

# Brunswick Harbor Modification Study, Glynn County, Georgia

## REVIEW PLAN

July 2019

### 1. OVERVIEW

This review plan defines the scope and level of peer review for the following study:

- **Study Name:** Brunswick Harbor Modification Study
- **P2 Number:** 465055
- **Federal Project:** Brunswick Harbor, Glynn County, Georgia
- **Decision Document - Type:** Integrated Feasibility Report and Environmental Assessment (EA)
- **Project Type:** Single purpose navigation (deep draft)
- **Congressional Approval Required (Yes/No):** Yes
- **District:** Savannah District (SAS)
- **Major Subordinate Command (MSC):** South Atlantic Division (SAD)
- **Review Management Organization (RMO):** Deep Draft Navigation Planning Center of Expertise (DDNPCX)
- **Review Plan (RP) Contacts:**
  - a. **District:** Project Planner, (313) 226-2099
  - b. **MSC:** SAD Review Manager, (404) 562-5226
  - c. **RMO:** DDNPCX Review Manager, (251) 694-3842

### 2. KEY REVIEW PLAN DATES

Action	Date - Actual <sup>1</sup>
RMO Endorsement of RP	<i>10 July 2019</i>
MSC Approval of RP	<i>31 August 2019</i>
Independent External Peer Review (IEPR) Exclusion Approval	<i>31 August 2019</i>
Has RP changed since PCX endorsement?	<i>No</i>
Last RP revision <sup>2</sup>	<i>None</i>
RP posted on District Website	<i>16 Sept 2019</i>
Congressional notification <sup>3</sup>	<i>Pending</i>

<sup>1</sup>Date action occurred or 'pending' if not yet approved

<sup>2</sup>Enter 'none' if no updates have been made since approval

<sup>3</sup>Date RIT notified Congress of IEPR decisions

### 3. MILESTONE SCHEDULE

Action	Date - Scheduled	Date - Actual	Status - Complete?
Feasibility Cost Sharing Agreement Signed	04/11/19	04/11/19	Yes
Alternatives Milestone Meeting (AMM)	07/15/19	7/15/2019	Yes
Tentatively Selected Plan (TSP)	04/09/20		No
Release Draft Report to Public	06/11/20		No
Agency Decision Milestone (ADM)	10/09/20		No
Final Report Transmittal	08/06/21		No
Senior Leaders Briefing	09/17/21		No
Chief's Report	04/11/22		No

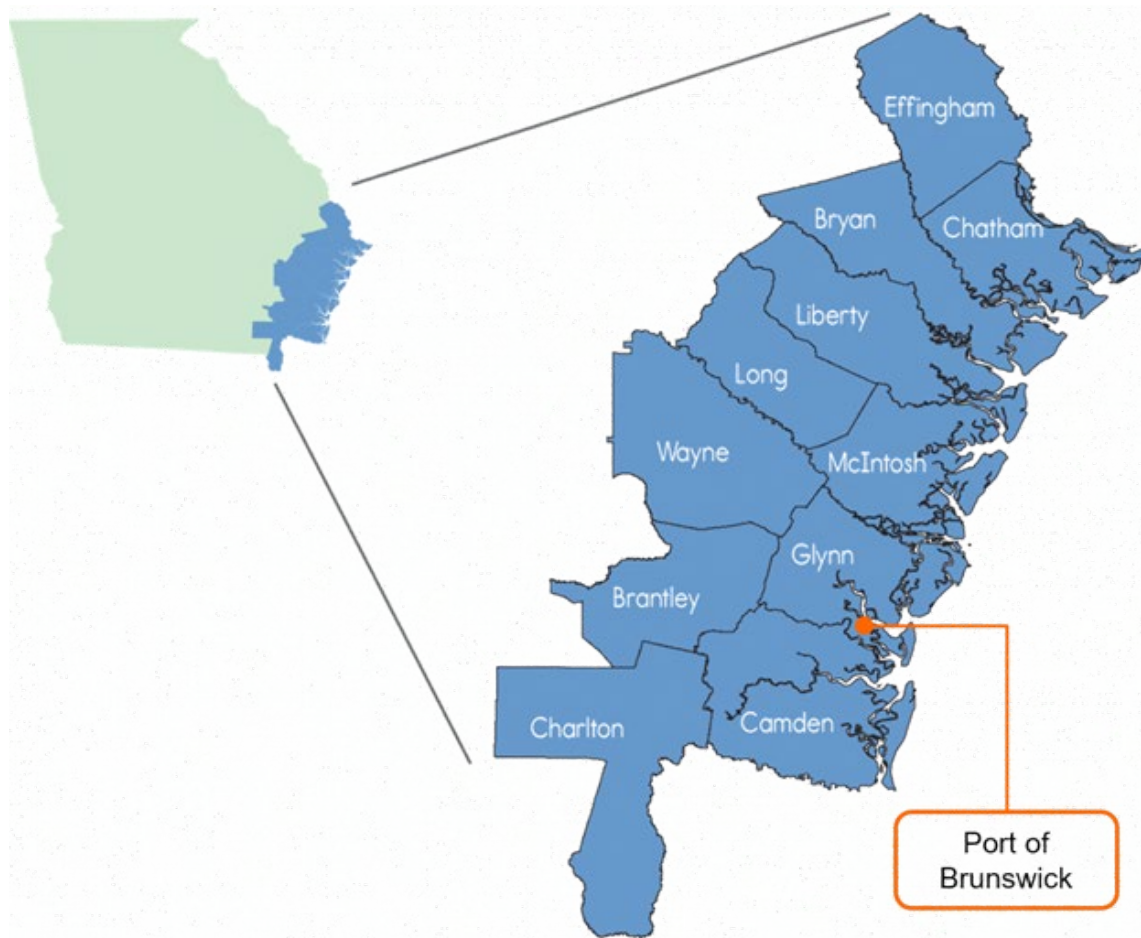
## 4. BACKGROUND

- **Date of ‘Background’ Information:** July 2019
- **RP References:**
  - Engineer Circular (EC) 1165-2-217, Review Policy for Civil Works (CW), 20 February 2018
  - EC 1105-2-412, Assuring Quality of Planning Models, 31 March 2011
  - Engineer Regulation (ER) 1105-2-100, Planning Guidance Notebook, Appendix H, Policy Compliance Review and Approval of Decision Documents, Amendment #1, 20 November 2007
  - Chief’s Memorandum, Delegation of Authority in Section 2034(a)(5)(A) of the Water Resources Development Act of 2007 (WRDA 2007), as amended (33 U.S.C. 2343), 8 January 2018
  - Director’s Policy Memorandum (DPM) CW Programs 2018-05, Improving Efficiency and Effectiveness in U.S. Army Corps of Engineers (USACE) CW Project Delivery (Planning Phase and Planning Activities), 3 May 2018
  - Director of Civil Works (DCW) Memorandum, Delegation of Model Certification, 11 May 2018
  - DCW Memorandum, Revised Delegation of Authority in Section 2034(a)(5)(A) of WRDA 2007, as amended (33 U.S.C. 2343), 7 June 2018
  - Planning Bulletin (PB) 2018-01, Feasibility Study Milestones, 26 September 2018
  - DPM 2019-01, Policy and Legal Compliance Review, 9 January 2019
  - DCW Memorandum, Revised Implementation Guidance for Section 1001 of the Water Resources Reform and Development Act of 2014 (WRRDA 2014), Vertical Integration and Acceleration of Studies as Amended by Section 1330(b) of WRDA 2018, 25 March 2019
  - DCW Memorandum, Interim Guidance on Streamlining IEPR for Improved CW Product Delivery, 5 April 2019
  - Brunswick Harbor Modification Study Project Management Plan, June 2019
- **Authority:** Section 1201 of WRDA 2016, which reads:

“The Secretary is authorized to conduct a feasibility study for the following projects for water resources development and conservation and other purposes, as identified in the reports titled “Report to Congress on Future Water Resources Development” submitted to Congress on January 29, 2015, and January 29, 2016, respectively, pursuant to section 7001 of the Water Resources Reform and Development Act of 2014 (33 U.S.C. 2282d) or otherwise reviewed by Congress:

(12) BRUNSWICK HARBOR, GEORGIA.—Project for navigation, Brunswick Harbor, Georgia.”
- **Sponsor:** Georgia Ports Authority

- **SMART Planning Status:** This study is 3x3x3 compliant and recently met the Alternatives Milestone.
- **Project Area:** Brunswick Harbor is located in the southeastern section of Glynn County, Georgia, adjacent to the City of Brunswick. The harbor is approximately 70 miles north of Jacksonville, Florida. The project area is within the inner channels through St. Simon’s Sound, Brunswick River, Turtle River, and East River. The inner channels are at a depth of -36 feet mean lower low water and at a width of 400 feet.



**Figure 1. Port of Brunswick**

- **Problem Statement:** Large vessels transporting rolling cargo are typically referred to as “roll-on/roll-off” or Ro/Ro vessels. Ro/Ro vessels have increased in both length and width since design of the existing project. There are two locations within the Federal channel where vessels experience navigational challenges due to vessel size. Self-imposed transportation safety restrictions are in place such as waiting for suitable weather (including favorable tides), one-way traffic for most of the harbor, and utilizing tug boats earlier in the berthing process. Larger Ro/Ro vessels are experiencing transportation cost inefficiencies due to these restrictions at targeted areas within the confined Federal channel. The areas of concern, as identified by the Brunswick Harbor Pilots, include the area near U.S. Coast Guard (USCG) Buoy 24 (where Cedar Hammock Range and Brunswick Point Cut Range

intersect) and the existing turning basin located near the Colonel's Island facility where Ro/Ro vessels berth.

- **Study/Project Goals and Objectives:** The study goal is to provide an efficient, reliable, and safe navigation channel while contributing to national economic development (NED) by minimizing the cost of existing cargo volumes and anticipated future increases in cargo volumes to and from Brunswick Harbor in an environmentally acceptable and sustainable manner during the period of analysis anticipated to start in 2025.
- **Description of Action:** Alternatives were formulated to address study objectives through the combinations of screened management measures. The formulation strategy focused on the information provided by the harbor pilots who are responsible for maneuvering the Ro/Ro fleet into and out of Brunswick Harbor. Figure 2 illustrates locations of proposed alternatives.
  - **Alternative 1** proposes to widen the Federal channel near the Cedar Hammock Range bend widener (near USCG Buoy 24) in order to accommodate Ro/Ro vessels coming into and out of Brunswick Harbor.
  - **Alternative 2** proposes to widen the Federal channel in order to expand the existing turning basin (at the confluence of the Turtle River and South Brunswick River) to accommodate Ro/Ro vessels as they berth.
  - **Alternative 3** proposes to widen the Federal channel at the Cedar Hammock Range bend widener and to widen the Federal channel in order to expand the existing turning basin.
  - **Alternative 4** proposes to widen the federal channel from the turning basin near the Cedar Hammock Range bend widener up to the Colonel's Island turning basin. This segment of channel will focus on widening the existing navigation channel in order to provide safe two-way passage for Ro/Ro vessels east of the Sidney Lanier Bridge.

The expansion width for both the bend widener and the turning basin would be optimized through the feasibility process based on guidelines from *Engineer Manual (EM) 1110-2-1613 Hydraulic Design Guidance for Deep Draft Navigation Projects*. In addition, the harbor pilots have suggested minimum width increases for both the turning basin and bend widener which will be examined during the feasibility process as well.

This optimization is important since the existing Federal channel was designed to accommodate a vessel fleet dominated by vessels with a length of 660 feet and a width of 106 feet. This design revision would allow the project to serve a fleet dominated by vessels with a length of 870 feet (106 feet wide) as well as the increasing number of High Efficiency Ro/Ro vessels measuring 660 feet in length and up to 134 feet in beam width, which more accurately represent vessels currently calling on Brunswick Harbor. Ship simulation using the more recent design vessel for the harbor is recommended over use of design standards in this area because the turning basin is located in an open unprotected area that is exposed to cross wind from all directions and experiences cross currents from the merging rivers.



**Table 1. Risk Matrix**

Functional Group	Risk/Concern	Mitigation/Contingency	Risk Level (H, M, L) <sup>1</sup>
Project Management/ Planning	<ul style="list-style-type: none"> <li>• Scope Creep</li> <li>• Legislation &amp; Planning Policy Changes</li> </ul>	<ul style="list-style-type: none"> <li>• Active management of quality, costs &amp; schedule</li> <li>• Change Management Log/Decision Log</li> <li>• Regular communication with sponsors &amp; vertical team (VT)</li> <li>• Informal in-progress reviews as needed with VT, agency technical review (ATR) Lead, district quality control (DQC) Lead, &amp; DDNPCX</li> </ul>	L
Economics	<ul style="list-style-type: none"> <li>• Fleet forecast and design vessel inaccuracy, due to recent opening of the expanded Panama Canal and changing fleet of Ro/Ro vessels.</li> <li>• Future tonnage at the port is uncertain and based on the U.S. economy.</li> </ul>	<ul style="list-style-type: none"> <li>• Coordination with shippers and analysis of order books will reduce uncertainty.</li> <li>• Sensitivity analysis will be completed for low and (and possibility high) commodity growth scenarios.</li> </ul>	M  L
Geotechnical Engineering	<ul style="list-style-type: none"> <li>• Geotechnical sampling late in the feasibility phase could impact the design/cost estimate.</li> </ul>	<ul style="list-style-type: none"> <li>• Review of existing harbor data suggests that geotechnical sampling late in feasibility or early in preconstruction engineering and design is acceptable.</li> </ul>	L
Hydrology, Hydraulics, and Coastal (HH&C) Engineering	<ul style="list-style-type: none"> <li>• Collecting and analyzing data in accordance with the project study timeframe.</li> </ul>	<ul style="list-style-type: none"> <li>• Use of EM 1110-2-1613 and ship simulations</li> </ul>	M
Cost Engineering	<ul style="list-style-type: none"> <li>• Cost of energy (fuel)</li> <li>• Competition for bids</li> </ul>	<ul style="list-style-type: none"> <li>• Be aware of market trends that drive fuel costs – dredging costs are directly related to fuel costs</li> <li>• Involve industry ahead of time so they know what's coming and can prepare.</li> </ul>	H
Environmental/ Cultural	<ul style="list-style-type: none"> <li>• Receipt of timely permits (401 water quality cert, U.S. Fish and Wildlife Service (USFWS) concurrence)</li> <li>• Sediment testing results prove not suitable for BU or routine placement into the dredged material confined area.</li> <li>• Might need cultural resource surveys for beneficial use sites</li> </ul>	<ul style="list-style-type: none"> <li>• Early coordination and participation by resource agencies in the charrette ensure agencies are already aware of the project.</li> <li>• Identify BU sites and suitability of material as soon as possible.</li> </ul>	L
Real Estate	<ul style="list-style-type: none"> <li>• Determination of acceptable placement areas, i.e. bird island, a 2nd bird island, off shore Jekyll Island and/or Andrews Island. Possible need to identify alternative placement area.</li> </ul>	<ul style="list-style-type: none"> <li>• Early analysis of historical sediment testing and borings of dredged materials by engineering.</li> </ul>	L
Operations & Maintenance (O&M)	<ul style="list-style-type: none"> <li>• Increase shoaling and additional maintenance costs in the future</li> </ul>	<ul style="list-style-type: none"> <li>• Monitor lifecycle cost through study process to minimize impacts to future O&amp;M</li> </ul>	M

## 5. FACTORS AFFECTING THE SCOPE AND LEVEL OF REVIEW

- A. Is it likely that part(s) of the study will be challenging (EC 1165-2-217, paragraph 7.a.(1))? It is not likely that this study will be challenging as it is a single purpose deep-draft navigation project to evaluate widening of an existing channel and associated placement of dredged material. The district has a high level of expertise with this type of project.
- B. Provide a preliminary assessment of where the project risks are likely to occur and assess the magnitude of those risks (EC 1165-2-217, paragraph 7.a.(1)). This project has relatively low risk as implementation would only modify elements of an existing Federal navigation channel to meet changing user conditions. However, there is some uncertainty, as in any feasibility study, whether modifications of existing general navigation features is economically justified, environmentally acceptable and engineeringly feasible. These potential risks are similar to those inherent in any deep draft navigation study and are not expected to inhibit successful project implementation.
- C. Is there a significant threat to human life associated with aspects of the study or with failure of the project or proposed project (Type I IEPR - EC 1165-2-217, paragraph 11.d(1)(a) and Safety Assurance Review (SAR) – paragraph 12.h.)? Channel improvements will be justified through a savings in transportation costs and will not be justified by life safety. It is expected that the study and any subsequent project (should one be authorized) will follow the established guidelines associated with any channel widening and would pose no significant threat to human life. There are no significant threats to human life associated with either construction of the proposed improvements, operation and maintenance of the proposed project, or with project failure. Should the project not perform as expected, the impact would be a lower than expected benefit to NED, which does not impact human life and/or safety. Non-performance of the project would not affect the well-being of the general public and/or environment, but may negatively affect transportation cost for commodities moving through area facilities. The dredging, placement, and construction of potential new BU sites would fall under standard operating procedures and would not include new technologies to the industry.

By MFR dated June 7, 2019, the Savannah District Chief, Engineering and Construction concurred that life safety is not anticipated to be an issue for this navigation project.

- D. Is the estimated total cost of the project greater than \$200 million (EC 1165-2-217, paragraph 11.d(1)(b))? No, the TSP has not yet been identified; however, the TSP is anticipated to cost in the range of \$40-\$80 million. Therefore, the project cost would not exceed the \$200 million threshold for IEPR defined by WRRDA 2014.
- E. Will the study/project require an environmental impact statement (EIS) (EC 1165-2-217, paragraph 11.d(1)(b))? It is expected that an EA will sufficiently cover National Environmental Policy Act (NEPA) requirements. However, if after coordination with resource agencies it is determined that an EIS is needed, the project delivery team (PDT) will coordinate an updated RP.
- F. Has the Governor of an affected state requested a peer review by independent experts (EC 1165-2-217, paragraph 11.d(1)(c))? No, the Governor of Georgia has not requested peer review by independent experts nor is such a request expected.

- G. Has the Chief of Engineers determined that the project study is controversial due to significant public dispute over the size, nature, or effects of the project or the economic or environmental costs or benefits of the project (EC 1165-2-217, paragraph 11.d(1)(d))? No. The study is not likely to involve significant public dispute as to its size, nature, or effects of the project. This study involves modifications to an existing Federal project (channel) and possible BU of dredged material.
- H. Is the study/project likely to involve significant public dispute as to the project's size, nature, or effects (EC 1165-2-217, paragraph 11.d(1)(e))? The project is unlikely to involve significant public dispute as to the size, nature, or effects of improvements to existing channel. Placement alternatives will be considered; however, least cost, environmentally acceptable, and engineeringly sound placement is required. Through the public review process, the study will be coordinated with the public and resource agencies, providing an opportunity to submit comments. The project is not expected to have significant public dispute as it is a modification study to an existing Federal project that would utilize standard and routine dredging procedures. The project is proposing to use standard construction equipment preferred by the environmental agencies at a much lower risk to endangered fish, and will also stay within established environmental work windows.
- I. Is the study/project likely to involve significant public dispute as to the economic or environmental cost or benefit of the project (EC 1165-2-217, paragraph 11.d(1)(f))? There is no significant public dispute as to the economic or environmental cost or benefit of the project. Standard benefit categories will be used and cost considerations are very straightforward and based on standard estimating techniques. The project will likely not involve any mitigation.
- J. Is the information in the decision document or anticipated project design likely to contain influential scientific information or be a highly influential scientific assessment – i.e., be based on novel methods, involve innovative materials or techniques, present complex challenges for interpretation, contain precedent-setting methods or models, or present conclusions that are likely to change prevailing practices (Type I IEPR - EC 1165-2-217, paragraph 11.d(1)(g); SAR paragraph 12.i.(1); and paragraph 15.d)? No, the project is a typical channel improvement project and will not involve influential scientific information or be a highly influential scientific project that would change prevailing practices. The project will involve traditional methods of dredging and placement of dredged material. Overall, it is anticipated that there will be low risk associated with the project. Standard engineering, economic and environmental analyses and information will be included in the final feasibility report and supporting documentation. Novel methods will not be utilized. If this decision is changed, the RP will be updated and re-coordinated.
- K. Does/will the study/project have significant interagency interest (EC 1165-2-217, paragraph 7.f(1))? The project is unlikely to have significant interagency interest since the project is expected to have no significant environmental effects and is a project to modify an existing Federal channel. Resource agency coordination is ongoing.
- L. Are there any other circumstances that would lead the Chief of Engineers to determine Type I IEPR is warranted (EC 1165-2-217, paragraph 11.d(1)(h))? No, there are no known



circumstances that would lead the Chief of Engineers to determine the review by an independent panel of external experts is warranted.

- M. Is the project expected to have more than negligible adverse impacts on scarce or unique tribal, cultural, or historic resources (EC 1165-2-217, paragraph 11.d(4)(a))? No, the project is not expected to have more than negligible adverse impacts on scarce or unique tribal, cultural, or historic resources. A cultural archeologist is assigned to the PDT.

Several cultural resources investigations have been conducted within and near Brunswick Harbor. Many of these investigations were conducted for specific projects that required permits; therefore, they are very limited in scope and survey coverage. However, based on available data the potential for encountering significant submerged cultural resources is low near the existing channel. Remote sensing surveys conducted in Brunswick Harbor in the 1970s-1990s resulted in the identification of few magnetic anomalies. The low number of anomalies may be attributed to channel enlargements performed in the harbor since the 1870s, which likely removed any wrecks in the immediate vicinity of the channel. A sonar survey from 1980 identified patches of clean, hard, rock bottom throughout the channel which also indicate a low potential for encountering buried vessel remains in the project area.

A review of Georgia's Natural, Archaeological and Historic Resources GIS shows no recorded submerged resources within Brunswick River, South Brunswick River, or Turtle River. Recorded resources within 1 kilometer of the navigation channel are limited to terrestrial archaeological sites that are located on Colonel's Island and the northwest and northern areas on Jekyll Island.

Magnetometer and sonar surveys will be conducted in areas that have not been previously surveyed after the tentatively selected plan has been identified. Furthermore, terrestrial cultural resources investigations will be conducted in salt marsh, mud flats and hammock areas that will be impacted by construction access/staging or placement of dredged material, if the areas have not been previously surveyed. Archival documents report numerous vessel losses in the vicinity of Brunswick so there is a possibility that a shipwreck or prehistoric oyster shell middens could be identified in salt marsh or mud flat area.

- N. Is the project expected to have substantial adverse impacts on fish and wildlife species and their habitat prior to the implementation of mitigation measures (EC 1165-2-217, paragraph 11.d(4)(a))? No, although three types of sea turtles are present in Brunswick Harbor, no adverse effects are expected. This is because the use of hopper dredge will be EXCLUDED from construction methods. Dredging would likely occur with a clamshell. The extent of potential impacts will be documented in the EA and coordinated with the USFWS. If significant environmental effects are discovered, an EIS will be required and the RP will be updated.
- O. Is the project expected to have, before mitigation measures, more than a negligible adverse impact on an endangered or threatened species or their designated critical habitat (EC 1165-2-217, paragraph 11.d(4)(a))? No. Threatened and Endangered Species (T&E) in the study area include the Loggerhead, Kemp's Ridley, and Green Sea Turtle. Near the outer channel (in the open ocean) there is the possibility of encountering Atlantic or Shortnose Sturgeon and West Indian Manatees. It is expected that the project would have no effect or no adverse effect on these species due to standard construction practices being utilized and the low likelihood of

these species in the area. No T&E critical habitat is present in the project area. Essential fish habitat will be coordinated through the NEPA/ public review processes.

- P. Does the project study pertain to an activity for which there is ample experience within the USACE and industry to treat the activity as being routine (EC 1165-2-217, paragraph 11.d(4)(b))? Yes, navigation improvement studies and implementation of those projects (widening of deep-draft navigation channels) are activities for which there is ample experience within USACE and industry to treat those activities as routine.
- Q. Does the project study have minimal life safety risk (EC 1165-2-217, paragraph 11.d(4)(b))? This project is considered a standard navigation improvement project with minimal life safety risk. The project involves minimal life safety risk; standard dredging techniques are proposed consistent with those used in the authorized project for channel maintenance. No unique or special equipment that would introduce uncertainties or additional risk to life safety is needed to complete proposed project construction. Construction at the proposed placement sites will be accomplished with equipment that is permitted for use at those sites as approved and will be operated in accordance with the standard requirements set by each site.
- R. Does the project design require redundancy, resiliency, and/or robustness (EC 1165-2-217, paragraph 12.i.(2))? No, the project design will follow standard dredging and placement methodologies typically conducted by the District for navigation projects, and the project design will not require redundancy, resiliency, and/or robustness.
- S. Will the project have unique construction sequencing or a reduced or overlapping design construction schedule (e.g., significant project features will be accomplished using the Design-Build or Early Contractor Involvement delivery systems) (EC 1165-2-217, paragraph 12.i.(3))? No, the project design will follow standard dredging and placement methodologies typically conducted by the District for navigation projects. As such the project design is not anticipated to require redundancy, resiliency, and/or robustness, unique construction sequencing, or a reduced or overlapping design construction schedule.

## 6. REVIEW EXECUTION PLAN

This RP section provides a general description of each type of review and identifies the reviews anticipated for this study/project.

### A. Types of Review

- 1) **District Quality Control.** DQC is an internal review process of basic science and engineering work products focused on fulfilling the project quality requirements of the project management plan. All decision documents (including data, analyses, environmental compliance documents, etc.) undergo DQC review.
- 2) **Agency Technical Review.** ATR is performed to assess whether study/project analyses are technically correct and comply with USACE guidance and whether documentation explains the analyses and results in a clear manner. Further, the ATR team will ensure that proper and effective DQC has been performed (as assessment of which will be documented in the ATR report) and will ensure that the product is consistent with established criteria, guidance,

procedures, and policy. If significant life safety issues are involved in a study or project, a safety assurance review should be conducted during ATR. At a minimum, ATR of the draft and final decision documents and supporting analyses is required (EC 1165-2-217, paragraph 9.i.(3)); however, targeted reviews may be scheduled as needed.

- 3) **Independent External Peer Review.** Type I IEPR may be required for decision documents under certain circumstances. IEPR is the most independent level of review and is applied in cases that meet criteria where the risk and magnitude of the proposed project are such that a critical examination by a qualified team outside of USACE is warranted. A risk-informed decision is made as to whether Type I IEPR is appropriate. The information in Section 5 of this RP informs the decision whether to conduct IEPR. Certain criteria dictate mandatory performance of Type I IEPR and other considerations may lead to a discretionary decision to perform IEPR.
- 4) **Cost Engineering Review.** All decision documents will be coordinated with the Cost Engineering and ATR Mandatory Center of Expertise (MCX). The MCX will provide the cost engineering expertise needed on the ATR team and will provide certification of cost estimates. The RMO is responsible for coordinating with the MCX for cost reviews. Cost reviews may occur as part of the draft/final report ATRs but the schedule for specific reviews may also vary. Accordingly, the PDT should coordinate closely review related needs with both the MCX and RMO.
- 5) **Model Review and Approval/Certification.** EC 1105-2-412 established the process and requirements for ensuring the quality of planning models. The EC mandates use of certified or approved planning models for all planning activities to ensure that planning products are technically and theoretically sound, compliant with USACE policy, computationally accurate, and based on reasonable assumptions regarding the availability of data, transparent, and described in sufficient detail to address any limitations of the model or its use.
- 6) **Policy and Legal Compliance Reviews.** All decision documents will be reviewed throughout the study process for compliance with law and policy. ER 1105-2-100, Appendix H, and DPM CW/DCW memos, provide guidance on policy and legal compliance reviews (P&LCRs). These reviews culminate in determination whether report recommendations, supporting analyses, and coordination comply with law and policy and whether the decision document warrants approval or further recommendation to higher authority by the home MSC Commander.
- 7) **Public Review.** The home District will post the RMO endorsed and MSC approved RP on the District's public website. Internet posting of the RP provides opportunity for the public to comment on that document. It is not considered a formal comment period, and there is no set timeframe for public comment. The PDT should consider any comments received and determine if RP revisions are necessary. During the public comment period, the public will also be provided with the opportunity to review and comment on the draft and final reports. Should IEPR be required, public comments will be provided to the IEPR panel for consideration.

## **B. Anticipated Project Reviews and Estimated Costs**

Table 2 provides the estimated schedule and cost for reviews anticipated for this study.

**Table 2: Brunswick Harbor Modification Study – Anticipated Reviews**

<b>Product to undergo Review</b>	<b>Review</b>	<b>Start Date</b>	<b>End Date</b>	<b>Cost</b>	<b>Complete</b>
AMM Milestone Submittals	DQC	06/17/19	06/21/19	\$2,000	Yes
TSP Milestone Submittals	DQC	03/02/20	03/27/20	\$2,000	No
Draft Integrated Feasibility Report and EA	DQC <sup>1</sup>	04/09/20	04/22/20	\$24,000	No
	ATR <sup>2</sup>	06/11/20	07/24/20	\$59,720	No
	P&LCR	04/23/20	05/21/20	n/a	No
ADM Milestone Submittals	DQC	09/21/20	10/20/20	\$2,000	No
Final Integrated Feasibility Report and EA	DQC <sup>1</sup>	03/19/21	04/01/21	\$24,000	No
	ATR <sup>2</sup>	04/09/21	05/13/21	\$59,720	No
	P&LCR	05/14/21	06/11/21	n/a	No
In-kind Products <sup>3</sup>	N/A				

<sup>1</sup> Estimated as \$3K/reviewer.

<sup>2</sup> Estimated as \$5,720 for DDNPCX RMO, \$4,000 ATR Lead, \$5,000/Reviewer – maximum 10 reviewers

<sup>3</sup> Products and analyses provided by non-Federal sponsors (NFS) as in-kind services are subject to DQC, ATR, and IEPR. No in-kind products or analyses will be developed by the NFS.

## C. District Quality Control

The home district shall manage DQC and will appoint a DQC Lead to oversee that review (see EC 1165-2-217, section 8.a.1).

1) **Review Team Expertise.** Table 3 identifies the required DQC team expertise.

**Table 3: Required DQC Expertise**

<b>DQC Team Disciplines</b>	<b>Expertise Required</b>
DQC Lead	A senior professional with extensive experience preparing CW decision documents and conducting DQC. The lead may also serve as a reviewer for a specific discipline (such as planning, economics, environmental resources, etc.).
Plan Formulation	A senior water resources planner with experience in leading a team through a deep draft navigation study and familiarity with the SMART Planning process.
Economics <sup>1</sup>	The economics reviewer should be a senior economist with experience in deep draft navigation studies and familiarity with economic models identified in Table 5.
Environmental Resources/Cultural Resources	The environmental reviewer should have expertise in evaluating the impacts associated with deep draft navigation improvements / dredging projects and dredged material placement requirements. The reviewer should also be experienced with environmental coordination and NEPA requirements for deep draft navigation projects. Cultural resources reviewer should have expertise in evaluating the impacts associated with deep draft navigation channel improvement and dredging projects as well as extensive knowledge of underwater archaeology. The reviewer should also be familiar with the environmental coordination and NEPA/National Historic Preservation Act (NHPA) requirements for coastal deep draft navigation projects.
HH&C Engineer	The HH&C engineering reviewer should be knowledgeable in the field of hydraulics, have a thorough understanding of open channel dynamics and have experience in deep draft navigation studies/projects. The reviewer should also be familiar with computer modeling techniques that will be used in the study (as identified in Table 6).
Geotechnical Engineer	The reviewer will have an understanding of the behavior or soils, site characterization, material management, slope stability, and the analysis and placement of dredged material.
Cost Engineer	The cost engineering reviewer should have experience in evaluating cost requirements for a deep draft navigation channel improvement project and experience with the cost engineering models identified in Table 6.
Operations	The operations reviewer should have experience in the O&M of deep draft navigation projects to include channel maintenance dredging, placement, and BU of dredged material.
Real Estate	The real estate reviewer should have expertise in the real estate requirements of deep draft navigation projects.

<sup>1</sup>The economics DQC team member will be identified by the DDNPCX (OPORD 2012-15).

- 2) **Documentation of DQC.** Quality Control should be performed continuously throughout the study. DQC of milestone submittals is required (PB 2018-01, Feasibility Study Milestones). Certification of DQC completion is required at the draft and final report stages. Documentation of DQC should follow the District Quality Manual and the MSC Quality Management Plan. An example DQC Certification statement is provided in EC 1165-2-217 (Figure F). **DrChecks software will be used to document DQC review comments, responses, and issue resolution.**

Documentation of the completed DQC review (i.e., all comments, responses, issue resolution, and DQC certification) will be provided to the MSC, RMO, and ATR Team leader prior to initiating an ATR. The ATR team will assess the quality of the DQC performed and provide a summary of that assessment in the ATR report. Missing or inadequate DQC documentation can result in the start of subsequent reviews being delayed (see EC 1165-2-217, Section 9).

#### D. Agency Technical Review

ATR will be performed on the draft and final decision documents and supporting analyses (EC 1165-2-217, paragraph 9.i.(3)). The RMO will manage the ATR. ATR will be performed by a qualified team from outside the home district that is not involved in the day-to-day production of the project/product. ***ATR will be performed by a team whose members are certified or approved by their respective Communities of Practice (CoPs) to perform reviews.*** The RMO will identify an ATR lead and ATR team members. Neither the home District nor the MSC will nominate review team members. The ATR team lead will be from outside the home MSC. The ATR team lead is expected to participate in the study’s milestone meetings (PB 2018-01), the cost of which is not included in the estimates provided in Table 2.

- 1) **Review Team Expertise.** Table 4 identifies the anticipated disciplines and ATR team expertise required for study efforts.

**Table 4: Required ATR Team Expertise**

ATR Team Disciplines	Expertise Required
ATR Lead	The ATR lead will be a senior professional with extensive experience preparing CW decision documents and conducting ATR. The lead should have the skills to manage a virtual team through an ATR. The lead may serve as a reviewer for a specific discipline (e.g., plan formulation, economics, etc.).
Plan Formulation	The plan formulation reviewer should be a senior water resources planner with experience in leading a team through a deep draft navigation channel improvement study and analysis of dredged material placement requirements.
Economics	The economics reviewer should be a senior deep draft navigation economist with experience in performing economic evaluations for channel widening projects. Experience with evaluating Ro/Ro trade is preferred. Typically, two economics reviewers will be required, one to review the economics appendix and the other to review

	inputs/outputs of economic models to be used (as identified in Table 5).
Environmental Resources/Cultural Resources	The environmental reviewer should have expertise in evaluating the impacts associated with deep draft navigation improvements / dredging projects and dredged material placement requirements. The reviewer should also be experienced with environmental coordination and NEPA requirements for deep draft navigation projects. Cultural resources reviewer should have expertise in evaluating the impacts associated with deep draft navigation channel improvement and dredging projects. The reviewer should also be familiar with the environmental coordination and NEPA/NHPA requirements for coastal deep draft navigation projects.
HH&C Engineer	The HH&C engineering reviewer should have experience designing deep-draft navigation channels, channel maintenance and placement (including BU) and a thorough understanding of open channel dynamics. The reviewer should also be familiar with computer modeling techniques identified in Table 6.
Geotechnical Engineer/Geologist	The reviewer will have experience performing geotechnical evaluations for deep draft navigation channel improvement projects, including evaluating the behavior of soils, site characterization, material management, slope stability, and the analysis and placement of dredged material.
Cost Engineer	The cost engineering reviewer will be identified by the Cost MCX and will have experience evaluating cost requirements for a deep draft navigation project (channel widening, placement site construction, BU, etc.). Cost engineering models to be used are identified in Table 6.
Operations	The operations reviewer should have experience in the O&M of deep-draft navigation projects to include channel maintenance dredging, placement, and BU.
Real Estate	The real estate reviewer should have expertise in the real estate requirements of deep draft navigation improvement projects.
Climate Preparedness and Resilience/ HH&C Reviewer	A member of the Climate Preparedness and Resiliency CoP or a HH&C Climate reviewer will participate on the ATR team. Another reviewer can fulfill this requirement as long as that reviewer has the required expertise.

**2) Documentation of ATR.** DrChecks will be used to document ATR comments, responses, and issue resolution. Comments should be limited to those needed to ensure product adequacy. All members of the ATR team should use the four part comment structure (EC 1165-2-217, Section 9(k)(1)). If a concern cannot be resolved by the ATR team and PDT, it will be elevated to the vertical team for resolution using the issue resolution process identified in EC 1165-2-217. The comment(s) can then be closed in DrChecks by noting the concern has been elevated for resolution. The ATR Lead will prepare a Statement of Technical Review Report (see EC 1165-2-217, Section 9), for both draft and final decision documents. Any unresolved issues will be documented in the ATR report prior to certification. The Statement of Technical Review (ATR completion) should always include signatures from the ATR Lead, Project Manager, and RMO, and the Certification of ATR should always include signatures from the District’s Chiefs of Engineering and Planning Divisions.

## E. Independent External Peer Review

- 1) **Decision on Type I IEPR.** Type I IEPR is managed outside of USACE and is typically conducted on studies where the risk and magnitude of the proposed project are such that a critical examination by a qualified team outside of USACE is warranted. Type I IEPR panels assess the adequacy and acceptability of the economic and environmental assumptions and projections, project evaluation data, economic analysis, environmental analyses, engineering analyses, formulation of alternative plans, methods for integrating risk and uncertainty, models used in the evaluation of environmental impacts of proposed projects, and biological opinions of the project study.

Based upon the criteria identified in the 05 April 2019 DCW memorandum and the scope of the study, the PDT's risk informed assessment is that the study does not require Type I IEPR.

The risk informed decision was based on consideration of the following, as documented in Section 5 of this RP. The decision document does not meet any of the mandatory triggers for Type I IEPR: there is no significant threat to human life; the estimated total cost of the project is between \$40-\$80M, which is less than the \$200M trigger; the Governor of Georgia has not requested peer review by independent experts; and neither the DCW nor the Chief of Engineer's has determined that the project study is controversial due to significant public dispute over either the size, nature, or effects of the project or the economic or environmental costs or benefits of the project.

- 2) **Decision on Type II IEPR.** Type II IEPR, Safety Assurance Review, is managed outside of the USACE and is performed on design and construction activities for any project where potential hazards pose a significant threat to human life. For Type II IEPRs, a panel is convened to review the design and construction activities before construction begins and periodically thereafter until construction activities are completed.

The PDT has assessed this single purpose deep draft navigation project and determined that it DOES NOT meet the criteria for conducting Type II IEPR:

- The Federal action is not justified by life safety and failure of the project will not pose a significant threat to human life.
- The project does not involve the use of innovative materials or techniques where the engineering is based on novel methods; it does not present complex challenges for interpretations; it does not contain precedent-setting methods or models; and it does not present conclusions that are likely to change prevailing practices. Proposed improvements are to an existing Federal navigation project. Construction and maintenance techniques have been standardized and no new techniques are expected to be utilized for design and construction activities.
- The project design does not require redundancy, resiliency, or robustness as the design of navigation improvements at Brunswick Harbor will be based upon previously developed and utilized construction techniques which do not require redundancy, resiliency, and/or robustness.
- The project does not have unique construction sequencing or a reduced or overlapping design construction schedule.



## F. Model Certification or Approval

EC 1105-2-412 mandates the use of certified or approved models for all planning activities to ensure the models are technically and theoretically sound, compliant with USACE policy, computationally accurate, and based on reasonable assumptions. Planning models are any models and analytical tools used to define water resources management problems and opportunities; to formulate potential alternatives to address study area problems and take advantage of opportunities; to evaluate potential effects of alternatives; and to support decision making. The use of a certified/approved planning model does not constitute technical review of a planning product. The selection and application of the model and assessment of input and output data is the responsibility of the users and is subject to DQC, ATR, and IEPR (if required). The following models may be used to develop the decision document.

**Table 5: Planning Models**

<b>Model Name and Version</b>	<b>Brief Model Description and How It Will Be Used in the Study</b>	<b>Certification/Acceptance Status</b>
HarborSym 1.5.8.3 (Economics)	HarborSym is a discrete event Monte-Carlo simulation model designed to facilitate economic analyses of proposed navigation improvement projects in coastal harbors. Incorporating risk and uncertainty, the model will be used to estimate transportation cost savings (benefits) attributable to fleet and loading changes under future with project conditions. With user-provided input data, such as the port layout, vessel calls, and transit rules, the model calculates vessel interactions within the harbor. Unproductive wait times result when vessels are forced to delay sailing due to transit restrictions within the channel; HarborSym captures these delays.	Certified
Regional Economic System (RECONS) (Economics)	RECONS is a regional economic impact modeling tool that estimates jobs, income, sales and value added associated with Corps CW spending and additional economic activities. The model will be used to estimate the regional economic impacts of project implementation.	Certified

EC 1105-2-412 does not address engineering models used in planning. The responsible use of well-known and proven USACE developed and commercial engineering software will continue. The professional practice of documenting the application of the software and modeling results will be followed. The USACE Scientific and Engineering Technology Initiative has identified many engineering models as preferred or acceptable for use in studies. These models should be used when appropriate. The selection and application of the model and the input and output data is the responsibility of the user and is subject to DQC, ATR, and IEPR (if required). The following models may be used to develop the decision document.

**Table 6: Engineering Models**

<b>Model Name and Version</b>	<b>Brief Model Description and How It Will Be Used in the Study</b>	<b>Certification / Acceptance Status</b>
Adaptive Hydraulic Modeling (ADH) (HH&C Engineer)	ADH is a state-of-the-art Adaptive Hydraulics Modeling system. It is capable of handling both saturated and unsaturated groundwater, overland flow, three-dimensional Navier-Stokes flow, and two- or three-dimensional shallow water problems. ADH contains other essential features such as wetting and drying and wind effects. It will be used to provide hydrodynamic conditions (currents and water levels) for ship simulation for existing conditions and proposed alternatives.	Allowed
ERDC Ship/Tow Simulator (HH&C Engineer)	The Ship/Tow Simulator features two bridges set up for real-time ship maneuvering, and were specifically developed for evaluating navigation channel designs, modifications, and safety issues. Located at ERDC, Coastal and Hydraulics Laboratory, the model portrays currents, wind and wave conditions, shallow water effects, bank forces, ship handling, ship to ship interaction, fender forces, anchor forces, and tug assistance. It will be used to evaluate proposed alternatives.	Allowed
Channel Design and Evaluation Tool (CADET) (HH&C Engineer)	Probabilistic risk analysis techniques to evaluate the accessibility of channel reaches for multiple vessel geometries, loading, and wave conditions.	CoP Preferred
Microcomputer Aided Cost Engineering System (MCACES), MII (Cost Engineer)	MCACES is the cost estimating software program tools used by cost engineering to develop and prepare Class 3 CW cost estimates.	CW Cost Engineering and ATR MCX mandatory
Abbreviated Risk Analysis, Cost Schedule Risk Analysis (Cost Engineer)	Cost risk analyses identify the amount of contingency that must be added to a project cost estimate and define the high risk drivers. The analyses will include a narrative identifying the risks or uncertainties. During the alternatives evaluation, the PDT will assist the cost engineer in defining confidence/risk levels associated with the project features within the abbreviated risk analysis. For the Class 3 estimate, an evaluation of risks will be performed using Crystal Ball Cost Schedule Risk Analysis for construction costs over \$40 million or the Abbreviated Risk Analysis for projects under \$40 million.	CW Cost Engineering and ATR MCX mandatory
Total Project Cost Summary (TPCS) (Cost Engineer)	The TPCS is the required cost estimate document that will be submitted for either division or Headquarters USACE (HQUSACE) approval. The Total Project Cost for each CW project includes all Federal and authorized non-Federal costs represented by the CW Work Breakdown Structure features and respective estimates and schedules, including the lands and damages,	CW Cost Engineering and ATR MCX mandatory

	relocations, project construction costs, construction schedules, construction contingencies, planning and engineering costs, design contingencies, construction management costs, and management contingencies.	
Corps of Engineers Dredge Estimating Program (CEDEP) (Cost Engineer)	CEDEP is the required software program that will be used for dredging estimates using floating plants. CEDEP contains a narrative documenting reasons for decisions and selections made by the cost engineer. Software distribution is restricted as it is considered proprietary to the Government.	CW Cost Engineering and ATR MCX mandatory

## G. Policy and Legal Compliance Reviews

In accordance with DPM CW 2018-05, P&LCRs for draft and final planning decision documents are delegated to the MSC responsible for the execution of the study.

With input from MSC and HQUSACE functional leaders and through collaboration with the Chief of Office of Water Project Review (OWPR), the MSC Chief of Planning and Policy is responsible for establishing a competent interdisciplinary P&LCR team (DPM 2019-01). The composition of the policy review team will be drawn from HQUSACE, the MSC, the PCX, and other review resources as needed. The identification of Counsel members will follow the procedures set forth by the HQUSACE Chief Counsel, as coordinated by HQUSACE and MSC Counsel functional leaders. The MSC Chief of Planning and Policy and the Chief of OWPR will collaborate to identify and endorse a P&LCR Manager from among the P&LCR team identified for the study. The manager may be a MSC, PCX, or HQUSACE employee. The team is identified in Attachment 1 of this RP.

The P&LCR team will:

- Provide advice and support to the PDT and decision makers at the District, MSC, HQUSACE, and Assistant Secretary of the Army for CW levels.
- Engage at both the MSC and HQUSACE levels, ensuring that the vertical teaming aspect of SMART planning is maintained.
- Help guide PDTs through project development and the completion of policy and legally compliant documents, identifying policy and legal issues as early as possible such that issues can be addressed while minimizing impacts to study and project costs and schedules.
- Provide impartial and unbiased recommendations, advice, and support to decision makers.

**ATTACHMENT 1: TEAM ROSTERS**

PROJECT DELIVERY TEAM			
Name	Office	Position	Phone Number
[REDACTED]	SAS-PM-C	Project Manager	[REDACTED]
[REDACTED]	SAS-EN-H	Lead Engineer	[REDACTED]
[REDACTED]	SAS-EN-H	Design Engineer	[REDACTED]
[REDACTED]	LRE-PLP	Plan Formulator	[REDACTED]
[REDACTED]	SAM-PD-D	Economist	[REDACTED]
[REDACTED]	SWF-P	Economist	[REDACTED]
[REDACTED]	SAS-PM-P	Archeologist	[REDACTED]
[REDACTED]	SAS-PD-EM	Environmental	[REDACTED]
[REDACTED]	LRC-TS-D-C	Cost Engineer	[REDACTED]
[REDACTED]	SAS-RE-HA	Real Estate	[REDACTED]
[REDACTED]	SAS-EN-GS	Geotechnical/GIS	[REDACTED]
[REDACTED]	SAS-OP-N	Operations	[REDACTED]
[REDACTED]	Georgia Ports Authority	Sponsor Representative	[REDACTED]

DISTRICT QUALITY CONTROL TEAM			
Name	Office	Position	Phone Number
[REDACTED]	SAS-PM-P	DQC Lead/Plan Formulation	[REDACTED]
[REDACTED]	DDNPCX	Economist	[REDACTED]
[REDACTED]	SAS-PM-P	Environmental/Cultural Resources	[REDACTED]
[REDACTED]	SAS-EN-H	Chief, Engineering Hydrology & Hydraulics Branch	[REDACTED]
[REDACTED]	SAS-EN-GS	Geotechnical Engineer	[REDACTED]
[REDACTED]	SAS-EN-ET	Cost Estimator	[REDACTED]
[REDACTED]	SAS-OP-NA	Operations	[REDACTED]
[REDACTED]	SAS-RE	Chief, Real Estate Acquisition Branch	[REDACTED]

AGENCY TECHNICAL REVIEW TEAM			
Name	Office	Position	Phone Number
[REDACTED]	NAE-PD-P	ATR Lead	[REDACTED]
TBD		Plan Formulation	
TBD		Economics – Appendix	
TBD		Economics – Model	
TBD		Environmental Resources	
TBD		Cultural Resources	
TBD		HH&C Engineer	
TBD		Geotechnical Engineer/Geologist	
TBD		Cost Engineer	
TBD		Operations	
TBD		Real Estate	
TBD		Climate Preparedness and Resilience/HH&C Reviewer	

VERTICAL TEAM			
Name	Office	Position	Phone Number
[REDACTED]	SAD-PDP	Chief, Planning and Policy	[REDACTED]
[REDACTED]	CECW-SAD	RIT Coordinator	[REDACTED]
[REDACTED]	SAD-PDP	Biologist	[REDACTED]
[REDACTED]	SAD-RBT	Engineering	[REDACTED]
[REDACTED]	SAD-PDO	Navigation	[REDACTED]
[REDACTED]	SAD-PDP	CW Lead	[REDACTED]
[REDACTED]	SAD-PDC	Program Manager	[REDACTED]

POLICY and LEGAL COMPLIANCE REVIEW TEAM			
Name	Office	Position	Phone Number
[REDACTED]	SAD-PDP	Review Manager	[REDACTED]
[REDACTED]	NWP-ENC-HD	Climate Change	[REDACTED]
[REDACTED]	SAD-RBT	Engineering	[REDACTED]
[REDACTED]	CECW-PC	Economics	[REDACTED]
[REDACTED]	CECW-PC	Environmental	[REDACTED]
[REDACTED]	SAD-PDO	Navigation	[REDACTED]
[REDACTED]	CECC-G	Legal	[REDACTED]
[REDACTED]	CECC-R	Legal	[REDACTED]
[REDACTED]	CECW-NAD	Plan Formulation	[REDACTED]
[REDACTED]	SAS-PDR	Real Estate	[REDACTED]