APPENDIX D: ALTERNATIVES INFORMATION

D1: Alternatives Working Group Summary

D2: Eliminated Alternatives Matrix

D1: Alternatives Working Group Summary

MBSD EIS Alternatives Working Group
Summary of Process and Meeting Notes

CEMVN worked with the LA TIG and cooperating agencies through an Alternatives Working Group (AWG) to develop and implement a process to identify and screen various alternatives. Members of the AWG included representatives from CEMVN, CPRA, and the Project Federal Coordination Team, including representatives from NOAA, NMFS, USEPA, USFWS, USDOI, and USDA. The screening process considered the following:

- information available from previous studies, including those described in Section 2.1, relevant to the currently proposed MBSD Project;
- decision-making needs of the lead agency (USACE) and cooperating agencies (see Chapter 1 for additional information about roles of the lead and cooperating agencies);
- NEPA requirements (40 CFR 1502.14);
- NRDA restoration planning efforts;
- information and modeling input provided by CPRA; and
- public and agency scoping comments.

The screening process involved the development and use of matrices to show the basic assumptions employed, the data and information analyzed, and the reasons and rationale used. The process began with identifying possible alternatives for consideration and developing relevant screening criteria. The AWG then began filling in the matrix by identifying why each alternative did or did not meet each of the identified the screening criteria. Overall, the group collaborated to refine and conduct the alternatives screening process to evaluate a wide range of alternatives, taking into consideration practicability, location, design, and operation in an objective and transparent manner.

The AWG met nine times between February 7 and July 3, 2018, and coordinated with the MBSD EIS UFT four times (at the February 27, March 27, 2018, April 24, 2018, and May 22, 2018 UFT meetings). The AWG agreed upon the key parameters of the reasonable range of alternatives via teleconference on April 5, 2018. Following this preliminary identification of the reasonable range of alternatives, the AWG began an iterative process of preparing a draft of Chapter 2 for inclusion in the DEIS. CEMVN prepared an initial draft of Chapter 2 on April 18, 2018, for review and comment by the LA TIG. CEVMN and the LA TIG worked collaboratively through July 3, 2018, to develop the final draft Chapter 2 (version 3) for inclusion in the PDEIS. During this process, CPRA provided additional information regarding the Applicant's Preferred Alternative and the alternatives identified and selected by the AWG to be included in the reasonable range for analysis in the EIS. While the matrix continued to be a valuable tool during the drafting process, the ultimate analysis and conclusions of the AWG, as reviewed and agreed by the CEVMN, are reflected in the text of Chapter 2.

The following includes meeting notes and key milestones in the AWG process.

Working Group Meeting 1: (Feb 7, 2018) Overall goal was to introduce preliminary draft screening matrices-how they were set up and how they will be used and to begin review and concurrence on screening criteria and alternatives to be considered in screening.

- Reviewed matrix set up and intended use. Discussed alternatives and screening criteria and made assignments regarding review of screening criteria.
    - CEMVN reviewed and commented on CPRA's revised five screening criteria from their Alternatives Framework deliverable on 1/18/18. A sheet was also added to the matrix to identify how screening criteria in the matrix fit into or supported CPRA's five criteria.
    - CPRA reviewed the screening criteria and prepared a spreadsheet that identified screening criteria from the matrix sheets that they felt were in alignment with their concepts as well as those that they felt were not necessary or were more related to impact analysis rather than screening.

Working Group Meeting 2: (Feb 21, 2018) Goal was to come to agreement regarding screening criteria for the matrix, set expectations for AWG goals, and make assignments for moving forward with screening to begin at next AWG meeting.

- Discussed CEMVN comments on CPRA's revised screening criteria. CPRA intends to consider comments in revised Alternatives Framework submittal on March 5.
- Reviewed the alternatives screening matrix screening criteria, resulting in a modified list of screening criteria. Decisions made during this effort will also be taken into consideration in CPRA's revised Alternatives Framework submittal on March 5.
    - GEC modified the matrix to reflect agreed-upon changes to criteria and sent it to AWG prior to March 7 meeting.
- Discussed content needed in an operations plan. Discussed need for Operations Plan and MAMP in the alternatives screening process versus review of alternatives. CPRA intended that most of the information requested in the December Data Needs deliverable for inclusion in the operations plan would be addressed in CPRA's March 5 alternatives submittal.
    - CPRA intent with operations plan is to disclose the maximum extent for operational parameters for permitting purposes. Content would focus on operational triggers, maintenance, and safety.
    - Need to discuss with FCT at February 27 UFT meeting in regards to needs of other cooperating agencies
    - A separate meeting or additional discussion at March UFT meeting may be needed regarding the MAMP and Operations Plan and how they may be used to respond to changing conditions if the MBSD is constructed
- Discussed AWG goals and reviewed proposed path forward. General agreement was reached regarding goals for AWG meetings 3 and 4 and to have a reasonable range of alternatives for evaluation in the EIS by April 10, 2018.
    - Writing will begin concurrent with remaining AWG efforts with goal of having either a first draft of Chapter 2 or appendix materials ready for collaborative writing or review by April 16, 2018.

Working Group Meeting 3: (March 7, 2018) Goal was to begin populating the screening matrix to work towards identifying a reasonable range of alternatives to be carried through the EIS.

- Final revisions were reviewed and made to screening criteria in the alternatives screening matrix.
- The AWG coordinated to populate cells in the screening matrix. Discussion focused on populating cells with information and references to aid in writing Chapter 2. Assignments were made for continuing to fill in the matrix for submittal prior to AWG meeting #4, with CEMVN completing the P&N and Location tabs and CPRA/TIG completing the Design and Operation Tabs. Deadline for submittal was set at COB 3/15/18.
- CPRA alternatives submittal was provided March 7, 2018. The AWG agreed to have a call to discuss the submittal March 14, 2018. Discussion focused on major comments from CEMVN and any clarification needs.

Working Group Meeting 4: (March 21, 2018) The goal was to finalize the alternatives screening process to identify the reasonable range of alternatives to be carried through the EIS.

- GEC had combined the tabs completed by CPRA/TIG into the master matrix and added a summary tab to show how each alternative or concept was addressed in the screening and to identify those to be carried forward for further consideration. Any questions or need for clarification were identified for discussion.
- The AWG worked through the screening matrix as a group to address comments and additional information needs or clarifications.
    - Discussed defining "large-scale" sediment diversion: specific to this effort because the capture and transfer of sediment is location-specific.
    - Discussed 250k cfs diversion: not in 2017 MP primarily due to need for much more robust structure and associated large footprint resulting in additional potential impact.
    - Discussed marsh creation/features in outfall area: given the past, current, and future planned efforts that involve marsh creation features in/around the outfall area (Bayou Dupont Projects and Large-Scale Marsh Creation Component E), focus shifted to creation of features within the outfall area that would aid in accelerated benefits or enhanced diversion performance. The group agreed this would be a viable option for consideration but that a material source would need to be identified. CPRA considered the concept further for discussion at the next UFT meeting (March 27, 2018).
    - CPRA was tasked to provide additional information in Design and Operations matrices beyond a yes/no response.
- Discussed draft screening summary: Many of the alternative scenarios moving forward are design and operational options that would be applied to MBSD or a larger diversion. Based on review of the matrices, it was determined that some of the options were not reasonable to move forward but had not been screened out because the screening criteria did not capture the issues. An example of this is a siphon intake structure, which is not feasible because it is not designed to capture sediment and would therefore not function properly if placed in a manner to maximize sediment capture. The AWG agreed to move forward with alternatives and options

carried forward based on the screening by addressing each individually and explaining why each was retained as a reasonable alternative or not.

- Reasonable Range Discussion: the AWG discussed results of the screening process and determined that rather than move to a Phase II screen, the remaining alternatives would be discussed in text of Chapter 2 in the EIS in regards to whether they were removed from consideration or carried forward as part of the reasonable range of alternatives evaluated in the EIS and why.
    - A task list was created and distributed following the meeting along with a summary that included discussion of each of the remaining alternatives and options in some fashion.
- At conclusion of the meeting, the AWG agreed that the following alternatives and options would be carried forward for further consideration as part of the reasonable range of alternatives.
    1. **CPRA's Proposed MBSD** (designed for max flow of 75k cfs, located at RM 60.7, conveyance includes gated structure with straight open conveyance channel and back structure, 5k cfs base flow when not operating and when head differential does not lead to gate closure, operational trigger at 450k cfs)
    2. **Max 150k cfs Sediment Diversion** (designed for max flow of 150k cfs, located at RM 60.7, conveyance includes gated structure with straight open conveyance channel and back structure, 5k cfs base flow when not operating and when head differential does not lead to gate closure, operational trigger at 450k cfs)

    The following describes features applied to the two alternatives above, resulting in separate and distinct alternatives for potential consideration. Note, these alternatives are based on discussion at the AWG meeting March 21, 2018 and some of these features were subsequently removed from consideration based on additional information, thus further narrowing the range of reasonable alternatives to be carried through the EIS.

    3. **CPRA's Proposed MBSD with Outfall Features** (designed for max flow of 75k cfs, located at RM 60.7, conveyance includes gated structure with straight open conveyance channel and back structure, 5k cfs base flow when not operating and when head differential does not lead to gate closure, operational trigger at 450k cfs)
        - Outfall Features: prior to the proposed MBSD being operational, features would be strategically designed and constructed in the outfall area with the intent to trap and/or direct sediment, nutrients, and/or freshwater in a manner that would supplement or expedite anticipated benefits from the diversion and/or avoid specific potential impacts. These features could include:
            - placement of terraces, berms, small marshes, ridges
            - enhancement of existing marshes
            - construction of impoundments, weirs, canals, bayous or any other feature designed to meet these goals
            - Borrow source for features that require placement of materials could be those excavated during construction of MBSD, materials dredged from the Mississippi River, materials dredged from navigation channels (MR or Barataria Basin), or another feasible source. If successful, ongoing

placement of features and/or maintenance of features could be part of the project's Monitoring and Adaptive Management Plan.

4. **CPRA's Proposed MBSD with Supplemental Sediment** (designed for max flow of 75k cfs, located at RM 60.7, conveyance includes gated structure with straight open conveyance channel and back structure, 5k cfs base flow when not operating and when head differential does not lead to gate closure, operational trigger at 450k cfs)
    - Supplemental Sediment Feature: A suitable material source would be identified (MR borrow area, maintenance material from navigation channels in MR or Barataria Basin, or other feasible source) and periodically injected directly into the diversion conveyance channel with the intent to provide additional sediment and nutrients into the system to supplement and/or enhance project benefits.
5. **CPRA's Proposed MBSD with 10k cfs base flow** (designed for max flow of 75k cfs, located at RM 60.7, conveyance includes gated structure with straight open conveyance channel and back structure, 10k cfs base flow when not operating and when head differential does not lead to gate closure, operational trigger at 450k cfs)
6. **CPRA's Proposed MBSD with Maintenance of MR Flow** (designed for max flow of 75k cfs, located at RM 60.7, conveyance includes gated structure with straight open conveyance channel and back structure, 5k cfs base flow when not operating and when head differential does not lead to gate closure)
    - Maintenance of MR Flow Feature: The diversion would operate to maintain a minimum of 200k cfs flow in the MR downstream from the diversion. Thus, gates would be open unless head differential forced closure or flow in the MR reached 200k cfs downstream of the diversion.
7. **Max 150k cfs Sediment Diversion with Outfall Features** (designed for max flow of 150k cfs, located at RM 60.7, conveyance includes gated structure with straight open conveyance channel and back structure, 5k cfs base flow when not operating and when head differential does not lead to gate closure, operational trigger at 450k cfs)
8. **Max 150k cfs Sediment Diversion with Supplemental Sediment** (designed for max flow of 150k cfs, located at RM 60.7, conveyance includes gated structure with straight open conveyance channel and back structure, 5k cfs base flow when not operating and when head differential does not lead to gate closure, operational trigger at 450k cfs)
9. **Max 150k cfs Sediment Diversion with 10k cfs base flow** (designed for max flow of 150k cfs, located at RM 60.7, conveyance includes gated structure with straight open conveyance channel and back structure, 10k cfs base flow when not operating and when head differential does not lead to gate closure, operational trigger at 450k cfs)
10. **Max 150k cfs Sediment Diversion with Maintenance of MR Flow** (designed for max flow of 150k cfs, located at RM 60.7, conveyance includes gated structure with straight open conveyance channel and back structure, 5k cfs base flow when not operating and when head differential does not lead to gate closure)

March 27 UFT Meeting-Alternatives Discussion: During the UFT meeting the AWG provided an overview of the above information, CPRA proposed moving forward with three alternatives (MBSD as proposed, 150k cfs max diversion, and diversion operated to maintain downstream flow of 250k cfs in

the Mississippi River), each with and without outfall features. Following discussion with the UFT, the following was determined:

- Due to constraints of the Delft 3D modeling program, a maximum of eight alternatives can be run at one time. In the interest of time and funding, CPRA desires to only do one set of model runs, which must include the no-action and action alternatives, as well as cumulative impacts.
- To address public comment regarding smaller diversions and to show a range of diversion sizes being considered, it was determined that the AWG would consider a smaller diversion, operating at a maximum of 50k cfs. CPRA agreed to prepare a memorandum comparing a 50k cfs to a 75k cfs in regards to capture of sediment, addressing sea level rise and subsidence, and salinity effects within the bay (all based on previous studies). CPRA agreed to submit the memo for consideration on April 3, 2018.
- At this time, the alternatives being considered for the final reasonable range of alternatives are as follows (Based on information provided by CPRA and reviewed by the AWG following the March 21 AWG meeting, it is assumed all would maintain a base flow of 5,000 cfs base flow except when head differential required gate closure):
    - No action;
    - CPRAs preferred alternative (35,000 cfs - 75,000 cfs max flow with 450,000 cfs Mississippi River flow trigger for operation);
    - 35,000 cfs - 75,000 cfs max flow, trigger is to maintain 200k in the downstream Mississippi River;
    - 35,000 cfs - 150,000 cfs with 450,000 cfs trigger Mississippi River flow trigger for operation; and
    - 15,000 cfs – 50,000 cfs max flow with 450,000 cfs Mississippi River flow trigger for operation.
- The UFT decided it would be beneficial to begin referring to each alternative with its respective flow range rather than maximum flow, as the maximum flow would be infrequently seen during the operation of any of the diversion alternatives, particularly the higher flow alternatives.
- Salinity intrusion is a factor to be considered in determining minimum downstream flow; salinity intrusion at freshwater intakes would be cause to eliminate an alternative such as the maintenance of 200,000 cfs downstream of the diversion. USACE agreed to investigate the trigger of salinity intrusion and provide to the UFT and AWG for consideration.

Working Group Meeting 5: (April 5, 2018) During this AWG call, the group reviewed the deliverables provided by CPRA on March 23 and April 3, discussed the salinity issues within the Mississippi River at 250k cfs flows, considered modeling constraints and risks associated with various modeling scenarios, and determined the reasonable range of alternatives to be carried through the EIS. The AWG considered the needs of the USACE and cooperating agencies for decision-making, adequacy for meaningful public review and understanding, and logistical constraints of modeling, and identified the following as the reasonable range of alternatives.

- No Action Alternative: No diversion would be permitted.
- Alternative 1: 15k-50k cfs sediment diversion

- Alternative 2: 15k-50k cfs sediment diversion including outfall features
- Alternative 3: 35k-75k cfs sediment diversion (Applicant's Proposed Alternative)
- Alternative 4: 35k-75k cfs sediment diversion including outfall features
- Alternative 5: 50k-150k cfs sediment diversion
- Alternative 6: 50k-150k cfs sediment diversion including outfall features

Each diversion alternative (alternatives 1 through 6) would be located at River Mile 60.7, operate at a 450k cfs trigger in the Mississippi River Belle Chasse gauge, and have a base flow of 5k cfs.

The outfall features were included as a feature for each of the three diversion sizes in response to scoping comments and the consideration of exploring options to expedite project benefits. Outfall features would be constructed prior to operation of the diversion and would consist of terraces and/or berms designed to trap and/or direct sediment, nutrients, and/or freshwater in a manner that would supplement or expedite anticipated benefits from the diversion and/or avoid specific potential impacts. Preliminary design plans for these features and a material source will be developed for modeling and effects evaluation as design of the project progresses. The AWG determined that each of the three diversion sizes should be considered both with and without outfall features because of the likelihood that each may perform differently in regards to how the diversion interacts with the features. Performance of features may be influenced by the different volumes of various sediment types captured and transported into the outfall area by each of the diversion sizes.

Thus, in order to determine project-related effects, the Delft 3D model would be set up to run all seven alternative scenarios. The group also determined that modeling would be conducted for a cumulative impacts scenario using the 50k – 150k cfs sediment diversion including outfall features, as this alternative would have potentially the largest net effect and could be used to qualitatively describe anticipated effects for the other alternatives.

Features Removed from the Reasonable Range:

Operational Trigger to Maintain 250k cfs Flow Downstream – This operational scenario, which would allow operation of the diversion except for when flow in the Mississippi River downstream of the diversion was 250k cfs or lower, was removed from further consideration due to concerns with saltwater intrusion. An evaluation of historic trends indicated that the saltwater wedge extends into Southwest Pass when flows in the Mississippi River reach 300k cfs. Because of concern with potable water intakes along the river and various other issues associated with saltwater moving up the Mississippi River, this option was removed from consideration.

Base Flow at 10k cfs – Consideration was given to a base flow of 10k cfs rather than 5k cfs but preliminary investigation showed that the 10k cfs scenario resulted in a larger magnitude change compared to 5k cfs base flow, which reduced salinities in the extreme southern reaches of the basin. Given that the primary purpose of the base flow is to help protect newly created or converted fresh and intermediate marsh areas from seasonal intrusion of highly saline waters, it was determined the larger base flow scenario was unnecessary.

Supplemental Sediment Option – This option considered periodically pumping sediment directly into the diversion channel to supplement that captured by the diversion, with the intent to expedite project benefits. This option was removed from further consideration for three reasons. One, a reliable sediment source of appropriate sediment sizes that would not remove sediment already needed for planned marsh creation/enhancement projects and would not remove sediment upstream from the diversion could not be identified. Second, placement on infrastructure (such as a pipeline) to transport material from a source to the diversion would be costly, contribute to project-related potential negative impacts, and would be costly to maintain. Third, placement of material directly into the conveyance channel could result in unanticipated negative effects within the channel, potentially decreasing conveyance efficiency and increasing maintenance efforts.

MILESTONE: AWG agreed on a preliminary range of reasonable alternatives for evaluation in the EIS – 4/5/18. See discussion above for Working Group Meeting 5 (Notably: details of these alternatives continued to develop during the NEPA process, but identification of the basic parameters of the reasonable alternatives enable The Water Institute of the Gulf ("TWIG") to begin running the Delft 3D model for impact analysis.)

MILESTONE: CEMVN/GEC provided draft Chapter 2 (v.1) on April 18, 2018

Working Group Meeting 6 (4/24/18 (afternoon of UFT meeting)):

- Collaborative writing was not built into the schedule for Chapter 2
  - It was originally intended for the AWG to function as the collaboration effort.
  - The UFT stated that they would like to treat Version 1 as collaborative writing, rather than a review.
- GEC noted intent with Chapter 2, Version 1 deliverable
  - To gain consensus on how/why reasonable range of alternatives was determined
  - To identify areas of focus for finalizing project descriptions needed for impact assessment
- CPRA/TIG feels that the description of the screening process in version 1 belongs in a technical appendix or in the Admin Record
  - No decisions had been made by the AWG regarding technical appendix vs. Admin Record materials. Some of the information in the current Chapter 2 was probably more suited for an appendix.
- The TIG presented an outline for revising Chapter 2 to the UFT.
  - The UFT discussed splitting work efforts between revising Chapter 2 based on the outline and what to move to a technical appendix within the schedule timeframe.
    - Federal NEPA agencies can work on revising Chapter 2.
    - CPRA will take lead on redlining what could be in a technical appendix.
- All agreed that the priority should be on ensuring project descriptions reflect final decisions regarding modeling.
  - Preparing the text of Chapter 2 is not a critical path item, but the project descriptions are and they should be finalized for impact analysis by May 31, 2018.
  - The finalization of draft Chapter 2 can be pushed past the current end date (May 30, 2018) and the overall schedule will remain intact.
- CPRA stated that they will make suggestions and provide language on how the diversion alternatives could be renamed to indicate variable flow up to 50k/75k/150k cfs, since the ranges on the low end are dependent upon so many variables.

- Project descriptions currently in Chapter 2 are adequate for modeling needs but should be cross-referenced with final decisions from the modeling group for the Delft 3D model to ensure consistency.
    - The project descriptions will need to be more robust and have more detail for impact analysis and should be a priority effort prior to the initiation of writing Chapter 4 – Environmental Consequences (May 31, 2018).
    - CPRA stated that the Construction Means and Methods document is basically a start to project description and has all project components in it.
    - CPRA will provide explanation of why the Wilkinson Canal ridge was proposed as the additional outfall feature
    - CPRA clarified that the two marsh creation features in the permit application (made from material excavated for the apron on the basin side) were placed intentionally as a feature to aid in delta formation.
    - These marshes meet the AWG definition of "outfall feature" and the project alternative names should reflect that the difference in alternatives is really with/without the ridge.
    - CPRA to provide information to describe the features that were built into the project as originally designed (two marshes), in addition to the features that were looked at that would be additional benefit (terraces and ridges). This will be worked into a revised Chapter 2.
- The No Action Alternative will be updated and revised to be consistent with what is being modeled and for NEPA purposes.
- The Screening Matrix will need to be reviewed and updated to confirm any relevant reference/citation information is included.
    - GEC will work on this and ensure all sources are available in the Admin Record as a reference.

<u>Next Steps</u>

- The Federal agencies will pull information from the Chapter 2, Version 1 document as needed to develop a Chapter 2 per their revised outline and submit to USACE for consideration in the EIS.
- CPRA will propose materials for inclusions in a Chapter 2 technical appendix
- GEC and CEMVN will call into scheduled working calls with the agencies to assist with revision of Chapter 2.
- GEC will update the screening matrices to include relevant references/citation.

TIG submitted revised Chapter 2 to USACE/GEC for review on May 17, 2018.

Alternative Working Group Meeting 7 (5/22/18 (afternoon of the UFT meeting)

- CPRA explained that the collaboratively written version of chapter 2 de-emphasizes process and focuses more on screening criteria and describing how each alternative meets criteria and purpose and need.
- GEC asked why this version focuses on the USACE and doesn't represent the screening process as an inter-agency process.
- NOAA stated that the collaboratively written version of Chapter 2 was intended to reflect the Federal agencies' independent review and verification of CPRA's submittals through the lead NEPA agency. NOAA will document its acceptance of the alternatives analysis in its restoration document. USACE re-iterated tonal issues in the collaboratively written version.
- Team agreed that some minor language changes can be made to show that it's the Applicant's project and that the alternative screening process was a multi-agency review.

- GEC confirmed with CPRA that Chap. 2 was written by the TIG's contractor (Abt/Atkins) and the appendices are being prepared by CPRA; however, Abt/Atkins included some revisions in the draft submitted to the CEVMN/GEC that the TIG had not previewed prior to submittal in order to ensure all had an adequate opportunity to review the revised version of Chap. 2 prior to this meeting.
- CEMVN stated that it will review the document to make sure it meets regulatory/CEMVN purposes
- May need a coordination appendix to provide more details about how the process was carried out
- Need consistency in naming Project features
- GEC/USACE will come up with questions about alternatives and coordinate with CPRA/TIG in the next couple of weeks
- Discussions about Chap. 2 alternatives can also continue during DIG meetings

On 6/1/18, members of the LA TIG provided additional comments regarding portions of Chap. 2 to CEMVN/GEC to assist in CEMVN/GEC's ongoing revisions, including:

- description of the Applicant's preferred alternative,
- adding a narrative for multiple smaller diversions, and
- clarifying the discussion of sediment size

USACE/GEC issued revised version of Chapter 2 (v.2) to TIG on June 7, 2018 for review/comment.

Alternative Working Group Meeting # 8 (6/13/18, Brad LaBorde and Angie Love joined TIG SWG meeting to discuss TIG comments on draft Chapter 2 (v.2))

- Discussed rationale for eliminating the combination of sediment diversion and marsh creation as an alternative. AWG discussed the fact that marsh creation and sediment diversions are not connected actions, and in combination are not an alternative to a sediment diversion (alone).
- Discussed edits to the description of the Applicant's preferred alternative, including the channel types under consideration.
- Discussed how the "No Action" alternative explanation identified other potential uses of the project site in general (industrial or commercial development). CEMVN/GEC noted that to attempt to describe specific actions/operations that may be constructed at the diversion site if the MBSD did not proceed would be speculative and that the current text reflected this.

LA TIG submitted comments on Chapter 2 (v. 2) on June 14, 2018.

Alternative Working Group Meeting 9 (6/21/18)

- AWG discussed the use of upstream sand bars in the MR as source material for marsh creation/maintenance efforts following implementation of MBSD, if permitted, and how this will be an important issue in consideration of impact evaluations for certain resources in the EIS.
- CEMVN requested that CPRA provide the names of two approved clay borrow sites mentioned in their submittal of information for Chapter 2. The names will allow CEMVN to collection information to help determine how potential impacts associated with use of these sites will be addressed in the EIS.
- AWG decided to refer to the "sediment deposition area" as the "outfall area" in the EIS for ease in understanding and flow in the document.

- CEMVN requested this additional AWG meeting to discuss outstanding questions based on TIG's proposed edits to Chapter 2 (v. 2).
- AWG discussed the technical and legal rationale for eliminating combinations of marsh creation and sediment diversion as a reasonable alternative.
- AWG discussed sediment size. In particular, CEMVN asked whether the Delft 3D model results will include information regarding the volume of particular sediment sizes transported by the diversion (e.g., clays, fines, and sand).
- AWG discussed the relationship of the original screening matrix to the final Chapter 2 narrative. The matrix was an initial tool to facilitate alternatives development. Final decisions regarding the alternatives analysis are reflected in Chapter 2.

MILESTONE: 7/3/18 CEMVN/GEC issued Chapter 2 (v.3) to LA TIG members (final version prior to PDEIS). Final range of reasonable alternatives is reflected in 7/3/18 version (subject to further refinement through the EIS process).

D2: Eliminated Alternatives Matrix

ID #	Diversion/No diversion	Alternative or Option Type	Description	Source	Source Details	Basis for Decision Not to Carry Forward for Detailed Review
22	diversion	design options	Construct guide levee with earthen material instead of concrete walls to allow for sustenance fishing when the structure is not in operation.	scoping		Not an alternative as contemplated by NEPA. Analysis as an alternative would not result in notably different potential environmental effects as compared to the Applicant's Preferred Alternative or the other action alternatives selected for more detailed review. In any case, not a reasonable alternative because the diversion will be fenced to protect public safety. Fishing will be available at either end of the diversion structure (either in the Mississippi River or the Barataria Basin), but not as part of the Applicant's Preferred Alternative or any of the action alternatives.
23	diversion	design options	Construct the MBSD structure with geopolymer concrete	scoping		Not an alternative as contemplated by NEPA. Analysis as an alternative would not result in notably different potential environmental effects as compared to the Applicant's Preferred Alternative or the other action alternatives selected for more detailed review. In any case, CPRA and its CMAR contractor are evaluating materials types for the diversion structure and this comment will be considered as part of that process.
24	diversion	design options	Justify having two gates versus the more cost effective option of one gate	scoping		Not an alternative as contemplated by NEPA. Analysis as an alternative would not result in notably different potential environmental effects as compared to the Applicant's Preferred Alternative or the other action alternatives selected for more detailed review. In any case, the engineering review conducted as part of the Section 408 analysis will consider this issue in regards to maintaining the integrity of the federal levee. The recommendations resulting from that review will be integrated into each of the alternatives considered in the EIS. Additionally, a reduction in the number of gates (<3) would result in the need for a larger structure to achieve proposed flow rate.
25	diversion	design options	Consider alternative rail alignment that excludes costly upgrades	scoping		Multiple rail alignment alternatives were considered by the Applicant. The Applicant's current design for the Proposed Project includes a rail alignment that maintains the current alignment and does not include costly upgrades. This alignment will be carried forward for detailed analyzed in the EIS.
26	diversion	flood reduction options	Rather than place excavated material into proposed disposal areas, use that material to raise ground in Ironton, fortify the back levee, or fill in borrow pits	scoping		Not an alternative as contemplated by NEPA. Analysis as an alternative would not result in notably different potential environmental effects as compared to the Applicant's Preferred Alternative or the other action alternatives selected for more detailed review. In any case, excavated material that is considered suitable for levee construction will be used for construction of the conveyance channel guide levees and the temporary reroute of the MRL levee system to maintain protection during construction of the Project. Material deemed unsuitable for use in levees is expected to be used beneficially. Additionally, CPRA is considering flood risk and potential mitigation measures that will be considered and included in the EIS analysis. See Chapter 4, Section 4.20 regarding Public Health and Safety, and Section 4.27, Mitigation Summary.
27	diversion	flood reduction options	Use some sediment from conveyance channel to create ring levees and raise homes for Ironton and other communities	scoping		Not an alternative as contemplated by NEPA. Analysis as an alternative would not result in notably different potential environmental effects as compared to the Applicant's Preferred Alternative or the other action alternatives selected for more detailed review. In any case, CPRA, CEMVN and cooperating agencies are considering mitigation from flood risk as part of the EIS analysis. See Chapter 4, Section 4.20 regarding Public Health and Safety, and Section 4.27, Mitigation Summary.

28	diversion	flood reduction options	Place material in the western reach of the Barataria Waterway to reduce tidal events in Upper Barataria and lessen potential Project-induced flooding impacts	scoping		Not an alternative as contemplated by NEPA. Analysis as an alternative would not result in notably different potential environmental effects as compared to the Applicant's Preferred Alternative or the other action alternatives selected for more detailed review. In any case, CPRA, CEMVN and cooperating agencies are considering mitigation from flood risk as part of the EIS analysis. See Chapter 4, Section 4.20 regarding Public Health and Safety, and Section 4.27, Mitigation Summary.
29	diversion	flood reduction options	Build guide levees to 100-year hurricane and flood protection standard so that guide levees and highway bridge will not have to be modified in future	scoping		Not an alternative as contemplated by NEPA. Analysis as an alternative would not result in notably different potential environmental effects as compared to the Applicant's Preferred Alternative or the other action alternatives selected for more detailed review. In any case, existing levee system is not built to 100-yr level of protection; levees will be designed consistent with direction from CEMVN based on integration into the existing system. As of 7/9/20 , a levee design grade of EL 15.85 was recommended, which is 0.25 feet higher than the design grade recommended by USACE for the Reach NOV-NF-W-05c, 50-yr (2063).
3	diversion	freshwater diversion	Freshwater diversion similar to those previously implemented	previous studies	CPRA Master Planning	Addressed in Chapter 2 (evaluation of functional alternatives)
15	diversion	freshwater diversion	Ironton-Gated concrete box culverts at intake, conveyance channel, outflow channel into basin, pilot channel with locks also considered. 5kcfs, 15kcfs. RM 59.8	previous studies	MRSNFR Study	Addressed in Chapter 2 (evaluation of functional alternatives)
7	diversion	location options	Upriver over existing borrow pits to avoid stressed wetland area at proposed location and increase distance to residences	scoping		Addressed in Chapter 2 (evaluation of location within Basin)
8	diversion	location options	Down river toward Venice or even below Venice to protect a bigger area from storm surge and land loss	scoping		Addressed in Chapter 2 (evaluation of location within Basin)
9	diversion	location options	Not in vicinity of future RAM Terminals Coal Export Facility	scoping		See analysis in Chapter 2 for explanation of locations carried forward for detailed analysis. The Ram Terminal is no longer proposed at that location. Reasonably foreseeable projects are addressed in the EIS in Chapter 4.
10	diversion	location options	Optimize tidal mixing: Move marsh creation area to freshwater areas extending into brackish areas to allow for tidal mixing and prevention of hypoxia	scoping		Locations responsive to this comment are in the upper Basin. Location within the Basin is addressed in Chapter 2 (evaluation of location within Basin).
11	diversion	location options	Proposed location of MBSD at RM 60.7	application		Addressed in Chapter 2 (evaluation of location within Basin)

12	diversion	location options	Magnolia @RM 47.5	previous studies	Medium Diversion at Myrtle Grove with Dedicated Dredging (LCA, 2008-2014), 15 kcfs & 70 kcfs	Addressed in Chapter 2 (evaluation of location within Basin)
13	diversion	location options	Woodland @RM 51	previous studies	Medium Diversion at Myrtle Grove with Dedicated Dredging (LCA, 2008-2014), 15 kcfs & 70 kcfs	Addressed in Chapter 2 (evaluation of location within Basin)
14	diversion	location options	Myrtle Grove @ RM 59	previous studies	Medium Diversion at Myrtle Grove with Dedicated Dredging (LCA, 2008-2014), 15 kcfs & 70 kcfs	Addressed in Chapter 2 (evaluation of location within Basin)
16	diversion	location options	RM 60.8-61.3 (Between Alliance Refinery and Myrtle Grove)	previous studies	Myrtle Grove Ecosystem Restoration Project (CWPPRA)	Addressed in Chapter 2 (evaluation of location within Basin)
17	diversion	location options	Myrtle Grove @ RM 60.2	previous studies	Medium Diversion at Myrtle Grove with Dedicated Dredging (LCA, 2008-2014)	Addressed in Chapter 2 (evaluation of location within Basin)
1	no diversion	marsh creation	Marsh creation through Mississippi River dredging/pipeline sediment delivery	scoping		Addressed in Chapter 2 (evaluation of functional alternatives)
20	diversion	maximize sediment options	Pipe sediment directly into MBSD conveyance channel through dedicated dredging to maximize sediment/water ratio	scoping		This alternative was determined not to be practical or feasible from a technical or economic standpoint. Utilizing the lateral bar adjacent to the diversion in the Mississippi River as a sediment source for the piped sediment would decrease the efficiency of the diversion and availability of sediment. Piping sediment from a a more distant source would not be cost efficient due to the distance and maintenance of pipeline and could result in impact to navigation. Further, piping sediment directly into the conveyance channel could alter the movement of sediment within the channel, increasing maintenance costs. (See EIS Chapter 2, Section 2.4.4)

21	diversion	maximize sediment options	Use vortex generators near the intake of diversion structure or in conveyance channel to create turbulence near the bottom to keep sediment suspended while flows are low to increase amount of sediment transfer and keep channel bottom from shoaling	scoping		A vortex generator (VG) is generally considered an aerodynamic device, consisting of a small vane usually attached to a lifting surface (or airfoil, such as an aircraft wing) or a rotor blade of a wind turbine. As a result, a vortex generator is not a reasonable/feasible alternative in an aquatic environment. CPRA did, however, consider turbulence inducing structures intended to support sediment suspension during flow through the channel into the basin. Results from modeling of such structures found that the sufficient sediment exists in the system to meet the target sediment to water ratio without the need of additional turbulence structures. Further, the presence of such structures would lead to additional energy loss through the structures, and therefore, was not practical or technical feasible. As a result, turbulence generating structures wre not carried forward for detailed review.
51	diversion	operations-trigger	Mimic Historic Hydrology: 5,000 cfs diversion at 50% duration river stage. Every 5th year 150,000 cfs	previous studies	Myrtle Grove Alt R3	Would not transport sufficient water, nutrients and sediment from the Mississippi River to the Barataria Basin to meet purpose and need. Consequently, not carried forward for detailed review.
52	diversion	operations-trigger	Mimic Historic Hydrology: 75,000 cfs at 50% duration river stage diverted for 3 months at 5-year intervals	previous studies	Myrtle Grove Alt M3: Mimic Historic Hydrology	At the proposed durations and intervals, this operational scenario would not transport sufficient water, nutrients and sediment from the Mississippi River to the Barataria Basin to meet purpose and need. Consequently, not carried forward for detailed review.
55	diversion	operations-trigger	Triggers specific to the health of different species (shrimp, oyster, marine mammals, protected species, overall fishery, EFH), or existing wetlands	scoping		Not technically feasible or reasonable. Data/technology do not currently exist to support this operational regime. Consequently, not carried forward for detailed review. Nevertheless, adaptive management of the proposed diversion will be addressed in the Operations Plan and Monitoring and Adaptive Management Plan.
56	diversion	operations-trigger	Maintain inter-annual consistency in operation	scoping		Not technically feasible because of the natural variability in the Mississippi River system. Operations will be largely determined by flows within the Mississippi River and water levels in the Barataria Basin. Flows in the Mississippi River are naturally variable, changing throughout each year and between years.
57	diversion	operations-trigger	Time pulses to maximize sediment capture	scoping		As part of the project design, CPRA considered multiple pulsing scenarios with the goal of maximizing sediment capture and transport. That analysis showed that applying pulsing to project operations significantly reduced the days of operation, and consequently this operational scenario would not transport sufficient water, nutrients, and sediment from the Mississippi River to the Barataria Basin to meet the purpose and need. Consequently, not carried forward for detailed review.
58	diversion	operations-trigger	Seasonal triggers	scoping		Addressed in Chapter 2 (evaluation of operational triggers)
59	diversion	operations-trigger	Salinity, turbidity, and water temperature triggers	scoping		Operating a diversion using these triggers would not meet project purpose and need, as salinity and temperature are not tied specifically to sediment availability, and real time sediment monitoring is not currently technically feasible (real time sediment monitoring does not provide consistent and reliable data to support diversion operations). Consequently, this alternative was not carried forward for detailed review. Nevertheless, adaptive management of the proposed diversion will be addressed in the Operations Plan and Monitoring and Adaptive Management Plan.

60	diversion	operations-coordination	Coordinate operations with other diversions in area to maximize benefits	scoping		Coordination with all other diversions in the area is not practical or technically feasible because CPRA does not control the operations of all other diversions and siphons in the Barataria Basin. Nonetheless, as part of evaluating the location and operations of the proposed Project and potential alternatives, CPRA and the AWG assumed operations of other diversions consistent with their current or anticiapted operational protocols. Further, potential impacts to the Davis Pond Freshwater Diversion will be considered as part of the 408 process. CPRA will coordinate to the extent possible with other entities responsible for operation of other diversions and siphons.
61	diversion	operations-coordination	Create a basin-wide operation plan to coordinate all diversions and siphons to maximize benefits	scoping		Coordination of a basin-wide operation plan is not practical or technically feasible due to varied ownership and operational responsibility for other diversions and siphons in the Bararataria Basin. Nonetheless, as part of evaluating the location and operations of the proposed Project and potential alternatives, CPRA and the AWG assumed operations of other diversions consistent with their current or anticiapted operational protocols. Further, potential impacts to the Davis Pond Freshwater Diversion will be considered as part of the 408 process. CPRA will coordinate to the extent possible with other entities responsible for operation of other diversions and siphons.
62	diversion	operations-trigger	Make real-time trigger data publicly available	scoping		Not an alternative as contemplated by NEPA. Analysis as an alternative would not result in notably different potential environmental effects as compared to the Applicant's Preferred Alternative or the other action alternatives selected for more detailed review. In any case, river flow data is publicly available.
63	diversion	operations-NA	Develop operation plan in coordination with fishing, navigation, agencies, and non-profit organizations	scoping		Not an alternative as contemplated by NEPA. Analysis as an alternative would not result in notably different potential environmental effects as compared to the Applicant's Preferred Alternative or the other action alternatives selected for more detailed review. In any case, CPRA's proposed operations plan has been developed following significant engagement with the public, NGOs and other agencies. Additional comments regarding the operational plan should be made during the DEIS comment period.
69	diversion	operations-trigger	Maintain 200,000 cfs downstream of diversion	CPRA PED	Tech Memo-TO 05, TO 41, TO 44	This alternative was determined not technically feasible or reasonable. Reducing the water levels downstream in the Mississippi River is likely to result in salt water intrusion that could threaten several downstream freshwater drinking sources.
70	diversion	operations-trigger	600,000 cfs at Belle Chasse trigger	CPRA PED	Tech Memo-TO 05, TO 41, TO 45	Addressed in Chapter 2 (evaluation of operational triggers)
71	diversion	operations-trigger	450,000 cfs at Belle Chasse trigger	CPRA PED	Tech Memo-TO 05, TO 41, TO 46	Addressed in Chapter 2 (evaluation of operational triggers)
72	diversion	operations-trigger	Trigger for discharge at rising limb only	CPRA PED	Tech Memo-TO 05, TO 41, TO 47	Addressed in Chapter 2 (evaluation of operational triggers)
73	diversion	operations-trigger	Asymmetrical Trigger- for rising limb effect	CPRA PED	Tech Memo-TO 05, TO 41, TO 48	Addressed in Chapter 2 (evaluation of operational triggers)
74	diversion	operations-trigger	Pulsing	CPRA PED	Tech Memo-TO 05, TO 41, TO 49	Addressed in Chapter 2 (evaluation of operational triggers)
75	diversion	operations-trigger	Pulsing with reduced summer opening	CPRA PED	Tech Memo-TO 05, TO 41, TO 50	Addressed in Chapter 2 (evaluation of operational triggers)
76	diversion	operations-trigger	Pulsing with summer closed	CPRA PED	Tech Memo-TO 05, TO 41, TO 51	Addressed in Chapter 2 (evaluation of operational triggers)

77	diversion	operations-trigger	Simple sediment trigger	CPRA PED	Tech Memo-TO 05, TO 41, TO 52	Addressed in Chapter 2 (evaluation of operational triggers)
78	diversion	operations-trigger	Asymmetrical sediment trigger	CPRA PED	Tech Memo-TO 05, TO 41, TO 53	Addressed in Chapter 2 (evaluation of operational triggers)
53	diversion	operations-Base Flow	Base flow: No base flow—when there are no benefits of silt, close off the freshwater.	scoping		Addressed in Chapter 2 (evaluation of base flow)
54	diversion	operations-Base Flow	Base flow: Analyze impacts of different base flow scenarios	scoping		Addressed in Chapter 2 (evaluation of base flow)
64	diversion	operations-Base Flow	None	CPRA PED	Tech Memo-TO 46	Addressed in Chapter 2 (evaluation of base flow)
65	diversion	operations-Base Flow	1,000 cfs	CPRA PED	Tech Memo-TO 47	Addressed in Chapter 2 (evaluation of base flow)
66	diversion	operations-Base Flow	2,500 cfs	CPRA PED	Tech Memo-TO 48	Addressed in Chapter 2 (evaluation of base flow)
67	diversion	operations-Base Flow	5,000 cfs	CPRA PED	Tech Memo-TO 49	Addressed in Chapter 2 (evaluation of base flow)
68	diversion	operations-Base Flow	10,000 cfs	CPRA PED	Tech Memo-TO 50	Addressed in Chapter 2 (evaluation of base flow)
39	diversion	operations-Flow rates	2,100 cfs	previous studies	Myrtle Grove Freshwater Diversion (BA-24) (1996-1998)	Addresed in Chapter 2 (evaluation of functional alternatives)
40	diversion	operations-Flow rates	2,500 cfs	previous studies	Myrtle Grove Ecosystem Restoration Project (CWPPRA), Delta Building Diversion at Myrtle Grove (NMFS)	Addresed in Chapter 2 (evaluation of functional alternatives)
41	diversion	operations-Flow rates	5,000 cfs	previous studies	Myrtle Grove Ecosystem Restoration Project (CWPPRA), LCA Recon Rpt/EIS	Addresed in Chapter 2 (evaluation of functional alternatives)
42	diversion	operations-Flow rates	10,000 cfs	previous studies	Myrtle Grove Ecosystem Restoration Project (CWPPRA)	Addresed in Chapter 2 (evaluation of functional alternatives)

43	diversion	operations-Flow rates	15,000 cfs	previous studies	Myrtle Grove Ecosystem Restoration Project (Fed/State 1997-98), Myrtle Grove Ecosystem Restoration Project (CWPPRA), MRSNFR Study, LCA Recon Rpt/EIS, Delta Building Diversion at Myrtle Grove (NMFS), Medium Diversion at Myrtle Grove with Dedicated Dredging (USACE)	Addresed in Chapter 2 (evaluation of functional alternatives)
44	diversion	operations-Flow rates	20,000 cfs	previous studies	Myrtle Grove Ecosystem Restoration Project (CWPPRA)	Addresed in Chapter 2 (evaluation of functional alternatives)
45	diversion	operations-Flow rates	38,000 cfs	previous studies	LCA Recon Rpt/EIS	Addresed in Chapter 2 (evaluation of functional alternatives)
46	diversion	operations-Flow rates	45,000 cfs	previous studies	Medium Diversion at Myrtle Grove with Dedicated Dredging (USACE)	Addresed in Chapter 2 (evaluation of functional alternatives)
47	diversion	operations-Flow rates	70,000 cfs	previous studies	Medium Diversion at Myrtle Grove with Dedicated Dredging (USACE)	Addresed in Chapter 2 (evaluation of functional alternatives)

48	diversion	operations-Flow rates	75,000 cfs	previous studies	LCA Recon Rpt/EIS, Medium Diversion at Myrtle Grove with Dedicated Dredging (USACE), MR Delta Management Study	Addresed in Chapter 2 (evaluation of functional alternatives)
49	diversion	operations-Flow rates	150,000 cfs	previous studies	LCA Recon Rpt/EIS, Medium Diversion at Myrtle Grove with Dedicated Dredging (USACE), MR Delta Management Study	Addresed in Chapter 2 (evaluation of functional alternatives)
50	diversion	operations-Flow rates	250,000 cfs	previous studies	CPRA 2012 Master Plan	Addresed in Chapter 2 (evaluation of functional alternatives)
80	Diversion	Operations-gate closure	300,000 cfs at Belle Chase to avoid backflow from head differential	CPRA PED	Tech Memo-TO 46	Alternative determined to be not reasonable or feasible. Operation/flow rate of the diversion will depend on a combination of flow rate in the Mississippi River and head differential in the Basin. It is not accurate or predictable to assert that 300,000 cfs in the Mississippi River will avoid backflow. Not carried forward for detailed analysis in the EIS.
18	diversion	outfall options	Construct canals, bayous, terracing, impoundments, weirs or Chenier-like ridges to manipulate the flow of water for water quality and sediment retention benefits, to create barriers for storm surge and wind, and to redirect waters away from oyster production and sensitive areas.	scoping		This issue is addressed in Chapter 2 (evaluation of sediment diversion outfall features).- It should be noted that because operation of the proposed diversion will result in freshening within certain portions of the basin, it is not feasible to redirect waters to avoid certain areas within the basin. Potential impacts associated with changes in salinity are addressed in Chapter 4, Section 4.5. Mitigation, if any, to address potential effects from water flow and to water quality will be addressed in Chapter 4, Section 4.27.
19	diversion	outfall options	Pump tidal saline waters into diversion outfall area to mitigate excess nutrients and allow for oxygenation of river water	scoping		This alternative does not meet purpose and need for the project. The intent is to restore the natural delatic process between the Mississippi River and Barataria Basin through the introduction of freshwater, sediment, and nutrients from the Mississippi River into the Basin. Additionally, the basin will experience periodic introduction of more saline water naturally through tidal processes and storm events. Potential impacts associated with changes in salinity are addressed in Chapter 4, Section 4.5.

6	no diversion	restore barrier islands	Barrier Islands: Focus on rebuilding barrier islands for storm surge protection and to reduce land loss	scoping		Addressed in Chapter 2 (evaluation of functional alternatives)
5	no diversion	shoreline protection	Shoreline Protection: Protect the coastal shoreline with rock or beach nourishment (through dredging/pipeline sediment delivery from lower Mississippi River or gulf nearshore areas) for storm surge protection and to reduce land loss	scoping		Addressed in Chapter 2 (evaluation of functional alternatives)
2	diversion	smaller diversion + marsh creation	Marsh Creation/Smaller Diversion: Smaller diversion/operate at lower flows (to lessen impacts on fisheries) in conjunction with Mississippi River dredging/pipeline sediment delivery	scoping		Addressed in Chapter 2 (evaluation of functional alternatives)
4	no diversion	structural barriers	Structural Barriers: Build rock barriers, retaining walls, a longer Barataria Land Bridge, or levees for storm surge protection and to reduce land loss/marsh erosion	scoping		Addressed in Chapter 2 (evaluation of functional alternatives)
30	diversion	Design-structural options	Siphon	previous studies	Myrtle Grove Freshwater Diversion (BA-24) (1996-1998)	Addressed in Chapter 2 (evaluation of additional design considerations)
31	diversion	Design-structural options	Gated concrete box culverts at intake, conveyance channel, outlow channel into basin	previous studies	MRSNFR Study 2000	Aside from the box culvert component of this design, this alternative is consistent with the diversion designs carried forward for detailed review in the EIS. The environmental impacts potentially resulting from a box culvert design are substantially similar to the environmental impacts potentially resulting from an open cut U-frame intake. As a result, the environmental impacts of this alternative will be evaluated in the EIS, although the box culvert specific design is not carried forward for detailed analysis in the EIS.
32	diversion	Design-structural options	Pilot channel with locks	previous studies	MRSNFR Study 2000	This alternative is not feasible and is not consistent with the project purpose and need. The diversion channel is not intended for, nor will it allow, vessel access between the Mississippi River and Barataria Basin.
33	diversion	Design-structural options	Gated structure at intake, conveyance channel, outflow channel into basin	CPRA PED	Design consideration with HDR	This is the Applicant's Preferred Alternative. It is carried forward for detailed analysis in the EIS.

34	diversion	Design-structural options	Gated structure at intake, conveyance channel, back structure	CPRA PED	Design consideration with HDR	Each of the alternatives carried forward for detailed evaluation includes a gated structure at intake and a conveyance channel. CPRA considered a diversion structure with a back gate structure. After detailed design consideration, however, CPRA proposed eliminating the back gate design and proceeded with a diversion structure with hurricane/guide levees and no back gate structure. CPRA worked with CEMVN to complete a USACE Risk Assessment of this proposed design. In any case, the inclusion or exclusion of a back structure would not result in notably different potential environmental effects as compared to the Applicant's Preferred Alternative or the other action alternatives, and consequently was not carried forward for more detailed review.
35	diversion	Design-structural options	Closed Conveyance Channel	CPRA PED	Design consideration with HDR	Addressed in Chapter 2 (evaluation of additional design considerations)
36	diversion	Design-structural options	Open Conveyance Channel	CPRA PED	Design consideration with HDR	This design feature is included with the action alternatives carried forward for detailed analysis in the EIS.
37	diversion	Design-structural options	Channel Configurations: Dog-leg	previous studies	CPRA's Delta Building Diversion Modeling effort	Addressed in Chapter 2 (evaluation of additional design considerations)
38	diversion	Design-structural options	Channel Configurations: Straight	previous studies	CPRA's Delta Building Diversion Modeling effort	Carried forward for detailed analysis in the EIS.
USACE-1f	Alternatives		Creation of a distributary network in the outfall area			All action alternatives considered in the EIS include an Outfall Transition Feature that is intended to expedite formation of a distributary network of channels to naturally form in the outfall area. This network may be slightly modified or maintained through dredging to support sediment distribution throughout the basin over the duration of the project. Need for such action would be considered through adaptive management and therefore is not considered an alternative.
USACE-1b	Alternatives		Addition of marsh creation features in the Project Area			Addressed in Chapter 2 (evaluation of functional alternatives)
	diversion		Multiple smaller diversions within Barataria Basin			Addressed in Chapter 2 (evaluation of functional alternatives)
	diversion		MBSD with beneficial use of material dredged from navigation canals			This alternative was determined to be not feasible. Materials dredged from the public navigation canals is already dedicated to other beneficial use projects. Material dredged from private navigation canals is privately owned and not necessarily available to CPRA. Additionally, it is unknown if the material from maintenance dredging of canals would be appropriate for beneficial use projects. Therefore, the ability to utilize sediment dredged from such waterways is speculative at this point and therefore not practicable or feasible.

	no diversion		Reduce the size of Bay Long Pass and 4 Bayou Pass to slow the tide water and save land	Draft EIS Public Comments		This alternative as presented, specifically reducing or narrowing the passes, would not meet the goals and objectives as stated in the purpose and need as described in Chapter 1, Section 1.4 Purpose and Need and Chapter 2, Section 2.2.1 in Steps Taken to Identify and Evaluate Reasonable Alternatives. It would not re-establish deltaic processes between the Mississippi River and Barataria Basin through the delivery of sediment, fresh water and nutrients.
	no diversion		Allow the levees to sink, erode, and collapse down to a normal height with annual widespread overflow distribution of the sediments in the historic and gentle way instead of the MBSD Project.	Draft EIS Public Comments		This alternative of removing levees and restoring natural processes is not feasible and was not considered further because levees are necessary for flood risk reduction for the communities and industries that line the Mississippi River in Barataria Basin.
	diversion		Suggestions such as barging in wood chips and placing in shallow waters, and using old sunken ships and barges to build land	Draft EIS Public Comments		Suggestions such as barging in wood chips and other organic material to the sediment deposited by the diversion or building upon old sunken ships and barges would not meet the scope and the scale of the proposed Project or its purpose and need, and therefore, would not be practicable. While alternative materials such as these may fill in small-scale areas, fill material such as these would not address the proposed Project's purpose of restoring deltaic processes to the Barataria Basin. Therefore, they were eliminated from further consideration.
	diversion/no diversion		Tear down spoil banks and backfill abandoned canals before, in addition to, or instead of implementing the proposed MBSD Project.	Draft EIS Public Comments		This suggested alternative would not meet the goals and objectives as stated in the purpose and need and described in Chapter 1, Section 1.4 Purpose and Need and Chapter 2, Section 2.2.1 in Steps Taken to Identify and Evaluate Reasonable Alternatives. It would not re-establish deltaic processes between the Mississippi River and Barataria Basin through the delivery of sediment, fresh water, and nutrients. However, the EIS acknowledges the influence of canals and spoil banks on wetland losses in Barataria Basin (see Chapter 3, Section 3.6.2.2 in Wetland Resources and Waters of the U.S. of the Final EIS), and has updated the analysis to include additional technical references regarding the influence of canals on the existing environment in the Barataria Basin.

	diversion		Use a sediment diversion to selectively build land by directing water/sediment to a contained area for dewatering, such as a colmates system. A controlled system would be needed to create dry land where it is needed coupled with a system to contain sediment-infused river water in specific areas outside of the levee protection system.	Draft EIS Public Comments		This method of sediment transport and/or sediment containment and land-building would not meet the proposed Project's purpose and need of reconnecting and reestablishing sustainable deltaic process between the Mississippi River and the Barataria Basin. A colmate or other means of large-scale marsh creation using dewatered sediment would allow for sediment to be transported from the Mississippi River to the Barataria Basin and deposited into a location confined by containment berms, which would create an impoundment where the suspended sediment would settle out of the water column over time to create a marsh platform. Once the area dewaters and the platform stabilizes at an appropriate marsh elevation, the berms would be degraded or gapped to allow fish passage and hydrologic exchange. While this type of system would create marsh, it would not be a passive system and would require active management and maintenance, including potentially pumps to ensure sediment transport, mechanical gapping/degrading of the retention berms and periodic lifts to combat the effects of subsidence. It would not reestablish natural deltaic processes. A relatively short amount of time would be required to fill the colmate but this system would limit the amount and grain size of transported sediment in the water column and the transport system would be subject to clogging.
	no diversion		Use alternatives that transport more sediment and sand and less water, such as a conveyor belt or barge and utilizing a processing plant that removes the sediment from the Mississippi River to filter and neutralize the sediment before transport.	Draft EIS Public Comments		This suggested alternative would not meet the goals and objectives as stated in the purpose and need as described in Chapter 2, Section 2.2.1 in Steps Taken to Identify and Evaluate Reasonable Alternatives. CPRA's intent is to re-establish sustainable deltaic processes between the Mississippi River and Barataria Basin through the introduction of freshwater, sediment, and nutrients from the Mississippi River into the basin. Additionally, in light of the volume and nature of the material that would need to be transported, a conveyor belt is not feasible. In addition, as described in Chapter 2, Section 2.4 Step 2: Evaluation of Operational Alternatives - Location, Operational Trigger, Capacity, and Base Flow the proposed Project is designed to maximize sediment bed load transport. Previous studies of the Mississippi River have documented the positive correlation between river discharge and sediment load, demonstrating that higher river discharge levels are generally correlated with higher sediment loads.

	no diversion		Use the funds to move people out of the area instead of implementing the proposed MBSD Project.	Draft EIS Public Comments		This suggested alternative would not meet the goals and objectives as stated in the purpose and need as described in Chapter 1, Section 1.4 Purpose and Need and Chapter 2, Section 2.2.1 in Steps Taken to Identify and Evaluate Reasonable Alternatives. It would not reestablish sustainable deltaic processes and help restore habitat and ecosystem services injured by the DWH oil spill.
	no diversion		Open the Morganza Spillway instead of implementing the proposed MBSD Project.	Draft EIS Public Comments		The Morganza Spillway, operated by USACE for emergency flood control, discharges into the Atchafalaya Basin. The scope of this EIS is the Barataria Basin and the Mississippi River birdfoot delta, which is the defined proposed Project area. This suggested alternative would not meet the purpose and need to reestablish sustainable deltaic processes between the Mississippi River and the Barataria Basin. The LA TIG identified the Barataria Basin in the SRP/EA #3 as the location for the proposed Project because within Louisiana, the Barataria Basin suffered the most severe and persistent oiling from the DWH oil spill. This suggestion would not provide any land-building benefits in the Barataria Basin because it is located outside of the basin.
	no diversion		Divert some of the Mississippi River water off to other states and areas.	Draft EIS Public Comments		The proposed MBSD Project purpose and need is to reestablish sustainable deltaic processes between the Mississippi River and the Barataria Basin. The LA TIG identified the Barataria Basin in the SRP/EA #3 as the location for the proposed Project because within Louisiana, the Barataria Basin suffered the most severe and persistent oiling from the DWH oil spill. This suggestion would not meet the purpose and need because it would not connect the Mississippi River to the Barataria Basin.

	no diversion		Use an alternative that creates a split system to capture and concentrate sediment in one stage, followed by a transfer of the captured sediment to a separate second stage which delivers that sediment with a reduced volume of water having a chosen composition in terms of salinity and nutrients. This can be accomplished by capturing sediment in basins within the channel bottom, while curving the main channel back to the Mississippi River to return the majority of river water to the Mississippi, while delivering a more sediment-focused slurry to Barataria Bay via a separate outfall channel. A dredge operating in the basins, powered by river current, would move the captured sediment, under well-controlled conditions, the short distance from the basins to the outfall channel.	Draft EIS Public Comments		This suggested alternative would not meet the goals and objectives as stated in the purpose and need as described in Chapter 1, Section 1.4 Purpose and Need and Chapter 2, Section 2.2.1 in Steps Taken to Identify and Evaluate Reasonable Alternatives. The purpose of the Project is to re-establish sustainable ~~a~~ deltaic processes between the Mississippi River and Barataria Basin through the delivery of sediment, fresh water, and nutrients from the Mississippi River into the Basin. Details as submitted by the commenter regarding this alternative are lacking making it difficult to evaluate. Based on the description provided by the commenter, it seems that this alternative would transport primarily coarse-grained sediments (for example, larger sediments and sand) collected in the Mississippi River and conveyance channel into the Basin, but, due to the collection method, would not convey substantial finer -grained sediments (for example, clay and silt) that are necessary to sustain existing wetlands in the basin. Also, with the significant reduction in fresh water transported into the basin, this alternative would not transport sufficient fresh water or nutrients to meet the Purpose and Need. Further, it is unclear whether or how the proposed alternative would mobilize the collected coarser-grained sediments. As explained in Section 2.4.3.2 Application of Additional Considerations to Capacity Alternatives of the Final EIS, a sufficient volume of water is needed to mobilize and entrain coarser-grained sediments and transport them into the basin. The commenter's description of the alternative suggests a significant reduction in the volume of water that would pass through the diversion channel. Absent diversion flows, the commenter did not explain how this alternative would transport these coarser sediments to the basin other than to mention a "dredge operating in the basin." Marsh creation through dredging was evaluated in the Draft EIS and eliminated from detailed consideration. See Section 2.3.5 Large Scale Marsh Creation of the Final EIS.
	no diversion		Dredge the passes (south pass and south east pass) along with building rock jetties along the Louisiana coastline to support marsh growth and protect from oncoming storms; then use dredging to build up areas inland.	Draft EIS Public Comments		This alternative as presented, specifically dredging the passes and building rock jetties to create marsh, would not meet the goals and objectives as stated in the purpose and need and described in Chapter 1, Section 1.4 Purpose and Need and Chapter 2, Section 2.2.1 in Steps Taken to Identify and Evaluate Reasonable Alternatives in the EIS. Similar to marsh creation alternatives (as described in Chapter 2, Section 2.3.5 in Step 1: Evaluation of Functional Alternatives), it would not deliver enough fresh water, nutrients, and fine sediments to sustain existing and created wetlands beyond the marsh creation area and over the long term would require repeated lifts and maintenance through placement of additional dredged material.

	no diversion		Use suction dredge of Mississippi River beneficial material in South Pass, Pass A Loutre, Tiger Pass, and other tributaries to pump the river sand material through pipelines. This material can be delivered up to 25 to 30 miles upriver and could be used to build a series of ridges that can be planted with sustainable foliage.	Draft EIS Public Comments		This alternative as presented, specifically dredging the passes and other tributaries and creating marsh, would not meet the goals and objectives as stated in the purpose and need in Chapter 1, Section 1.4 Purpose and Need and Chapter 2, Section 2.2.1 in Steps Taken to Identify and Evaluate Reasonable Alternatives of the EIS. Similar to marsh creation alternatives (as described in Chapter 2, Section 2.3.5 in Step 1: Evaluation of Functional Alternatives), it would not deliver enough fresh water, nutrients, and fine sediments to sustain existing and created wetlands beyond the marsh creation area and over the long term would require repeated lifts and maintenance through placement of additional dredged material to maintain a marsh elevation despite subsidence and sea-level rise.