



NEWS RELEASE

For Immediate Release:
July 2, 2010

Contact: Ken Holder
504-862-1522
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Corps provides status of rock dike emergency permit request

NEW ORLEANS – The US Army Corps of Engineers, New Orleans District released the current status as of July 2, 2010 for an emergency permit by Jefferson Parish officials to build two rock dikes in Barataria Basin

The below timeline outlines the actions taken to allow for the offering of the permit:

- June 7: The Jefferson Parish Department of Environmental Affairs submitted an application at 10:03 pm, requesting Department of Army (DA) emergency authorization for five rock dikes to be installed in Caminada Pass, Barataria Pass, Pass Abel, Four Bayou Pass, and Chenier Ronquille Pass as a temporary effort to combat the Deepwater Horizon Oil Discharge.
- June 8: The Army Corps of Engineers, New Orleans District (CEMVN) Regulatory Branch coordinated and solicited comments for the applicant's request with state and federal agencies. CEMVN requested that all comments be submitted by 12:00 pm on June 9.
- June 10: CEMVN held a meeting with the applicant and Shaw Group to discuss the project and agency comments/concerns. The meeting prompted Shaw Group to incorporate bathymetric and hydrographic modeling by Coast and Harbor Engineering to provide more detailed information at the five passes. Two follow-up meetings were requested by Shaw Group, one with CEMVN Regulatory Branch, CEMVN Engineering Division, and the Engineer Research and Development Center (ERDC) to discuss hydrographic and bathymetric modeling techniques/results (held on June 18), and a second interagency meeting to discuss modeling results and their June 8-9 comments/concerns (held on June 23). In response to the interagency meeting, the scope of the project was reduced to placing rock structures within two passes, as opposed to five.
- June 24: A final rock dike alignment for Pass Abel and Four Bayou Pass was submitted to CEMVN. This modification requested that the authorization focus on these two passes, with an additional review for the remaining three as they are approved by the U.S. Coast Guard's Unified Command. On the same day, the final alignment was again forwarded to state and federal agencies for comment. CEMVN requested that all comments be submitted by 12:00 pm on June 25.

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- June 25: CEMVN requested the applicant address all comments and provide additional drawings of the rock dike tie-in locations.
- June 28: A response to comments and rock dike tie-in drawings were submitted to CEMVN by the applicant. The rock tie-in drawings were forwarded to Engineering Division for comment.
- June 29: An interagency teleconference was held to discuss each Federal agency's position, potential special conditions, and monitoring requirements.
- July 1: Letter to Jefferson Parish officials requesting additional information.

The original project proposed on June 7, suggested the rock be placed within the channels and extends to neighboring islands in shortest distance increments. After a magnetometer survey for oil and gas pipelines was requested and completed, it was determined that the alignment needed to be altered. Pass Abel had 5 alternatives, listed as alternative 1, 2, 3a, 3b, and 3c; Four Bayou Pass had 7 alternatives, listed as 1, 2, 3a, 3b, 3c, 5a, and 5b.

The applicant selected alternatives 3b and 5a. Their alternative criteria and selection were based on: an alignment that would not impact nearby oil and gas pipelines; result in a model run which minimized the change in max flood and max ebb velocities within the five passes, and; result in a model run which minimized energy differentials (at max flood and max ebb).

The "No Action" alternative is also being considered for this emergency permit request. Selection of this alternative would result in the proposed rock dike structures not being constructed and avoidance of short- and long-term beneficial and adverse impacts associated with the project. It is reasonable to anticipate that protective measures taken thus far, such as barges staged to intercept and recover oil (as authorized in permit MVN 2010-1342-EOO), strategic boom placement, skimming, and burning would continue. Although these operations have been affected by weather events, they continue to provide a measure of success in reducing oil penetration into the estuary. The "No Action" alternative would avoid basin-wide adverse impacts to the Barataria Bay estuarine system potentially incurred by alteration of current flows and circulation patterns, and possible damage to the extensive pipeline infrastructure that exists in the area. These factors must be considered in weighing project benefits against possible detriments and ensuring a decision on this request that is not contrary to the overall public interest.

Authorization under NOD-20 is temporary and does not replace the normal permit approvals. Within 30 days, a full Department of the Army permit request must be submitted.

"The concerns and comments received from both non-governmental organizations and federal resource agencies have raised additional questions which must be addressed prior to any decision on whether or not to proffer a permit for these rock dikes," said Col. Al Lee, Commander, New Orleans District. "Without answers to the issues raised it would be irresponsible to proceed."

Following are pertinent documents for this emergency permit request:

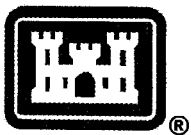
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1 July 2010

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DEPARTMENT OF THE ARMY
NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
P.O. BOX 60267
NEW ORLEANS, LOUISIANA 70160-0267

REPLY TO
ATTENTION OF

Operations Division
Eastern Evaluation Section

SUBJECT: Additional Information Request

BASE FILE: MVN-2010-1271-EOO (Deepwater Horizon Oil Discharge)

Marnie Winter
Jefferson Parish Environmental Affairs
4901 Jefferson Highway, Suite E
Jefferson, Louisiana 70121

Dear Ms. Winter:

This is in reference to your June 24, 2010 and June 28, 2010 modified emergency request to construct a temporary rock dike structure at Pass Abel and Four Bayou Pass in Jefferson and Plaquemines Parishes, Louisiana. Your project would result in a 1.74 mile rock structure at Pass Abel, with approximately 101,000 cubic yards of material being placed from open water, eastward to Grand Terre Island and a 1.76 mile structure at Four Bayou Pass, with approximately 62,000 cubic yards of rock material to be placed from open water, eastward to Point Chenier Ronquille. Due to the scope of your proposal and the potential for adverse impacts, we request that you address the following items.

The rock dike structures at Pass Abel and Four Bayou Pass are proposed as an additional oil spill response tool that will work in tandem with boom, barge, and skimming operations. You have expressed that mobilization of the barge operation has provided beneficial results, but is shut down due to current weather conditions. During high wind events, higher wave conditions will exist at the passes including the possibility for enhanced wave energy at the dike opening at Four Bayou Pass due to wave reflection off the dike, and higher velocities of water will enter the constricted passes (as demonstrated in your modeling results). Constrictions created by the dikes will act to increase flow through the reduced cross-sectional area, potentially moving great quantities of oil further into the basin.

- In the event that barge, booming, and skimming operations are shut down, how effective are the rock structures as a standalone project at reducing the volume of oil entering the Barataria Basin when no clean-up operations are permitted during high tide/increase flow events, as seen with Hurricane Alex?

The alignment of the rock structures at Pass Abel and Four Bayou Pass increases flow volumes at all five passes, thus creating additional scouring of the channels. In our previous meetings, it was mentioned that recent bathymetric data revealed that one (or more) oil and gas pipelines were currently exposed. A much more rigorous analysis of erosion potential in each of the five passes is required in light of the presence of pipelines. Please identify all oil and gas

pipelines within the five channels and provide a detailed assessment of their current conditions. This pipeline assessment shall include:

- A map of current pipeline locations at Caminada Pass, Barataria Pass, Pass Abel, Four Bayou Pass, and Pass Chenier Ronquille.
- Profiles of the pipeline elevations with depth of cover (below the mudline) across each pass and extending into the bank line
- The diameter, ownership, contact information, and type of product in each pipeline
- The national importance of each pipeline (local, regional, or national) and its current status
- Determining the potential for failure, a detailed protection plan, and plan of action should failure occur. The protection plan should address how current exposures will be protected. Your plan of action should detail how future exposures will be determined and addressed, how the scoured infrastructure will be protected from failure, and response times for corrective action once scour is detected. Assessment should consider a broad range of hydrologic conditions that would be expected over the project duration, modeling results and potential for additional scour based upon material properties of the waterbottoms.

Please forward the requested information to this office so that we may continue our evaluation of your proposal. If you have any questions, please contact Brad LaBorde with this office at (504) 862-2225.

Sincerely,



Pete J. Serio
Chief, Regulatory Branch
Operations Division

National Oceanic and Atmospheric Administration
Comments Pertaining to Proposed Authorization of
Two Rock Dike Closures in Jefferson Parish

July 1, 2010, 2010

NOAA appreciates the urgency of necessary and appropriate actions to reduce the movement of oil into the valuable estuarine waters and wetlands in the Barataria Basin. However, NOAA remains concerned regarding the potential for significant direct and indirect adverse impacts, potential piecemealing of additional inlet restrictions, and the likelihood of resultant cumulative impacts. NOAA also remains concerned that the proposed rock dike structures will remain in place despite proposed permit conditions to require removal of the structures and assurances by the involved parties that these measures are intended to be temporary in nature.

NOAA also is concerned that many of the proposed permit special conditions require actions by the permittee, yet require funding by BP or the Oil Spill Liability Trust Fund. Lacking written commitments to fund as-yet undefined actions, NOAA questions the capability of the applicant to fulfill permit special conditions.

In view of these and previously raised concerns, NOAA continues to recommend the proposed project not be authorized under emergency procedures.

Background

By electronic mail dated June 8, 2010, the U.S. Army Corps of Engineers, New Orleans District (NOD) requested natural resource agency review of the application by Jefferson Parish for emergency authorization to construct partial rock dike closures (PRDC) in Caminada Pass, Barataria Pass, Pass Abel, Four Bayou Pass, and Cheniere Ronquille Pass. In a document dated June 9, 2010, NOAA provided comments on that proposal and recommended the NOD not authorize the effort under General Permit NOD-20.

On June 24, 2010, the NOD transmitted to NOAA a revised request from Jefferson Parish for the placement of PRDCs in Four Bayou Pass and Pass Abel only. In a document dated June 24, 2010, NOAA provided general comments and recommended draft permit special conditions to be applied if the NOD determined permit issuance was warranted. It should be noted that NOAA again recommended against authorization of the project under General Permit NOD-20, which is used by the NOD to authorize emergency actions.

On June 29, 2010, NOAA staff participated in a conference call with the federal natural resource agencies and staff of the NOD, including the District Commander. During that call, NOD indicated they were likely to authorize the placement of PRDCs in the two passes (Pass Abel and Four Bayou Pass) based on commitments provided by representatives of the applicant, as well as U.S. Coast Guard staff serving in the National

Incident Command and Unified Command Centers. Given the ramifications of a decision to permit under emergency authorization a project that would result in potentially significant adverse impacts, NOAA believes it is important to document the commitments that were verbally communicated to the natural resource agencies by the NOD during the conference call on June 29. Those commitments are described below. NOAA requests that NOD review these commitments as understood by NOAA and identify and clarify those where misunderstandings may be present, prior to permit issuance.

In addition, on June 30, 2010, NOD transmitted for NOAA review the draft permit special conditions proposed to be included in the authorization for this project. Given NOAA's understanding of the commitments made by the applicant and the USCG, other information discussed during the June 29, 2010, conference call, and NOAA's concerns related to potential project impacts to trust resources, NOAA provides recommended revisions to those permit special conditions below. However, due to the short review period, NOAA has not yet provided recommended revisions to the monitoring plan. Therefore NOAA requests revision to the permit special condition related to monitoring to require completion and implementation of the monitoring plan, in coordination with NOAA, prior to initiation of project construction.

Documentation of Commitments

1. Either BP or the Oil Spill Liability Trust Fund would be responsible for funding the removal of the PRDCs when the threat of oil entering these passes from the Deepwater Horizon spill has ended.
2. Either BP or the Oil Spill Liability Trust Fund would be responsible for funding monitoring, modeling, and mitigative actions necessary to offset adverse impacts caused by the construction of the PRDCs. Mitigative actions could include major efforts to restore barrier island segments adversely impacted by PRDC installation.
3. The NOD authorization would require the PRDCs to be removed when the threat of oil entering the passes from the Deepwater Horizon spill has passed. If Jefferson Parish later desires these structures to remain in place, the Parish would have to apply for a new authorization under normal Clean Water Act and Rivers and Harbors Act procedures and complete an Environmental Impact Statement to evaluate impacts associated with those structures.
4. The NOD would not consider authorization of PRDCs in the remaining three passes originally requested by Jefferson Parish under the present application.
5. Construction of PRDCs in Four Bayou Pass and Pass Abel would not be initiated until all necessary baseline data collection had been completed.
6. Construction of PRDCs would not be initiated until a monitoring plan had been completed, in full coordination with the natural resource agencies.
7. Construction of PRDCs would not be initiated until all modeling efforts necessary to evaluate the likely impacts of project implementation had been initiated.
8. Jefferson Parish is the permittee. The Parish and NOD would be responsible for overseeing compliance with all permit special conditions.

Specific Comments

NOAA continues to recommend the NOD not authorize this project under emergency procedures. Routine data collection and coastal engineering methods should be applied prior to permit issuance to assess potential impacts and risks, and whether the adverse impacts outweigh potential benefits. However, if the NOD determines that emergency authorization for this effort is warranted, NOAA recommends the following revisions to the proposed Special Conditions transmitted on June 30, 2010. These recommendations are a continuation of comments provided under the authority of the Essential Fish Habitat (EFH) provisions of the Magnuson-Stevens Fishery Conservation and Management Act and the Fish and Wildlife Coordination Act. It should be noted that a required Essential Fish Habitat Assessment pursuant to NOAA's EFH Findings with the NOD Regulatory Program has not been completed at this time.

Special Condition 5: This special condition indicates that any request to place rock dikes in the three adjacent passes will require additional coordination with the NOD under the present application. During the June 29, 2010, conference call, NOD indicated there would be no further consideration of the placement of PRDCs in those three adjacent passes. As such, NOAA recommends this special condition be revised to remove the phrase "or request to place rock dikes in the three adjacent passes".

Special Condition 13: NOAA recommends the phrase "or future maintenance work" be deleted from the first sentence because the action is proposed as temporary in nature.

Special Condition 15: NOAA recommends this provision be revised as below to clarify that removal of the structures is required immediately upon a determination that the threat of oiling has passed, and additionally that the applicant is responsible for all elements associated with the removal. As currently drafted, the provision may lack clarity of intent.

"The permittee is aware that this is a temporary measure for oil response only and that the rock dike structures shall be removed immediately after the threat of oiling resulting from the Deepwater Horizon incident ends. The determination of the oiling threat will be based on near shore oiling forecasts produced in the support of the National Incident Command.

The permittee is responsible for all aspects of removal and disposal of the rock dike structures. Prior to construction, the permittee shall develop a plan for all aspects of removal and disposal of the rock dike structures. The plan shall be developed in coordination with the natural resource agencies and include provisions for disposal of rock material that may become contaminated."

Special Condition 16: In the highly complex western Barataria Bay area, there are numerous factors that could confound interpretation of post-construction monitoring data. For example, without predictive assessments, it would be difficult to determine if

shoreline erosion or island breaching following storm events are related to the proposed tidal pass restrictions. The recommended predictive engineering assessments would provide an engineering basis for establishing causal relationships.

NOAA recommends adding the following special condition to any authorization of this project to require predictive engineering analyses to evaluate likely or anticipated effects of the proposed action on barrier islands and headlands, tidal inlets, water quality and sediment transport within the affected area.

“Prior to construction, the permittee, in conjunction with CEMVN Regulatory Branch and interested parties, shall develop a comprehensive plan to assess potential direct and indirect impacts on shoreline stability and hydrodynamics using shoreline response and sediment transport modeling. These analyses shall be conducted using standard coastal engineering methods. This assessment shall include all shorelines, islands and passes extending from Caminada Pass eastward to Pass Chaland. At a minimum, the analyses shall evaluate potential changes in sediment transport, tidal pass dynamics and both bay and gulf shoreline response that may result from the project in both fair weather and various storm events. The permittee shall submit the analyses to NOD, NOAA and other interested agencies. The results of this analysis may result in additional monitoring requirements.

NOAA concurs that providing potential monitoring requirements to the applicant in advance of permit issuance is desirable, but there has not been sufficient time to provide detailed comments on acceptable minimum monitoring requirements. Special Condition 16 indicates the intended draft monitoring plan would be acceptable as the minimum necessary. NOAA will review and submit specific recommended monitoring elements as soon as practicable. There should be discussion amongst NOD, NOAA, and other natural resource agencies on the acceptability of that minimum plan prior to indicating such to the applicant. NOAA also recommends revising Special Condition 16 as follows:

“Prior to construction, and in conjunction with CEMVN Regulatory Branch and other interested parties, the permittee shall develop and implement a comprehensive monitoring plan with measurable hydrodynamic, geomorphologic, bathymetric, and water quality elements. The monitoring plan shall require field data collection (e.g., topographic and bathymetric surveys, aerial photography) adequate to quantitatively assess potential and actual impacts to tidal pass geometry, sediment transport and resulting shoreline response for all areas that may be directly and indirectly impacted (i.e., from Caminada Pass east to Pass Chaland). The adequacy of data acquisition (e.g., limits and density of surveys) should be coordinated with NOAA and other natural resource agencies. The permittee is responsible for implementing the monitoring plan. As part of the monitoring plan, the permittee shall provide to the resource agencies copies of pre-and post-construction data and results.”

Special Condition 17: NOAA recommends revising this provision to include both predictive engineering analyses and monitoring as project features.

Special Condition 18: This special condition relates to corrective actions to be undertaken if monitoring data demonstrate adverse impacts. The entity responsible for a determination of adverse impacts is not identified. NOAA recommends this special condition be revised to clarify that the NOD, in coordination with the natural resource agencies, will be responsible for a determination of adverse impacts, if warranted.

Special Condition 20: This special condition indicates the permittee would be responsible for mitigating for all adverse impacts. NOAA recommends this special condition be revised to clarify that the NOD, in coordination with the natural resource agencies, would be responsible for identifying impacts to wetlands and special aquatic sites and for defining and prescribing mitigative actions necessary to offset such impacts.

From: [Serio, Pete J MVN](#)
To: [Laborde, Brad MVN](#)
Subject: FW: Special Conditions and monitoring plan
Date: Friday, July 02, 2010 9:18:36 AM

FYI

Pete Serio
Chief, Regulatory Branch
504-862-2255

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-----Original Message-----

From: Ettinger.John@epamail.epa.gov [<mailto:Ettinger.John@epamail.epa.gov>]
Sent: Thursday, July 01, 2010 10:46 AM
To: Serio, Pete J MVN
Cc: Honker.William@epamail.epa.gov; Watson.Jane@epamail.epa.gov; Woodka.Janet@epamail.epa.gov; EOC_Water; McCormick.Karen@epamail.epa.gov; Parrish.Sharon@epamail.epa.gov; Evans.David@epamail.epa.gov; Keehner.Denise@epamail.epa.gov; Miller.Clay@epamail.epa.gov; Landers.Timothy@epamail.epa.gov; Keeler.Barbara@epamail.epa.gov; Croll.Brittany@epamail.epa.gov
Subject: Re: Special Conditions and monitoring plan

Pete,

Here are our comments.

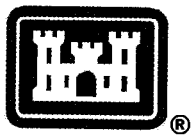
Thank you for the opportunity to review and comment on the proposed conditions for a permit for rock jetties in Jefferson Parish. EPA continues to have ongoing concerns about the efficacy of this project and the severe potential environmental impacts, as detailed in our earlier comments. Our concerns about the impact and degradation of the ecosystem are shared by local scientists, again, as detailed in their letters to the Corps. The temporary nature of this proposal is questionable and the ability to mitigate the impact is questionable. We would urge continued review and discussion on this project with a broader group of scientists and engineers. EPA considers a decision to issue this permit in light of these concerns to be solely a Corps decision and a Corps decision alone.

----- Original Message -----

From: "Serio, Pete J MVN" [Pete.J.Serio@usace.army.mil]
Sent: 06/30/2010 06:56 AM EST
To: John Ettinger; <Patti_Holland@fws.gov>; "Patrick Williams" <Patrick.Williams@noaa.gov>; "Richard Hartman" <Richard.Hartman@noaa.gov>; <rachel.sweeney@noaa.gov>; "Miles Croom" <Miles.Croom@noaa.gov>
Subject: FW: Special Conditions and monitoring plan

Attached is the draft permit for the rock dikes in Pass Abel and Four Bayou Pass. Please submit your comments to us by 7:00 AM on Thursday, July 1.
Also attached is the first draft of the interim monitoring plan. We are forwarding the plan as a heads-up to be discussed later.

Pete Serio
Chief, Regulatory Branch
504-862-2255



28 June 2010

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SUMMARY OF COMMENTS									
Emergency permit application to restrict Pass Abel and Four Bayou Pass to limit oil intrusion into interior marsh (June 26, 2010)									
		USACE	USFWS	EPA	CPRA	NOAA	H-SERT	CRCL et al	
1.0	Provide more engineering information, particularly how the structures will tie into existing islands.								
1.1	Submit detailed plans for the rock tie-in points at Pass Abel and Four Bayou Pass: address the eastern tie end of the rock jetty @ the island on the east side of Four Bayou Pass	●							Shaw has developed tie in details for both of the proposed passes. At Pass Abel, the dike will tie into the recently constructed East Grand Terre dune. As this dune is higher than the proposed rock structure, the proposed rock structure will be overtopped first in the event of a storm surge, thus minimizing scour of the existing island. In addition, a scour blanket will extend around the tie in to the -1 ft NAVD contour. For Four Bayou Pass, topographical highs were identified using existing lidar information. The rock dike will extend 50 ft onto the island at the high spot. Topographical surveys will be performed to verify the location and elevation of the tie in. A scour blanket will extend from the tie in to the -1 NAVD contour. Details of the proposed tie-ins are attached.
1.2	Identify need, if any, for land-based construction equipment at shoreline tie-in points.					●			Land based equipment will operate within the footprint of the dike and tie in. End-on construction techniques will be utilized at the tie in to limit shore impacts.
1.3	Identify need, if any, for dredging for flotation or equipment access.					●			No dredging is anticipated at this time. Barges will be light loaded to facilitate access in shallow waters.
1.4	No excavation should be authorized for this project unless approved by the NOD through coordination with natural resource agencies.		●						No excavation will be required

SUMMARY OF COMMENTS									
<i>Emergency permit application to restrict Pass Abel and Four Bayou Pass to limit oil intrusion into interior marsh (June 26, 2010)</i>									
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1.5	Lacks details on construction access locations and methods.					●			In depths less greater than 6 ft, rocks will be offloaded directly onto the alignment. From depths ranging from 6 ft to 3ft, barges will be light loaded and rocks placed in a similar manner. For depths less than three feet, track based equipment operating within the footprint will spread material into the desired configuration. Daily progress reports on construction methods and equipment will be provided. Pre-construction bird surveys will be performed with USFWS and LDWLF. Construction, and if deemed necessary, biological monitors will be onsite.
1.6	Unclear who would maintain the proposed structures for the duration of the emergency (to avoid creation of navigation hazards) and who would remove the rock after the emergency has concluded to minimize adverse impacts.					●			USCG has personnel and vessels on site to assist with navigational issues. Project features will be marked and/or lighted as per USCG requirements. Rocks will be removed by BP contractors after the Unified Command determines that the threat of oil has passed.
2.0	Concerns that the rocks will not be temporary								
2.1	The rock dikes should be removed entirely immediately after the threat of oiling resulting from the Mississippi Canyon 252/Deepwater Horizon incident ends.		●			●	●		The subject permit application is for a temporary structure that will be removed when the threat of oil has past, as determined by the National Incident Command.
2.2	The determination of oiling threat will be based on near shore oiling forecasts produced in support of the National Incident Command.						●		Actual field conditions will be constantly monitoring allowing for early identification and response to adverse effects on ecosystem.

SUMMARY OF COMMENTS									
<i>Emergency permit application to restrict Pass Abel and Four Bayou Pass to limit oil intrusion into interior marsh (June 26, 2010)</i>									
		USACE	USFWS	EPA	CPRA	NOAA	H-SERT	CRCL et al	
2.3	The permittee will be responsible for removal of these structures if monitoring shows adverse effect on ecosystem (especially the adjoining barrier islands in form of erosion, breach overwash, etc.) or within 90 days after threat of oil has passed.				●				Shaw is also developing a monitoring plan capable of identifying morphological changes to the barrier islands and passes. Should serious unexpected morphological changes be observed, the proposed rock structures will be altered or removed to correct the problem.
2.4	Removal if they are found to be causing erosion elsewhere or are ineffective in preventing oil from entering through either pass.					●			Monitoring will include effectiveness of preventing oil from entering through the passes as well as ecosystem impacts.
2.5	IF the permit is granted, identify the responsible party for impacts from the jetties and their removal.						●		Project was authorized by the Unified Command and is being funded by BP. Removal will also be funded by BP.
2.6	If permitted, there needs to be clause in the permit for removal, and the identification of a responsible party for the financial aspects of removing the rocks.						●		Noted. See comment 5.5 above.
2.7	There is no firm commitment to remove such rock barriers.; Lacking a commitment by the applicant to remove these structures, an analysis on the likely long term impacts of rock jetty installation should be required.			●		●			The emergency permit application is for a temporary structure to limit oil impact on interior marsh. A separate permit would be required to leave the rocks in place, and it is agreed that an analysis ofon the likely long term should be required if such an application were to be submitted.

SUMMARY OF COMMENTS									
Emergency permit application to restrict Pass Abel and Four Bayou Pass to limit oil intrusion into interior marsh (June 26, 2010)									
		USACE	USFWS	EPA	CPRA	NOAA	H-SERT	CRCL et al	
2.8	The rock dike structures would not be a temporary oil-fighting feature, but a permanent change to the landscape in Barataria Bay. If the project is anticipated to be temporary, no information was provided to describe how the project would be dismantled and temporary impacts addressed. Therefore, the impacts of these structures would also be permanent and long-term. The potential for large-scale environmental impacts would require more in-depth study prior to approving for construction.							●	The rocks will be removed after the threat of oil has been determined to be over by the Unified Command.
3.0	Effectiveness for preventing oil intrusion, less damaging alternatives.								
3.1	The plan relies on an engineering and construction approach that carries high economic and environmental risk, and threatens the sustainability of the very ecosystem we are all trying to save.							●	We all agree that there is a potential risk of environmental impacts on ecosystem of Barataria Bay from the dikes. However this risk is manageable by an intensive monitoring program and removal of dikes if potential damage is identified through monitoring. Compared to the risk from the dikes, the risk to ecosystem from oil is real and not manageable.

SUMMARY OF COMMENTS								
<i>Emergency permit application to restrict Pass Abel and Four Bayou Pass to limit oil intrusion into interior marsh (June 26, 2010)</i>								
		USACE	USFWS	EPA	CPRA	NOAA	H-SERT	CRCL et al
3.2	Estuaries can naturally recover from the impacts of oil. In our current crisis, the degraded state of the oil and the dispersed nature of the oil will likely not result in long-term impacts to large areas of interior wetlands.							<ul style="list-style-type: none"> There is a definite immediate short term impact from oil entering the estuary; the long-term impact is unclear. The impacts from the dikes that have been raised occur over a longer term (decades), while their short-term impacts are minor and can be mitigated. The dike will limit the immediate short-term impact from oil by improving the collection efficiency of oil. After the immediate short-term threat is gone the dikes will be removed. This is the best possible scenario, as impacts from dikes are likely on larger time scales (decades) and will be mitigated by removal of dikes after oil impact has decreased. <p>Large areas of interior wetlands are being impacted now, and we cannot know for sure that additional and repeated oiling will not result in long-term impacts. David Westerholm, Director of NOAA's Office of Response and Restoration testified that:</p> <p>"The effect of the Deepwater Horizon oil spill and the dispersants used, on coastal wetland loss will be determined by how much oil reaches coastal wetlands, and how long the oil persists. Large amounts of oil resting on vegetated coastal shorelines could cause the vegetation to become stressed and die. This could cause the roots to die, which would weaken marsh soils. Weakened marsh soils would then be at risk of accelerated erosion from waves and storms. The long-term effects to these habitats have yet to be determined." (Written statement of David Westerholm, Director, Office of Response and Restoration, National Ocean Service, U.S. Department of Commerce Hearing on Our natural resources at risk: the short and long term impact of the Deepwater Horizon oil spill before the subcommittee on insular affairs, Oceans and Wildlife, Committee on Natural Resources, U.S. House of Representatives, June 10, 2010.</p>

SUMMARY OF COMMENTS									
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3.3	There are remediation activities that would be more appropriate for use in interior wetlands than those wetlands located in high energy areas such as the Mississippi River Delta.							●	Suggestions are welcome. This spill will provide ample opportunity to use all available remediation activities.
3.4	Increased velocities resultant from the rock jetties will compromise the ability for clean up technologies to remove the oil						●		<p>It is not clear that this is the case; modeling results indicate that the resulting velocity fields allow for clean-up operations to continue. Monitoring of the effectiveness will help adapt to more efficient strategies if required, including modification to the dikes if required.</p> <p>The ability for clean up technologies to remove the oil will be improved, not compromised, through the reduction in the pass width</p>

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3.5	No information provided to support the claim that oil is suspended under the water and could therefore move under the barges.			●					<p>Grand Isle Mayor David Camardelle provided an eye witness account of subsurface oil surfacing almost daily between 2:00 pm and 4:00 pm and made reference to NOAA's recent confirmation of subsurface oil. News agencies reported on June 8, 2010, that NOAA agency head, Jane Lubchenco told a news conference that NOAA's research offers proof that vast quantities of oil have spread not just along the ocean's surface, but at a great depth underwater, and further stated that scientists have completed a process of "fingerprinting" the oil that confirms the oil did in fact come from the BP spill. "The test results confirm that there is oil subsurface. We've always suspected that, but it's good to have confirmation," the NOAA chief said.</p> <p>(http://www.google.com/hostednews/afp/article/ALeqM5iyqYbhKXS-hMfVWZBOzpifZlciOQ)</p> <p>NOAA research data relative to subsurface oil can be found in several scientific reports including: Smith, Mayer, DeRobertis, et al. June 3-11, 2010. NOAA Ship Thomas Jefferson Deepwater Horizon Response Mission Report. Interim Project Report-Leg 2,.</p>
3.6	NOAA believes the proposed activity will have little or no effect on reducing the exchange of water, and thus the movement of oil, through the passes under consideration.					●			Please see response to 2.12-2.16 below
3.7	Should the oil still be in the Gulf of Mexico when the Fall/Winter cold fronts come through, the rock barrier will slow the flow of unoiled or oiled water out of the basin.		●						In the same way that the rock barriers allow us to better spread resources in the passes for incoming oil, the rocks will allow us to do the same for outgoing oil.

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3.8	We continue to believe that the barge barrier option is a viable alternative with less environmental consequences and should be tried before it is abandoned in favor of a more environmentally damaging rock berm.			●					<p>Barge and boom operations are currently underway, and are not effective due to the size of the pass. There are not sufficient barges available to effectively operate over the entire pass width, which allows for a significant flow of oil to enter the pass unmitigated</p> <p>The barge barrier option is being implemented. However, the rock barriers are part of the comprehensive plan and will work in conjunction with the barges. Rocks will provide a barrier when inclement weather limits barge operations or if the threat of severe weathers forces removal of the barges until the weather threat has abated. Additionally, the rock barrier is less costly and labor intensive.</p> <p>he barge/boom only option is being implemented as we speak. Limited barges, weather down time, shallow water and other factors are limiting our ability to best use the barges. By placing rocks in these two passes, and reducing the length of the fight, we can move the barges to other areas, better utilizing the limited resources available.</p>
3.9	Lack of clarity on why the rock structures are better than barges/boom alone.						●		
3.10	The rocks will reduce the linear extend of the operations, but with faster currents there is a risk of having to move farther inland to capture the oil, and that would increase the distance over which operations take place.						●		<p>It is not clear that this is the case; modeling results indicate that the resulting velocity fields allow for clean-up operations to continue.</p> <p>Monitoring of the effectiveness will help adapt to more efficient strategies if required, including modification to the dikes if required.</p>

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3.11	Oil in the water column could also become trapped in the rock structure, leading to a more complex cleanup effort.							<ul style="list-style-type: none"> ● Rock recovers from oiling much faster than any other shoreline type, while marsh shoreline is the most sensitive to oiling and takes longer to recover than sandy beaches. The U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS) established Shoreline Environmental Sensitivity Index (ESI) rankings for different shoreline types (Table 1). Habitat sensitivity is based on exposure to natural removal processes (wind and wave action), biological sensitivity and production, human use of habitat, and ease of oil removal. The property of the shoreline contacted affects the behavior of the spilled oil. High wave action enhances both physical removal and weathering processes, thus wave-swept rocky shores tend to recover from oil spills in a matter of months while marshes and mangroves may be affected for years. (NRCS, May 2010. Organic sorbents for the remediation of oil contaminated soils, Interim Conservation Practice Standard 772 Guidance, Field Office Technical Guide Section IV, p. 2) <p>Methods of cleaning oil off of rock structures have been established. Also, the rock can be protected with a smaller (and more available) boom than that needed to block the high velocity passes. Furthermore, the rocks can be cleaned on an individual event basis, thus reducing the complexity of removal efforts.</p>

SUMMARY OF COMMENTS

Emergency permit application to restrict Pass Abel and Four Bayou Pass to limit oil intrusion into interior marsh (June 26, 2010)

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3.12									<p>Table 1. Shoreline Environmental Sensitivity Index (ESI)¹ rankings for habitats in marine and freshwater shorelines (1=least sensitive and 10=most sensitive to oil and clean up actions.)</p> <table border="1"> <thead> <tr> <th>ESI</th> <th>Marine Shoreline</th> <th>Freshwater Shoreline</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Exposed rocky shores Sea walls and piers</td> <td>Exposed rocky cliff Exposed man-made structures</td> </tr> <tr> <td>2</td> <td>Exposed wave-cut platforms</td> <td>Shelving bedrock shores</td> </tr> <tr> <td>3</td> <td>Fine-grained sand beaches</td> <td>Eroding scarps in unconsolidated sediments</td> </tr> <tr> <td>4</td> <td>Coarse-grained sand beaches</td> <td>Sand beaches</td> </tr> <tr> <td>5</td> <td>Mixed sand and gravel beaches</td> <td>Mixed sand and gravel beaches</td> </tr> <tr> <td>6</td> <td>Gravel beaches and riprap</td> <td>Gravel beaches and riprap</td> </tr> <tr> <td>7</td> <td>Exposed tidal flat</td> <td>Exposed flats</td> </tr> <tr> <td>8</td> <td>Sheltered rocky shores</td> <td>Sheltered rocky shores Sheltered man-made structures</td> </tr> <tr> <td>9</td> <td>Sheltered tidal flats</td> <td>Sheltered vegetated low banks</td> </tr> <tr> <td>10</td> <td>Salt marshes and mangroves</td> <td>Sheltered sand flats Freshwater marshes and swamps.</td> </tr> </tbody> </table> <p>¹Adapted from Zhu et al. (2001)</p>	ESI	Marine Shoreline	Freshwater Shoreline	1	Exposed rocky shores Sea walls and piers	Exposed rocky cliff Exposed man-made structures	2	Exposed wave-cut platforms	Shelving bedrock shores	3	Fine-grained sand beaches	Eroding scarps in unconsolidated sediments	4	Coarse-grained sand beaches	Sand beaches	5	Mixed sand and gravel beaches	Mixed sand and gravel beaches	6	Gravel beaches and riprap	Gravel beaches and riprap	7	Exposed tidal flat	Exposed flats	8	Sheltered rocky shores	Sheltered rocky shores Sheltered man-made structures	9	Sheltered tidal flats	Sheltered vegetated low banks	10	Salt marshes and mangroves	Sheltered sand flats Freshwater marshes and swamps.
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3.13	Figure 1 pre-post velocity profiles and impacts on operations (Ioannis Georgiou)						●	
3.14	<p>Figure 1 pre-post velocity profiles and impacts on operations</p>							<p>Response to 3.13-3.16: 2.18. We appreciate the opportunity to use of the sketch prepared by Dr Ioannis Georgiou to explain the mechanics of possible reduction of oil propagation through the Passes. Maximum velocities (V) at the passes without barrier are in excess of 4 ft per second. The passes are very wide: Pass Abel is more than 7,000 ft in width. One can compute a possible huge amount of oil that currently or in the future can propagate into the bay. Excluding velocities for most of the length of the pass (making V=0 and making B post <<< B pre-project would exclude a significant amount of oil from entering the pass.</p> <p>In addition, modeling showed that construction of the dike would reduce in more than a 65% decrease in the flow volume at Pass Abel ($V_i \cdot B \cdot C$; the total amount of water and oil that enter the bay) and more than a 35% reduction in volume at Quattre Bayou Pass. This means that there is an overall reduction of the oil entering the bay through these passes.</p>
3.15	The primary concern is to reduce the large openings for attacking and capturing oil effectively. I understand that the rocks will reduce the linear extend of the operations, but with faster currents there is a risk of having to move farther inland to capture the oil, and that would still increase your distance over which operations take place.						●	
								Same as above.

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3.16	Since there is oil at depth (another concern), and surface structures (barges, rigid pipe, or boom) cannot capture this, we have to acknowledge that by constricting inlets you will also accomplish this: a. The faster currents will change the velocity profile (figure 1), and inadvertently increase the volume that skimmers would have to pump, per unit time during flood currents (gray box in fig 1) b. The area below the gray box, integrated and subtracted from the pre-rock placement profile, would also increase the amount of subsurface oil coming through these inlets. Water surface oil capturing depth ,-----, Increased volume of oil that post-rocks velocity profile needs to be captured compared to present operations Increased volume of subsurface oil per unit time, per unit width or opening						●		Same as above.
3.17	The proposed rocks would accelerate velocities through the narrowed passes. Thus, the movement into the estuary of any such subsurface oil could potentially be accelerated by the proposed rock berm project itself. With respect to subsurface oil, the rock project could actually make matters worse.			●			●		We are using our models to inform the barge and boom operations. The ingress of subsurface oil can be predicted and addressed.

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3.18	Alterations in hydrology could increase water flow through the passes creating a funnel effect for oil to enter into the Barataria Bay and complicate the oil-fighting methods in the passes.							●	By reducing the length of the fight in other passes, we have more assets available for stopping and collecting oil in other passes.
3.19	Deepening of the channel, along with increased velocities, could accelerate the movement of oil both on the surface and in the water column into the interior marshes.							●	The velocities are not increased in Pass Abel as shown by the modeling. The velocities are slightly increase in Quattre Bayou Pass. However, as discussed above, the overall flow rate decreases, reducing the volume of oil entering through the pass.
3.20	Storm surge would greatly increase the velocities through the narrowed passes, potentially accelerating oil entry into the estuary during a storm.			●					Storm surge will increase velocities for existing conditions as well as with-dike conditions. It is expected that as was shown to be the case with typical conditions, the dikes will reduce the volume of flow compared to existing conditions for storm surge. Storm surge could potentially accelerate oil entry into the estuary without the rock structures.
3.21	There needs to be some consideration of how the islands and/or the shape of the inlets will change as the flows change after rock placement. It is possible that this could make it even more difficult to contain oil moving through the inlet using the fixed barges as the flow paths change, new areas open up/close, etc.						●		The time scale of morphology of the type described is much longer than the expected time period the dikes are in place. Therefore, this is not expected to be a concern.
3.22	Full support for the rapid implementation of the authorized barge barriers as a less damaging option for attempting to block oil in these passes.			●					Noted.

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3.23	Lesser environmentally damaging and practicable alternatives to reduce the inland movement of oil, such as booms and skimmers, should be utilized to the maximum extent practicable.					●			Noted.
3.24	The risks of long-term damage posed from oil entering into the interior marshes could be less damaging than the long-term risks associated with the rock dikes proposed in the Emergency Barataria Bay Oil Spill Protection Plan.							●	Rock dikes will be temporary. Therefore, long-term risks are not anticipated. Monitoring plan will detect short-term morphological changes to the barrier islands and passes, and allow for appropriate response to limit impacts.

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4.0	Secondary impacts, primarily due to changes in tidal hydrology							
4.1	Will likely result in scouring and breaching of the barrier island chain.		●	●		●		●
								<p>Response to Comments on scouring and erosion/breaching of barrier islands:</p> <ul style="list-style-type: none"> • Breaching of adjacent islands will be mitigated by providing a dike with a low crest height, suggested to be +2 ft NAVD88. Most islands have elevations on average of +3 to +5 ft NAVD88 • Higher velocities through Quattre Bayou Pass may result in deepening of the pass. The depth of tidal passes are primarily controlled by the volume of water flowing through them. When the dike is removed and the pass returned to existing conditions, the flow through the pass will be insufficient to maintain the scoured depth, and the channel is expected to fill in to existing conditions.
4.2	Restricting the tidal passes may force water to seek new outlets for drainage or increase the size of existing openings. Those outlets would likely be through lower elevation portions of existing barrier islands.					●		
								<ul style="list-style-type: none"> • It is not clear how the dikes will increase wave energy and erosion from waves. The proposed erosion mechanisms should be further explained in detail so that an appropriate response can be developed to address the concern.
4.3	Modeling shows the preferred alternatives would significantly alter flow volumes through the two passes; most likely result in the widening and/or deepening of other passes through increased scour and erosion.			●				
								<p>Generally, these comments are addressed through the proposed extensive monitoring program. Previous experience by USACE by building a dike in Pass Abel appears to not have resulted in these impacts. The figure below shows this rock dike at Pass Abel , constructed more than 10 years ago. In order to assure that the proposed berm does not create any negative impact, and extensive monitoring program will be conducted and if damage is shown to have occurred, the dikes will be removed.</p>
4.4	Confining the water flow through a smaller opening could lead to increased erosion at the bottom of the pass, deepening these passes permanently.							●

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4.5	Restricting the tidal passes may force water to seek new outlets for drainage or increase the size of existing openings. Those outlets would likely be through lower elevation portions of existing barrier islands.					●		
4.6	Increased erosion of existing barrier islands could be expected from wave energies					●		
4.7	Installation of rock jetties will definitely increase the current through the remaining tidal interchange area and likely increase scouring on the sea floor.						●	
4.8	The rock dikes could also result in longterm economic impacts through increased barrier island and wetland land loss, reducing the habitat for fish and wildlife and diminishing the lines of defense against storm surges.							●
4.9	The presence of hardened structures at the inlets will likely create more instability around the barrier islands, create more erosion and possibly additional conduits for oil to enter into the bays and marshes.						●	Monitoring and pre/concurrent construction morphological modeling will be used to determine if this is the case. If so, corrective action will be taken.



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4.10	Analysis and modeling were performed with islands and jetties as non-overtopping (solid) boundaries. This obviously underestimates the performance of hard-soft connections; the weakest point near connections of hard-soft combinations, the soft being the barriers and marsh vicinity will definitely erode and subsequently breached.						●		The flow modeling was intended to illustrate the maximum changes in maximum velocities expected to occur; existing conditions do not overtop either the islands or the dikes. Therefore the use of solid boundaries is correct to determine maximum possible changes. If storm surge modeling is conducted, all boundaries will be represented by accurate elevations and overtopping will be allowed to occur.
4.11	The 10 - 14 % change in the tidal prism; shown in the presentation as a reduction and therefore a positive point, is not entirely positive. During a storm, the storm prism (exchange of ocean with bay during a storm), is much more energetic, and will still be accommodated by the bay because the bay area did not change. Hence, risking island breaching, and marsh incisions in areas that may appear robust today. The science behind where this might happen is still complex.						●		The expected storm prism is likely to be reduced for the same reasons discussed above
4.12	Scouring of restricted tidal passes may cause exposure of pipelines and other infrastructure.					●			Concrete aprons or other engineered solutions will be used to protect pipelines and other infrastructure. Monitoring will provide early identification of potential problem areas.
4.13	Disrupt the littoral process and result in increased erosion; would affect sediment transport processes		●	●		●			Generally, these comments are addressed through the proposed extensive monitoring program.

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4.14	Adverse impacts on adjacent shorelines, especially on eastern Grand Terre where one rock jetty is proposed to tie into the adjacent beach face.					●			Dike tie-in to East Grand Terre would like result in accretion on the seaward side of the structure due to the bayward orientation of littoral drift along the island. The island on the bayward side of the structure is primarily wetlands and unlikely to be impacted by the dike, especially when considering that the dike will greatly reduce velocities in the vicinity.
4.15	Increased velocities associated with a storm surge could cause breaching on or near the transition points where the proposed rocks connect with existing islands. This would be similar to what occurred at levee transition points during hurricane Katrina.			●		●			See attached design for end-point detail.
4.16	It should be noted that restoration of the beach and dune on eastern Grand Terre had been recently partially completed by a barrier island restoration project funded under the auspices of the Coastal Impact Assistance Program (CIAP).					●			Noted.
4.17	Altering hydrology will likely result in increased erosion of Louisiana's barrier islands and interior marshes.							●	This comments is addressed through the proposed extensive monitoring program.
4.18	The proposed rock dike could interrupt the sediment exchange between the interior marshes and the Gulf of Mexico, specifically during storm events.							●	Please discuss the mechanism on how the dikes will result in increased erosion to interior marshes and adjacent barrier islands so the comment can be addressed. Based on our understanding of the local coastal processes, it is unclear how or where this would occur

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4.19	The proposed rock dikes will alter the tidal prism which could lead to changes in salinities and wetland habitats.							●	Response to 6.1 and 6.2: The tidal prism was shown to be reduce by approximately 10%. In the past 100 years, the tidal prism of Barataria Bay has been increased by more than 200% through wetland erosion, subsidence and relative sea level rise that resulted from water, oil, and natural gas extraction as well as from controlling flood events from the Mississippi River and Bayou Lafource. A 10% change (decrease) is unlikely to cause detrimental impacts on
4.20	Shall evaluate potential impacts of the activity on habitats of concern including impacts on tidal passes and oyster producing areas and sediment transport.					●			
4.21	The proposal would result in substantial reductions in tidal inlet cross-sectional area which could reduce fish and crustacean passage.			●		●			The overall area change of inlets to Barataria Bay is less than a 10% reduction.
4.22	Applicant fully intends to seek authorization of rock placement in the three remaining passes in the near future.			●		●			Impacts from further rock placement should be evaluated in permits for those structures, and not for the proposed work in this permit application.
4.23	Modeling in an idealized estuary conducted by the USACE Engineer Research and Development Center found that the increase in current velocities resulted in a "tendency to shift toward flood dominance with increasing wetland loss." (Reference: Sanchez, A. 2008. Interactions between wetlands and tidal inlets. Coastal and Hydraulics Engineering Technical Note. (ERDC/CHL CHETN-IV-72. Vicksburg, MS: U.S. Army Engineer Research and Development Center.)							●	The study performed in the CHETN-IV-72 arrived at the stated conclusions by assuming the only changing factor was wetland loss, not necessarily the other way around (ie they conclude wetland loss led to more flood dominance and higher velocities, not that higher velocities led to more flood dominance and wetland loss). In addition, the wetland loss that caused the increased velocities and flood dominance occurs over a long time scale (decades) while the proposed project is expected to be in place much shorter time scales (months to years).

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4.24	The proposed action could result in adverse direct and indirect impacts to near shore, surf zone, sand flats, and back barrier marshes designated as essential fish habitat. Direct impacts from excavation and tracking (movement of heavy equipment on the barrier islands) may occur as a result of moving and placing rock into existing shorelines. Shorelines may be indirectly impacted					●			Direct impacts from construction will be limited to the construction template. Indirect impacts stated (wave and sediment transport) are not expected based on our understanding of the coastal processes. Please provide more detail on the mechanism of the direct impacts so the specific concerns can be addressed.
4.25	The permittee shall assess potential direct and indirect impacts on shoreline stability and hydrodynamics using shoreline response and sediment transport modeling. This assessment shall include all shorelines, islands and passes extending from Caminada Pass eastward to Chenier Ronquille. At a minimum, the analyses shall evaluate potential changes in sediment transport, tidal pass dynamics and shoreline response. These analyses shall be conducted using					●			This modeling work has been initiated, but requires considerable time and effort. Results will not likely be available for several weeks or months. Extensive monitoring before, during, and after construction will help assess the impacts. If results of the modeling study indicate negative impacts beyond the impact of oil, the dikes will be removed.
%0	Cummulative impacts.								
5.1	The cumulative effect of this action and the future rock closures would most likely be long-term significant changes in hydrology through the passes, which could have substantial unforeseen adverse impacts in terms of increased barrier island erosion and breaching, and possibly reduced fishery access			●		●			Long term is over time scales of years to decades; this is a temporary structure that is expected to be in place for the short term.

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5.2	Concerned about the cumulative impacts of five proposed partial closures on barrier islands in the Barataria Bay estuary					●			<input type="checkbox"/> At this time we are only seeking authorization for the two passes. We are initiating modeling to analyze alternatives in other passes and determine if there are acceptable alternatives. If it is determined that this technique will work in other passes, in conjunction with the two currently requested, then we will modify our request accordingly. At that time, the Corps will analyze potential impacts and determine if the additional authorization is warranted.
5.3	NOAA requests the Army Corps of Engineers express its intention pertaining to the need to conduct a Regulatory Environmental Impact Statement to evaluate likely near and long term project impacts individually, as well as the cumulative effects of similar emergency response actions in the vicinity of the project area.					●			Noted.
5.4	It is our understanding that closure of these two passes will be followed by plans to close the other three passes, Caminda Pass, Barataria Pass and Cheniere Ronquille Pass. The cumulative impacts of the entire project could have drastic modifications to the tidal prism for Barataria Basin.							●	At this time we are only seeking authorization for the two passes. We are initiating modeling to analyze alternatives in other passes and determine if there are acceptable alternatives. If it is determined that this technique will work in other passes, in conjunction with the two currently requested, then we will modify our request accordingly. At that time, the Corps will analyze potential impacts and determine if the additional authorization is warranted.
5.5	Modeling comments								

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5.6	No analysis was undertaken to determine the likely impact of such increased velocities on the depth of each pass, or the dimensions of adjacent passes.					●			Higher velocities through Quatre Bayou Pass may result in deepening of the pass. The depth of tidal passes are primarily controlled by the volume of water flowing through them. When the dike is removed and the pass returned to existing conditions, the flow through the pass will be insufficient to maintain the scoured depth, and the channel is expected to fill in to existing conditions.
5.7	Lacking wave refraction/diffraction analyses.			●		●			<input type="checkbox"/> Most of the waves striking the rock structures will be depth limited. Also the rock structures will protect west grand terre and the NE of East Grand Terre from northerly waves. We anticipate a net benefit to these two islands in terms of wave energy.
5.8	Modeling conducted as a part of the permit request indicates an increase in water velocities and a shift in water current patterns, although no velocity profiles have been modeled or provided.							●	Modeling is ongoing and will be further developed based on field monitoring data.
5.9	Modeling performed is inadequate to accurately represent the system being impacted.						●		Noted.
5.10	Perform at minimum coarse morpho dynamic modeling at the passes to determine effects on sediment transport.						●		Modeling is ongoing and will be further developed based on field monitoring data.

SUMMARY OF COMMENTS									
<i>Emergency permit application to restrict Pass Abel and Four Bayou Pass to limit oil intrusion into interior marsh (June 26, 2010)</i>									
		USACE	USFWS	EPA	CPRA	NOAA	H-SERT	CRCL et al	
5.11	This is a purely a hydrodynamic study, without (or at least other parts are ongoing) any information to either infer, or provide insights into the morphological response of nearby nonhard shorelines and marshes, in combination with coastal processes operating in the project area.						●		Modeling is ongoing and will be further developed based on field monitoring data.
5.12	There needs to be some consideration of how the islands and/or the shape of the inlets will change as the flows change after rock placement. It is possible that this could make it even more difficult to contain oil moving through the inlet using the fixed barges as the flow paths change, new areas open up/close, etc.						●		This modeling work has been initiated, but requires considerable time and effort. Results will not likely be available for several weeks or months. Extensive monitoring before, during , and after construction will help assess the impacts. If results of the modeling study indicate negative impacts beyond the impact of oil, the dikes will be removed. However, the timescale of the potential morphologic processes are years to decades, while the proposed project is to be in place only for months to years.
6.0	Recommended permit conditions								
6.1	IF the permit is granted, that it be on the condition that the rock jetties are removed when they are no longer needed as part of the response.						●		Concur.
6.2	Recommends a Special Condition be added to any permit issued for this project indicating that the permit does not address the applicability of this project to the spill response effort, which is a decision to be made by the National Incident Commander in consultation with the Federal On-Scene Coordinator.					●			Concur.

SUMMARY OF COMMENTS									
<i>Emergency permit application to restrict Pass Abel and Four Bayou Pass to limit oil intrusion into interior marsh (June 26, 2010)</i>									
		USACE	USFWS	EPA	CPRA	NOAA	H-SERT	CRCL et al	
6.3	The permittee shall include emergency provisions for allowing drainage of surge from Barataria Bay in the event tropical storm or hurricane.				●				Consider low crested "weir" segment or other means.
6.4	Rock baniers should be designed and constructed in a manner that does not increase water velocity in any of the passes to the point that results in scour of beach habitat down to the mean low low water line.		●						Modeling is being conducted to predict such changes. IN addition, monitoring will be conducted to identify such changes should they occur.
6.5	Rock barrier installation should not result in a redirection of the ebb-tide delta Gulfward to the point that the littoral building process is compromised.		●						Concur.
6.6	The permittee shall develop and implement a monitoring plan which will address the changes in current (velocity and direction) and impact on sediment morphodynamics of the adjoining banler island system. This monitoring plan should be developed in consultation with state and federal agencies.				●				Concur.

SUMMARY OF COMMENTS									
<i>Emergency permit application to restrict Pass Abel and Four Bayou Pass to limit oil intrusion into interior marsh (June 26, 2010)</i>									
		USACE	USFWS	EPA	CPRA	NOAA	H-SERT	CRCL et al	
6.7	The permittee shall develop a post-emergency mitigation plan to ensure compensation for all unavoidable adverse impacts to vegetated and unvegetated habitats. Such a plan may include sand fill placement to restore pre-project conditions (i.e., coastal processes and spatial extent of islands) to the maximum extent practicable. Implementation of the mitigation shall occur within the same year the rock dikes are removed.					●			Our monitoring plan will identify secondary impacts should they occur. If negative secondary impacts are occurring, then a suitable mitigation plan will be developed and implemented.
6.8	Permit conditions: No dredging for flotation or equipment access is authorized.					●			Concur.
6.9	No heavy construction equipment (i.e., dump trucks or tracked excavators) should be allowed on existing islands, shorelines or vegetated wetlands unless approved by the NOD through coordination with the natural resource agencies. No construction access corridors should be across marsh unless approved by the NOD through coordination with the resource agencies.					●			No construction corridors will be allowed in critical habitat or vegetated wetlands. Impacts to vegetated wetlands due to construction of the tie ins will be identified and submitted to the NOD prior to construction.
7.0	OTHER COMMENTS								
7.1	Strongly recommend the Corps not authorize the proposed rock project.			●					Noted.
7.2	Recommends the NOD not authorize this project under emergency procedures.					●			Noted.

SUMMARY OF COMMENTS									
<i>Emergency permit application to restrict Pass Abel and Four Bayou Pass to limit oil intrusion into interior marsh (June 26, 2010)</i>									
		USACE	USFWS	EPA	CPRA	NOAA	H-SERT	CRCL et al	
7.3	Lack of collaboration with scientific community.								
7.4	Limited, if any, scientific input has been incorporated from outside experts, even when offered. This process is inadequate for an endeavor of this scope of potential impacts and risks. Prior to issuance of a permit, we recommend incorporating science and technical expertise into the planning process to work to address the concerns listed in this letter.								<ul style="list-style-type: none"> The model used to inform selection of the preferred alternative was developed through coordination with scientific input from several sources over an extended period of time. Input from scientists and engineers at the state and federal level was provided throughout project development. The comments provided will be used in the development of the monitoring plan and the scientific community will have an opportunity to review and provide additional input into the monitoring process.
7.5	we re-emphasize our desire to resolve these concerns in a constructive way and in an expedited manner. We also request to be included in future oil-fighting strategies planning. We stand ready to assist.								<ul style="list-style-type: none"> We will be happy to collaborate and share with the scientific community as we implement these novel measures. Lessons learned during this fight may provide critical tools in combating future events. Before this event is over, collaboration may lead to continuing improvements in our operational capacity. However, the immediacy of the situation demands swift action. It should be noted that these plans were developed by experts in coastal project implementation and coastal process modeling. <p>All constructive comments, scientific input, and other suggestions are welcome and will be evaluated if detailed information is provided.</p>
7.6	Monitoring								
7.7	Pre (or concurrent) and post construction monitoring of the adjacent shorelines should be conducted to quantify the impact to wetlands.		<ul style="list-style-type: none"> 						All comments relative to monitoring are being considered in the development of the monitoring plan.

SUMMARY OF COMMENTS									
<i>Emergency permit application to restrict Pass Abel and Four Bayou Pass to limit oil intrusion into interior marsh (June 26, 2010)</i>									
		USACE	USFWS	EPA	CPRA	NOAA	H-SERT	CRCL et al	
7.8	The permittee shall develop and implement a monitoring plan which will address the changes in current (velocity and direction) and impact on sediment morphodynamics of the adjoining banler island system. This monitoring plan should be developed in consultation with state and federal agencies.				●				A monitoring plan to address operational efficiency and secondary impacts due to these structures will be implemented.. The plan includes provisions for addressing the concerns expressed by the commenting entities. This plan will include periodic workshops with the agencies to identify concerns.
7.9	Monitoring should consist of a GlobalPosition-Satellite (GPS) determination of the existing shorelines plotted on the most recent low altitude aerial photography presently available for oil spill response.		●						Same as above.
7.10	Every six months post project construction, the permittee should submit a monitoring report to the NOD, and interested natural resource agencies that includes GPS data indicating		●						Same as above.
7.11	Hydrographic surveys of the passes should also be taken every 6 months to document system response and determine if adverse erosion is occurring.		●						Same as above.
7.12	Should monitoring demonstrate that the project has significant adverse effects, corrective action		●						Same as above.
7.13	The effectiveness of these structures in enhancing the capture of oil should be monitored.				●				Same as above.

SUMMARY OF COMMENTS									
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		USACE	USFWS	EPA	CPRA	NOAA	H-SERT	CRCL et al	
7.14	Should be monthly meetings of an agency/permittee/expert group to consider whether the structures are still needed for oil spill response and to identify an appropriate time for their removal.						●		Same as above.
7.15	With the UFWL Service's assistance, a qualified observer should monitor each colonial nest site to determine the minimum distance at which construction can occur without disturbing nesting birds (nesting gulls, terns, and/or black skimmer).		●						Same as above. Birding surveys are being conducted in conjunction with the USFWL and LWL&F.
7.16	Monitoring should include surveying the effects of construction activities and rock dikes on erosion or infilling tidal passes and marsh. As part of the monitoring plan, the permittee shall provide to the resource agencies copies of pre-construction and as-built plans and surveys of the passes and the islands on each side of the passes. The bayward, alongshore, and offshore limits of the surveying should be approved by the NOD through coordination with the resource agencies.					●			Same as above.

SUMMARY OF COMMENTS									
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7.17	The permittee shall develop and implement a monitoring plan, in coordination with the natural resource agencies, to assess the potential direct and indirect impacts of project implementation. At a minimum, the monitoring plan shall require field data collection (e.g., topographic and bathymetric surveys, aerial photography) adequate to quantitatively assess potential and actual impacts to tidal pass geometry, sediment transport and resulting shoreline response for all areas that may be directly and indirectly impacted (i.e., from Caminida Pass east to Chenier Roquille). As part of the monitoring plan, the permittee shall provide to the resource agencies copies of pre-and post- construction data and results.					●			Same as above.
7.18	The permittee will be responsible for removal of these structures if monitoring shows adverse effect on ecosystem (especially the adjoining barrier islands in form of erosion, breach overwash, etc.) or within 90 days after threat of oil has passed.				●				Noted.
7.19	Mitigation								
7.20	Applicant expressed an unwillingness to undertake actions that may be necessary to mitigate for unintended consequences of project implementation.					●			Monitoring will allow for early identification of unintended consequences and allow for mitigation adaptive management or other appropriate mitigation actions.

SUMMARY OF COMMENTS									
<i>Emergency permit application to restrict Pass Abel and Four Bayou Pass to limit oil intrusion into interior marsh (June 26, 2010)</i>									
		USACE	USFWS	EPA	CPRA	NOAA	H-SERT	CRCL et al	
7.21	Restoring portions of barrier islands impacted by refracted/diffracted waves, breached by tidal movement, or otherwise impacted by construction of the rock jetties.					●			Noted.
7.22	Permittee should be responsible for mitigating all unavoidable adverse impacts to wetlands.		●						Noted.
7.23	The permittee shall develop a post-emergency mitigation plan to ensure compensation for all unavoidable adverse impacts to vegetated and unvegetated habitats. Such a plan may include sand fill placement to restore pre-project conditions (i.e., coastal processes and spatial extent of islands) to the maximum extent practicable. Implementation of the mitigation shall occur within the same year the rock dikes are removed.					●			Noted.
7.24	Permittee should be responsible for mitigating all unavoidable adverse impacts to piping plover critical habitat.		●						See ESA comment below. Additionally, it is noted that the intend of the project is to protect back barrier shorebird habitat as most habitat at the project site has already been impacted by oil.
7.25	An acceptable compensatory mitigation plan should be developed through coordination with resource agencies.		●						Mitigation plan will be developed through coordination with appropriate agencies.
7.26									

SUMMARY OF COMMENTS								
<i>Emergency permit application to restrict Pass Abel and Four Bayou Pass to limit oil intrusion into interior marsh (June 26, 2010)</i>								
		USACE	USFWS	EPA	CPRA	NOAA	H-SERT	CRCL et al
7.27	Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.c. 1531 et							
7.28	Piping plover Critical Habitat (CH) includes Elmer's Island, Grand Isle, and East Grand Terre. To the maximum extent possible, avoid impacts to island habitat from the dune/vegetation line to mean low low water (Le., within CH). If this is not possible, in order to minimize disturbance to feeding and resting piping plovers, construction activity should be limited in CH to the maximum extent possible.		●					
								We are coordinating with the LDWF and the USFWS to identify critical habitat in the project area. Our monitoring plan will address potential impacts to critical habitat.

SUMMARY OF COMMENTS								
<i>Emergency permit application to restrict Pass Abel and Four Bayou Pass to limit oil intrusion into interior marsh (June 26, 2010)</i>								
		USACE	USFWS	EPA	CPRA	NOAA	H-SERT	CRCL et al
7.29	Migratory Bird Treaty Act (40 Stat. 755, as amended; 16 U.S.C. 703 et seq.),							
7.30	To minimize disturbance to colonies containing nesting gulls, terns, and/or black skimmers, the Service typically recommends that all work within 650 feet of a colonial nest site be restricted to the non-nesting period (i.e., September 16 through April 1). The Service should be notified if colonial bird nest sites are identified within the 650-foot buffer, and coordination should take place between the permittee and the Service to determine the most appropriate course of action. With the Service's assistance, a qualified observer should monitor each colonial nest site to determine the minimum distance at which construction can occur without disturbing nesting birds. That distance could be utilized as the construction zone buffer for that nesting area. An additional precaution would include limiting activities that are closest to the nesting sites to the cooler parts of the day (i.e., morning and evening).		●					<input type="checkbox"/> We are coordinating with the LDWF and the USFWS to identify nesting colonies in the project area. Our monitoring plan will address potential impacts to nesting colonies.

Condensed response to agency comments.

Tyler Ortego draft. 6-27-2010 3:45 pm Oneil and Vickie edits. 6-27-2010 5:15 Josh additions

Introduction

After the June 23, 2010 interagency presentation, comments were received from the USFWS, EPA, CPRA, NOAA, H-SERT and CRCL. These comments were forwarded to Jefferson Parish and Shaw by the NOD permit analyst. This document was produced to address concerns raised in these comments. Most of the commenters are concerned about the same key issues. Below, we attempt to condense these comments into the key issues in order to address concisely. In addition, we will address the specific permit conditions recommended by the various stakeholders.

Provide more engineering information, particularly how the structures will tie into existing islands.

Shaw has developed tie in details for both of the proposed passes. At Pass Abel, the dike will tie into the recently constructed East Grand Terre dune. As this dune is higher than the proposed rock structure, the proposed rock structure will be overtopped first in the event of a storm surge, thus partially diverting wave energy and minimizing scour of the existing island. In addition, a scour blanket will extend around the tie in to the -1 ft NAVD contour. For Four Bayou Pass, topographical highs were identified using existing lidar information. The rock dike will extend 50 ft onto the island at the high spot. Topographical surveys will be performed to verify the location and elevation of the tie in. A scour blanket will extend from the tie in to the -1 NAVD contour.

Details of the proposed tie-ins are attached.

Concerns that the rocks will not be temporary

The requested emergency authorization is for temporary rock structures. The proposed rock structures are being implemented by BP at the direction of the National Incidence Command (NIC) to aid in preventing the ingress of oil into sensitive interior marshes. After the threat of oil is gone, at the direction of the NIC, BP will remove the rock structures.

Shaw is also developing a monitoring plan capable of identifying morphological changes to the barrier islands and passes. Should serious unexpected morphological changes be observed, the proposed rock structures will be altered or removed to correct the problem.

Effectiveness for preventing oil intrusion, less damaging alternatives.

Mississippi Canyon 252 Deepwater Horizon oil spill is unprecedented and continues to inflict high economic and environmental damage on coastal parishes and the state of Louisiana. The risk of not moving forward with this project to limit oil reaching interior marsh is greater than the potential short-term environmental impacts associated with this project. Potential negative impacts have been minimized through extensive hydrodynamic modeling to determine the best possible alignments for Pass Abel and Four Bayou Pass.

Currently, a variety of methods are being employed to prevent oil from entering the estuaries. Booms, skimmers, steel pipe booms and barge mounted vacuum trucks are all being utilized in this attempt. Unfortunately, there is a wholesale shortage of necessary assets to effectively keep oil out of the

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estuary. The Jefferson Parish barge plan (MVN-2010-1342-EOO) calls for 16 barges sets in Pass Abel and 24 barge sets in 4 Bayou Pass. Currently, 7 sets are in place in Pass Abel, 7 sets are sitting in Bayou Rigaud and the contractors are scrambling to find the remainder. By utilizing the proposed rock structures in Pass Abel and Four Bayou Pass, these assets can be moved to enhance the effort in other passes.

Some commenters stated that the oil would be less damaging than our proposed structure. Large areas of interior wetlands are being impacted now, and we cannot know for sure that additional and repeated oiling will not result in long-term impacts. David Westerholm, Director of NOAA's Office of Response and Restoration testified that:

"The effect of the Deepwater Horizon oil spill and the dispersants used, on coastal wetland loss will be determined by how much oil reaches coastal wetlands, and how long the oil persists. Large amounts of oil resting on vegetated coastal shorelines could cause the vegetation to become stressed and die. This could cause the roots to die, which would weaken marsh soils. Weakened marsh soils would then be at risk of accelerated erosion from waves and storms. The long-term effects to these habitats have yet to be determined." (Written statement of David Westerholm, Director, Office of Response and Restoration, National Ocean Service, U.S. Department of Commerce Hearing on Our natural resources at risk: the short and long term impact of the Deepwater Horizon oil spill before the subcommittee on insular affairs, Oceans and Wildlife, Committee on Natural Resources, U.S. House of Representatives, June 10, 2010.

Other commenters stated that the proposed structures would increase velocities in the passes, making it harder to contain and collect oil. However, our modeling results clearly demonstrate that the peak velocity will be reduced in Pass Abel, and only localized increases will occur in Four Bayou Pass. Modeled velocity fields in Four Bayou Pass indicate that the proposed rock structures would in fact create a situation that enhances oil capture effectiveness. Slight velocity increases in other passes are manageable and predictable.

In addition, our model results predict a slight *decrease* in overall tidal prism of Barataria Bay as a result of the proposed rock structures. Modeling showed that construction of the dike would result in a more than 65% decrease in the flow volume at Pass Abel and more than a 35% reduction in volume at Four Bayou Pass. This means that there is an overall reduction of the oil entering the bay through these passes directly proportional to the reduction of flow volume. Therefore, concerns about increased oil ingress due to changed velocities are unfounded.

Shaw is developing a monitoring plan which will document the effectiveness of the proposed structures/operations to capture oil.

Secondary impacts, primarily due to changes in tidal hydrology.

Extensive modeling was performed in order to identify the most effective, least damaging alternatives in the two passes. Based on our modeling, the proposed rock structure will reduce the tidal flow in Pass Abel and Four Bayou Pass, slightly increase the tidal flow in Caminada Pass, Barrataria Pass and Pass Ronquille and overall, slightly decrease the tidal prism of the overall system (Barataria Basin). It was noted that the pass will respond morphologically to reach an equilibrium. However, morphological

Condensed response to agency comments.

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responses occur on the order of years or decades, while our structure will only be in place until the NIC declares that there is no more threat of oil.

Numerical modeling is being conducted to address concerns about storm surge. Results of the modeling are not available at the time of this writing, and will be presented as soon as available. In general, storm surge will increase velocities for existing conditions as well as with-dike conditions. It is expected that as was shown to be the case with typical conditions, the dikes will reduce the volume of flow entering the bays as compared to existing conditions for storm surge.

Shaw is also developing a monitoring plan capable of identifying morphological changes to the barrier islands and passes. Should serious unexpected morphological changes be observed that cannot be corrected through adaptive management, the proposed rock structures will be altered or removed to correct the problem.

Cumulative impacts.

At this time we are only seeking authorization for the two passes. We are initiating modeling to analyze alternatives in other passes and determine if there are acceptable alternatives. If it is determined that this technique will work in other passes, in conjunction with the two currently requested, then we will modify our request accordingly. Again, at this time we are only requesting an emergency permit for rock structures in Pass Abel and Four Bayou Pass.

Recommended Permit Conditions

1. IF the permit is granted, that it be on the condition that the rock jetties are removed when they are no longer needed as part of the response.
 - Concur.
2. Recommends a Special Condition be added to any permit issued for this project indicating that the permit does not address the applicability of this project to the spill response effort, which is a decision to be made by the National Incident Commander in consultation with the Federal On-Scene Coordinator.
 - Concur.
3. The permittee shall include emergency provisions for allowing drainage of surge from Barataria Bay in the event tropical storm or hurricane.
 - Concur.
4. Rock barriers should be designed and constructed in a manner that does not increase water velocity in any of the passes to the point that results in scour of beach habitat down to the mean low low water line.
 - Modeling is being conducted to predict such changes. In addition, monitoring will be conducted to identify such changes should they occur.
5. Rock barrier installation should not result in a redirection of the ebb-tide delta Gulfward to the point that the littoral building process is compromised. The permittee shall develop and implement a monitoring plan which will address the changes in current (velocity and direction) and impact on sediment morphodynamics of the adjoining barrier island system. This monitoring plan should be developed in consultation with state and federal agencies.

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- Concur. The monitoring plan will also address critical habitat, and migratory bird nesting colonies. Pre-construction monitoring activities have been initiated.
- 6. The permittee shall develop a post-emergency mitigation plan to ensure compensation for all unavoidable adverse impacts to vegetated and unvegetated habitats. Such a plan may include sand fill placement to restore pre-project conditions (i.e., coastal processes and spatial extent of islands) to the maximum extent practicable. Implementation of the mitigation shall occur within the same year the rock dikes are removed.
 - Concur. Our monitoring plan will identify secondary impacts should they occur. If negative secondary impacts are occurring, then a suitable mitigation plan will be developed and implemented.
- 7. No dredging for flotation or equipment access is authorized.
 - Concur.
- 8. No heavy construction equipment (i.e., dump trucks or tracked excavators) should be allowed on existing islands, shorelines or vegetated wetlands unless approved by the NOD through coordination with the natural resource agencies. No construction access corridors should be across marsh unless approved by the NOD through coordination with the resource agencies. No construction corridors will be allowed in critical habitat or vegetated wetlands.
 - Concur. Impacts to vegetated wetlands due to construction of the tie in features will be identified and submitted to the NOD prior to construction of those features.

June 24, 2010
June 28, 2010 ADDENDUM

Colonel Alvin Lee
U.S. Army Corps of Engineers
Commander
New Orleans District
P.O. Box 60267
New Orleans, LA 70160

Dear Colonel Lee,

We, the undersigned coastal scientists and engineers, are writing to express our concerns over the Emergency Barataria Bay Oil Spill Protection Plan that has been submitted for an emergency permit to the U.S. Army Corps of Engineers by Jefferson Parish. The permit request is to construct rock dikes and closure structures on two passes (Four Bayou Pass and Pass Abel) to Barataria Bay.

Many of us have dedicated our professional lives to the study of Louisiana coastal systems and have been among the first to recommend responsive measures in the face of the oil spill disaster on the coast. We understand the importance of acting quickly, but we also understand the importance to acting responsibly for the current threat and for the long-term sustainability of the Louisiana coast.

In sum, we believe that the current plans are based on a common goal to protect interior wetlands from excessive oiling but, ultimately the plan relies on an engineering and construction approach that carries high economic and environmental risk, and threatens the sustainability of the very ecosystem we are all trying to save. The purpose of this letter is to alert you to these concerns and to offer to assist in resolving them.

The Emergency Barataria Bay Oil Spill Protection Plan features various alignment alternatives for linear rock dike structures to block Pass Abel and Four Bayou Pass. These features could fundamentally alter, and impair, coastal hydrology leading to drastic changes in the tidal prism and could increase erosion of the barrier islands and interior wetlands. At present, little reliable information exists relative to the impacts on the hydrology, sediment and wetland habitats. Specific concerns include:

- The proposed rock dikes will alter the tidal prism which could lead to changes in salinities and wetland habitats.
- Modeling conducted as a part of the permit request indicates an increase in water velocities and a shift in water current patterns, although no velocity profiles have been modeled or provided. Modeling in an idealized estuary conducted by the USACE Engineer Research and Development Center found that the increase in current velocities resulted in a “tendency to shift toward flood dominance with increasing wetland loss.” (Reference: Sánchez, A. 2008. Interactions between

wetlands and tidal inlets. Coastal and Hydraulics Engineering Technical Note. ERDC/CHL CHETN-IV-72. Vicksburg, MS: U.S. Army Engineer Research and Development Center.)

- Altering hydrology will likely result in increased erosion of Louisiana's barrier islands and interior marshes.
- Alterations in hydrology could increase water flow through the passes creating a funnel effect for oil to enter into the Barataria Bay and complicate the oil-fighting methods in the passes.
- It is our understanding that closure of these two passes will be followed by plans to close the other three passes, Caminda Pass, Barataria Pass and Cheniere Ronquille Pass. The cumulative impacts of the entire project could have drastic modifications to the tidal prism for Barataria Basin.
- The proposed rock dike could interrupt the sediment exchange between the interior marshes and the Gulf of Mexico, specifically during storm events.
- The rock dikes are being proposed, in addition to the barge plan for surface oil, to fight oil in the water column due to concerns that dispersants have resulted in large quantities of oil below the surface. However, the oil in the water column could also become trapped in the rock structure, leading to a more complex clean-up effort.
- Confining the water flow through a smaller opening could lead to increased erosion at the bottom of the pass, deepening these passes permanently. Deepening of the channel, along with increased velocities, could accelerate the movement of oil both on the surface and in the water column into the interior marshes.
- During a storm surge, the rock dikes, at a +4 elevation, are unlikely to significantly reduce the movement of oil into the estuary. In contrast, the hard structures located adjacent to the barrier islands are likely to increase the probability of large scale erosion and breaching of the barrier islands.
- The rock dike structures would not be a temporary oil-fighting feature, but a permanent change to the landscape in Barataria Bay. If the project is anticipated to be temporary, no information was provided to describe how the project would be dismantled and temporary impacts addressed. Therefore, the impacts of these structures would also be permanent and long-term. The potential for large-scale environmental impacts would require more in-depth study prior to approving for construction.

We certainly understand the risk of ecosystem damage due to oiling of the interior wetlands in Barataria Bay. The ecosystem impacts can include mortality of wetland plants leading to wetland loss and impacts to the fisheries and wildlife communities. However, we also understand that estuaries can naturally recover from the impacts of oil. Louisiana's wetlands have been recovering from oil spills for nearly 50 years. These historic oil spills are smaller in scale overall, however could have similar or more damaging localized effects. In our current crisis, the degraded state of the oil and the dispersed nature of the oil will likely not result in long-term impacts to large areas of interior wetlands. There are also remediation activities that would be more appropriate

for use in interior wetlands than those wetlands located in high energy areas such as the Mississippi River Delta.

We also understand the economic impacts to individuals and communities that rely on these estuaries for their livelihood. Yet, the rock dikes could also result in long-term economic impacts through increased barrier island and wetland land loss, reducing the habitat for fish and wildlife and diminishing the lines of defense against storm surges.

Ultimately, the oil-fighting strategies that are proposed for the Louisiana coast need to evaluate the economic and environmental risks involved, both short-term and long-term, and plan to address those risks. The risks of long-term damage posed from oil entering into the interior marshes could be less damaging than the long-term risks associated with the rock dikes proposed in the Emergency Barataria Bay Oil Spill Protection Plan.

Lastly, the plans are currently proceeding on an in-house basis. Limited, if any, scientific input has been incorporated from outside experts, even when offered. This process is inadequate for an endeavor of this scope of potential impacts and risks. Prior to issuance of a permit, we recommend incorporating science and technical expertise into the planning process to work to address the concerns listed in this letter.

In closing, we re-emphasize our desire to resolve these concerns in a constructive way and in an expedited manner. We also request to be included in future oil-fighting strategies planning. We stand ready to assist.

For purpose of reply, you may contact Natalie Snider at the Coalition to Restore Coastal Louisiana at nsnider@crcl.org.

Respectfully submitted,

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President, Lafourche Parish
Mayor, Town of Lafitte
Mayor, Town of Grand Isle
Administrator, Environmental Protection Agency
Administrator, National Oceanic and Atmospheric Administration
Secretary, Department of Interior
Secretary, Louisiana Department of Wildlife and Fisheries



24 June 2010

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June 24, 2010
Emergency Authorization Request for Jefferson Parish
Rock/Barge Plan - Pass Abel and Quatro Bayou Pass

The U.S. Fish and Wildlife Service (Service) is in receipt of your June 24, 2010, electronic transmittal requesting comments pertaining to emergency General Permit NOD-20 authorization of Jefferson Parish Government's proposal to construct two barriers in Pass Abel and Quatro Bayou Pass within the Barataria Basin barrier island chain. The project would consist of a combination of rock jetties, anchored barges, and booms to serve as a barrier for oil intrusion and to aid in oil clean up. The comments below are submitted in accordance with the technical assistance provisions of the Fish and Wildlife Coordination Act (FWCA; 48 Stat. 401, as amended; 16 U.S.C. 661 et seq.). In addition, these comments pertain to the Migratory Bird Treaty Act (MBTA) (40 Stat. 755, as amended; 16 U.S.C. 703 et seq.), and provide emergency informal consultation information under the authority of the Endangered Species Act (ESA) of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.). Due to the limited time provided for agency review and response to the emergency authorization request, the Service reserves the right to provide additional recommendations and permit conditions when the formal permit application is processed as per the requirements of NOD-20.

The Service is committed to the protection of Louisiana's wetlands from ongoing land loss and the added impact of the oil spill. We also remain committed to working closely with all agencies involved in spill response efforts to further explore alternatives and alternative features in order to reduce the current degree of risk and uncertainty associated with any oil spill response activities.

On June 23, 2010, the applicant's consultants provided a presentation explaining the proposed project alternatives and the potential impacts and benefits of the preferred alternatives. The applicant contends that the rock barrier proposal would provide more control of oil than just booms and barges as the rocks would hold better in storm events. The booms previously failed to hold oil during a spring storm event that caused strong southerly winds and high wave action. The Service agrees that in spring storm situations, the rocks would be a better solution; however, the situation is now that summer weather patterns prevail, placid conditions are the norm, with the exception of tropical events. In a tropical storm/hurricane event, it is likely that the rock jetty would be over-topped by wave action and would not be any more effective than the barges and booms. Also, should the oil still be in the Gulf of Mexico when the Fall/Winter cold fronts come through, the rock barrier will slow the flow of unoiled or oiled water out of the basin.

Modeling of the two proposed barriers demonstrates that the tidal flow in Pass Abel would be reduced by 70 % and Quatro Bayou Pass by 35 %. In total, the volume of water passing through the five passes within the Barataria Basin would be reduced by 10% as a result of the two barriers. The applicant maintains that they intend to construct similar rock jetties in all of the five passes. The Service is concerned that construction of all of the rock barriers would have a substantial adverse impact on tidal flow and will likely result in scouring and breaching

of the barrier island chain. Furthermore, installation of hard structures in the marine environment is known to disrupt the littoral process and result in increased erosion.

Barrier Island Habitat

To ensure that the proposed action does not result in significant adverse impacts to tidal processes and the littoral accretion process, and does not result in excessive erosion, the Service recommends the following:

1. The rock barriers should be designed and constructed in a manner that does not increase water velocity in any of the passes to the point that results in scour of beach habitat down to the mean low low water line. Furthermore, rock barrier installation should not result in a redirection of the ebb-tide delta Gulfward to the point that the littoral building process is compromised.
2. No excavation should be authorized for this project unless approved by the NOD through coordination with the Service and other natural resource agencies.
3. Pre (or concurrent) and post construction monitoring of the adjacent shorelines should be conducted to quantify the impact to wetlands. Monitoring should consist of a Global-Position-Satellite (GPS) determination of the existing shorelines plotted on the most recent low altitude aerial photography presently available for oil spill response. Every six months post project construction, the permittee should submit a monitoring report to the NOD, and interested natural resource agencies that includes GPS data indicating whether there are or any breaches at the work sites and within the Barataria Basin island chain. Hydrographic surveys of the passes should also be taken every 6 months to document system response and determine if adverse erosion is occurring.
4. Should monitoring demonstrate that the project has significant adverse effects, corrective action will be implemented.
5. The permittee should be responsible for mitigating all unavoidable adverse impacts to wetlands and piping plover critical habitat. An acceptable compensatory mitigation plan should be developed through coordination with the Service.
6. All rock and other tidal obstructions should be removed after the threat of oil intrusion has passed.

Endangered Species

On May 12, 2010, the Service provided a memo transmitting ESA emergency consultation recommendations to Federal Agencies. If the Corps determines that emergency authorization is warranted, in addition to the guidance provided in that memo, our office would like to add the following recommendations specifically designed to protect the Federally threatened piping plover and its critical habitat (CH):

Piping plover CH includes Elmer's Island, Grand Isle, and East Grand Terre. To the maximum extent possible, avoid impacts to island habitat from the dune/vegetation line to mean low low water (i.e., within CH). If this is not possible, in order to minimize disturbance to feeding and resting piping plovers, construction activity should be limited in CH to the maximum extent possible.

Migratory Birds

The Migratory Bird Treaty Act prohibits the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests, except when specifically authorized by the U.S. Department of the Interior. While the Act has no provision for allowing unauthorized take, the Service realizes that some birds may be killed during emergency response activities even if all reasonable measures to protect birds are implemented. The Service's Office of Law Enforcement carries out its mission to protect migratory birds through investigations and enforcement, as well as by fostering relationships with individuals, companies, and industries that have taken effective steps to minimize their impacts on migratory birds, and by encouraging others to enact such programs. It is not possible to absolve individuals, companies, or agencies from liability even if they implement avian mortality avoidance or similar conservation measures. However, the Office of Law Enforcement focuses its resources on investigating and prosecuting individuals and companies that take migratory birds without regard for their actions or without following an agreement such as this to avoid take.

The Service suggests the following recommendations as mitigative measures to minimize project-associated impacts to migratory birds:

To minimize disturbance to colonies containing nesting gulls, terns, and/or black skimmers, the Service typically recommends that all work within 650 feet of a colonial nest site be restricted to the non-nesting period (i.e., September 16 through April 1). The Service should be notified if colonial bird nest sites are identified within the 650-foot buffer, and coordination should take place between the permittee and the Service to determine the most appropriate course of action. With the Service's assistance, a qualified observer should monitor each colonial nest site to determine the minimum distance at which construction can occur without disturbing nesting birds. That distance could be utilized as the construction zone buffer for that nesting area.

An additional precaution would include limiting activities that are closest to the nesting sites to the cooler parts of the day (i.e., morning and evening).

The Service appreciates the opportunity to provide these comments. If there are any question regarding our recommendations, please contact Patti Holland at 337-291-3121.

From: Ettinger.John@epamail.epa.gov
Sent: Thursday, June 24, 2010 1:06 PM
To: Serio, Pete J MVN
Cc: Richard Hartman; Patrick Williams; Patti_Holland@fws.gov; Walther, David; Rachel Sweeney; Farabee, Michael V MVN; Laborde, Brad MVN; Mayer, Martin S MVN; Evans.David@epamail.epa.gov; Honker.William@epamail.epa.gov; Keehner.Denise@epamail.epa.gov; McCormick.Karen@epamail.epa.gov; Miller.Clay@epamail.epa.gov; Landers.Timothy@epamail.epa.gov; Parrish.Sharon@epamail.epa.gov; EOC_Water; Watson.Jane@epamail.epa.gov; Woodka.Janet@epamail.epa.gov
Subject: Re: FW: Jefferson Parish Rock plan request for emergency authorization - Pass Abel and Quatro Bayou Pass

Pete,

Following are EPA's comments on this proposal. Thank you again for your coordination on this matter.

As we have repeatedly emphasized, we fully share the applicant's urgency with respect to blocking oil from entering the valuable estuarine waters and wetlands in Barataria Basin, while at the same time minimizing any potential negative environmental impacts of our actions. For this reason, we fully and quickly supported authorization of the permitted barge barriers for five passes, including the two that are subject to this latest permit request. We have seen no information to suggest that the barge barriers would be a less effective option. We continue to believe that the barge barrier option is a valid alternative with less environmental consequences and should be tried before it is abandoned in favor of a more environmentally damaging rock berm.

The applicant asserts that the permitted barge barriers (MVN-2010-1342-EOO) would not block oil that might be suspended below the surface of the water. Such oil, it is feared, could move underneath the partially submerged barges and enter the estuary. There is no information to support this claim. More importantly, the proposed rocks would accelerate velocities through the narrowed passes. Thus, the movement into the estuary of any such subsurface oil could potentially be accelerated by the proposed rock berm project itself. With respect to subsurface oil, the rock project could actually make matters worse.

The applicant also argues that the authorized barge barriers would have to be moved during storms, thus allowing oil to flood into the estuary on a storm surge. We too are greatly concerned about potential increased oil contamination of coastal marsh due to storm surges. Here again, however, the rocks might not be any more effective during a storm – and they could possibly worsen matters. Specifically, a storm surge could overtop the rock dikes, which permit application drawings show at being four feet above the waterline. Additionally, a storm surge would greatly increase the velocities through the narrowed passes, potentially accelerating oil entry into the estuary during a storm. Unfortunately, there are no easy or good answers when dealing with the prospect of a hurricane or large storm. It is not clear why the rocks would be any more effective in a storm. Additionally, the increased velocities associated with a storm surge could cause breaching on or near the transition points where the proposed rocks connect with existing islands. This would be similar to what occurred at levee transition points during hurricane Katrina.

We greatly appreciate the applicant's hard work to minimize potential adverse environmental impacts by modeling various less damaging options. The work done in that regard was high quality, given the extremely limited timeframe. Despite such efforts, we believe the modeling shows the preferred alternatives would significantly alter flow volumes through the two passes. Specifically, the applicant's modeling projects that flow volumes through the two subject passes could change by approximately 65% in Pass Abel and over 35% in Four Bayou Pass. It was acknowledged in the June 23, 2010, meeting that this would most likely result in the widening and/or deepening of other passes through increased scour and erosion, as well as other potential indirect impacts. Moreover, what is unknown is how these proposed rock dikes would affect sediment transport processes and fisheries ingress and egress. Nor has any modeling or analysis been done on how these rocks would affect wave energies. Here too, increased erosion of existing barrier islands could be expected.

The applicant would likely argue that the overall effect of these two rock projects on all five passes that were the subject of the earlier permit application would be minimal. However, it is clear to us that the applicant fully intends to seek authorization of rock placement in the three remaining passes in the near future. It is also apparent that there is no firm

commitment to remove such rock barriers. In such a scenario, we would likely see long-term changes in flow volumes through the other three passes that are similar to the substantial effects projected for the two passes that are the subject of this latest request. Thus, the cumulative effect of this action and the future rock closures would most likely be long-term significant changes in hydrology through the passes, which could have substantial unforeseen adverse impacts in terms of increased barrier island erosion and breaching, and possibly reduced fishery access. The barge barriers would have no such long-term effects, because these barriers are by definition temporary.

Thus, based on the availability of a less environmentally damaging and permitted option, as well as the remaining potential for long-term substantial indirect and cumulative adverse environmental impacts, we strongly recommend the Corps not authorize the proposed rock project. Again, we reiterate our full support for the rapid implementation of the authorized barge barriers as a less damaging option for attempting to block oil in these passes.

John Ettinger
U.S. EPA Region 6
(504) 862-1119
ettinger.john@epa.gov

-----"Serio, Pete J MVN" <Pete.J.Serio@usace.army.mil> wrote: -----

To: John Ettinger/R6/USEPA/US@EPA, "Richard Hartman" <Richard.Hartman@noaa.gov>, "Patrick Williams" <Patrick.Williams@noaa.gov>, <Patti_Holland@fws.gov>, "Walther, David" <david_walther@fws.gov>, "Rachel Sweeney" <Rachel.Sweeney@noaa.gov>
From: "Serio, Pete J MVN" <Pete.J.Serio@usace.army.mil>
Date: 06/24/2010 06:49AM
cc: "Farabee, Michael V MVN" <Michael.V.Farabee@usace.army.mil>, "Laborde, Brad MVN" <Brad.Laborde@usace.army.mil>, "Mayer, Martin S MVN" <Martin.S.Mayer@usace.army.mil>
Subject: FW: Jefferson Parish Rock plan request for emergency authorization - Pass Abel and Quatro Bayou Pass

Please have your comments to us by 1:00 PM today. Thank you for your cooperation.

Pete Serio
Chief, Regulatory Branch
504-862-2255

In order to assist us in improving our service to you, please complete the survey found at: <http://per2.nwp.usace.army.mil/survey.html>

-----Original Message-----

From: Ortego, Tyler R [mailto:tyler.ortego@shawgrp.com]
Sent: Thursday, June 24, 2010 6:42 AM
To: Serio, Pete J MVN; Karl Morgan
Cc: Laborde, Brad MVN; MWinter; DBonano; Malbrough, Oneil; Duffourc, Vickie; Malbrough, Benjamin
Subject: Jefferson Parish Rock plan request for emergency authorization - Pass Abel and Quatro Bayou Pass

DATE: June 24, 2010

TO: Mr. Pete Serio, Chief Regulatory ,Branch



Coastal Protection and
Restoration Authority of Louisiana

State of Louisiana

CPRA

BOBBY JINDAL
GOVERNOR

June 24, 2010

Pete Serio
Chief, Regulatory Branch
Operations Division
U.S. Army Corps of Engineers
P.O. Box 60267
New Orleans, Louisiana 70160-0267

Dear Mr. Serio:

The purpose of this letter is to recommend conditions in the emergency authorization requested by Jefferson Parish for tidal pass constrictions at Pass Abel and Four Bayou Pass, Plaquemines Parish, Louisiana. These conditions are needed to address concerns of our agency regarding potential unintended consequences of these hard structures should they be allowed to remain in place longer than necessary to address the current emergency response to the Deepwater Horizon event MC-252.

Potential unintended consequences of long-term existence of proposed hard structures include changing boundary conditions of tidal exchange passes; subsequent increase in tidal exchange through adjacent passes; increase in erosion on both sides of adjoining barrier islands; and causing overwash or breach in existing islands. To address these concerns, we recommend that the following conditions be included in any authorization issued.

1. The permittee shall develop and implement a monitoring plan which will address the changes in current (velocity and direction) and impact on sediment morphodynamics of the adjoining barrier island system. This monitoring plan should be developed in consultation with state and federal agencies.
2. The permittee will be responsible for removal of these structures if monitoring shows adverse effect on ecosystem (especially the adjoining barrier islands in form of erosion, breach overwash, etc.) or within 90 days after threat of oil has passed.
3. The effectiveness of these structures in enhancing the capture of oil should be monitored.

4. The permittee shall include emergency provisions for allowing drainage of surge from Barataria Bay in the event tropical storm or hurricane.

Please let us know if you have any questions regarding these recommendations.

Sincerely yours,

A handwritten signature in cursive script that reads "Steve Mathies".

Steve Mathies

Executive Director

National Oceanic and Atmospheric Administration
Comments on
Emergency Authorization Request for
Rock Dike Closures

June 24, 2010

By electronic mail dated June 8, 2010, the U.S. Army Corps of Engineers, New Orleans District (NOD) requested natural resource agency review of the application by Jefferson Parish for emergency authorization to construct partial rock dike closures (PRDC) in Caminada Pass, Barataria Pass, Pass Abel, Four Bayou Pass, and Cheniere Ronquille Pass. In a document dated June 9, 2010, NOAA provided comments on that proposal and recommended the NOD not authorize the effort under General Permit NOD-20.

On June 24, 2010, the NOD transmitted to NOAA a request for emergency authorization from Jefferson Parish for the placement of PRDCs in Four Bayou Pass and Pass Abel. According to information transmitted with the permit application, the U.S. Coast Guard has approved the construction of those two PRDCs only. In the e-mail transmitting that application, NOAA was given approximately six hours to provide agency comments and recommendations. Given the short review and comment period, NOAA is unable to provide detailed comments and recommendations at this time. The NOD should refer to our comments on the original emergency authorization application, dated June 9, 2010 (attached), for additional concerns. The following identify general concerns and limited recommendations towards a path forward at this time.

General Comments

- On June 23, 2010, staff of NOAA participated in a conference call with the NOD, other natural resource agencies, and representatives of the applicant to discuss concerns regarding the placement of PRDCs in passes leading into Barataria Bay. During that conference call, information was provided regarding hydrologic modeling that had been undertaken to evaluate some potential impacts of project implementation. That information suggested the PRDCs would significantly increase velocities in portions of each pass. No analysis was undertaken to determine the likely impact of such increased velocities on the depth of each pass, or the dimensions of adjacent passes.
- No wave refraction/diffraction analyses had been completed, but representatives of the applicant did agree that project implementation could have some adverse impacts on adjacent shorelines, especially on eastern Grand Terre where one PRDC is proposed to tie into the adjacent beach face. It should be noted that restoration of the beach and dune on eastern Grand Terre had been recently partially completed by a barrier island

restoration project funded under the auspices of the Coastal Impact Assessment Program.

- NOAA is concerned about the future of the constructed PRDCs. During the June 23 conference call, representatives of the applicant indicated an intention to leave the structures in place following completion of oil spill closure efforts. Lacking a commitment by the applicant to remove these structures, an analysis on the likely long term impacts of PRDC installation should be required.
- NOAA is concerned about the cumulative impacts of five proposed partial closures on barrier islands in the Barataria Bay estuary. While this proposal only represents two of the previously requested five closures, the applicant indicated during the June 23 conference call and in the permit application submittal that they plan to request approval of the other three in the future. If the Corps of Engineers determines that approval of these two partial closures is warranted as an emergency action to help mitigate oil movement into the Barataria Bay estuary, they should require a thorough analysis of the cumulative impacts of all five closures on the coastal ecosystem prior to any consideration of authorizing the remaining structures.
- Restricting the tidal passes may force water to seek new outlets for drainage or increase the size of existing openings. Those outlets would likely be through lower elevation portions of existing barrier islands. During the June 23 conference call, consultants working for the applicant indicated a possibility that restricting tidal passes could lead to increases in the size or depth of existing openings, or the creation of new openings elsewhere. Were this to occur, project implementation could increase the already high erosion rates of these barrier habitats. This may be a more likely risk for islands in greater stage of deterioration. In our review of the permit plats provided to NOAA for this application, it appears that the barrier islands on both sides of Four Bayou Pass are extremely degraded and have numerous low areas susceptible to inlet formation and erosion.
- During the June 23 conference call, representatives of Jefferson Parish clearly indicated an unwillingness to undertake actions that may be necessary to mitigate for unintended consequences of project implementation. Mitigation actions that could reasonably be expected to be necessary include: 1) removal or partially degrading portions of either PRDC if they are found to be causing erosion elsewhere or are ineffective in preventing oil from entering through either pass; or, 2) restoring portions of barrier islands impacted by refracted/diffracted waves, breached by tidal movement, or otherwise impacted by construction of the PRDCs.

Specific Comments

In view of the concerns raised above and lacking official clarification from the applicant regarding their position on future structure removal and mitigation, NOAA recommends the NOD not authorize this project under emergency procedures. However, if the NOD determines that emergency authorization for this effort is warranted, NMFS recommends the following conditions be included in any permit issued for the partial rock dike closure

project. These comments are provided under the authority of the Essential Fish Habitat provisions of the Magnuson-Stevens Fishery Conservation and Management Act and the Fish and Wildlife Coordination Act.

1. The rock dikes should be removed entirely immediately after the threat of oiling resulting from the Mississippi Canyon 252/Deepwater Horizon incident ends. The determination of oiling threat will be based on near shore oiling forecasts produced in support of the National Incident Command.
2. The permittee shall assess potential direct and indirect impacts on shoreline stability and hydrodynamics using shoreline response and sediment transport modeling. This assessment shall include all shorelines, islands and passes extending from Caminada Pass eastward to Chenier Ronquille. At a minimum, the analyses shall evaluate potential changes in sediment transport, tidal pass dynamics and shoreline response. These analyses shall be conducted using standard coastal engineering methods. The permittee shall submit the analyses to NMFS and other interested agencies.
3. The permittee shall develop and implement a monitoring plan, in coordination with the natural resource agencies, to assess the potential direct and indirect impacts of project implementation. At a minimum, the monitoring plan shall require field data collection (e.g., topographic and bathymetric surveys, aerial photography) adequate to quantitatively assess potential and actual impacts to tidal pass geometry, sediment transport and resulting shoreline response for all areas that may be directly and indirectly impacted (i.e., from Caminada Pass east to Chenier Roquille). As part of the monitoring plan, the permittee shall provide to the resource agencies copies of pre-and post-construction data and results.
4. No dredging for flotation or equipment access is authorized.
5. No heavy construction equipment (i.e., dump trucks or tracked excavators) should be allowed on existing islands, shorelines or vegetated wetlands unless approved by the NOD through coordination with the natural resource agencies. No construction access corridors should be across marsh unless approved by the NOD through coordination with the resource agencies.
6. The permittee shall develop a post-emergency mitigation plan to ensure compensation for all unavoidable adverse impacts to vegetated and unvegetated habitats. Such a plan may include sand fill placement to restore pre-project conditions (i.e., coastal processes and spatial extent of islands) to the maximum extent practicable. Implementation of the mitigation shall occur within the same year the rock dikes are removed.

June 24, 2010

Colonel Alvin Lee
U.S. Army Corps of Engineers
Commander
New Orleans District
P.O. Box 60267
New Orleans, LA 70160

Dear Colonel Lee,

We, the undersigned coastal scientists and engineers, are writing to express our concerns over the Emergency Barataria Bay Oil Spill Protection Plan that has been submitted for an emergency permit to the U.S. Army Corps of Engineers by Jefferson Parish. The permit request is to construct rock dikes and closure structures on two passes (Four Bayou Pass and Pass Abel) to Barataria Bay.

Many of us have dedicated our professional lives to the study of Louisiana coastal systems and have been among the first to recommend responsive measures in the face of the oil spill disaster on the coast. We understand the importance of acting quickly, but we also understand the importance to acting responsibly for the current threat and for the long-term sustainability of the Louisiana coast.

In sum, we believe that the current plans are based on a common goal to protect interior wetlands from excessive oiling but, ultimately the plan relies on an engineering and construction approach that carries high economic and environmental risk, and threatens the sustainability of the very ecosystem we are all trying to save. The purpose of this letter is to alert you to these concerns and to offer to assist in resolving them.

The Emergency Barataria Bay Oil Spill Protection Plan features various alignment alternatives for linear rock dike structures to block Pass Abel and Four Bayou Pass. These features could fundamentally alter, and impair, coastal hydrology leading to drastic changes in the tidal prism and could increase erosion of the barrier islands and interior wetlands. At present, little reliable information exists relative to the impacts on the hydrology, sediment and wetland habitats. Specific concerns include:

- The proposed rock dikes will alter the tidal prism which could lead to changes in salinities and wetland habitats.
- Modeling conducted as a part of the permit request indicates an increase in water velocities and a shift in water current patterns, although no velocity profiles have been modeled or provided. Modeling in an idealized estuary conducted by the USACE Engineer Research and Development Center found that the increase in current velocities resulted in a “tendency to shift toward flood dominance with increasing wetland loss.” (Reference: Sánchez, A. 2008. Interactions between wetlands and tidal inlets. Coastal and Hydraulics Engineering Technical Note.

ERDC/CHL CHETN-IV-72. Vicksburg, MS: U.S. Army Engineer Research and Development Center.)

- Altering hydrology will likely result in increased erosion of Louisiana's barrier islands and interior marshes.
- Alterations in hydrology could increase water flow through the passes creating a funnel effect for oil to enter into the Barataria Bay and complicate the oil-fighting methods in the passes.
- It is our understanding that closure of these two passes will be followed by plans to close the other three passes, Caminda Pass, Barataria Pass and Cheniere Ronquille Pass. The cumulative impacts of the entire project could have drastic modifications to the tidal prism for Barataria Basin.
- The proposed rock dike could interrupt the sediment exchange between the interior marshes and the Gulf of Mexico, specifically during storm events.
- The rock dikes are being proposed, in addition to the barge plan for surface oil, to fight oil in the water column due to concerns that dispersants have resulted in large quantities of oil below the surface. However, the oil in the water column could also become trapped in the rock structure, leading to a more complex clean-up effort.
- Confining the water flow through a smaller opening could lead to increased erosion at the bottom of the pass, deepening these passes permanently. Deepening of the channel, along with increased velocities, could accelerate the movement of oil both on the surface and in the water column into the interior marshes.
- During a storm surge, the rock dikes, at a +4 elevation, are unlikely to significantly reduce the movement of oil into the estuary. In contrast, the hard structures located adjacent to the barrier islands are likely to increase the probability of large scale erosion and breaching of the barrier islands.
- The rock dike structures would not be a temporary oil-fighting feature, but a permanent change to the landscape in Barataria Bay. If the project is anticipated to be temporary, no information was provided to describe how the project would be dismantled and temporary impacts addressed. Therefore, the impacts of these structures would also be permanent and long-term. The potential for large-scale environmental impacts would require more in-depth study prior to approving for construction.

We certainly understand the risk of ecosystem damage due to oiling of the interior wetlands in Barataria Bay. The ecosystem impacts can include mortality of wetland plants leading to wetland loss and impacts to the fisheries and wildlife communities. However, we also understand that estuaries can naturally recover from the impacts of oil. Louisiana's wetlands have been recovering from oil spills for nearly 50 years. These historic oil spills are smaller in scale overall, however could have similar or more damaging localized effects. In our current crisis, the degraded state of the oil and the dispersed nature of the oil will likely not result in long-term impacts to large areas of interior wetlands. There are also remediation activities that would be more appropriate for use in interior wetlands than those wetlands located in high energy areas such as the Mississippi River Delta.

We also understand the economic impacts to individuals and communities that rely on these estuaries for their livelihood. Yet, the rock dikes could also result in long-term economic impacts through increased barrier island and wetland land loss, reducing the habitat for fish and wildlife and diminishing the lines of defense against storm surges.

Ultimately, the oil-fighting strategies that are proposed for the Louisiana coast need to evaluate the economic and environmental risks involved, both short-term and long-term, and plan to address those risks. The risks of long-term damage posed from oil entering into the interior marshes could be less damaging than the long-term risks associated with the rock dikes proposed in the Emergency Barataria Bay Oil Spill Protection Plan.

Lastly, the plans are currently proceeding on an in-house basis. Limited, if any, scientific input has been incorporated from outside experts, even when offered. This process is inadequate for an endeavor of this scope of potential impacts and risks. Prior to issuance of a permit, we recommend incorporating science and technical expertise into the planning process to work to address the concerns listed in this letter.

In closing, we re-emphasize our desire to resolve these concerns in a constructive way and in an expedited manner. We also request to be included in future oil-fighting strategies planning. We stand ready to assist.

For purpose of reply, you may contact Natalie Snider at the Coalition to Restore Coastal Louisiana at nsnider@crcl.org.

Respectfully submitted,

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New Orleans, Louisiana 70148

cc: Governor, State of Louisiana
Members, Louisiana Congressional Delegation
Assistant Secretary for Civil Works, United States Army
Chair, Coastal Protection and Restoration Authority
Executive Director, Office of Coastal Protection and Restoration
President, Jefferson Parish
President, Lafourche Parish
Mayor, Town of Lafitte
Mayor, Town of Grand Isle
Administrator, Environmental Protection Agency
Administrator, National Oceanic and Atmospheric Administration
Secretary, Department of Interior
Secretary, Louisiana Department of Wildlife and Fisheries



9 June 2010

U.S. ARMY CORPS OF ENGINEERS

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National Oceanic and Atmospheric Administration
Comments on
Emergency Authorization Request for
Rock Dike Closures

June 9, 2010

By electronic mail dated June 8, 2010, the U.S. Army Corps of Engineers, New Orleans District (NOD) requested natural resource agency review of the application by Jefferson Parish for emergency authorization to construct partial rock dike closures in Caminada Pass, Barataria Pass, Pass Abel, Four Bayou Pass, and Cheniere Ronquille Pass. The Corps of Engineers is considering authorizing the proposed partial rock dike closures under provisions of General Permit NOD-20. Rock dikes would be constructed to a +4 ft elevation for the purpose of reducing northward oil intrusion into coastal waters between the barrier island chain and the mainland. Due to the limited time provided for agency review and response to the emergency authorization request, NOAA reserves the right to provide additional recommendations and permit conditions. Those recommendations could be provided during our review of a response to agency comments developed by the applicant, our review of proposed permit special conditions provided to NOAA by NOD personnel, or when a formal permit application is processed within 30 days of permit issuance as required by provisions of General Permit NOD-20.

General Comments

Project Efficacy Concerns

- The stated purpose of the project is to “reduce inland movement of oil from the BP Deepwater Horizon Oil Spill.” NOAA believes the proposed activity will have little or no effect on reducing the exchange of water, and thus the movement of oil, through the passes under consideration. As the tidal inlets are restricted through dike construction, scouring will very likely result in deepening of the remaining openings, or formation of new openings, to accommodate the existing tidal prism. Those new openings would invariably be through existing barrier island features. In light of the very clear possibility for both direct and indirect adverse impacts, NOAA suggests the applicant provide a technical analysis of the ability of the proposed dikes to meet project objectives.

Potential Adverse Impacts

- The proposed action could result in adverse direct and indirect impacts to near shore, surf zone, sand flats, and back barrier marshes designated as essential fish habitat. Direct impacts from excavation and tracking (movement of heavy equipment on the barrier islands) may occur as a result of moving and placing rock into existing shorelines. Shorelines may be indirectly impacted from altered wave patterns and sediment transport processes created by the dikes.

- The proposal would result in substantial reductions in tidal inlet cross-sectional area which could reduce fish and crustacean passage.
- Restricting the tidal passes may force water to seek new outlets for drainage. Those outlets would likely be through lower elevation portions of existing barrier islands. Were this to occur, project implementation could significantly increase the already high erosion rates of these rare habitats. This may be a more likely risk for islands in greater stage of deterioration, such as Cheniere Ronquille east of Pass Ronquille.
- Hard structures reflect wave energy and may contribute to erosion of existing shorelines. This will be more substantial where dikes are placed at a more perpendicular angle to existing shorelines. Such is the case with the proposed Pass Abel dike and the tie-in with East Grand Terre Island and the Cheniere Ronquille dike and the tie-in with Grand Pierre Island.
- Scouring of restricted tidal passes may cause exposure of pipelines and other infrastructure. Additionally, increased tidal velocities caused by restricted passes could result in disruption of near shore sediment transport processes.

Procedural Concerns

- NOAA recommends a Special Condition be added to any permit issued for this project indicating that the permit does not address the applicability of this project to the spill response effort, which is a decision to be made by the National Incident Commander in consultation with the Federal On-Scene Coordinator.
- Under normal permitting procedures, a project of this individual scope would likely require full NEPA compliance. NOAA requests the Army Corps of Engineers express its intention pertaining to the need to conduct a Regulatory Environmental Impact Statement to evaluate likely near and long term project impacts individually, as well as the cumulative effects of similar emergency response actions in the vicinity of the project area.
- Lesser environmentally damaging and practicable alternatives to reduce the inland movement of oil, such as booms and skimmers, should be utilized to the maximum extent practicable.
- The proposal lacks details on construction access locations and methods. Such information is necessary for NOAA to assess and quantify potential impacts. In particular, the excavation of flotation channels to accommodate barges and the need for land-based construction equipment at shoreline tie-in points has not been identified.
- It is unclear who would maintain the proposed structures for the duration of the emergency (to avoid creation of navigation hazards) and who would remove the rock after the emergency has concluded to minimize adverse impacts.

Specific Comments

In view of the concerns raised above, NOAA recommends the NOD not authorize this project under emergency procedures. However, if the NOD determines that emergency authorization for this effort is warranted, NMFS recommends the following conditions be included in any permit issued for the partial rock dike closure project. These comments are provided under the authority of the Essential Fish Habitat provisions of the

Magnuson-Stevens Fishery Conservation and Management Act and the Fish and Wildlife Coordination Act.

1. Prior to issuance, the permittee shall assess impacts on shoreline erosion rates using shoreline response modeling and empirical analysis of sediment transport rates. These analyses shall be conducted using standard coastal engineering methods. The permittee shall submit the analyses to NMFS and other interested agencies.
2. The permittee shall evaluate potential impacts of the activity on habitats of concern including impacts on tidal passes and oyster producing areas and sediment transport.
3. No dredging for flotation or equipment access is authorized outside of areas depicted on the June 3, 2010, plats unless approved through interagency coordination.
4. The permittee shall avoid, to the extent practicable, direct impacts to vegetated wetlands and unvegetated shoreline from construction of the rock dikes.
5. No heavy construction equipment (i.e., dump trucks or tracked excavators) should be allowed on existing islands, shorelines or vegetated wetlands unless approved by the NOD through coordination with the natural resource agencies. No construction access corridors should be across marsh unless approved by the NOD through coordination with the resource agencies.
6. Prior to construction, the permittee shall develop a monitoring plan, in coordination with the natural resource agencies, to assess the adverse impacts of rock dike construction. Monitoring should include surveying the effects of construction activities and rock dikes on erosion or infilling tidal passes and marsh. As part of the monitoring plan, the permittee shall provide to the resource agencies copies of pre-construction and as-built plans and surveys of the passes and the islands on each side of the passes. The bayward, alongshore, and offshore limits of the surveying should be approved by the NOD through coordination with the resource agencies.
7. The rock dikes should be removed entirely as soon after the emergency ends as is possible, unless determined otherwise through coordination with the resource agencies.
8. The permittee shall develop a post-emergency mitigation plan to ensure compensation for all unavoidable adverse impacts on vegetated and unvegetated habitat. Such a plan may include sand fill placement to restore pre-project conditions (i.e., coastal processes and spatial extent of islands) to the maximum extent practicable. Implementation of the mitigation should occur within the same year the rock dikes are removed.

H-SERT Comments Regarding Rock Jetty Installation Permit Request from Jefferson Parish

In summary the comments are:

- 1) The modeling performed is inadequate to accurately represent the system being impacted.
- 2) Installation of rock jetties will definitely increase the current through the remaining tidal interchange area and likely increase scouring on the sea floor.
- 3) Increased velocities resultant from the rock jetties will compromise the ability for clean up technologies to remove the oil and likely increase the influx of subsurface oil due to the deepening of the passage due to scour.
- 4) The presence of hardened structures at the inlets will likely create more instability around the barrier islands, create more erosion and possibly additional conduits for oil to enter into the bays and marshes.
- 5) It is unclear as to how the jetties will perform any better than the barge and boom system behind the proposed jetties.
- 6) This was an extremely short time frame in which HSERT could develop a more robust review of the plan.

Leading to the following recommendations:

- 1) IF the permit is granted, that it be on the condition that the rock jetties are removed when they are no longer needed as part of the response.
- 2) IF the permit is granted, identify the responsible party for impacts from the jetties and their removal.
- 3) Perform at minimum coarse morphodynamic modeling at the passes to determine effects on sediment transport.

Comments:

Denise Reed

- The sediment transport consequences of these structures must be considered. Our experience with hard structures in Louisiana is that they alter the configuration of the surrounding sandy shoreline. The models, I assume, consider the existing island features are 'hard' – these are not morphodynamic models. There needs to be some consideration of how the islands and/or the shape of the inlets will change as the flows change after rock placement. It is possible that this could make it even more difficult to contain oil moving through the inlet using the fixed barges as the flow paths change, new areas open up/close, etc. The flows are not the only concern here. Experts may be able to provide additional insight on this without the need for additional modeling.

- Given that these rocks will harden part of the shoreline during extreme conditions, e.g., the outflow from the Bay after a tropical storm, the softer parts of the system (e.g., the sandy barriers between the inlets) will then become the weak spot as the inlets have been hardened and constricted. It is possible that hardening the inlets makes breaching of the islands more likely – both resulting in additional erosion and more pathways for oil to move in from the Gulf.

- It is not clear to me how these structures will increase our ability to contain and remove the oil over and above the temporary barges. I understand that the barges will need to be moved during storms, but under those conditions the flows through the inlets will be much greater likely further limiting the ability to use traditional clean up techniques like booms and skimmers.

Unless these conditions have been considered I do not see how these structures can be seen to increase our ability to limit oil penetration into the estuary.

How these issues influence the permit is not my area. However it is important that expectations of the performance of these structures, both the benefits they might provide for cleanup and the potential consequences for the shoreline system, are thought through during the permit process. Recognizing the emergency situation facing the coast I understand that measures may need to be taken that would otherwise not be considered. But given the potential long term consequences of rock structures for sediment transport at our shoreline, the experience we have in other areas where they alter sediment transport pathways and can limit the ability of the barriers to 'heal' after storms, I strongly recommend that if a permit is issued for these structures it be **on the condition that they are later removed when no longer needed as part of the response**. Given that the longevity of the spill and oil movement through the system is currently unknown, I suggest ~ monthly meetings of an agency/permittee/expert group to consider whether the structures are still needed for oil spill response and to identify an appropriate time for their removal. The State's Horizon SERT could support such a group.

Doug Meffert

I think Denise's comments are very thorough and well-outlined. After going through the attachments and the presentation, in particular, I want to re-emphasize the lack of clarity on why the rock structures are better than barges/boom alone. the presentation has alternatives that with 1) jetties alone and 2) jetties with boom/barges but none of the alternatives evaluate booms/barges without jetties. If that option has been evaluated, it needs to be included. If the jetties are going to happen anyway, I agree completely with Denise's condition in **bold**.

Ioannis Georgiou

Comments on rocks and jetties in two Barataria Estuary tidal inlets (Pass Abel, and Quatre Bayou).

This is a purely a hydrodynamic study, without (or at least other parts are ongoing) any information to either infer, or provide insights into the morphological response of nearby non-hard shorelines and marshes, in combination with coastal processes operating in the project area.

General comments for rocks as oil capturing devices, impacts on operations, etc.

Continuity tells us that if we reduce the cross-sectional area and the forcing remains unchanged, velocities need to increase to satisfy continuity. We also know that faster moving currents will

erode sediment, especially if this persists over a relatively long time. The time period however, can be shortened if these structures are subjected to conditions outside their equilibrium state.

Their performance in capturing oil however still is unclear to me. I have the following concerns regarding this.

1. the primary concern is to reduce the large openings for attacking and capturing oil effectively. I understand that the rocks will reduce the linear extend of the operations, but with faster currents there is a risk of having to move farther inland to capture the oil, and that would still increase your distance over which operations take place.
2. Since there is oil at depth (another concern), and surface structures (barges, rigid pipe, or boom) cannot capture this, we have to acknowledge that by constricting inlets you will also accomplish this:
 - a. The faster currents will change the velocity profile (figure 1), and inadvertently increase the volume that skimmers would have to pump, per unit time during flood currents (gray box in fig 1)
 - b. The area below the gray box, integrated and subtracted from the pre-rock placement profile, would also increase the amount of subsurface oil coming through these inlets.

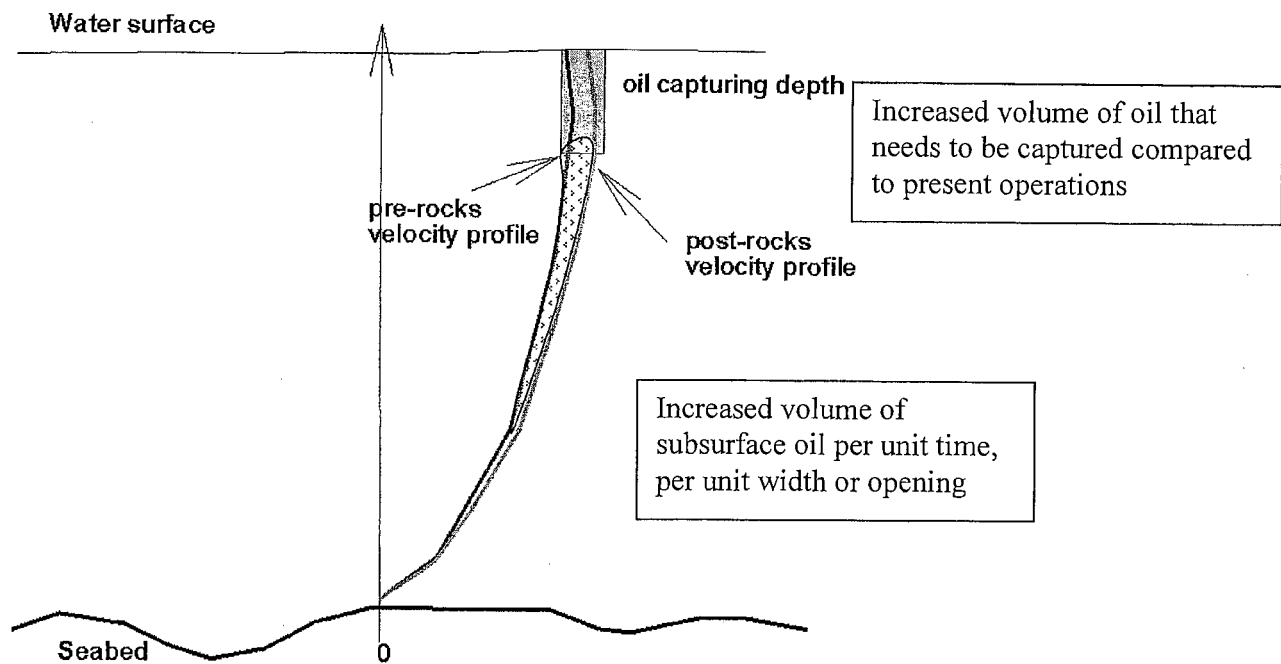


Figure 1 pre-post velocity profiles and impacts on operations

Analysis and modeling were performed with islands and jetties as non-overtopping (solid) boundaries. This obviously underestimates the performance of hard-soft connections; the

weakest point near connections of hard-soft combinations, the soft being the barriers and marsh vicinity will definitely erode and subsequently breached.

The 10 – 14 % change in the tidal prism; shown in the presentation as a reduction and therefore a positive point, is not entirely positive. During a storm, the storm prism (exchange of ocean with bay during a storm), is much more energetic, and will still be accommodated by the bay because the bay area did not change. Hence, risking island breaching, and marsh incisions in areas that may appear robust today. The science behind where this might happen is still complex.

If permitted, there needs to be clause in the permit for removal, and the identification of a responsible party for the financial aspects of removing the rocks.

MEMORANDUM FOR C/CEMVN-OS-S

SUBJECT: Request for Review, 5 Rock Dike Closures in Plaquemines/Jefferson Parish

In response to the email request for review of this subject emergency authorization package, Engineering Division submits the following comments/questions/recommendations. ERDC responses are included as a separate attachment to this memorandum.

1. Potential success of this effort directly impacted on proposed stone gradation to be used in construction, which is not provided in the permit package. Larger, poorly graded, gradations will result in larger voids; what is the anticipated permeability of these rock structures?
2. Rock volumes provided in the permit appear to be neatline estimates, and potentially underestimated for the purpose of cost estimating. Anticipated settlement needs to be calculated and incorporated into the permit quantities.
3. No bankline tie-in designs are provided in the permit package. Wave action and tidal surges will result in flanking of the structures, likely in a relatively short timeframe. This will ultimately result in erosion of the existing island platforms.
4. Proposed structures as shown indicate approximately a 50' bottom width and 10' top width. By nature, this will result in significant void space, allowing potential entrapment of oil. Is there a viable cleanup plan for these structures once oil gets embedded within? What happens to the rock structures if they have been "oiled"? How do we clean oil off the rock while they are in place? (In theory, you could scrape contaminated sand off of the sand berm and dispose of it somehow, how do you clean the rock?)
5. No marking or warning signs are proposed within the application provided. Although majority of these passes are not federally authorized waterways, they are viable navigation routes. Recommend signage be provided at all sites, especially in light of potential future settlement.
6. Are these to be permanent structures, or is future removal of these structures being considered? What happens after the oil spill threat is over? When will it be removed, and whose responsibility to remove? If removal part of the plan, it should be specified. Also, for overall coastal restoration, is it beneficial to leave the rock in place? There should be an exit strategy for the rock dikes for after the spill threat is over.

7. Future settlement is likely, resulting in submerged structures and/or rock barriers right at the water elevation. Who is responsible for future maintenance of these structures and what is the anticipated maintenance cycle and cost?

8. In this attempt to close tidal passes, applicant should anticipate scour immediately ahead of rock placement activities. It is recommended that a scour protection pad be maintained a minimum of 400' ahead of vertical construction to minimize scour within the proposed construction footprint.

9. Based on limited subsurface information we have in the area associate with the rock design section furnished (approx 14' high with 10' crown width with no berm) we anticipate usual settlement for building rock on soft CH during construction for Pass Abel, Four Bayou Pass and Cheniere Ronquille Pass, a separator layer (crushed stone, geotextile separator, etc) is recommended to placed below the rock to minimize settlement and hold the rock in place while settling. As for Caminada and Barataria Passes less settlement is expected compare to the other passes but a separator is recommended.

10. The proposal indicates a significant lift of rock in the majority of the construction efforts. Geotechnical stability analysis is recommended to verify of stability berms are needed for structure integrity. This could significantly increase project rock quantity.

11. Based on the permit drawings provided it is estimated that the proposed dike structures will approximately close the respective passes as follows:

Caminada Pass	60%
Barataria Pass	25%
Pass Abel	85%
Four Bayou Pass	80%
Cheniere Ronquille	78%

While the remaining passes show significant proposed closures, Barataria Pass is remaining 75% open upon completion of these efforts. It does not appear that the potential for rock launching into the navigation channel, and potential for future navigation concerns is warranted by this 25% closure. In all likelihood, any oil in this vicinity would bypass the small sections of proposed rock and follow currents into the Barataria Pass. Recommend deleting this reach from the proposed effort. The potential to close all passes as proposed and still maintain tidal flows without breaching or erosion of additional inlets (or significant deepening of the remaining passes) is doubtful.

12. If the permit is constructed as proposed, the potential for launching of stone at the terminal end of the dike extensions is likely. To preserve the structure integrity, a dike head or launch section may be considered to accommodate anticipated stone loss into the scour area.
13. What is the anticipated production rate, duration, and scheduling for this proposed effort?
14. The applicant should provide information on the effect of the proposed action on velocities and tidal prisms. Reducing the cross sections of all these passes could impact water circulation and salinity in Barataria Bay. Could the constriction of flow at Caminada Pass cause channel velocities to increase in the vicinity of the bridge to Grand Isle?
15. Does this plan change the tidal prism and if so how much? How do various passes exchange water with sections of the bay and how does plan alter that? What about the product of surface velocity and gap width this might be parameter to minimize to retard surface oil penetration how does plan change this.
16. The potential is for velocities to increase at all passes, some significantly depending on cross section reduction. This might just jet oil deeper into the bay. It will be more difficult to boom at the pass because of increased velocities.
17. It should be noted that the these passes have deepened over time; since 1980, the cumulative cross sectional area of Barataria, Quatre Bayou, Caminada, and Pass Abel have increased from approximately 25%. Depths have increased by 5 to 15 feet in all but Barataria Pass. (Source: Impacts of Rising Sea Level to Backbarrier Wetlands, Tidal Inlets, and Barrier Islands: Barataria Coast, Louisiana, FitzGerald et al, 2007). Because the cross sectional area for these passes is increasing over time, this increases the likelihood that there will be some response in cross sectional area, either in these passes or at other passes in the area.

ERDC Response

There are many potential problems that could arise with this design. The following is a listing of several potential issues that could arise from the implementation of this design.

- The presence of the rock structures may induce significant erosion in the passes, due to increased velocities. This erosion may undermine the structure, or flank the structures by eroding the barrier islands.
- The increased velocities through the cuts will increase the vertical mixing through the cuts, which in turn may mix the oil and oil products through the water column.
- If a hurricane strikes this region, the presence of rock structures is likely to induce breaching of the barrier islands, resulting in a potentially catastrophic loss of land.
- The structures may serve to restrict tidal flow and induce zones of low circulation, both of which could be detrimental to water quality.
- There is the potential for significant impacts on dissolved oxygen and salinity resulting from these constrictions and the changed in circulation associated with them.
- Rock jetties are porous, so significant oil and oil products could be transported through them

This list is by no means exhaustive. These are just a few of the potential issues that are immediately obvious upon first assessment of the plans.

Under normal circumstances, each of these issues would be addressed with extensive data collection and modeling analyses. However, since this is not possible in the current situation, it seems prudent to opt for the most conservative options that will accomplish the goal of mitigating the oil while minimizing the impacts to the existing conditions of this system.

Therefore, the first option should be to evaluate whether or not, and to what degree, the presence of these structures will improve the ability of skimmer and boom operations to capture the oil going through the passes. Have these operations been unsuccessful so far, and is there no option for increasing their effectiveness short of the structural option? Is there a way to quickly estimate the minimum change of flow cross-section required to reduce the footprint of the skimming and boom operations to a manageable size?

If the structures are built, we recommend several changes to the design that should help alleviate most of these concerns and should make the structures much more efficient at accomplishing their stated purpose of oil intrusion mitigation.

These design modifications are predicated on the assumption that the optimum design will result in maximum oil mitigation benefits with minimum impact to the existing circulation patterns.

- The jetties should be reduced in height from 4' to MHHW. This will allow overtopping during a significant storm or wind event, thereby reducing the pressure on the barrier islands themselves and minimizing the opportunity for breaching.
- Some of the rock saved in this reduction could be placed in the cuts, if it is determined that the velocities in the cuts will be significant enough to induce erosion. This will likely be the case under storm conditions.
- The placement of jetties or (preferably) booms perpendicular to the cuts and extending out into the gulf would be very beneficial to trapping oil. Modeling results indicate that the currents are likely to move parallel to the structures and enter the cuts, so the booms and/or jetties would trap the oil in a manner analogous to the trapping of littoral sediments. An example of this configuration is a natural spit connected to Dauphin Island, which has been shown to serve as an effective oil trap.
- The constrictions themselves should be sized such that they are small enough that the water passing through them can be effectively skimmed, but not so small that the currents are dramatically increased and the flow patterns are affected. Therefore, based on a quick and conservative analysis of the currents in the passes taken from existing model results, we recommend that the reduction in cross-sectional area at any of the cuts not exceed 50%. This should limit the change in the current speed to a level that may not be significantly detrimental, and may not dramatically change the circulation and morphology patterns (at least in the near term). The proposed cuts at Pass Abel and 4 bayou pass exceed this criterion as now designed. A possible alternative design for pass Abel is to have 2 cuts in the jetty, where skimming can take place at both cuts and the total cross sectional area change can be limited to 50%.
- Finally, extensive data collection in the vicinity of these passes should begin immediately and continue through the life of the project, to monitor discharge through the passes, water levels, basic water quality constituents (such as salinity, dissolved oxygen, and sediment oxygen demand). This monitoring program should begin pre-construction, to get some idea of the baseline conditions.

Laborde, Brad MVN

From: Ettinger.John@epamail.epa.gov
Sent: Wednesday, June 09, 2010 8:07 PM
To: Laborde, Brad MVN
Cc: Seth_Bordelon; richard hartman; Patrick Williams; Walther, David; Serio, Pete J MVN; Mayer, Martin S MVN; Honker.William@epamail.epa.gov; Keeler.Barbara@epamail.epa.gov; Landers.Timothy@epamail.epa.gov; Miller.Clay@epamail.epa.gov; Watson.Jane@epamail.epa.gov; Woodka.Janet@epamail.epa.gov; EOC_Water
Subject: Re: NOD-20 request; 5 Rock Dike Closures in Plaquemines Parish/Jefferson Parish

Brad,

This is a re-send of EPA's comments with minor format edits. (I have removed quotation marks and italics in the second paragraph.) Please use this version as our formal response. Thanks.

The central question is whether the potential adverse environmental impacts of this proposed project could outweigh potential benefits.

Blocking oil from entering estuaries and coastal wetlands is of utmost importance to all involved in the spill response. It must not, however, be done at the expense of the sustainability and productivity of the coastal environment.

We recommend the proposed emergency authorization be denied based on the potential for significant near- and long-term impacts on sediment processes, erosion rates, and fisheries. While the applicant has provided no assessment of such impacts, experience with rock projects elsewhere in coastal Louisiana suggests that there could be serious adverse unintended impacts to the aquatic environment, contrary to the goal of the project. We are available to work with the applicant to help quickly develop less environmentally damaging alternatives to the proposed project.

The proposed rock dikes, while well intended, could have long-term impacts contrary to the goal of protecting Louisiana's valuable coastal resources. Such potential impacts include increased erosion rates due to changes in sediment transport processes, reduced ingress and egress of fish and other aquatic organisms, and other potential negative impacts - including effects on navigation access and safety. The creation of such rock dikes could increase velocities and/or block sediment transport in the project area, thereby eroding the barrier islands further. Moreover, the extent to which this approach will effectively aid in blocking and removing oil from the aquatic ecosystem is uncertain.

To avoid the potential for long-term unintended adverse impacts of this and other proposals, we would recommend the Corps quickly review the feasibility of less environmentally damaging options. We realize given the nature of this crisis that the Parish government might not have the resources to provide adequate analysis and information to support such a review and recommend, therefore, that the Corps convene a meeting of agency and external experts to review this proposal and make recommendations to minimize potential downsides and maximize potential upsides. Such a meeting should include government and academic scientists with expertise in coastal geology, fisheries, and barrier island restoration, and should examine ideas based upon the efficacy in terms of potential at stopping shoreward movement of oil, the feasibility of alternative approaches, and potential environmental impacts.

Thanks in advance for your consideration of these comments. Please let me know if you have any questions or would like to discuss this matter further

John Ettinger
U.S. EPA Region 6

Laborde, Brad MVN

From: Brown, Jane L MVN
Sent: Wednesday, June 09, 2010 8:57 AM
To: Laborde, Brad MVN
Cc: Schneider, Donald C MVN
Subject: RE: MVN-2010-1271-EOO; NOD-20 Emergency Request

We have no objection.

-----Original Message-----

From: Schneider, Donald C MVN
Sent: Tuesday, June 08, 2010 9:33 AM
To: Brown, Jane L MVN
Cc: Laborde, Brad MVN
Subject: Fw: MVN-2010-1271-EOO; NOD-20 Emergency Request

Message sent via my BlackBerry Wireless Device

From: Laborde, Brad MVN
To: Schneider, Donald C MVN; Schindler, Paige P MVN
Sent: Tue Jun 08 09:31:00 2010
Subject: MVN-2010-1271-EOO; NOD-20 Emergency Request

Don and Paige,

Jefferson Parish has requested an emergency authorization to install rock jetties in 5 passes along the Jefferson and Plaquemines Parish barrier island chain to combat the Deepwater Horizon oil discharge. The rock jetties will be constructed to a +4.0' elevation at Caminada Pass, Barataria Pass, Pass Abel, Four Bayou Pass, and Chenier Ronquille Pass.

The permit drawings are attached for your review. I will send a hard copy as well. Please provide me with feedback by 3:00 pm on Wednesday June 9, 2010.

Thank you for your time,

Brad LaBorde
Environmental Resources Specialist
Eastern Evaluation Section
(504) 862-2225
(504) 862-2117 - fax

In order to assist us in improving our service to you, please complete the survey found at <http://per2.nwp.usace.army.mil/survey.html> <<http://per2.nwp.usace.army.mil/survey.html>>

Laborde, Brad MVN

From: Schindler, Paige P MVN
Sent: Tuesday, June 08, 2010 9:55 AM
To: Laborde, Brad MVN; Schneider, Donald C MVN
Subject: RE: MVN-2010-1271-EOO; NOD-20 Emergency Request

Brad, we have no real estate interests in the proposed work areas, no RE instrument will be required. Thanks, Paige

-----Original Message-----

From: Laborde, Brad MVN
Sent: Tuesday, June 08, 2010 9:31 AM
To: Schneider, Donald C MVN; Schindler, Paige P MVN
Subject: MVN-2010-1271-EOO; NOD-20 Emergency Request

Don and Paige,

Jefferson Parish has requested an emergency authorization to install rock jetties in 5 passes along the Jefferson and Plaquemines Parish barrier island chain to combat the Deepwater Horizon oil discharge. The rock jetties will be constructed to a +4.0' elevation at Caminada Pass, Barataria Pass, Pass Abel, Four Bayou Pass, and Chenier Ronquille Pass.

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Thank you for your time,

Brad LaBorde
Environmental Resources Specialist
Eastern Evaluation Section
(504) 862-2225
(504) 862-2117 - fax

In order to assist us in improving our service to you, please complete the survey found at <http://per2.nwp.usace.army.mil/survey.html> <<http://per2.nwp.usace.army.mil/survey.html>>

The U.S. Fish and Wildlife Service (Service) is in receipt of your 09:14 AM, June 8, 2010, electronic transmittal requesting comments pertaining to emergency authorization of Jefferson Parish Government's proposal to construct rock jetties in 5 passes along the Jefferson and Plaquemines Parish barrier island chain. The rock jetties would be constructed to a +4.0' elevation at Caminada Pass, Barataria Pass, Pass Abel, Four Bayou Pass, and Chenier Ronquille Pass. The proposed work is intended to protect wetlands from the oil spill associated with the Deepwater Horizon (i.e., Mississippi Canyon 252) blowout. The comments below are submitted in accordance with the technical assistance provisions of the Fish and Wildlife Coordination Act (FWCA; 48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), but do not constitute the report of the Secretary of the Interior as required by Section 2(b) of that Act. In addition, these comments pertain to the Migratory Bird Treaty Act (MBTA) (40 Stat. 755, as amended; 16 U.S.C. 703 et seq.), and provide emergency informal consultation information under the authority of the Endangered Species Act (ESA) of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.) in anticipation of emergency consultation.

The Service is committed to the protection of Louisiana's wetlands from ongoing land loss and the added impact of the oil spill. We also remain committed to working closely with all agencies involved in spill response efforts to further explore alternatives and alternative features in order to reduce the current degree of risk and uncertainty associated with any oil spill response activities.

On May 12, 2010, the Service provided a memo transmitting ESA emergency consultation recommendations to Federal Agencies. If the Corps determines that emergency authorization is warranted, in addition to the guidance provided in that memo, our office would like to add the following recommendations specifically designed to protect the Federally threatened piping plover and its critical habitat (CH):

1. Piping plover CH includes Elmer's Island, Grand Isle, and East Grand Terre. To the maximum extent possible, avoid impacts to island habitat from the dune/vegetation line to mean low low water (i.e., within CH). It is recommended that the jetties be constructed before July 15, prior to piping plover wintering season and fall migration. If this is not possible, in order to minimize disturbance to feeding and resting piping plovers, construction activity should be limited in CH to the maximum extent possible. Post-construction monitoring of down-drift shorelines should be conducted to determine the impact of these jetties on CH.
2. The proposed jetties should be removed immediately once the threat of oil is no longer imminent, as they could result in negative impacts to piping plover CH by disrupting long shore sediment transport and altering sediment deposition patterns. Areas disturbed by jetty construction should be restored to pre-construction conditions.

The Migratory Bird Treaty Act prohibits the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests, except when specifically authorized by the U.S. Department of the Interior. While the Act has no provision for allowing unauthorized take, the Service realizes that some birds may be killed during emergency response activities even if all reasonable measures to protect birds are implemented. The

Service's Office of Law Enforcement carries out its mission to protect migratory birds through investigations and enforcement, as well as by fostering relationships with individuals, companies, and industries that have taken effective steps to minimize their impacts on migratory birds, and by encouraging others to enact such programs. It is not possible to absolve individuals, companies, or agencies from liability even if they implement avian mortality avoidance or similar conservation measures. However, the Office of Law Enforcement focuses its resources on investigating and prosecuting individuals and companies that take migratory birds without regard for their actions or without following an agreement such as this to avoid take.

The Service suggests the following recommendations as mitigative measures to minimize project-associated impacts to migratory birds:

1. To minimize disturbance to colonies containing nesting gulls, terns, and/or black skimmers, the Service typically recommends that all activity occurring within 650 feet of a colonial nest site be restricted to the non-nesting period (i.e., September 16 through April 1). The Service should be notified when colonial bird nest sites are identified, and no activity should occur on the beach within a recommended buffer zone during the nesting season. With the Service's assistance, a qualified observer should monitor each colonial nest site to determine the minimum distance at which construction can occur without disturbing nesting birds. That distance could be utilized as the construction zone buffer for that nesting area and a boom(s) could be placed in lieu of the jetty within that buffer distance until nesting is complete, at which time the jetty can be completed.
2. Birds would likely utilize the jetties as resting/fishing perches. If the jetties are oiled, birds attracted to them will likely come in contact with oil as well. The applicant should use a deterrent (e.g., reflective streamers or other specialized roosting deterrent) in an effort to keep birds off the jetties. At a minimum, weekly inspection and replacement of deterrents should be undertaken. If deterrents are not totally effective, periodic cleaning of the jetties should be undertaken to reduce the potential for oiling of birds.



BOBBY JINDAL
GOVERNOR

State of Louisiana

DEPARTMENT OF WILDLIFE AND FISHERIES
OFFICE OF WILDLIFE

ROBERT J. BARHAM
SECRETARY

JIMMY L. ANTHONY
ASSISTANT SECRETARY

June 9, 2010

Mr. Pete J. Serio, Chief
Regulatory Branch
United States Army Corps of Engineers
P. O. Box 60267
New Orleans, LA 70160-0267

RE: *Emergency Permit Jefferson and Plaquemines Parishes Barrier Island Chain Rock Jetties*
Applicant: Jefferson Parish
Notice Date: June 08, 2010

Dear Mr. Serio:

The professional staff of the Louisiana Department of Wildlife and Fisheries (LDWF) has reviewed the above referenced Emergency Notice. Based upon this review, the following has been determined:

A comparison of historic photography indicates that islands adjacent to Pass Abel, Four Bayou Pass, and Cheniere Ronquille Pass are eroding northward. Rock dikes installed at these passes are likely to be abandoned as the islands continue to migrate northward. The structures would then be rendered ineffective.

Hard structures, such as rock dikes, can reflect wave energy thereby causing increased erosion in those transition areas where hard structures end and natural ground begins. If not adequately addressed in project design, construction of the proposed rock dikes could result in a rapid increase in erosion along the flanks of the structures.

Also, field observations indicate that rock dikes are not impervious to oil. A rock dike overlain with filter cloth and capped with more rock may prevent oil from passing through the structure.

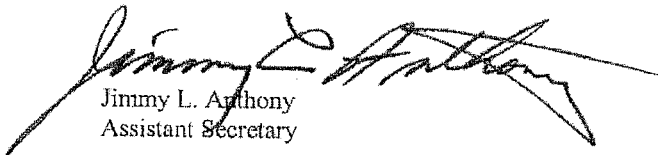
Sand berms constructed in front of the rock jetties may provide an additional layer of protection from oil seepage through the structures (some sand berms were authorized under EUA 10-037). Applicant shall be required to monitor and repair all areas that are eroded as a result of the placement of the rock structures.

The Louisiana Natural Heritage Database indicates the presence of bird nesting colonies within one mile of this proposed project. If the project will be occurring during the nesting season (Feb 16th-Sept. 15th) please consult with the Michael Seymour the Louisiana Natural Heritage Program Ornithologist at 225-763-3554

Our Database also indicates that several federally listed or state rare species and natural communities are known to occur in the area. These species and communities include sea piping plover, grass beds, coastal mangroves, manatees, diamondback terrapin and sea turtles.

The Louisiana Department of Wildlife and Fisheries appreciates the opportunity to review and provide recommendations to you regarding this proposed activity. Please do not hesitate to contact Habitat Section biologist Matthew Weigel at 225-763-3587 should you need further assistance.

Sincerely,



Jimmy L. Anthony
Assistant Secretary

mw/cm/cm

c: Christy McDonough, Biologist Supervisor
Matthew Weigel, Biologist
Carolyn Michon, Biologist
EPA Marine & Wetlands Section
USFWS Ecological Services

Laborde, Brad MVN

From: Jamie Phillippe [Jamie.Phillippe@LA.GOV]
Sent: Wednesday, June 09, 2010 3:01 PM
To: Laborde, Brad MVN
Cc: Chris Piehler; Dwight Bradshaw; Jeff Dauzat; Cheryl Nolan; Melvin "Mitch" Mitchell; Tom Killeen; Gary Aydell; Ronnie Bean; Betty Brousseau; Sanford Phillips; Rodney Mallett; _DEQ-
Subject: BP Deepwater Horizon Oil Spill
RE: NOD-20 request; 5 Rock Dike Closures in Plaquemines Parish/Jefferson Parish

Brad,

DEQ has the following comments concerning the rock jetties project:

- We are unsure if the rock jetties will effectively prevent oil from entering Barataria Bay, &
- To have the rock jetties removed after the oil spill situation has abated.

Thanks,

Jamie Phillippe

Louisiana Department of Environmental Quality

401 Water Quality Certifications

From: Laborde, Brad MVN [mailto:Brad.Laborde@usace.army.mil]
Sent: Tuesday, June 08, 2010 9:00 AM
To: Seth_Bordelon@fws.gov; Balkum, Kyle; richard.hartman@noaa.gov; John Ettinger - EPA; Jamie Phillippe; Patrick Williams; Butler, Dave; Joseph "Jay" Pecot; Christine Charrier; Walther, David; Karl Morgan
Cc: Serio, Pete J MVN; Mayer, Martin S MVN
Subject: NOD-20 request; 5 Rock Dike Closures in Plaquemines Parish/Jefferson Parish

All,

Jefferson Parish has requested an emergency authorization to install rock jetties in 5 passes along the Jefferson and Plaquemines Parish barrier island chain to combat the Deepwater Horizon oil discharge. The rock jetties will be constructed to a +4.0' elevation at Caminada Pass, Barataria Pass, Pass Abel, Four Bayou Pass, and Chenier Ronquille Pass.

The permit drawings are attached for your review. Please provide your comments by 3:00 pm on Wednesday June 9, 2010.

Thank you,

Brad LaBorde
Environmental Resources Specialist
Eastern Evaluation Section
(504) 862-2225
(504) 862-2117 - fax

In order to assist us in improving our service to you, please complete the survey found at <http://per2.nwp.usace.army.mil/survey.html>

Laborde, Brad MVN

From: Farabee, Michael V MVN
Sent: Wednesday, June 09, 2010 2:02 PM
To: Laborde, Brad MVN
Subject: FW: Rock dikes

Michael V. Farabee
New Orleans District
Regulatory Branch
Chief, Eastern Evaluation Section

(504) 862-2292
(504) 862-2117 Fax

In order to assist us in improving our service to you, please complete the survey found at:
<http://per2.nwp.usace.army.mil/survey.html>

-----Original Message-----

From: Karl Morgan [mailto:Karl.Morgan@LA.GOV]
Sent: Wednesday, June 09, 2010 11:32 AM
To: Joseph "Jay" Pecot; Regina Staten
Cc: Farabee, Michael V MVN
Subject: FW: Rock dikes

For whomever is handling the rock dikes, we need a condition that they be removed within 6 months of the end of the emergency clean-up activities.

From: MWinter [mailto:MWinter@jeffparish.net]
Sent: Wednesday, June 09, 2010 11:04 AM
To: Karl Morgan
Subject: Re: Rock dikes

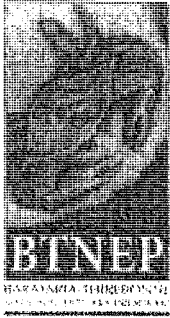
Karl,

Rocks are an emergency measure and will be removed after the emergency has passed if warranted.

From: Karl Morgan
To: MWinter
Sent: Wed Jun 09 09:41:52 2010
Subject: Rock dikes

Marnie,

Is the intention to remove the rocks after the spill crisis or does the Parish intend to leave them in place?



June 10, 2010

Mr. Pete Serio, Chief Regulatory Branch
U.S. Army Corps of Engineers
New Orleans District
P.O. Box 60267
New Orleans, Louisiana 70160-0267

Subject: Jefferson Parish Emergency Authorization for Proposed Rock Dikes in Barataria Basin Passes

Dear Mr. Serio:

While the Barataria-Terrebonne National Estuary Program strongly supports the restoration of the Barataria Basin barrier shoreline (as well as the Terrebonne Basin barrier islands), we must respectfully object to the issuance of this Emergency Authorization requested by Jefferson Parish due to the severe impacts to the Barataria Basin that these rock dikes would cause. The Emergency Authorization was requested by Jefferson Parish to construct rock dikes which would considerably narrow the width of Caminada Pass, Barataria Pass, Pass Abel, Four Bayou Pass, and Chenier Ronquille Pass. The reason given for the permit request was to "reduce the inland movement of oil from the BP Deepwater Horizon Oil Spill..." The reasons for our objection to this permit are as follows:

The Rock Dikes would facilitate, not lessen, movement of oil from offshore into the internal estuaries.

Reducing the width of the barrier island passes either with rock dikes or sunken barges without significant restoration of the internal wetlands beforehand would result in increased velocities of water flowing through the passes during a given tidal cycle. This would result in any oil that may remain in the open Gulf when these rock dikes are completed to flow at exceptionally higher velocities, moving oil farther up into our estuaries.

The concept of tidal prism is a well-studied, scientific principal. The water flowing into, and out of an estuary in a given tidal cycle (the tidal prism) has increased substantially over the years. This increased tidal flow is directly related to the amount of wetland loss we have experienced in the internal basins. The conversion of wetlands to open water allows for an increased tidal flow through the passes. The higher volumes and quicker velocities erode the passes making the barrier islands smaller. Simply narrowing the size of the passes will only serve to force water flowing through them at faster speeds. The substantially increased flow of water would carry oil from the Gulf at equally increased speeds, making the oil more difficult to be managed by boats pulling booms with skimmers. A well-established guideline in oil spill response is that booms are ineffective at trapping oil in currents greater than 0.7 knots.

The Rock Dikes or sunken barges in the passes will increase erosional forces substantially.

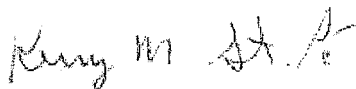
The increased flow of water flowing into and out of the Barataria estuary caused by the rock dikes or sunken barges placed in the passes may result in severe erosion to occur along the back barrier marshes. The western shoreline of Caminada Pass will likely be substantially affected. The recently accreted sand "spit" along the western shoreline of Caminada Pass as well as the camp sites along that shoreline will most likely be severely eroded. Increased velocities may potentially compromise the stability of the Caminada Bridge, although this would have to be verified by structural engineers. The entire hydrology of the modified passes will undoubtedly change considerably and will change the form through erosion of the ends of Grand Isle, Grand Terre, East Grand Terre, and other islands. The passes will become much deeper in order to accommodate the increased volumes of water passing through them.

Final Comments

The wish to protect our estuaries from the petroleum flowing out of the Gulf floor from the Deep Water Horizon spill is completely and utterly understandable. This desire is completely shared by the Barataria-Terrebonne National Estuary Program. But we can not allow our quest for remedies against this latest assault on our national estuary, the petroleum from the Deep Water Horizon, to leave us with extensive and lasting damages. Our wetland system, a system that has protected our communities and provided for a richly productive place to live for generations, has been weakened severely by past human modifications. We all know what those modifications to our natural system have been. Ironically, many of those human modifications have been to facilitate and promote oil and gas production. The people living here today, the people who love this place must remain unified in our desire and efforts to protect it. We have the ability to restore this place based on the principals of good science combined with the cultural and social needs of those of us who live here. The oil will be cleaned from our marshes. We will recover from this. We can not let our zeal to protect our wetlands from oil alter it beyond repair.

Thank you for the opportunity to comment on this Emergency Authorization.

Sincerely,



Kerry M. St. Pé
Program Director

Cc: BTNEP Management Conference Members (via email)
Janet Woodka, Environmental Protection Agency (via email)
National Estuary Program Directors (via email)

LAKE PONTCHARTRAIN BASIN FOUNDATION
SAVE OUR COAST SAVE OUR LAKE

20 YEARS OF SAVING OUR LAKE AND COAST
P.O Box 6965 Metairie, LA. 70009-6965 - SaveOurLake.org

To: Mr. Pete Serio
Via email: pete.j.serio@usace.army.mil & Brad.Laborde@usace.army.mil
USACE -New Orleans District
PO BOX 60267
New Orleans, LA 70160-0267

Date: June 15, 2010

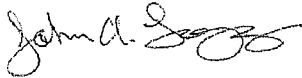
**RE: Emergency Authorization for the proposed Rock Dikes in Barataria Basin–
Jefferson Parish**

Dear Mr. Serio:

The proposed rock dikes to temporarily close tidal passes along the Barataria Basin Gulf shoreline threaten the very resources they are proposed to protect, and for that reason we oppose approval of a permit to construct these structures. Our primary concern is that tidal flow will work against the intent of the project. A reduced cross-sectional area will dramatically increase the velocity of normal tidal currents and scour the channel. A greater threat would be tidal flow driven by a lower pressure system such as a tropical depression or hurricane. In this case, the remaining channel will be enlarged and structures a may be undermined. It is also possible that overtopping water will scour around the placed blockage in the channels and threaten the adjacent gulf islands or shoreline. This could be similar to the damage caused by Hurricane Katarina in which massive damage was at the transitions from hard structure to soft (soil) levees. Water will take the path of least resistance and in so doing, erode the adjacent landscape. The result may be new breaches and tidal inlets across the gulf shoreline. This poses an unacceptable risk to the coast, and would increase the risk of oil penetrating the coast.

Please call or email for any questions.

Regards,



John A. Lopez Ph.D.
Director – Coastal Sustainability Program
Lake Pontchartrain Basin Foundation
504 421-7348 johnlopez@pobox.com

CC: John Ettinger