ATTACHMENT 2

MOBILE BAY SIERRA CLUB COMMENT LETTER

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MOBILE BAY SIERRA CLUB

P.O. BOX 2682 MOBILE AL 36652

June 24, 2020

Mr. Chris Blankenship, Commissioner
Alabama Department of Conservation and Natural Resources
64 North Union Street, Suite 468
Montgomery, AL 36130
chris.blankenship@dcnr.alabama.gov

RE: Alabama Barrier Island Restoration Assessment (ABIRA) Final Report, May 2020

Dear Commissioner Blankenship:

The Mobile Bay Sierra Club welcomes completion of the ABIRA Final Report and appreciates the opportunity to offer our organization's views on that important document which has the potential to positively influence the future of Alabama's western Gulf coastline. Our letter is divided into four sections: (1) comments on the report; (2) identification of a critical deficiency in the report; (3) our recommendations on specific restoration measures that should receive priority for implementation; and (4) what happens next?

Comments on Report. Since the ABIRA study has been completed and the report finalized, we question the value of submitting comments at this point because we are uncertain as to what actions will be taken to meaningfully address them. For that reason, our comments are limited to pointing out the following areas within the report that would benefit from some additional work to enhance the clarity and adequacy of the information presented:

1. Pages 6 and 20. Task 4 was conducted to "…update the Sediment Budget Analysis to calculate Volumetric Changes". However, Section 3.4 does not provide a focused discussion of the results of the sediment budget analyses, including the identification of the volume and fate of littoral sediments that naturally move from the east into the study area and the west out of the study area. Such a discussion should address the influence of Corps-created historic and continuing sinks for littoral drift sands (i.e.,

Sand Island Beneficial Use Area, Feeder Berm, and Mobile Ocean Dredged Material Disposal Site). Because of the historic controversy surrounding allegations maintenance of the Mobile Harbor Bar Channel interrupts the littoral drift transport of sands from the Fort Morgan peninsula that would be naturally bypassed across Mobile Pass Dauphin Island in the absence of dredging, the results of the sand budget analysis are critical and merit a clear and thorough explanation in the report. This is emphasized by the fact that the most costly restoration measures are directed at remedying the sediment deficit needs of the ebb tidal delta shoal and Dauphin Island.

2. Page 15. The statement is made that "…the imagery analysis does not provide the information needed to fully link shoreline change with volumetric gains or losses of island sediment." That deficiency reflects a critical methodology weakness in the overall study. If analysis of the imagery considered was inadequate to link observed shoreline change with gains or losses of island sediment, it would be reasonable to expect that a more appropriate analysis method would have been selected and applied to more effectively "…link shoreline change with volumetric gains or losses of island sediment…", an understanding of which is critical to achieving the study's sustainability objective for Dauphin Island.

3. Sections 3.3.2 and 3.5.4. The scale of the habitat figures is too small to allow the information contained therein to be easily interpreted. When the sizes of the present pdf images are expanded, they often lose clarity. If possible, we suggest higher resolution images for the habitat figures be added to the report website to improve the utility of the images.

4. Section 3.6.2 and 4. For each of the ebb tidal shoal, Gulf beach restoration, and back-barrier and marsh restoration measures, an estimate is provided for how much of the sand placed during initial construction would remain at the end of 10 years. Those discussions typically state the missing sand "…would be transported to the lee and along the Gulf-side…" of the shoal or Dauphin Island, requiring nourishment at variable time intervals over either 20- or 50-year project lives. For the two ebb tidal shoal measures, the discussions also state the analyses indicated, "…there was no noticeable change in the rates of sediment transport from…" either Sand or Pelican Island to Dauphin Island. The latter statement does not match with (1) long-term observations of morphodynamic changes in the Dauphin Island system; (2) our understanding how natural sand bypassing across tidal inlets maintain downdrift beaches; or (3) why beach nourishment projects are pursued in many cases to reverse interruptions in littoral drift processes created by either jetties at inlets and/or dredging of navigation channels through inlets. To gain an appreciation of the high volume of littoral drift sands that do in fact move from the Sand/Pelican Island shoal to Dauphin Island on an annual basis, all one has to do is compare the enclosed February 2008 and

May 2010 aerial photos of the Dauphin Island fishing pier. Between the dates of those two photos, Sand/Pelican Island became welded to Dauphin Island, resulting in the pier becoming completely enveloped within sand moved from the shoal and producing a tremendous increase in the width of the downdrift shoreline fronting the three condos in this area. Over the last decade, Sand/Pelican Island has continued to erode to the point that less than a mile of the island remains today, while the increased width of the Dauphin Island shoreline has been maintained by the eroding sands that are steadily being transported from the ebb tidal shoal. In a few years when the remnants of Sand/Pelican Island completely merge with Dauphin Island, the erosion of this portion of Dauphin Island will resume, one outcome of which will be a marked reduction in the width of the Gulf shoreline now fronting the condos. This important observation causes us to question the ability of the numerical model(s) used to reflect real world conditions and events.

5. Section 3.6.2. Most of the ebb tidal shoal and Gulf beach restoration measures identify the Mobile ebb tidal shoal as a potential source of initial construction sands. However, the report neither identifies the candidate locations within the shoal from which the sands would be mined nor includes an analysis of the consequences that could result to the overall Mobile ebb tidal delta system if sands are mined for placement at another location. Could mining of ebb tidal delta sands cause other unforeseen erosion problems as the system readjusts to the removal of a significant volume of sands? The scientific literature contains many studies documenting the adverse effects sand mining (even in connection with beach nourishment projects) can have on inlet ebb tidal deltas. Because the report fails to analyze the potential effects from mining ebb tidal shoal sands, the Mobile Bay Sierra Club cannot now support those construction options that depend upon the Mobile ebb tidal shoal as the source of initial construction sands. We do not want to trade one known significant erosion problem for another potential problem that has not been adequately evaluated.

Critical Deficiency in the Report. The report does a credible job in evaluating the role climatic events (i.e., sea level change (SLC) and coastal storms) unquestionably play in the erosion of Dauphin Island's Gulf shoreline. However, the report fails to evaluate the effects maintenance of the Mobile Harbor Bar Channel has in interrupting the natural transport of littoral drift sands across the Mobile Pass Inlet. That critical deficiency was thoroughly pointed out in our December 20, 2017 letter (copy enclosed) commenting on the August 2017 Interim Report. Our comments on this matter were completely disregarded in the subsequent work to the produce the Final Report.

The historic effect that maintenance of the Bar Channel has on the Mobile Pass Inlet littoral drift system can be appreciated by examining the Corps' dredging and disposal records for the 37-year period between 1980 and 2016, during which a total of 29,442,209 yds^3 of sands

were dredged from the channel. For the 20-year period between 1980 and 1999 alone, a period that included deepening the channel from 42 feet to 49 feet, all of the dredged sands (i.e., 14,672,078 yds^3, representing an average annual volume of 733,601 yds^3) were transported for disposal in the deep waters of the Gulf. Thus, for two decades, the littoral drift flow of sand across the Mobile Pass Inlet was completely disrupted. After 1999, the Corps began placing the dredged sands in the so-called Sand Island Beneficial Use Area (SIBUA). Over the 17-year period between 1999 and 2016, 13,124,045 yds^3 of sands were placed in the SIBUA, representing an average annual volume of 772,003 yds^3. At a February 22, 2018 public meeting on further deepening of the Mobile Harbor project, the Corps reported the average annual maintenance dredging volume to be 624,000 yds^3. Of major significance, the Corps also acknowledged for the first time that 52% (i.e., 324,480 yds^3) of the average annual volume placed in the SIBUA was accumulating within the site instead of being reincorporated into the littoral drift system. Based on these facts, the Mobile Bay Sierra Club believes the Corps' historic maintenance disposal practices over the last 37 years have significantly disrupted Mobile Pass Inlet sand budget. We also believe that impact has played a corresponding major role in the steady disappearance of Sand/Pelican Island complex and its associated sub-aerial shoal, as well as the erosion of Dauphin Island's Gulf shoreline. Our position is supported by Morton's 2007 U.S. Geological Survey report[1/] and his 2008 published paper[2/] and the Corps' especially relevant 1978 report[3/]. Since the timeframe evaluated in the ABIRA was limited to the "recent era (i.e. 1987–2015)…" to analyze "…sediment gains and losses in the nearshore areas of Dauphin Island and Mobile Pass…", all of the data considered reflected a littoral drift system that was significantly disrupted by the Corps' maintenance activities. No information is presented in the report analyzing how the study area's sand budget would function naturally in the absence of maintenance of the Bar Channel in order to identify how much of the erosion problem is caused by climatic conditions and events and how much to maintenance of the Bar Channel.

Numerous studies published in reputable scientific and coastal engineering journals point out deficiencies in sediment supply resulting from various anthropogenic actions (including dredging) increase the vulnerability of barrier islands and diminish their resilience to the effects of sea level change and coastal storms. We would be more than happy to provide you with a list of such references. What is particularly disturbing is that the ABIRA Team chose to selectively quote the findings of Morton's 2007 U.S. Geological Survey report[1/] and 2008 published paper[2/] both of which stated:

[1/] Morton, R.A. 2007. Historical Changes in the Mississippi-Alabama Barrier Islands and the Roles of Extreme Storms, Sea Level, and Human Activities. Open File Report 2007-1161. U.S. Geological Survey, Coastal and Marine Geology Program. St. Petersburg, Florida.

[2/] Morton, R.A. 2008. Historical Changes in the Mississippi-Alabama Barrier-Island Chain and the Roles of Extreme Storms, Sea Level, and Human Activities. *Journal of Coastal Research*, 24(6), 1587–1600. West Palm Beach (Florida), ISSN 0749-0208.

[3/] USACE. September 1978. Mobile County (Including Dauphin Island) Feasibility Report for Beach Erosion Control and Hurricane Protection. Mobile District, Mobile Alabama.

> "…The principal causes of land loss [of the Mississippi-Alabama barrier islands, including Dauphin Island] are frequent intense storms, a relative rise in sea level, and a **sediment-budget deficit** [emphasis added]… Historical land-loss trends and engineering records show that progressive increases in land-loss rate correlate with nearly simultaneous deepening of channels dredged across the outer bars of the three tidal inlets maintained for deep-draft shipping. This correlation indicates that channel-maintenance activities along the MS-AL barriers have impacted the sediment budget by disrupting the alongshore sediment transport system and progressively reducing sand supply. Direct management of this causal factor can be accomplished by strategically placing dredged sediment where adjacent barrier-island shores will receive it for island nourishment and rebuilding."

Further, the ABIRA Team completely ignored both the existence of and findings from the Corps' 1978 report[3/] that stated:

> "…If it assumed that none of the [Mobile Bar Channel maintenance] dredged material returns to shore and that this material would otherwise have been deposited on the shore of the western part of Dauphin Island, the total recession of the shoreline attributable to maintenance dredging of the bar channel since 1939 would be about 119 feet…Considering maintenance dredging since 1966, the average loss of shoreline width per year attributable to maintenance dredging of the outer bar would be about 4.6 feet per year…It can be surmised that the removal of 264,000 cubic yards of material per year from the outer bar has a significant effect on the shoreline of Dauphin Island…Erosion occurring along the western 11 miles of Dauphin Island is probably attributable mainly to rising sea levels and maintenance dredging of the ship channel through the bar fronting the Mobile Bay entrance channel."

By intentionally ignoring contravening information that maintenance of the Bar Channel contributes to the Dauphin Island erosion problem, we can only conclude that the Corps' involvement in the ABIRA has adversely influenced the study's objectivity. We say this because the Corps has a major conflict of interest in view of its role as the agency responsible for constructing and maintaining the Mobile Harbor project, as well as being a defendant in a 2000-2009 lawsuit that alleged erosion of Dauphin Island is caused by the Mobile Harbor project. To settle that lawsuit, in 2009, the Corps agreed to pay the plaintiffs $1.5 million in

exchange for the plaintiffs agreeing to never sue the Corps again over the erosion issue. In reaching that settlement, no finding of fault or innocence was assigned to the Corps. Therefore, it would appear obvious that the Corps is not interested in pursuing any course of action that could result in the potential determination that maintenance of the Bar Channel is contributing to the erosion of Dauphin Island. Hence the ABIRA Final Report assumes sea level change (SLC) and coastal storms are responsible for the erosion problem, while completely ignoring any consideration of the potential contribution to the problem from maintenance of the Bar Channel.

Restoration Measures Recommended for Priority Implementation. Notwithstanding our above stated comments and concern, the Mobile Bay Sierra Club believes the Final Report identifies an appropriate range and scope of restoration measures for consideration. According, our organization wishes to go on record as supporting the following restoration measures for the highest priority for implementation:

- Ebb Tidal Shoal Restoration
  - Pelican Island Southeast Nourishment
  - Sand Island Platform Nourishment and Sand Bypassing
- Gulf Beach Restoration
  - West End and Katrina Cut Beach and Dune Restoration (with No Buyouts)
  - East End Beach and Dune Restoration
- Back-Barrier and Marsh Restoration
  - Marsh Habitat Restoration Behind Katrina Cut

Since a major objective of the ABIRA was the identification of restoration measures that "….ensure the sustainability of the barrier island feature", we strongly believe the above five measures taken together provide the most appropriate approach to accomplish that objective. Strengthening Dauphin Island's Gulf shoreline should be paramount to allow the island to continue to serve as the mainland's first line of defense from tropical storms, while continuing to be the sheltering barrier necessary for the survival and propagation of the many critical estuarine habitats and resources occurring within Mississippi Sound. It is our view that these five measures must receive high priority for implementation. It also must be recognized that the success of all the other marsh creation and many of the land acquisition measures considered depend upon a strengthened Dauphin Island if they are to have any chance of long-term success. Pursuing such measures in the absence of strengthening the island would not represent prudent decision-making.

As you are aware, as a guiding policy, the Sierra Club does not favor development of fragile barrier islands. Nevertheless, we have elected to support the "no buyout" option for the West End and Katrina Cut Beach and Dune Restoration measure. Our position is primarily based upon our concern that the "voluntary buyout" of the 225 private properties could create an

inordinate delay in the design and implementation of this measure, as well as our concern that too many property owners may elect not to sell, thus compromising the eventual extent of the planned dune restoration work. Further, we are concerned that the estimated $90,000,000 cost to acquire and demolish all structures could be a "deal killer".

Based upon the initial construction cost presented for these five measures in Tables 6, 7, 8, 11, and 14, the combined total cost to construct all five measures could be around $358,000,000, depending upon the source of construction sands selected. While we fully appreciate this is a significant sum, we would like to remind you that the Federal government recently spent almost a half billion dollars to restore the eroding neighboring Mississippi barrier islands as a result of the effective leadership at all levels of that state's elected officials and agencies. In that connection, we would like to ask you to consider the question: Is Alabama's only barrier island and the numerous important functions it provides any less important looking forward into the future than Mississippi's four barrier islands? Lastly, it appears the most appropriate source of funds to implement these five measures are the oil spill monies controlled by the Alabama Gulf Coast Recovery Council. To date, many projects have already been funded with those monies, many of which had absolutely nothing to do with 2010 Deepwater Horizon Oil Spill event. Of Alabama's coastal resources, Dauphin Island was the most directly affected by the oil spill and its clean-up activities. As a result, the Mobile Bay Sierra Club strongly believes the Council should proactively move forward to expeditiously fund and construct all five above named restoration measures.

What Happens Next? We understand the State of Alabama has the leadership role in deciding which of the restoration measures will be funded and constructed. However, to date, the State has provided no information explaining the strategy and processes that will be followed to select projects for implementation and what role the public will be allowed to play in the decision-making process. Therefore, we respectively request that such information be developed and widely distributed soon.

In conclusion, the Mobile Bay Sierra Club greatly appreciates the opportunity to review and comment on the ABIRA Final Report. Because of our intense interest in the restoration of Dauphin Island, we stand ready to assist in any way we can to help the State move the project selection process forward. Should you wish to contact me, I can be reached at 251-421-3484.

Sincerely

Joseph Mahoney, Chair, Executive Committee
Mobile Bay Group Sierra Club

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MOBILE BAY SIERRA CLUB

P.O. BOX 2682 MOBILE AL 36652

December 20, 2017

Mr. Chris Blankenship
Alabama Department of Conservation of Natural Resources
64 Union Street
Montgomery, AL 36130

Dear Mr. Blankenship:

This is to provide the following Sierra Club's comments on the Alabama Barrier Island Restoration Assessment (ABIRA) based on our review of the August 2017 Interim Report and information presented at the December 11 Public Meeting on the report.

Comment 1. The Interim Report makes no mention of the role that maintenance of the Mobile Harbor Outer Bar channel plays in contributing to the erosion of Dauphin Island. We are aware of the Corps' firmly held position that channel maintenance practices do not appear to influence the island's erosion based upon only the Byrnes *et al* in 2010 report prepared under contract to the Corps. We are also very familiar with the 2007 US Geological Survey (USGS) report (https://pubs.usgs.gov/of/2007/1161/OFR-2007-1161-screen.pdf , the Corps' own 1978 report, the views of other credible coastal engineers and scientists, and the overall science of the hydrodynamics of coastal inlets that directly counter the Corps' position on this critical issue. For that reason, we are very concerned by the Interim Report's silence on the relationship between channel maintenance and Dauphin Island's erosion. This raises the question: How can the public have confidence that the AIBRA will develop viable options to restore Dauphin Island as a sustainable barrier island if the Assessment does not investigate ALL factors contributing to the island's erosion, particularly the most critical factor responsible for disrupting littoral drift processes that is causing the island to be starved of naturally provided beach quality sand. Based on statements made by you at the Public Meeting, it is our understanding the ABIRA will in fact consider the contributing effects of channel maintenance practices even though no such commitment to do so is made in the Interim Report. Since it is unlikely the Interim Report will be revised to correct this important omission, the Sierra Club strongly recommends your Department issue a public

announcement to clarify the ABIRA will in fact consider the effects of channel dredging and disposal on the erosion of Dauphin Island.

Comment 2. Dr. Susan Rees of the Mobile District has asserted on several occasions the ABIRA will be based on "sound science as stated in the Interim Report. However, the validity of that statement is questioned since the Interim Report completely ignores the extensive body of well accepted science that clearly shows dredging of navigation channels through coastal inlets, like Mobile Pass, typically interrupt littoral drift processes which cause downdrift shorelines to erode. The Sierra Club firmly believes that body of relative science is directly applicable to an understanding of the Dauphin Island's erosion problem that has been occurring since 1958 according to the USGS's 2007 report. The above requested public announcement should also explain how the ABIRA investigations will consider the large body of "sound science" that unquestionably demonstrates the consequences of channel dredging projects on downdrift shorelines. The Sierra Club has created an extensive list of engineering and scientific papers dealing with this issue if that would be of assistance to the ABIRA Team.

Comment 3. On pages 3 and 4 of the Interim Report, the following two questions should be added to the list on those two pages:

- What role does maintenance of the Mobile Harbor Outer Bar Channel contribute to the erosion of Dauphin Island?
- Since most of the dredged sands placed in the so-named "Sand Island Beneficial Use Area (SIBUA)" are not recaptured by the nearshore littoral system, should an alternative disposal site much closure to shallow waters near the crest of the Mobile Pass ebb-tidal delta be identified for future use?

These two questions are consistent with the previous two comments.

Comment 4. It appears the eastern boundary of the bathymetric Digital Elevation Model (DEM) was established to align with the western boundary of the Outer Bar Channel. Why was the eastern DEM boundary not set farther to the east to capture the bathymetry of the channel to include the Fort Morgan Peninsula and the "updrift bypassing bar" locally known as Dixie Bar? Since the eastern limits of the DEM coincide with the western boundary of the Outer Bar Channel, the Interim Report does not explain how the ABIRA's sediment transport modeling efforts account for the total volume of sands transported by longshore drift from the east past the Fort Morgan Peninsula; the volume trapped in the "channel sink" and is subsequently dredged and disposed at the SIBUA; and the volume of sands that are naturally bypassed around the seaward limits of the Mobile Pass ebb-tidal delta. Further, the Interim Report makes no statement that channel dredging volumes will be considered in the sediment transport analyses. Because of the omission of the important dredging quantity variable and the eastern limitations of the DEM, how will the sediment transport modeling efforts account

for the annual volume of littoral drift sands interrupted by dredging activities and prevented from being transported to the western side of the Mobile Pass ebb-tidal delta?

Comment 5. The Interim Report states "…the sediment budget analysis is being performed to describe recent era (i.e. 2001-2015) sediment gains and losses in the nearshore areas of Dauphin Island and Mobile Pass." Since the USGS's 2007 report and the Corps' 1978 report have separately pointed out Dauphin Island's erosion is due in part to a reduction in sand being transported to the island by maintenance of the Outer Bar Channel, why is the ABIRA limiting its sediment budget analyses to the "recent era (i.e. 2001-2015)"? Given the appropriate restoration goal of the ABIRA stated at the top of page 61, the sediment budget analyses should be directed at selecting a timeframe in the past when Dauphin Island was "healthy and sustainable", and modeling the sediment budget for that period. By the ABIRA restricting the sediment budget to only the "recent era", it appears no thought will be given to "restoring historic sediment budget scenarios" that were more beneficial to the island. In short, how does a recent era sediment budget analysis contribute to RESTORING Dauphin Island, since the island has been "sand starved" since 1958 according to the USGS? Considering only a "recent era" sand budget would only represent a perpetuation of the historic changes in littoral drift sands that are a contributing factor to Dauphin Island's significantly eroding Gulf shoreline instead of restoring the island.

Comment 6. Regarding shoreline restoration, it would appear appropriate for the alternative formulation and evaluation process to identify a historically documented "target year" (or in Corps study parlance: "with project conditions") when the island was "healthy and sustainable" against which the effects of the alternatives would be evaluated. In the final analysis, if no "target year" condition is identified, how will the concerned public understand what "restored" condition for Dauphin Island was selected as the targeted goal for the alternatives selected for evaluation and eventual inclusion in the Comprehensive Report?

Comment 7. Pages 73 and 74 of the Interim Report state "Project ID 2 – West End Beach and Dune Restoration" was assigned to the Group 2 projects, by alleging this project will "…need additional detailed engineering and/or environmental analyses". The Sierra Club takes issue with that allegation. Project ID 2 (same as Project 92 on the Alabama Coastal Restoration Portal) is a component of the Town of Dauphin Island's comprehensive shoreline restoration plan for the entire island. That plan was completed in 2011 with a $1.5 million NOAA grant. The Town contracted for the design and the construction plans and specifications with one of the most experienced shoreline restoration design firms in the Gulf of Mexico region. The project was designed so that it could be constructed at any of three funding levels: $21 M, $38 M, or $59 M. All three alternative designs are ready for construction. All that is needed are updated bathymetric surveys and verification of prior engineering calculations to determine if any design adjustments are needed to respond to

changed conditions that may have occurred since 2011. As such, Project ID 2 does not "…need additional detailed engineering and/or environmental analyses" and should be reassigned to the Group 1 projects. Finally, the Sierra Club supports implementation of the $59 M restoration design alternative to counter the significant erosion Dauphin Island's Gulf shoreline has experienced since 1958 as documented in the USGS's 2007 report.

The Sierra Club appreciates the opportunity to offer the above comments on the Interim Report and the ABIRA and hopes they will be given serious consideration by the ABIRA Team. Should you have any questions, please do not hesitate to contact me.

Sincerely,

Joseph Mahoney, Chair
Mobile Bay Group Sierra Club Executive Committee

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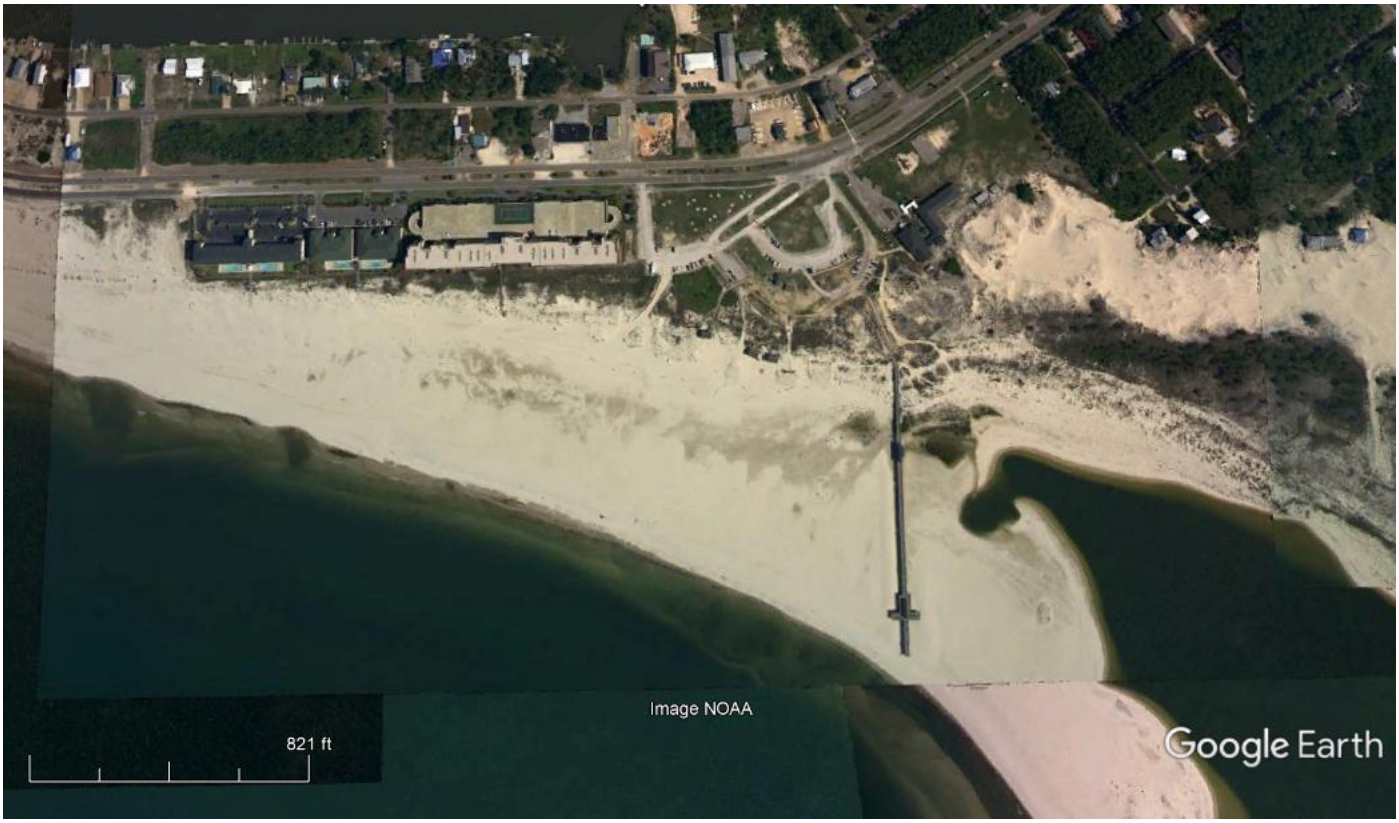
Enclosure 1 **February 2008**



Enclosure 2 **May 2010**