Wetland Ecologist/Biologist					
This Panel Member should be a scientist from academia, a public agency, a non-governmental entity, or an Architect-Engineer or Consulting Firm with a minimum MS degree or higher in an appropriate field of study. The Panel Member must have at least ten years of experience directly related to National Environmental Policy Act (NEPA) compliance. Experience should include an understanding and preparation of NEPA compliance documents. The Panel Member must have a minimum 10 years demonstrated experience with wetlands and estuarine ecosystems, coastal and estuarine processes, and an understanding of ecological responses to shoreline erosion. Experience should include an understanding of environmental impacts associated with dredging. Active participation in related professional societies is encouraged.					X

B.3 Panel Member Qualifications

Detailed biographical information on each panel members' credentials and qualifications and areas of technical expertise are summarized in the following paragraphs.

Name	*Role*	*Affiliation*
Donald Hayes, Ph.D., P.E., BCEE	Dredging Expert	Independent consultant

Dr. Hayes is Chair of the Department of Civil & Environmental Engineering and Construction at the University of Nevada, Las Vegas. He earned his B.S and M.S. in civil engineering from Mississippi State University and his Ph.D. in civil engineering (emphasis in Water Resources Planning and Management/Environmental Engineering) from Colorado State University. Dr. Hayes is a Board-Certified Environmental Engineer and a registered Professional Engineer in Louisiana, Mississippi, and Nevada. He has more than 35 years of experience in government, academia, and consulting, including 10 years with the U.S. Army Corps of Engineers (USACE) Waterways Experimental Station.

Dr. Hayes' deep draft navigation experience has focused on channel design, management, maintenance, and restoration. He has been actively involved in deep draft projects in many U.S. ports, including Houston, South Carolina, Port of New York and New Jersey, Norfolk, Oakland, San Francisco, Savannah, Charleston, Redwood City, Sacramento River, Baltimore, and Palm Beach. These projects have ranged in focus from channel design to environmental aspects of channel management and maintenance.
Dr. Hayes is a widely recognized expert in dredged material management. He has worked on dredged material management, placement (open water, near shore, and upland placement; confined and unconfined placement), and beneficial use of dredged material projects on all US coasts and in many

inland waterways. Dr. Hayes has authored many guidance documents and technical papers on dredged material placement, long-term consolidation and placement site management, and compliance with state and Federal water quality requirements. He is a leader in the development of environmental dredging practices and contaminated sediment management. Dr. Hayes was an original developer of the Automated Dredging and Disposal Alternatives Modeling System (ADDAMS), distributed by the USACE Engineer Research and Development Center (ERDC), and is very familiar with currently available software for managing dredged sediments.

Dr. Hayes has also worked extensively on coastal erosion and protection projects. His experience includes design and restoration of natural shoreline protection measures to mitigate erosive currents and waves from natural sources and those induced by vessel movement. He has been extensively involved in the design, testing, and implementation of innovative shoreline protection measures. He has worked extensively on the lower Mississippi River, including flow and sediment distribution for a more sustainable delta. Dr. Hayes has taught graduate and undergraduate hydrology and hydraulics courses for over 25 years.

Dr. Hayes is a Fellow of the American Society of Civil Engineers (ASCE), serves on the Board of Directors of the Western Dredging Association, and is Editor of the Journal of Dredging Engineering. He has been involved in the planning of many national and international conferences including ASCE Dredging 2012 and the World Association for Waterborne Transport Infrastructure (PIANC) Dredging 2015 planning committees.

Name	*Role*	*Affiliation*
Michael Giovannozzi, P.E.	Civil Engineer	AquaTerra Consulting International

Mr. Giovannozzi, a civil engineer at AquaTerra Consulting International, has more than 17 years of experience in both government and private sectors throughout the United States in the fields of coastal and hydraulic engineering, including deep draft navigation projects. He earned a B.S. and M.S. in civil engineering from the University of Delaware. He is a registered professional engineer in Washington, Florida, Alabama, Connecticut, Georgia, South Carolina, Texas, North Carolina, New Jersey, and Delaware. He worked for three years with the USACE Philadelphia District (2001 – 2004), two years with the USACE Seattle District (2009 – 2011), and 12 years in private consulting.

Mr. Giovannozzi has extensive experience designing navigation improvement projects in tidally influenced systems, including channel deepening projects. In the area of coastal current studies, Mr. Giovannozzi has performed extensive hydrodynamic and sediment transport modeling, morphologic analysis, and engineering assessments for multiple projects to determine expected water levels, tidal exchange, wave conditions, and circulation patterns. While at USACE Philadelphia District, he was the hydraulic engineer for a coastal inlet hydrodynamics study that involved numerical modeling to predict sediment transport potential for several alternative sand borrow-area strategies for a Federal beach fill project near a coastal inlet in Ocean City, New Jersey. Mr. Giovannozzi was the coastal engineer for a dredging/environmental restoration project for an island community located on the Gulf Intracoastal Waterway (GIWW) in Palm Beach County, Florida. The work included tidal hydraulic modeling, channel optimization, and dredging costs estimates for hydraulic and mechanic dredging to restore tidal connectivity.

Mr. Giovannozzi is familiar with USACE coastal engineering requirements for feasibility studies (including channel design and effects of navigation channels on currents, sedimentation, and water quality). He has demonstrated experience in deep draft navigation channel design. Notably, he was involved in the hydrodynamic modeling and navigation studies of the canals for the World Islands Mega Project in Dubai, United Arab Emirates. The project required a balanced design that allowed for safe navigation of pleasure craft and provided sufficient flow to minimize siltation and improve tidal flow, while also minimizing shoreline erosion. The study included hydrodynamic and sediment transport modeling and determination of safe navigational clearances for vessels. In addition, Mr. Giovannozzi was the lead project engineer for a Section 905(b) Reconnaissance Study that examined the potential need for navigation improvements for the Neah Bay Entrance Channel in Washington State to enable deeper draft vessels to use the port for commerce and as a safe harbor of refuge.

Mr. Giovannozzi is experienced in coastal erosion studies and the design of shoreline armoring. Recently, he provided shoreline erosion assessments and detailed designs for several projects in Guyana. Specifically, he designed rehabilitation/replacement structures for degraded coastal defense sea walls along the Atlantic Coast and riverine shorelines in Guyana for the Guyana Sea Defense Program. (Ministry of Public Works). He also provided the design of low-cost, innovative coastal structures to protect mangrove reforestation projects for the Guyana Mangrove Restoration Program (Ministry of Agriculture). The projects involved shoreline erosion assessments, wave and hydraulic stability calculations, wave runup and overtopping, scour assessment, and detailed shore protection designs.

Mr. Giovannozzi also has specialized experience in dredging projects. He is familiar with both mechanical and hydraulic dredging technologies and has completed the USACE Dredging Fundamentals Course. While at USACE Seattle District, he was the project manager for the outer reach of the Grays Harbor Navigation Channel Maintenance Dredging project, and also worked with Miami Dade County on several channel and berth deepening projects at the Port of Miami. Mr. Giovannozzi recently developed a dredged material management plan for the Panama Canal Authority. The dredge disposal plan included best management strategies for six confined upland and nearshore disposal areas for marina and riverine dredging along the Pacific region of the Panama Canal.

Mr. Giovannozzi also has demonstrated experience in the modification of existing channels. He was a project engineer on the Quillayute Navigation Channel Improvement Study in Washington State, which used numerical wave and current models to optimize the channel modification scheme to improve hydraulic efficiency with an aim to reducing future maintenance dredging activities. Recommendations were provided to alter the channel cross-section and to rehabilitate a nearby sea dike to optimize the channel flow. In addition, Mr. Giovannozzi assisted with a navigation study to assess the feasibility of deepening the GIWW to accommodate deep-draft mega-yachts at a yacht repair facility located near the Port of Palm Beach in Palm Beach County, Florida.

Mr. Giovannozzi is an active member of the ASCE; the Coasts, Oceans, Ports, and Rivers Institute; and the Association of Coastal Engineers. He regularly attends and presents at national and international conferences on flood damage reduction and shoreline protection. In addition, he served as the Secretary for the PIANC Recreational Committee Work Group on Marina Design and currently serves as PIANC YP-Com Vice-Chair of the Americas.

Name	Role	Affiliation
Kenneth Casavant, Ph.D.	Economics Expert	Independent consultant

Dr. Casavant is a professor and economist at the School of Economic Sciences at Washington State University, Director of the Freight Policy Transportation Institute, and adjunct professor at North Dakota State's Upper Great Plains Transportation Institute. He earned his Ph.D. in agricultural economics from Washington State University in 1971. Dr. Casavant has nearly 50 years of experience as an economist, with expertise in transportation economics and planning, particularly the evaluation and comparison of alternative plans for numerous navigation studies. He has served as an economic consultant detailing the tradeoffs necessary on several multi-objective public works projects, most recently on studies of the deep-draft national and international maritime industry. In this capacity, he has become a recognized expert in applied economics related to transportation economics, with specific experience with financing transportation infrastructure and national and international logistics and transportation requirements. For example, he has aided in the design of a physical distribution system for limestone in Portugal, the wheat transportation system in Mali and Bolivia, and other domestic and international assignments.

Dr. Casavant is familiar with USACE plan formulation processes, procedures, and standards. He has more than 15 years of experience in plan formulation, evaluation and comparison of alternative plans for numerous navigation studies (lock replacement), ecosystem restoration projects, and feasibility studies, including his technical reviews of the Lower Columbia River Channel Deepening Project, the Upper Mississippi and Illinois Navigation Study, the Barataria Basin Barrier Shoreline Restoration Study, and the Mississippi River Gulf Outlet Ecosystem Restoration Plan. The Mississippi-Illinois system project was a navigation lock system replacement project, including coastal inland waterway system needs. For the Lower Columbia River project, Dr. Casavant analyzed the costs of deep-draft shipping and the impacts on the costs of the project. The supply chains and alternative movements of the maritime steam ships were a focal point of the analyses. For the Delaware River Main Channel Deepening Project, he assessed and documented the benefits of the project. For the Upper Mississippi and Illinois Navigation Study, he examined alternative shipping flows and benefits calculations as part of the economic evaluation.

Dr. Casavant has worked with USACE methodologies for cost effectiveness/incremental cost analysis (CE/ICA) and has a detailed knowledge of USACE standards and procedures, including the Institute for Water Resource (IWR) Planning Suite. As an economist or a combined Civil Works planner/economist for USACE IEPRs, he has studied and evaluated alternative plans for navigation lock replacement projects as well as navigation/dredging projects, such as the Savannah Harbor Expansion Project General Re-evaluation Report. Over the last 10 years, he has worked on 13 USACE projects where he has had to apply USACE standards and procedures, including the IWR Planning Suite methodologies, with a focus on effective and efficient ecological and natural sustained output per dollar of relevant expenditure for alternative project formulations. He has applied the USACE six-step planning process, which is governed by Engineer Regulation (ER) 1105-2-100, *Planning Guidance Notebook*, during his work as a technical reviewer and peer reviewer on more than 20 projects, such as the Port of Iberia Channel Deepening Project in 2006 for USACE, the External Independent Economic Opinion on Identifying and Measuring NED Benefits: Navigation Shipping, and the Morganza to the Gulf IEPR study, a hurricane protection and storm damage risk project.

Dr. Casavant has experience identifying, reviewing, and evaluating impacts on environmental resources from structural flood risk and impacts related to hurricane and coastal storm damage risk reduction

projects. From risk assessment in Monte Carlo evaluations to traditional risk models in the IWR Planning Suite, he has broad and applied experience working with risk-informed approaches to decision making. The six most recent projects he has contributed to had critical components concerning the impacts of environmental resources from flood risk and coastal storm damage. He has also been a plan formulator expert on Louisiana Water Resources Council (LWRC) IEPRs; several of the projects under review had a specific objective to evaluate the damage reduction and the risk associated with achieving benefits from flood risk management and one project focused specifically on the impact on shorelines.

Dr. Casavant has published more than 70 journal articles and has contributed to hundreds of written documents, including chapters in books, books, abstracts, proceedings, professional materials, conference papers, and research bulletins, circulars, and reports. He is a member of numerous professional associations, such as the Transportation Research Board - National Research Council, the International Agricultural Economics Association, and the Logistics and Physical Distribution Association.

Name	*Role*	*Affiliation*
Steven Pugh	Plan Formulation Expert	Independent consultant

Mr. Pugh is an independent consultant with 25 years of direct planning and ecosystem restoration experience, including seven years with the USACE Baltimore District Planning Division and nine years as an independent consultant providing technical review of USACE Civil Works planning studies and models. He earned his B.S. in natural resources management from the University of Maryland in 1997 and is a graduate of the USACE Planning Associates Program class of 2003. He is an expert in the field of Civil Works planning, plan formulation, and the evaluation of navigation and ecosystem restoration projects and watershed studies. Mr. Pugh is familiar with USACE plan formulation processes, procedures, and standards. He has experience in the comparison of alternative plans for navigation studies, ecosystem restoration projects, and feasibility studies.

Mr. Pugh worked for the USACE Baltimore District Planning Division - Civil Works Branch for seven years, where he participated as a planner and ecologist. He has applied the USACE six-step planning process, which is governed by ER 1105-2-100, *Planning Guidance Notebook*, on approximately 50 Civil Works studies and projects. He was a PROSPECT course developer and instructor for the course "Planning for Ecosystem Restoration" and is knowledgeable of current Civil Works planning policies, methodologies, and procedures.

He is also practiced in the development and application of ecosystem models such as the Habitat Evaluation Procedure (HEP) and has worked on large USACE ecosystem restoration studies such as the Chesapeake Marshlands Restoration Study, which evaluated the restoration of up to 20,000 acres of marsh lands, the Lower Potomac River Watershed Study, and the Anacostia River Watershed Restoration Comprehensive Plan.

Mr. Pugh is proficient in the application of the IWR Planning Suite and used it on USACE studies as an employee of the Baltimore District. He also assisted in instructing the IWR Planning Suite module for the PROSPECT course "Planning for Ecosystem Restoration," and participated on the External Independent Technical Review team for the IWR Planning Suite Multi-Criteria Decision Analysis Module. In addition, he has participated in CE/ICA on many Civil Works planning studies as a planner and ecologist with the USACE Baltimore District and has assisted in teaching modules on CE/ICA in the context of multi-

purpose watershed and ecosystem restoration studies for the PROSPECT course. Mr. Pugh has been a panel member on several IEPR teams reviewing large-scale ecosystem restoration studies and on several planning model review teams for the certification of models to be used in CE/ICA. Mr. Pugh is an active member of the Society for Ecological Restoration.

Name	*Role*	*Affiliation*
Jason Stutes, Ph.D.	Wetland Ecologist/Biologist	GeoEngineers

Dr. Stutes is a nearshore ecologist with over 17 years of expertise related to water resource environmental evaluation and review and National Environmental Policy Act (NEPA) compliance for deep-draft navigation projects. His specific expertise focuses on the analysis and impact of project-level effects (e.g., dredged material placement, shading, and other habitat modifications) on nearshore ecosystems under the Endangered Species Act (ESA), Fish and Wildlife Coordination Act, and NEPA. Dr. Stutes understands environmental laws and compliance measures for deep-draft/dredging projects in coastal waters due to not only the number of ESA-listed species (and their critical habitat) that must be taken into account, but also relevant New Orleans District Dredged Material Management Program guidance and coordination with the Louisiana Department of Environmental Quality (LDEQ) and Coastal Protection and Restoration Authority (CPRA).

Dr. Stutes has performed numerous habitat surveys and functional assessments for nearshore projects ranging from simple boat launches for municipalities to multimodal piers for world-class ports. Many of these projects focus on footprint effects on habitats that support a diverse assemblage of animals and plants, including shellfish and submerged/emergent vegetation. This experience demonstrates his proficiency in navigating the permit process for nearshore projects and evaluating them for project-related impacts, ESA-listed species use, restoration potential, and potential contamination threats. He has consulted for numerous multidisciplinary teams tasked with conceptualizing, designing, permitting, and implementing restoration actions. As a marine scientist with degrees from multiple institutions along the Gulf coast, Dr. Stutes spent much of his formal training specifically examining coastal processes and nearshore wetland systems in south Louisiana. He has worked on several nearshore projects where coastal protection/erosion were the driving issues during design and permitting, most recently on the Port Fourchon marsh creation project. Dr. Stutes is able to inform the regulatory process on issues related to habitat function and ecosystem services, minimizing permit timelines and maximizing the value of mitigation actions for clients. He is a recognized expert in nearshore and benthic ecology and periodically reviews articles for international journals on the subject.

Dr. Stutes' diverse technical expertise includes characterizing nearshore habitat, conducting long-term monitoring, characterizing food webs, measuring recovery of nearshore systems after impact (e.g., dredging), and sampling/processing water quality parameters. He has been involved in several projects where dredging has been used to improve navigation for channels, as well as ports and marinas, including the Port of Everett Jetty Island Beneficial Reuse of Dredge Spoils Project, Alaska Pipeline Project, Point Thomson Project, Port of Everett South Terminal Project, Skagway Multimodal Project, Custom Plywood Remediation Project, and many marina projects. He has evaluated the impacts and recovery of these systems based on the existing infauna assemblage, size/depth of the proposed dredge, level of contamination of dredged materials, and level of intermittent disturbance due to boat traffic and

scour. He has also been involved in permitting (including pre-dredge baseline studies and impact and recovery assessment) on multiple nearshore infrastructure projects (including dredging projects) in the State of Washington (Puget Sound, Bellingham Bay, Hood Canal) and in Alaska (Cook Inlet, Beaufort Sea, Sitka Sound, Lynn Canal). He has also conducted several studies on the acoustic and water quality effects of dredging on nearshore ecosystems. Dr. Stutes was part of several long-term biological studies conducted in Florida, Alabama, and Louisiana that were used as baseline data during the Natural Resource Damage Assessment for the Deepwater Horizon oil spill and still participates in several of these studies currently to develop a better understanding of ecosystem recovery after large disturbances.

Dr. Stutes has prepared marine biological sections of numerous NEPA and Washington State Environmental Policy Act environmental impact statements (EISs) and environmental assessments (EAs) in Washington (Port Gamble Bay Restoration Project, EHW2 Pier Project, Terminal 5 Expansion Project, Thorndyke Resources Conveyor Project, Willapa Bay Imidacloprid Application) and in Alaska (Sitka Runway expansion/fill project, Point Thomson project, Donlin Mine project). He has supported coastal projects in the Pacific Northwest stretching from the Columbia Basin to the North Slope.

Dr. Stutes is an active member of the Pacific Estuarine Research Society and the Coastal and Estuarine Research Federation (CERF). He has presented scientific results to regional (Alaska Marine Science Symposium) and international/national scientific meetings and conferences (CERF, Benthic Ecology Meeting Society).

APPENDIX C

Final Charge for the HNC IEPR

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Charge Questions and Guidance to the Panel Members for the Independent External Peer Review (IEPR) of the Houma Navigation Canal Section 203 Draft Integrated Feasibility Report and Environmental Impact Statement

This is the final Charge to the Panel for the HNC IEPR. This final Charge was submitted to GEC as part of the final Work Plan, originally submitted on June 9, 2017.

BACKGROUND

Houma Navigation Canal (HNC) is a deep-draft navigation harbor located in Terrebonne Parish in southeast Louisiana at the northern edge of the Gulf of Mexico. The project begins at the Gulf Intracoastal Waterway (GIWW) and runs for about 41 miles from Houma, Louisiana, to the Gulf of Mexico. The study area encompasses the towns of Boudreaux, Dulac, Theriot, Mulberry, Crozier, and Cocodrie, and extends for one mile from each bank of the HNC within the Barataria-Terrebonne estuary. This estuary extends from the west bank levee of the Mississippi River (north and east) to the East Guide Levee of the Atchafalaya River (west), to the Gulf of Mexico (south) and to the Town of Morganza (north). The Terrebonne basin covers an area of about 2,063,500 acres.

This feasibility study of navigation improvements on the HNC was prepared by the Department of Transportation & Development/Coastal Protection and Restoration Authority (DOTD/CPRA) of Louisiana under the authority granted by Section 203 of the Water Resources Development Act (WRDA) of 1986 (P.L. 99-662). Section 203 of WRDA 1986 allows non-Federal interests, such as DOTD/CPRA, to undertake feasibility studies of proposed harbor projects and submit them to the Secretary of the Army. DOTD/CPRA conducted this Section 203 study to determine the feasibility of deepening the HNC.

OBJECTIVES

The objective of this work is to conduct an independent external peer review (IEPR) of the Houma Navigation Canal Integrated Section 203 Navigation Study Report and Draft Environmental Impact Statement (hereinafter: HNC IEPR) in accordance with the Department of the Army, U.S. Army Corps of Engineers (USACE), Water Resources Policies and Authorities' *Civil Works Review* (Engineer Circular [EC] 1165-2-214, dated December 15, 2012), and the Office of Management and Budget's (OMB's) *Final Information Quality Bulletin for Peer Review* (December 16, 2004). Peer review is one of the important procedures used to ensure that the quality of published information meets the standards of the scientific and technical community. Peer review typically evaluates the clarity of hypotheses, validity of the research design, quality of data collection procedures, robustness of the methods employed, appropriateness of the methods for the hypotheses being tested, extent to which the conclusions follow from the analysis, and strengths and limitations of the overall product.

The purpose of the IEPR is to assess the "adequacy and acceptability of the economic, engineering, and environmental methods, models, and analyses used" (EC 1165-2-214; p. D-4) for the decision documents. The IEPR will be limited to technical review and will not involve policy review. The IEPR will be conducted by subject matter experts (i.e., IEPR panel members) who meet the technical criteria and areas of expertise required for and relevant to the project.

The Panel will be "charged" with responding to specific technical questions as well as providing a broad technical evaluation of the overall project. Per EC 1165-2-214, Appendix D, review panels should identify, explain, and comment upon assumptions that underlie all the analyses, as well as evaluate the soundness of models, surveys, investigations, and methods. Review panels should be able to evaluate whether the interpretations of analysis and the conclusions based on analysis are reasonable. Reviews should focus on assumptions, data, methods, and models. The panel members may offer their opinions as to whether there are sufficient analyses upon which to base a recommendation.

DOCUMENTS PROVIDED

The following is a list of documents, supporting information, and reference materials that will be provided for the review.

Document	No. of Review Pages	Subject Experts				
		Dredging	Civil Engineer	Economics	Plan Formulation	Wetland Ecologist/ Biologist
HNC Draft Integrated Feasibility Report and EIS	327	327	327	327	327	327
Appendix A - Engineering	83	83	83			
Appendix B – Non-Federal Sponsor's (NFS) Letter of Intent	16	16	16	16	16	16
Appendix C - Real Estate Plan	39	39	39	39	39	39
Appendix D - Economic Benefits	170			170	170	
Appendix E - Draft Coordination Act Report	47					47
Appendix F – Hazardous, Radioactive, and Toxic Waste (HTRW)	278	278	278			278
Appendix G - Cultural Resources	180				180	180
Appendix H - Environmental	120					120
Appendix I - Public Notice Comments	4	4	4	4	4	4
Appendix J - Public Scoping Meeting Report	18	18	18	18	18	18
Appendix K - Alternative Costs	265			265	265	
Appendix L - Abbreviated Risk Analysis	105	105	105	105	105	105
Appendix M - MII Cost Estimate	191	191	191	191	191	
Appendix N - Cost and Schedule Risk Analysis	47	47	47	47	47	47
Appendix O - Quality Control	12	12	12	12	12	12
Total # of review document pages	**1,902**	**1,120**	**1,120**	**1,194**	**1,374**	**1,193**
*Public Comments**	*25*	*25*	*25*	*25*	*25*	*25*

* Page count for public comments is approximate. GEC will submit public comments to Battelle, which will in turn submit the comments to the IEPR Panel.

Documents for Reference

- USACE guidance *Civil Works Review* (EC 1165-2-214, December 15, 2012)
- Office of Management and Budget's *Final Information Quality Bulletin for Peer Review* (December 16, 2004)
- USACE Climate Change Adaptation Plan (June 2014)
- ETL 1100-2-1 – Procedures to Evaluate SLR Change Impacts Responses Adaptation
- ER 1100-2-8162 – Incorporating SLR Change in CW Programs

SCHEDULE

This schedule is based on the receipt of the final review documents – as provided to the Panel on May 17, 2017. Note that dates presented in the schedule below also could change due to panel member and GEC availability.[1]

Task	Action	Due Date
Conduct Peer Review	Battelle sends review documents to panel members	5/17/2017
	Battelle convenes kick-off meeting with panel members	5/17-18/2017
	Battelle convenes kick-off meeting with GEC and panel members	5/17-18/2017
	Battelle convenes mid-review teleconference for panel members to ask clarifying questions of GEC	5/23/2017
	Panel members complete their review of the documents	6/5/2017
Prepare Final Panel Comments and Final IEPR Report	Battelle provides talking points to panel members for Panel Review Teleconference	6/6/2017
	Battelle convenes Panel Review Teleconference	6/6/2017
	Battelle provides Final Panel Comment templates and instructions to panel members	6/7/2017
	Panel members provide draft Final Panel Comments to Battelle	6/12/2017
	Battelle provides feedback to panel members on draft Final Panel Comments; panel members revise Final Panel Comments	6/13/2017 - 6/15/2017
	Panel finalizes Final Panel Comments	6/16/2017
	Battelle receives public comments from GEC	5/24/2017
	Battelle sends public comments to Panel	6/6/2017
	Panel members complete their review of the public comments	6/9/2017
Prepare Final Panel Comments and Final IEPR Report	Battelle and Panel review Panel's responses to public comments	6/12/2017
	Panel drafts Final Panel Comment on public comments, if necessary	6/13/2017
	Panel finalizes Final Panel Comment regarding public comments, if necessary	6/16/2017
	Battelle provides Final IEPR Report to panel members for review	6/19/2017
	Panel members provide comments on Final IEPR Report	6/20/2017
	Battelle submits Final IEPR Report to GEC*	6/21/2017
	GEC provides decision on Final IEPR Report acceptance	6/23/2017

[1] The review was placed on a brief IEPR work stoppage from May 26 to June 5 by GEC; therefore, the schedule was revised, making some dates appear outdated.

Comment/ Response Process	Battelle inputs Final Panel Comments to Design Review and Checking System (DrChecks) and provides Final Panel Comment response template to GEC	6/26/2017
	Battelle convenes teleconference with Panel to review Comment Response process	6/27/2017
	GEC provides draft Evaluator Responses to Battelle for review and works with internal team regarding clarifications to responses, if needed	7/11/2017
	Battelle provides draft GEC Evaluator Responses to panel members	7/12/2017
	Panel members provide draft BackCheck Responses to Battelle	7/17/2017
	Battelle convenes teleconference with panel members to discuss draft BackCheck Responses	7/17/2017
	Battelle convenes Comment Response Teleconference with panel members and GEC	7/18/2017
	GEC inputs final Evaluator Responses to DrChecks	7/21/2017
	Battelle provides final GEC Evaluator Responses to panel members	7/24/2017
	Panel members provide final BackCheck Responses to Battelle	7/27/2017

* Deliverables

** If any public comments generate a Final Panel Comment(s), the Comment Response process will be repeated.

CHARGE FOR PEER REVIEW

Members of this IEPR Panel are asked to determine whether the technical approach and scientific rationale presented in the decision documents are credible and whether the conclusions are valid. The Panel is asked to determine whether the technical work is adequate, competently performed, and properly documented; satisfies established quality requirements; and yields scientifically credible conclusions. The Panel is being asked to provide feedback on the economic, engineering, environmental resources, and plan formulation. The panel members are not being asked whether they would have conducted the work in a similar manner.

Specific questions for the Panel (by report section or appendix) are included in the general charge guidance, which is provided below.

General Charge Guidance

Please answer the scientific and technical questions listed below and conduct a broad overview of the decision documents. Please focus your review on the review materials assigned to your discipline/area of expertise and technical knowledge. Even though there are some sections with no questions associated with them, that does not mean that you cannot comment on them. Please feel free to make any relevant and appropriate comment on any of the sections and appendices you were asked to review. In addition, please note that the Panel will be asked to provide an overall statement related to 2 and 3 below per USACE guidance (EC 1165-2-214; Appendix D).

1. Your response to the charge questions should not be limited to a “yes” or “no.” Please provide complete answers to fully explain your response.

2. Assess the adequacy and acceptability of the economic and environmental assumptions and projections, project evaluation data, and any biological opinions of the project study.

3. Assess the adequacy and acceptability of the economic analyses, environmental analyses, engineering analyses, formulation of alternative plans, methods for integrating risk and uncertainty, and models used in evaluating economic or environmental impacts of the proposed project.

4. If appropriate, offer opinions as to whether there are sufficient analyses upon which to base a recommendation.

5. Identify, explain, and comment upon assumptions that underlie all the analyses, as well as evaluate the soundness of models, surveys, investigations, and methods.

6. Evaluate whether the interpretations of analysis and the conclusions based on analysis are reasonable.

7. Please focus the review on assumptions, data, methods, and models.

Please **do not** make recommendations on whether a particular alternative should be implemented, or whether you would have conducted the work in a similar manner. Also, please **do not** comment on or make recommendations on policy issues and decision making. Comments should be provided based on your professional judgment, **not** the legality of the document.

1. If desired, panel members can contact one another. However, panel members **should not** contact anyone who is or was involved in the project, prepared the subject documents, or was part of the USACE Agency Technical Review (ATR).

2. Please contact the Battelle Project Manager, Rachel Sell (sellr@battelle.org), for requests or additional information.

3. In case of media contact, notify the Battelle Project Manager, Rachel Sell (sellr@battelle.org), immediately.

4. Your name will appear as one of the panel members in the peer review. Your comments will be included in the Final IEPR Report, but will remain anonymous.

Please submit your comments in electronic form to the Project Manager no later than 10 pm ET by the date listed in the schedule above.

Charge Questions and Relevant Sections as developed by Battelle

Broad Evaluation Review Charge Questions

1. Are the need for and intent of the decision document clear?

2. Are the assumptions that underlie the economic, engineering, environmental, and dredging analyses sound?

3. Given the need for and intent of the decision document, assess the adequacy and acceptability of the project evaluation data used in the study analyses.

4. Given the need for and intent of the decision document, assess the adequacy and acceptability of the models used in the evaluation of existing and future without-project conditions and of economic or environmental impacts of alternatives.

5. Were risk and uncertainty sufficiently considered?

6. Given the need for and intent of the decision document, assess the adequacy and acceptability of the formulation of alternative plans and the range of alternative plans considered.

7. Given the need for and intent of the decision document, assess the adequacy and acceptability of the overall assessment of significant environmental impacts and any biological analyses.

8. Evaluate whether the interpretations of analysis and the conclusions based on analysis are reasonable.

9. Assess the considered and tentatively selected alternatives from the perspective of systems, including systemic aspects being considered from a temporal perspective and specifically addressing the potential effects of climate change and sea-level rise.

10. Are the problems and opportunities adequately and correctly defined?

11. In your opinion, are there any other issues, resources, or concerns that have not been identified and/or addressed?

Specific Technical and Scientific Review Charge Questions

12. Do you agree with the general analyses of the existing social, financial, and natural resources within the study area?

13. Comment on whether the cumulative effects of the project and other previous and future projects in the area have been accurately described. What, if any, additional information should be included?

14. Has the assessment of potential beneficial use options been performed at a sufficient level of detail to include an assessment of capacity, projected capacity needs, and the timing for new beneficial use disposal sites?

15. Is the evaluation of the proposed future without-project conditions, including the problems associated with dredged material placement capacity, adequate in terms of data quality, timeliness of the data, and breadth of information covered?

16. Is there sufficient information presented to identify, explain, and comment on the assumptions that underlie the engineering analyses?

17. Please comment on the conclusion of the most probable future without-project condition. Do you envision other potential probable outcomes?

18. Are the expected changes in the quality and abundance of desired ecological resources clearly and precisely specified in justifying the ecosystem restoration and protection investment?

Plan Formulation / Evaluation

19. Was a reasonably complete array of possible measures considered in the development of alternatives?

20. Did the formulation process follow the requirement to avoid, minimize, and then mitigate adverse impacts to resources?

21. Does each alternative meet the formulation criteria of being effective, efficient, complete, and acceptable?

22. Are the uncertainties inherent in our evaluation of benefits, costs, and impacts, and any risk associated with those uncertainties, adequately addressed and described for each alternative?

23. Are future Operation, Maintenance, Repair, Replacement, and Rehabilitation efforts adequately described, and are the estimated cost of those efforts reasonable for each alternative?

Summary Charge Questions to the Panel Members

These questions are provided for Battelle's use in identifying the Panel's key technical issues.

24. Please identify the most critical concerns (up to five) you have with the project and/or review documents. These concerns can be (but do not need to be) new ideas or issues that have not been raised previously.

25. Please provide positive feedback on the project and/or review documents.

Public Comment Questions

26. Do the public comments raise any additional discipline-specific technical concerns with regard to the overall report?

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November 20, 2017

Cade E. Carter, Jr., P.E.
Vice- President
GEC, Inc.
8282 Goodwood Boulevard
Baton Rouge, LA 70806

CONTRACT NO. 400009022
Work Order No. 01, Amendment 01
SUBMITTAL OF DELIVERABLE: *Addendum to the Final IEPR Report for the Section 203 Draft Integrated Feasibility Report and Environmental Impact Statement for the Houma Navigation Canal Deepening Project, Terrebonne Parish, Louisiana*

Dear Mr. Carter:

This letter accompanies the submission of Battelle's Addendum to the Final Independent External Peer Review Report for the Section 203 Draft Integrated Feasibility Report and Environmental Impact Statement for the Houma Navigation Canal Deepening Project, Terrebonne Parish, Louisiana.

Please contact me at (208) 629-2123 if you have any technical questions regarding this submittal.

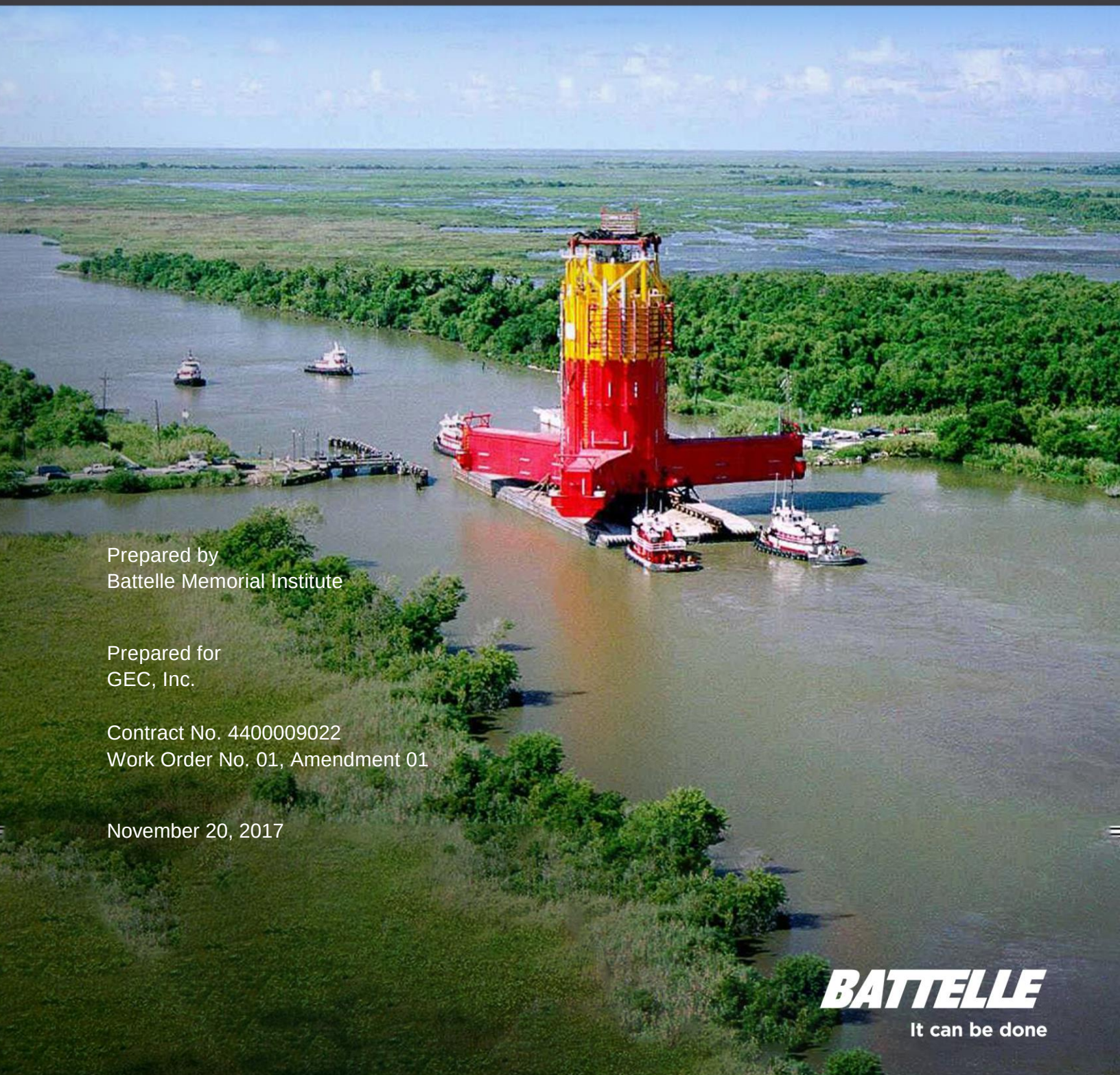
Sincerely,

Rachel N. Sell

Rachel N. Sell
Project Manager

encl.

Addendum to the Final Independent External Peer Review Report - Section 203 Draft Integrated Feasibility Report and Environmental Impact Statement for the Houma Navigation Canal Deepening Project, Terrebonne Parish, Louisiana



Prepared by
Battelle Memorial Institute

Prepared for
GEC, Inc.

Contract No. 4400009022
Work Order No. 01, Amendment 01

November 20, 2017

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Contract No. 4400009022
Work Order No. 01, Amendment 01

Addendum to the Final Independent External Peer Review Report for the Section 203 Draft Integrated Feasibility Report and Environmental Impact Statement for the Houma Navigation Canal Deepening Project, Terrebonne Parish, Louisiana

Prepared by

Battelle
505 King Avenue
Columbus, Ohio 43201

for
GEC, Inc.
8282 Goodwood Boulevard
Baton Rouge, LA 70806

November 20, 2017

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Table of Contents

LIST OF ACRONYMS

EC	Engineer Circular
IEPR	Independent External Peer Review
NEPA	National Environmental Policy Act
USACE	United States Army Corps of Engineers

1. INTRODUCTION

This addendum is a supplement to the Final Independent External Peer Review (IEPR) Report for the Section 203 Draft Integrated Feasibility Report and Environmental Impact Statement (FR/EIS) for the Houma Navigation Canal (HNC) Deepening Project, Terrebonne Parish, Louisiana (hereinafter: HNC IEPR) submitted on July 10, 2017, by Battelle. It was prepared to document activities associated with the IEPR Panel's review of the public comments on the HNC FR/EIS.

This addendum briefly details the IEPR process followed for this public comment review. At the end of the process, the Panel determined that there were no additional scientific or technical concerns that rose to the level of needing a Final Panel Comment.

2. METHODS

This section summarizes the activities associated with the review of the public and agency comments conducted for this project.

Battelle received electronic versions of the public comments from Gulf Engineers & Consultants (GEC), on November 2, 2017. The PDF supplied by GEC included five comment letters from various state and Federal agencies. No letters were received from non-governmental organizations or members of the general public. A second PDF file containing GEC's summary of the issues was also provided.

In accordance with procedures described in the Department of the Army, United States Army Corps of Engineers (USACE), Engineer Circular (EC) *Civil Works Review* (EC 1165-2-214)[1], Appendix D, Battelle focused the IEPR Panel's public comment review on assessing scientific and technical issues with regard to the assumptions, data, methods, and models used in the project.

Each panel member was asked to independently determine whether the public comments contained any additional scientific or technical concerns regarding the project which were not previously identified and which should be addressed by GEC in the HNC project documents. The Panel was charged with focusing on discipline-specific scientific and technical issues and not policy-related comments, per EC 1165-2-214, Appendix D.

Comments submitted by state and Federal agencies were provided to the Panel "For Information Only." Battelle understands that under the National Environmental Policy Act (NEPA), GEC must address state and Federal agency comments as part of the consultation process; therefore, issues brought up by these agencies, and GEC's subsequent responses, were considered policy related.

The HNC IEPR panel members received the state and Federal agency comments from Battelle on November 3, 2017. No emails, letters, or comment cards from companies, non-profit organizations, or members of the general public were provided by GEC. The panel members were required to answer one charge question with regard to the public comments.

[1] USACE (2012). Water Resources Policies and Authorities: Civil Works Review. Engineer Circular (EC) 1165-2-214. Department of the Army, U.S. Army Corps of Engineers, Washington, D.C. December 15.

1. **Do the public comments raise any additional discipline-specific technical concerns with regard to the overall report?**

The panel members submitted responses to this charge question, and Battelle reviewed those responses to identify any issues, areas of potential conflict, and other overall impressions. Each panel member's individual comments were shared with the full Panel. Battelle then confirmed via email and telephone that no additional scientific or technical concerns were identified that should be carried forward as Final Panel Comments.

All other concerns raised by agencies were deemed by Battelle and the Panel to be related to policy and therefore outside the purview of the Panel's review.

Battelle prepared this addendum based on the Panel's review. There was no direct communication between the Panel and GEC during the review of the public comments and preparation of this Addendum.

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