



REVIEW PLAN

**Orestimba Creek, West Stanislaus County, California
Feasibility Report**

Sacramento District

MSC Approval Date: Pending
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**US Army Corps
of Engineers®**

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1. PURPOSE AND REQUIREMENTS

a. **Purpose.** This Review Plan defines the scope and level of peer review for the Orestimba Creek, West Stanislaus County, California, Feasibility Study.

b. References

- (1) Engineering Circular (EC) 1165-2-209, Civil Works Review Policy, 31 Jan 2010
- (2) EC 1105-2-412, Assuring Quality of Planning Models, 31 Mar 2011
- (3) Engineering Regulation (ER) 1110-1-12, Quality Management, 30 Sep 2006
- (4) ER 1105-2-100, Planning Guidance Notebook, Appendix H, Policy Compliance Review and Approval of Decision Documents, Amendment #1, 20 Nov 2007
- (5) Project Management Plan, Orestimba Creek Interim (West Stanislaus County)San Joaquin River Basin, California, March 2005
- (6) CESP Regulation 1110-1-8, South Pacific Division Quality Management Plan, 30 Dec 2002
- (7) Quality Management Plan for the Sacramento District, 11 March 2004

c. **Requirements.** This review plan was developed in accordance with EC 1165-2-209, which establishes an accountable, comprehensive, life-cycle review strategy for Civil Works products by providing a seamless process for review of all Civil Works projects from initial planning through design, construction, and operation, maintenance, repair, replacement and rehabilitation (OMRR&R). The EC outlines four general levels of review: District Quality Control/Quality Assurance (DQC), Agency Technical Review (ATR), Independent External Peer Review (IEPR), and Policy and Legal Compliance Review. In addition to these levels of review, decision documents are subject to cost engineering review and certification (per EC 1165-2-209) and planning model certification/approval (per EC 1105-2-412).

2. REVIEW MANAGEMENT ORGANIZATION (RMO) COORDINATION

The RMO is responsible for managing the overall peer review effort described in this Review Plan. The RMO for decision documents is typically either a Planning Center of Expertise (PCX) or the Risk Management Center (RMC), depending on the primary purpose of the decision document. The RMO for the peer review effort described in this Review Plan is the Flood Risk Management PCX.

The RMO will coordinate with the Cost Engineering Directory of Expertise (DX) to ensure the appropriate expertise is included on the review teams to assess the adequacy of cost estimates, construction schedules and contingencies. Per Mr. Dalton's November 2010 email, the Hydrologic Engineering Center (HEC) is responsible for ensuring adequate ATR of the risk analysis and the RMO (FRM-PCX) will be responsible for coordinating the ATR with HEC.

3. STUDY INFORMATION

a. **Decision Document.** This document outlines the Review Plan for the Orestimba Creek, West Stanislaus County, California, Flood Risk Management Feasibility Study. The purpose of this study is to investigate plans that provide flood risk management for the City of Newman and surrounding agricultural areas. This feasibility study process is anticipated to culminate in a decision document approved by the Chief of Engineers and forwarded to Congress for potential authorization of a new

project. No significant environmental effects have been identified and therefore the study is proceeding with an Environmental Assessment (EA) rather than an EIS

b. Study/Project Description. The study area is located on the west side of the San Joaquin River in Stanislaus County, California (Figure 1). It encompasses approximately 186 square miles of rangeland and very productive irrigated cropland. The largest community in the study area (Figure 2) is the city of Newman, which is located along State Highway 33. Orestimba Creek is a "west side tributary" to the San Joaquin River, and originates from the eastern slopes of the Diablo Range, a section of the larger Coast Range of California. Orestimba Creek is traversed by US Interstate Highway 5, the California Aqueduct, the Delta-Mendota Canal, State Highway 33, the Northern California Railroad (NCR), and the Central California Irrigation District (CCID) Main Canal. The creek is ephemeral, with high flows normally occurring in late winter, and irrigation drainage accounting for low flows during the summer months. The creek flows in a northeasterly direction through steep mountain canyons until it emerges at the edge of the foothills. Here on the gently sloping valley floor, the decreased slope and size of the streambed reduces the creek's channel capacity. Flood flows spread over a wide undefined alluvial fan.



Figure 1. Regional Map

The purpose of this study is to investigate plans that provide flood risk management for the town of Newman and surrounding agricultural areas. In the course of identifying these plans, opportunities to address some of the environmental degradation along portions of Orestimba Creek may be identified. At this time, a sponsor has not been identified for the potential ecosystem restoration portion of this project, so the study will progress as a single purpose project. It is envisioned that this FRM feasibility study, when constructed, would provide the opportunity for future ecosystem restoration along Orestimba Creek by other interested parties. The study has considered a full range of alternatives, including detention basins, bypasses, setback levees, channel improvements and ring levees. The study has developed several hybrid alternatives which are in the process of being optimized in order to identify the NED and LPP plans. The estimated costs of these plans range from \$40 - \$50 million. The non-Federal sponsor is Stanislaus County which is receiving financial assistance from the State of California, Department of Water Resources.

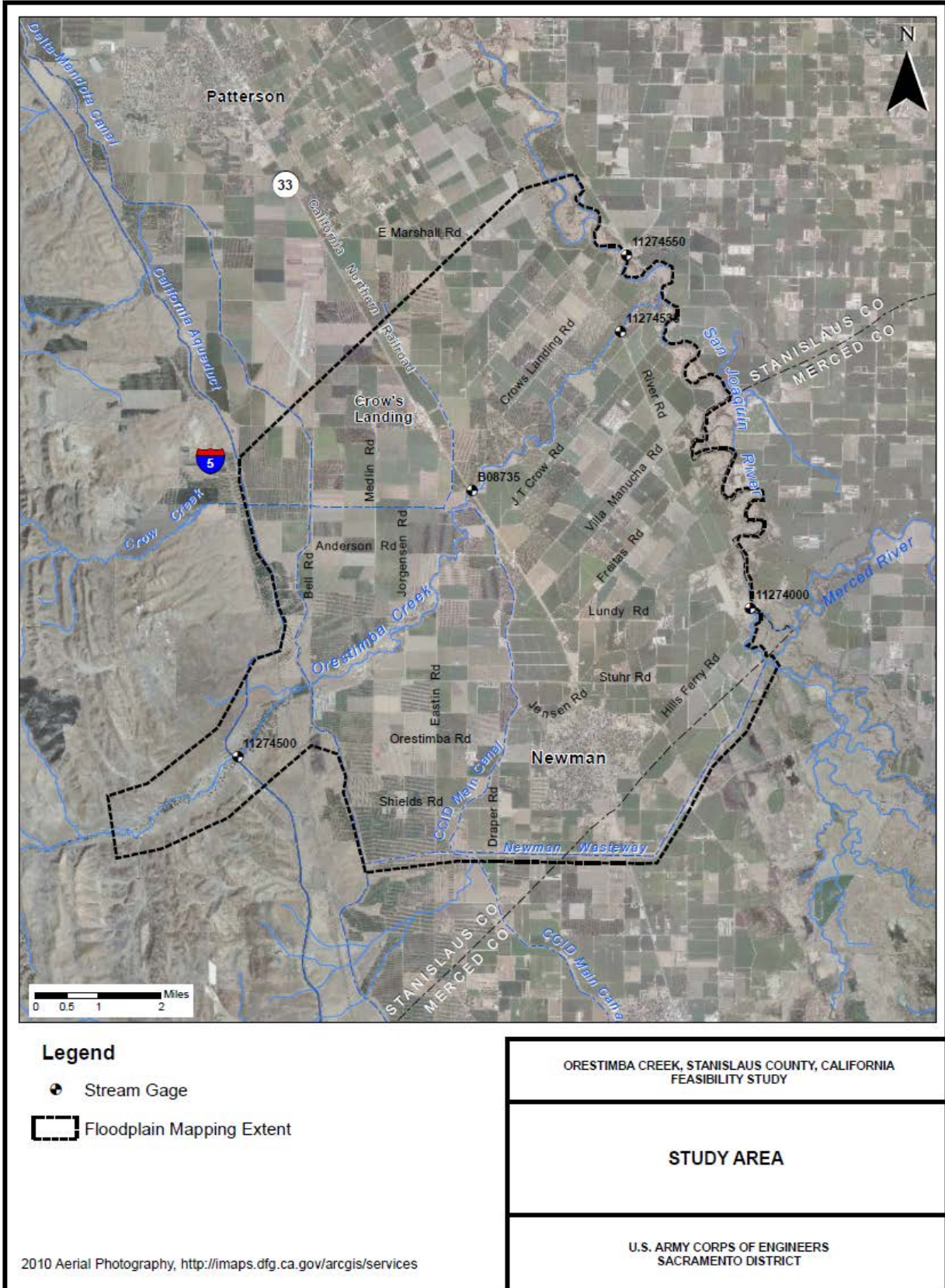


Figure 2: Study Area

c. **Factors Affecting the Scope and Level of Review.** This section discusses the factors affecting the risk informed decisions on the appropriate scope and level of review.

- One of the most challenging aspects of the study so far has been the development of the hydraulic modeling and the various levels of uncertainty that are inherent in identifying alluvial fan flooding. The following items detail some of the concerns:
 - Stage uncertainty in alluvial fan type flooding is difficult to quantify due to the relative small difference between flood depths and topographic features.
 - The uncertainty in aerial extent of alluvial fan type flooding is difficult to quantify because relatively small topographic features can redirect large volumes of flood waters.
 - FLO-2D models are based on average topographic elevations and they tend to smooth out topographic features discussed above. This is a model limitation.

This study is not expected to contain influential scientific information nor be a highly influential scientific assessment. This study area is mostly rural with a small town (Newman, population 12,000) which lies at the edge of the floodplain. There are potential life safety concerns; however, flooding in the study area is expected to only reach depths of 2-3 feet and the velocity of the flood flow would remain low since the water would have a wide area in which to spread out. There is a population at risk (a convalescent hospital) which has flooded in the past and which required an emergency evacuation. Given the depth and velocity of existing flood flows, there would be a moderate risk to human life if the project (to the extent known at this time) were to fail or its capacity were to be exceeded.

- There are no existing project levees. The study area is relatively small and while flooding on an alluvial fan can be complex, the flooding is sheet flow and therefore relatively shallow. This project is not expected to be controversial now that the Upstream Dry Dam will not be in the Final Array of Alternatives. Agency representatives have indicated support for the downstream options. Support for the downstream options among local land owners is growing, mostly sparked by refinements to the alternatives which reduce flood risk for the agricultural area. Non-structural measures will also be examined to reduce flood risk in the area. Since flooding in the study area is relatively shallow, with large areas of the floodplain subject to flooding of less than 1 foot, new and existing homes could be elevated or otherwise flood-proofed to reduce flood damages and flood risk. The total project cost for the downstream options most likely will optimize around \$40 million.
- The Governor has not requested a peer review by independent experts;
- The study team does not anticipate significant public dispute as to the size, nature, or effects of the project; however, the potential for induced flooding from any proposed project has been identified as a constraint and must be taken into consideration. Several measures and alternatives have been retained for consideration because of the potential for induced flooding.
- The study team does not anticipate significant public dispute as to the economic or environmental cost or benefit of the project since the overall project costs will be relatively low and the local community is united in its efforts to reduce the local flood risk. Also, the creek has been degraded by past land use activity and this project offers an opportunity to improve its condition.
- Public and agency input will be sought in order to minimize the potential for controversy. Uncertainty of success of the project ultimately will be low to moderate – if the proposed review

processes are implemented - because the methods used for evaluating the project are standard and the concept of implementing proposed project features is not innovative.

- The information in the decision document and the anticipated project design is not likely to be based on novel methods, involve the use of 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. The tentatively selected plan includes channel modifications and a chevron levee, both of which would be constructed with established techniques
- The proposed project would implement multiple features to reduce the risk of flooding in and around the City of Newman. The chance of multiple failures is extremely low. The consequences of catastrophic failure would remain lower than if the project was not constructed. Redundancy, resiliency, and robustness will be considered during project formulation and design. The project will not require unique construction sequencing, or a reduced or overlapping design construction schedule, however, some concurrent excavation and fill activities could lead to project cost savings.

d. In-Kind Contributions. Products and analyses provided by non-Federal sponsors as in-kind services are subject to DQC, ATR, and IEPR. No in-kind products or analyses are expected to be provided by the non-Federal sponsor.

4. DISTRICT QUALITY CONTROL (DQC)

All decision documents (including supporting data, analyses, environmental compliance documents, etc.) shall undergo DQC. DQC is an internal review process of basic science and engineering work products focused on fulfilling the project quality requirements defined in the Project Management Plan (PMP). The home district shall manage DQC. Documentation of DQC activities is required and should be in accordance with the Quality Manual of the District and the home MSC.

- a. Documentation of DQC.** DQC will be documented in Microsoft Word files which include the original comment, response and back-check of the comment. After back-check is completed, the files will be provided to the ATR team prior to review at each milestone.
- b. Products to Undergo DQC.** All the major technical components of the study will undergo DQC prior to ATR review, consistent with the District and MSC Quality Management Plans.
- c. Required DQC Expertise.** The DQC will be performed by District staff with expertise in the specific field, including regional technical specialists and supervisory staff.

5. AGENCY TECHNICAL REVIEW (ATR)

ATR is mandatory for all decision documents (including supporting data, analyses, environmental compliance documents, etc.). The objective of ATR is to ensure consistency with established criteria, guidance, procedures, and policy. The ATR will assess whether the analyses presented are technically correct and comply with published USACE guidance, and that the document explains the analyses and results in a reasonably clear manner for the public and decision makers. ATR is managed within USACE by the designated RMO and is conducted by a qualified team from outside the home district that is not involved in the day-to-day production of the project/product. ATR teams will be comprised of senior

USACE personnel and may be supplemented by outside experts as appropriate. The ATR team lead will be from outside the home MSC.

a. Products to Undergo ATR. The Orestimba Creek Feasibility Report will be an integrated document which includes all of the analysis necessary to satisfy NEPA and CEQA requirements. The Feasibility report and all of the Appendices (including those portions developed by contractors) will under ATR review. The most recent ATR review was conducted on the Alternative Review Conference (SPD Milestone - F4) documents between October 2009 and January 2010. The next anticipated ATR review will take place in October 2011 with future ATR reviews scheduled for the Draft and Final Reports. ATR review of the Hydraulic modeling will begin prior to initiation of ATR review for the other technical elements in order to verify assumptions from the modeling that are used in development of the economic, environmental and plan formulation analysis.

b. Required ATR Team Expertise. The ATR team shall be comprised of members with the following expertise:

ATR Team Members/Disciplines	Expertise Required
ATR Lead	The ATR lead should be a senior professional with extensive experience in preparing Civil Works decision documents and conducting ATR. The lead should also have the necessary skills and experience to lead a virtual team through the ATR process. The ATR lead may also serve as a reviewer for a specific discipline (such as planning, economics, environmental resources, etc).
Planning	The Planning reviewer should be a senior water resources planner with experience in civil works process, watershed level projects, current flood risk management planning and policy guidance, and have experience in plan formulation for multipurpose projects, specifically integrating measures for flood risk management, ecosystem restoration, recreation, watersheds, and planning in a collaborative environment.
Economics	Team member will be experienced in civil works and related flood risk reduction projects, and have a thorough understanding of HEC-FDA
Agricultural Economics	The reviewer should have experience with the general concepts and procedures used in the computation of the agricultural damages incurred by assumed flood events.
Environmental Resources	Team member will be experienced in NEPA/CEQA process and analysis, and have a biological or environmental background that is familiar with the project area and ecosystem restoration.
Cultural Resources	Team member will be experienced in cultural resources and tribal issues, regulations, and laws.
Hydrology	The reviewer should be familiar with the computation of frequency curves using conditional probability methods and development of hydrographs.
Hydraulic Engineering	The hydraulic engineering reviewer should be an expert in the field of urban hydrology & hydraulics, have a thorough understanding of the dynamics of the both open channel flow

	systems, enclosed systems, alluvial fan flooding, application of detention / retention basins, effects of best management practices and low impact development on hydrology, approaches that can benefit water quality, application of levees and flood walls in an urban environment with space constraints, non-structural measures especially as related to multipurpose alternatives including ecosystem restoration, non-structural solutions involving flood warning systems, and non-structural alternatives related to flood proofing. The team member will have an understanding of computer modeling techniques that will be used for this project (HEC-HMS, HEC-RAS, UNET, FLO-2D and TABS).
Geotechnical Engineering	Team member will be experienced in levee & floodwall design, post-construction evaluation, and rehabilitation. A certified professional engineer is recommended
Civil /Structural Engineering	Team member will have experience in utility relocations, positive closure requirements and internal drainage for levee construction, and application of non-structural flood damage reduction, specifically flood proofing. A certified professional engineer is suggested. Team member will also have a thorough understanding of non-structural measures, levee, flood wall, and retaining wall design, and structures typically associated with levees (pump stations, gate well structures, utility penetrations, stop log & sandbag gaps, and other closure structures). A certified professional engineer is recommended though not required
Cost Engineering	This reviewer will be familiar with cost estimating for similar civil works projects using MCACES. Team member will be a Certified Cost Technician, Certified Cost Consultant, or Certified Cost Engineer. A separate process and coordination is also required through the Walla Walla District DX for cost engineering.
Real Estate	The reviewer will be experienced in federal civil work real estate laws, policies and guidance. Members shall have experience working with respective sponsor real estate issues.
Risk Analysis	The reviewer will be experienced in the fundamentals of risk analysis for Corps civil works projects.

c. Documentation of ATR. DrChecks review software will be used to document all ATR comments, responses and associated resolutions accomplished throughout the review process. Comments should be limited to those that are required to ensure adequacy of the product. The four key parts of a quality review comment will normally include:

- (1) The review concern – identify the product’s information deficiency or incorrect application of policy, guidance, or procedures;
- (2) The basis for the concern – cite the appropriate law, policy, guidance, or procedure that has not be properly followed;
- (3) The significance of the concern – indicate the importance of the concern with regard to its potential impact on the plan selection, recommended plan components, efficiency (cost),

- effectiveness (function/outputs), implementation responsibilities, safety, Federal interest, or public acceptability; and
- (4) The probable specific action needed to resolve the concern – identify the action(s) that the reporting officers must take to resolve the concern.

In some situations, especially addressing incomplete or unclear information, comments may seek clarification in order to then assess whether further specific concerns may exist.

The ATR documentation in DrChecks will include the text of each ATR concern, the PDT response, a brief summary of the pertinent points in any discussion, including any vertical team coordination (the vertical team includes the district, RMO, MSC, and HQUSACE), and the agreed upon resolution. If an ATR concern cannot be satisfactorily resolved between the ATR team and the PDT, it will be elevated to the vertical team for further resolution in accordance with the policy issue resolution process described in either ER 1110-1-12 or ER 1105-2-100, Appendix H, as appropriate. Unresolved concerns can be closed in Dr. Checks with a notation that the concern has been elevated to the vertical team for resolution.

At the conclusion of each ATR effort, the ATR team will prepare a Review Report summarizing the review. Review Reports will be considered an integral part of the ATR documentation and shall:

- Identify the document(s) reviewed and the purpose of the review;
- Disclose the names of the reviewers, their organizational affiliations, and include a short paragraph on both the credentials and relevant experiences of each reviewer;
- Include the charge to the reviewers;
- Describe the nature of their review and their findings and conclusions;
- Identify and summarize each unresolved issue (if any); and
- Include a verbatim copy of each reviewer's comments (either with or without specific attributions), or represent the views of the group as a whole, including any disparate and dissenting views.

ATR may be certified when all ATR concerns are either resolved or referred to the vertical team for resolution and the ATR documentation is complete. The ATR Lead will prepare a Statement of Technical Review certifying that the issues raised by the ATR team have been resolved (or elevated to the vertical team). A Statement of Technical Review should be completed, based on work reviewed to date, for the AFB, draft report, and final report. A sample Statement of Technical Review is included in Attachment 2.

6. INDEPENDENT EXTERNAL PEER REVIEW (IEPR)

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 certain 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, as described in EC 1165-2-209, is made as to whether IEPR is appropriate. IEPR panels will consist of independent, recognized experts from outside of the USACE in the appropriate disciplines, representing a balance of areas of expertise suitable for the review being conducted. There are two types of IEPR:

- Type I IEPR. Type I IEPR reviews are managed outside the USACE and are conducted on project studies. 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. Type I IEPR will cover the entire decision document or action and will address all underlying engineering, economics, and environmental work, not just one aspect of the study. For decision documents where a Type II IEPR (Safety Assurance Review) is anticipated during project implementation, safety assurance shall also be addressed during the Type I IEPR per EC 1165-2-209.
 - Type II IEPR. Type II IEPR, or Safety Assurance Review (SAR), are managed outside the USACE and are conducted on design and construction activities for hurricane, storm, and flood risk management projects or other projects where existing and potential hazards pose a significant threat to human life. Type II IEPR panels will conduct reviews of the design and construction activities prior to initiation of physical construction and, until construction activities are completed, periodically thereafter on a regular schedule. The reviews shall consider the adequacy, appropriateness, and acceptability of the design and construction activities in assuring public health safety and welfare. The panel for the Type II IEPR is anticipated to include similar skill sets as identified for the Type I IEPR and cost approximately the same amount.
- a. **Decision on IEPR.** Type I IEPR will be conducted for the Feasibility Study and it is anticipated that a Type II Safety Assurance Report (SAR) will be conducted during the PED phase of the project. Safety Assurance will also be addressed during the Type I IEPR per Paragraph 2.c. (3) of Appendix D of EC 1165-2-209. This section documents the risk informed decision on the conduct of IEPR for the Orestimba Creek Study. The decision has been based on the criteria in EC 1165-2-209 and the discussion in Section 3 – Factors Affecting the Scope and Level of Review. The following issues were considered as part of the risk informed decision:
- The estimated Total Project Cost may be above the \$45 million trigger amount; therefore, the PDT will assume IEPR will take place.
 - The proposed project would implement multiple features to reduce the risk of flooding in and around the City of Newman. The chance of multiple failures is extremely low. The consequences of catastrophic failure would remain lower than if the project was not constructed.
 - the product is not likely to contain influential scientific information or be a highly influential scientific assessment; and
 - The decision document does meet the possible exclusions listed in EC 1165-2-209, paragraph 11.d.(3) in that it does not include an EIR, is not controversial, has no more than negligible adverse impacts on scarce or unique tribal, cultural, or historic resources, has no substantial adverse impacts on fish and wildlife species and their habitat prior to the implementation of mitigation measures, and has no more than a negligible adverse impact on threatened or endangered species or their habitat.
 - The Sacramento District has not received a request to conduct IEPR from a head of a Federal or state agency charged with reviewing the project
 - The proposed project meets the criteria for conducting Type II IEPR described in Paragraph 2 of Appendix D of EC 1165-2-209, including:

- The nature of alluvial fan flooding is shallow sheet flow and it is of a short duration, but has potentially high velocities and includes uncertainty as to where the flooding will occur. Therefore, the Federal Action is justified partially by that fact the Chief of Engineering has determined there is a life safety risk.
- The project does not involve the use of innovative materials or techniques where the engineering is based on novel methods, presents complex challenges for interpretations, contains precedent-setting methods or models, or presents conclusions that are likely to change prevailing practices;
- Redundancy, resiliency, and robustness will be considered during project formulation and design. The proposed levee height is higher than the canal berm and the Railroad berm so that floodwaters would overtop those facilities prior to overtopping the levee. The proposed project would implement multiple features to reduce the risk of flooding in and around the City of Newman. The chance of multiple failures is extremely low.
- the project does not have unique construction sequencing or a reduced or overlapping design construction schedule

b. Products to Undergo Type I IEPR. IEPR will be performed on the Feasibility Report and Appendices. The review will take place at the draft report stage, concurrent with public review.

c. Required Type I IEPR Panel Expertise. This section outlines the number of Type I IEPR panel members and briefly describes the expertise that will be represented on the panel. The expertise represented on the Type I IEPR panel is similar to those on the ATR team, but is more specifically focused and doesn't involve as many disciplines. The panel includes the necessary expertise to assess the engineering, environmental, and economic adequacy of the decision document as required by EC 1165-2-209, Appendix D. The PDT has made the initial assessment of the expertise is needed based on the PMP and the factors affecting the scope and level of review outlined in Section 3 of the review plan. The Outside Eligible Organization (OEO) will determine the final participants on the panel. The following table provides the disciplines that will be included on the IEPR team and a description of the expertise required.

IEPR Panel Members/Disciplines	Expertise Required
Economics with a focus on Agricultural Economics	The Economics Panel Member should be experienced in civil works and related flood risk reduction projects, and have a thorough understanding of HEC-FDA as well as experience with the general concepts and procedures used in the computation of the agricultural damages incurred by assumed flood events.
Environmental	The Environmental panel member will be experienced in NEPA/CEQA process and analysis, and have a biological or environmental background that is familiar with the project area and ecosystem restoration.
Engineering with a focus on Hydraulics	The Panel Member should be an expert in the field of urban hydrology & hydraulics, have a thorough understanding of the dynamics of the both open channel flow systems, enclosed systems, alluvial fan flooding, application of detention / retention basins, effects of best management practices and low impact development on hydrology, approaches that can benefit water

	<p>quality, application of levees and flood walls in an urban environment with space constraints, non-structural measures especially as related to multipurpose alternatives including ecosystem restoration, non-structural solutions involving flood warning systems, and non-structural alternatives related to flood proofing. The team member will have an understanding of computer modeling techniques that will be used for this project (HEC-HMS, HEC-RAS, UNET, and TABS).</p>
<p>Geotechnical Engineer</p>	<p>The geotechnical engineering reviewer should have an extensive experience in evaluation of flood risk management structures such as static and dynamic slope stability, evaluation of the seepage through earthen embankments and underseepage through the foundation of the flood risk management structures, including dam and levee embankments, floodwalls, closure structures and other pertinent features, and in settlement evaluation of the structures.</p>

d. Documentation of Type I IEPR. The IEPR panel will be selected and managed by an Outside Eligible Organization (OEO) per EC 1165-2-209, Appendix D. Panel comments will be compiled by the OEO and should address the adequacy and acceptability of the economic, engineering and environmental methods, models, and analyses used. IEPR comments should generally include the same four key parts as described for ATR comments in Section 4.d above. The OEO will prepare a final Review Report that will accompany the publication of the final decision document and shall:

- Disclose the names of the reviewers, their organizational affiliations, and include a short paragraph on both the credentials and relevant experiences of each reviewer;
- Include the charge to the reviewers;
- Describe the nature of their review and their findings and conclusions; and
- Include a verbatim copy of each reviewer's comments (either with or without specific attributions), or represent the views of the group as a whole, including any disparate and dissenting views.

The final Review Report will be submitted by the OEO no later than 60 days following the close of the public comment period for the draft decision document. USACE shall consider all recommendations contained in the Review Report and prepare a written response for all recommendations adopted or not adopted. The final decision document will summarize the Review Report and USACE response. The Review Report and USACE response will be made available to the public, including through electronic means on the internet.

7. POLICY AND LEGAL COMPLIANCE REVIEW

All decision documents will be reviewed throughout the study process for their compliance with law and policy. Guidance for policy and legal compliance reviews is addressed in Appendix H, ER 1105-2-100. These reviews culminate in determinations that the recommendations in the reports and the supporting analyses and coordination comply with law and policy, and warrant approval or further recommendation to higher authority by the home MSC Commander. DQC and ATR augment and complement the policy review processes by addressing compliance with pertinent published Army policies, particularly policies on analytical methods and the presentation of findings in decision documents.

8. COST ENGINEERING DIRECTORY OF EXPERTISE (DX) REVIEW AND CERTIFICATION

All decision documents shall be coordinated with the Cost Engineering DX, located in the Walla Walla District. The DX will assist in determining the expertise needed on the ATR team and Type I IEPR team (if required) and in the development of the review charge(s). The DX will also provide the Cost Engineering DX certification. The RMO is responsible for coordination with the Cost Engineering DX.

9. MODEL CERTIFICATION AND 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, for the purposes of the EC, are defined as any models and analytical tools that planners use to define water resources management problems and opportunities, to formulate potential alternatives to address the problems and take advantage of the 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 the planning product. The selection and application of the model and the input and output data is still the responsibility of the users and is subject to DQC, ATR, and IEPR (if required).

EC 1105-2-412 does not cover engineering models used in planning. The responsible use of well-known and proven USACE developed and commercial engineering software will continue and the professional practice of documenting the application of the software and modeling results will be followed. As part of the USACE Scientific and Engineering Technology (SET) Initiative, many engineering models have been identified as preferred or acceptable for use on Corps studies and these models should be used whenever appropriate. The selection and application of the model and the input and output data is still the responsibility of the users and is subject to DQC, ATR, and IEPR (if required).

a. Planning Models. The following planning models are anticipated to be used in the development of the decision document:

Model Name and Version	Brief Description of the Model and How It Will Be Applied in the Study	Certification / Approval Status
HEC-FDA 1.2.4 (Flood Damage Analysis)	<p>The HEC-FDA program provides the capability for integrated hydrologic engineering and economic analysis for formulating and evaluating flood risk management plans using risk-based analysis methods. The program will be used to evaluate and compare the future without- and with-project plans along Orestimba Creek near Newman to aid in the selection of a recommended plan to manage flood risk. This program:</p> <ul style="list-style-type: none"> o Provides a repository for both the economic and hydrologic data required for the analysis o Provides the tools needed to understand the results o Calculates the Expected Annual Damages and the Equivalent Annual Damages o Computes the Annual Exceedence Probability and the Conditional Non-Exceedence Probability o Implements the risk-based analysis procedures contained in EM 1110-2-1619. 	Certified CoP Preferred

<p>Sacramento Crop and Related Cost Estimation Model (SCARCE), Version 1.0</p>	<p>The model focuses on the primary damages on agricultural crops, loss of stored crops, and loss of farm equipment. These damages are directly related, and evaluated with special consideration for the expected time of seasonal flooding as well as the variability associated with crop prices and yields. The identified hydrologic/hydraulic variables, discharge associated with exceedence frequency and conveyance roughness and cross-section geometry, also apply to agricultural studies. Although the crop damage is directly related to the duration of flooding, damage to commodity storage and equipment is based on stage-damage relationships and is computed accordingly.</p>	<p>Funds have been provided to the FRM PCX for development of a Review Plan for the model. When the plan is completed we will be apprised of the funding requirements to complete the approval process.</p>
<p>Habitat Sensitivity Indices (HSI)</p>	<p>In accordance with the Fish and Wildlife Coordination Act, a HEP analysis, including the use of HSI models, will be used by the Fish and Wildlife Service to identify impacts to habitat. HSI models relevant to the project will be determined by the PDT's environmental subcommittee. The Ecosystem Restoration Planning Center of Expertise has responsibility for approving ecosystem output methodologies for use in ecosystem restoration planning and mitigation planning,</p>	
<p>IWR PLAN</p>	<p>This software assists with the formulation and comparison of alternative plans. While IWR-PLAN was initially developed to assist with environmental restoration and watershed planning studies, the program can be useful in planning studies addressing a wide variety of problems. IWR-PLAN can assist with plan formulation by combining solutions to planning problems and calculating the additive effects of each combination, or "plan." IWR-PLAN can assist with plan comparison by conducting cost effectiveness and incremental cost analyses, identifying the plans which are the best financial investments and displaying the effects of each on a range of decision variables.</p>	<p>Certified CoP Preferred</p>

b. Engineering Models. The following engineering models are anticipated to be used in the development of the decision document. The approval status of many engineering models can be found on the Hydraulics, Hydrology, and Coastal Engineering CoP SharePoint site at: <https://kme.usace.army.mil/NTCT/HHC/default.aspx> under shared documents/SET software lists.

Model Name and Version	Brief Description of the Model and How It Will Be Applied in the Study	Approval Status
HEC-RAS 4.0 (River Analysis System)	The Hydrologic Engineering Center’s River Analysis System (HEC-RAS) program provides the capability to perform one-dimensional steady and unsteady flow river hydraulics calculations. The program will be used for steady flow analysis to evaluate the future without- and with-project conditions along Orestimba Creek	HH&C CoP Preferred Model
FLO-2D:	This model will be used for the overbank reaches.	Allowed for use
HEC-HMS	By applying this model the PDT is able to: <ul style="list-style-type: none"> o Define the watersheds’ physical features o Describe the metrological conditions o Estimate parameters o Analyze simulations o Obtain GIS connectivity 	CoP Preferred
HEC-Res-Sim	This model predicts the behavior of reservoirs and to help reservoir operators plan releases in real-time during day-to-day and emergency operations. This model includes a Graphical User Interface, Map-Based Schematics and Rule-Based Operations	CoP Preferred
MCACES or MII	This software is used to help develop detailed cost estimates for the study.	Allowed for use

10. REVIEW SCHEDULES AND COSTS

a. ATR Schedule and Cost.

ATR Timeline

Task	Date
ATR Feasibility Scoping Meeting	September 2001
ATR of Alternative Review Comment Period	October - December 2009
Alternative Review Conference ¹	January 2010
AFB Kickoff meeting for ATR	February 2012
AFB ATR Comments	March - April 2012
PDT Responses	April 2012
Responses Back check	April 2012
Alternative Formulation Briefing (AFB)	June 2012
AFB Policy Memo Issued	July 2012
ATR Certification Draft Report	July 2012
Public Review of Draft Report	December 2012
ATR Certification Final Report	March 2013

¹Required by the Major Subordinate Command.

The estimated costs for the ATR are as follows:

- AFB \$40,000
- Draft Report \$20,000
- Final Report \$10,000
- Civil Works Review Board (ATR Chair) \$5,000
- Total **\$75,000**

b. Type I IEPR Schedule and Cost.

IEPR Timeline

Task	Date
Develop IEPR Charge, SOW and IGE	May 2012
District MIPRs funds to CVO ¹	June 2012
CVO awards IEPR Contract	June 2012
Provide draft review docs & charge to OEO	June 2012
OEO – Corps Kickoff Meeting	June 2012
OEO Develops work Plan	July 2012
Conflict of Interest Questionnaire	July 2012
IEPR Panel identified	July 2012
Final Review documents and charge to OEO	July 2012
USACE/OEO kickoff meeting with Panel	August 2012
Panel Review and comment	August 2012
Mid-Review Meeting with Panel	August 2012
Collate Comments and develop IEPR Report	August 2012
OEO submits report to USACE	September 2012
HQ and Congressional Coordination	September 2012
USACE response	September 2012
Panel Back-check	September 2012
IEPR participation at CWRB	May 2013

¹Contract Vehicle Organization.

Estimated costs for the IEPR are as follows:

- FRM PCX for IEPR Manager \$12,000 (Cost Shared)
- District support of IEPR review \$30,000 (Cost Shared)
- IEPR Contract \$150,000 (Federal Cost)

c. Model Certification/Approval Schedule and Cost. Sacramento Crop and Related Cost Estimation Model (SCARCE), Version 1.0. Funds have been provided to the FRM PCX for development of a Review Plan for the model. When the plan is completed we will be apprised of the schedule and funding requirements to complete the approval process. All other models that are anticipated for use on the Orestimba Creek study have been certified or approved for use.

d. Value Engineering Schedule and Cost. A Value Engineering Study was conducted for the Orestimba Creek Feasibility Study in April 2009. Costs for this study were approximately \$25,000.

e. Type II IEPR Safety Assurance Report (SAR) Schedule and Cost. A Safety Assurance Report will be conducted during the Preconstruction, Engineering and Design (PED) phase. It is anticipated that this review will cost in the range of \$100,000 to \$200,000.

11. PUBLIC PARTICIPATION

The public and agencies will continue to have multiple opportunities to participate in this study. Numerous Stakeholder meetings comprised of local landowners, city and county officials and agency representatives have been held in the past several years. Additional Stakeholder meetings are planned.

The established Orestimba Creek Stakeholder group will be asked to review and provide comments on the AFB document. The stakeholder group will also be asked to nominate other potential peer reviewers. Public review of the draft feasibility report will occur after issuance of the AFB policy guidance memo and concurrence by HQUSACE that the document is ready for public release. As such, public comments other than those provided at any public meetings held during the planning process will not be available to the review teams. Public review of the draft report will begin approximately 1 month after the completion of the ATR process and policy guidance memo. The period will last a minimum of 30 days as required for an Environmental Assessment (EA). One or more public workshops will be held during the public and agency review period. Comments received during the public comment period for the draft report could be provided to the ATRT before review of the final Decision Document. The public review of necessary state or Federal permits will also take place during this period. A formal State and Agency review will occur concurrently with the public review. However, it is anticipated that intensive coordination with these agencies will have occurred concurrent with the planning process. Upon completion of the review period, comments will be consolidated in a matrix and addressed, if needed. A comment resolution meeting will take place if needed to decide upon the best resolution of comments. A summary of the comments and resolutions will be included in the document. The final decision document, with an appendix including comments and responses, will be available for download on the District's website. Several hard copies of the report will be delivered to the City of Newman for distribution to City Hall and local libraries.

After its review of the final feasibility report and EA, including consideration of public comments, Corps Headquarters would prepare the Chief of Engineers' Report. This report would be submitted to the Assistant Secretary of the Army for Civil Works (ASA(CW)), who would coordinate with the Office of Management and Budget and submit the report to Congress. Once the final report is approved by the Chief of Engineers and the project is authorized by Congress, construction funds must be appropriated by Congress before a Project Partnership Agreement can be signed by the Corps and sponsor to begin construction.

REVIEW PLAN APPROVAL AND UPDATES

The South Pacific Division Commander is responsible for approving this Review Plan. The Commander's approval reflects vertical team input (involving district, MSC, RMO, and HQUSACE members) as to the appropriate scope and level of review for the decision document. Like the PMP, the Review Plan is a living document and may change as the study progresses. The home district is responsible for keeping the Review Plan up to date. Minor changes to the review plan since the last MSC Commander approval are documented in Attachment 3. Significant changes to the Review Plan (such as changes to the scope and/or level of review) should be re-approved by the MSC Commander following the process used for initially approving the plan. The latest version of the Review Plan, along with the Commanders' approval memorandum, should be posted on the Home District's webpage. The latest Review Plan should also be provided to the RMO and home MSC.

12. REVIEW PLAN POINTS OF CONTACT

Public questions and/or comments on this review plan can be directed to the following points of contact:

- Sara Schultz, Water Resources Planner, Sacramento District, Planning Division (916) 557-7368

- Karen Berresford, District Support Team Lead, South Pacific Division, (415) 503-6557
- Eric Thaut, Flood Risk Management PCX, (415) 503-6852

ATTACHMENT 1: TEAM ROSTERS

Name	Role in the Study	Contact Information	Email
Project Delivery Team (PDT) Members			
Michelle Williams, Project Manager(CESPK-PM-C)	Report Review, Schedule and Budget	(916) 557-7098	Michelle.R.Williams@usace.army.mil
Patrick Caden, Budget Analyst (CESPK-PM-C)	Budgeting and programming	(916)557-7975	Patrick.J.Caden@usace.army.mil
Scott Miner, (CESPK-PD-W)	Plan Formulation and Ecosystem Restoration	(916) 557-6695	Scott.P.Miner@usace.army.mil
Sara Schultz, Water Resources Planner (CESPK-PD-WW)	Plan Formulation and evaluation. Report Preparation. Graphic Preparation	(916) 557-7368	Sara.M.Schultz@usace.army.mil
Robin Rosenau, Environmental Manager (CESPK-PD-RA)	Report Preparation and Impact Assessment	(916) 557-5397	Robin.Rosenau@usace.army.mil
Ajala Ali, DWR Project Manager	State Coordination	(916) 574-1040	aali@water.ca.gov
Nick Applegate, Economist (CESPK-PD-WE)	Economic Analysis	(916) 557-6711	Nicholas.J.Applegate@usace.army.mil
Gary Bedker, Agricultural Economist (CESPK-PD-W)	Agriculture Economic Damage Assessment	(916) 557-6707	Gary.M.Bedker@usace.army.mil
Peter Blodgett, Hydraulic Engineer(CESPK-ED-HD)	Hydraulic Design	(916) 557-7529	Peter.J.Blodgett@usace.army.mil
Bob Vrchoticky, Cost Engineering (CESPK-ED-DR)	Cost Engineering	(916) 557-7336	Robert.D.Vrchoticky@usace.army.mil
Glen Johnson, Geotechnical Engineer(CESPK-ED-GS)	Geotechnical Analysis and Report Preparation	(916) 557-6681	Glen.A.Johnson@usace.army.mil
Paul Hsia, Civil Engineer(CESPK-ED-DB)	Civil Design	(916) 557-6648	Shanching.Hsia@usace.army.mil
Benson Liang, Civil Design(CESPK-ED-D)	Civil Design	(916) 557-6768	Benson.Y.Liang@usace.army.mil
Todd Wixom, Real Estate Specialist (CESPK-RE-B)	Real Estate	(916) 557-6797	Todd.P.Wixom@usace.army.mil
Ricky Okikawa, Attorney, (CESPK-OC)	Real Estate	(916) 557-6858	Ricky.K.Okikawa@usace.army.mil
Alarice Hansberry, Attorney, (CESPK-OC)	Legal Review	(916) 557-7264	Alarice.R.Hansberry@usace.army.mil

Agency Technical Review (ATR) Team			
Roger Dale Setters, PE Chief (CELRD PCX FRM)	ATR Chairperson and Planning Review	(502) 315-6891	Roger.D.Setters@usace.army.mil
Michael Hallisy, Economist (CESPL-PD-WE)	ATR Economics	(213)-452-3815	Michael.J.Hallisy@usace.army.mil
Robert Browning, Economist (CESPA-PM-LP)	ATR Agricultural Economics	(505)342-3366	Robert.L.Browning.II@usace.army.mil
Stephen Scissons, Hydraulic Design (CESPA –PM-LH)	ATR Hydraulic Design	(505)342-3328	Stephen.K.Scissons@usace.army.mil
Matthew McPherson Chief, Water Resources Division(CEIWR-HEC-WR)	Risk Analysis	(530)756-1104 x325	Matthew.M.McPherson@usace.army.mil
Bryan Miner (CELRB-TD-DE)	ATR Civil Design	(716) 218-2856	Bryan.C.Miner@usace.army.mil
Patty Smith, Real Estate (CELRL-RE-C)	ATR Real Estate	(502) 315-7017	Patty.S.Smith@usace.army.mil
Eugene Lenhardt (CELRB) Buffalo District	ATR Geotechnical	(716)-879-4167	Eugene.N.Lenhardt@usace.army.mil
Glen Matlock, Cost Estimating (CENWW-EC-X)	ATR Cost Estimating	(509) 527-7083	Glenn.R.Matlock@usace.army.mil
Hannah Hadley, Environmental Manager, (CENWS-PM-PL-ER)	ATR Environmental	(206) 764-6950	Hannah.F.Hadley@usace.army.mil
Review Management Organization (RMO)			
Eric Thaut Flood Risk Management PCX (CESPD-PDS-P)	Review Management	(415) 503-6852	Eric.W.Thaut@usace.army.mil
Dean McLeod (CESPK-PD-WE)	Review Management	(916) 557-7436	Dean.M.McLeod@usace.army.mil
Major Subordinate Command (MSC)			
Karen Berresford (CESPD-PDC)	District Support Team Lead	(415) 503-6557	Karen.G.Berresford@usace.army.mil
Regional Integration Team (RIT)			
Pauline Acosta (CECW-MP-SPD-RIT)	Deputy Chief, Regional Integration Team	(202) 761-4085	Pauline.M.Acosta@usace.army.mil
Outside Eligible Organization (OEO)			
Richard Uhler Battelle	IEPR Project Manager	(561)656-6301	uhlerr@battelle.org

**ATTACHMENT 2: SAMPLE STATEMENT OF TECHNICAL REVIEW FOR DECISION DOCUMENTS
COMPLETION OF AGENCY TECHNICAL REVIEW**

The Agency Technical Review (ATR) has been completed for the Feasibility Study for Orestimba Creek, West Stanislaus County, California. The ATR was conducted as defined in the project’s Review Plan to comply with the requirements of EC 1165-2-209. During the ATR, compliance with established policy principles and procedures, utilizing justified and valid assumptions, was verified. This included review of: assumptions, methods, procedures, and material used in analyses, alternatives evaluated, the appropriateness of data used and level obtained, and reasonableness of the results, including whether the product meets the customer’s needs consistent with law and existing US Army Corps of Engineers policy. The ATR also assessed the District Quality Control (DQC) documentation and made the determination that the DQC activities employed appear to be appropriate and effective. All comments resulting from the ATR have been resolved and the comments have been closed in DrCheckssm.

<p><i>SIGNATURE</i></p> <p><u>Name</u> ATR Team Leader <u>Office Symbol/Company</u></p>	<p>Date</p>
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<p><i>SIGNATURE</i></p> <p><u>Name</u> Project Manager <u>Office Symbol</u></p>	<p>Date</p>
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<p><i>SIGNATURE</i></p> <p><u>Name</u> Architect Engineer Project Manager¹ <u>Company, location</u></p>	<p>Date</p>
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<p><i>SIGNATURE</i></p> <p><u>Name</u> Review Management Office Representative <u>Office Symbol</u></p>	<p>Date</p>
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CERTIFICATION OF AGENCY TECHNICAL REVIEW

Significant concerns and the explanation of the resolution are as follows: [Describe the major technical concerns and their resolution.](#)

As noted above, all concerns resulting from the ATR of the project have been fully resolved.

<p><i>SIGNATURE</i></p> <p><u>Name</u> Chief, Engineering Division <u>Office Symbol</u></p>	<p>Date</p>
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<p><i>SIGNATURE</i></p> <p><u>Name</u> Chief, Planning Division <u>Office Symbol</u></p>	<p>Date</p>
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¹ Only needed if some portion of the ATR was contracted

ATTACHMENT 3: REVIEW PLAN REVISIONS

Revision Date	Description of Change	Page / Paragraph Number

ATTACHMENT 4: ACRONYMS AND ABBREVIATIONS

Term	Definition	Term	Definition
AFB	Alternative Formulation Briefing	NED	National Economic Development
ASA(CW)	Assistant Secretary of the Army for Civil Works	NER	National Ecosystem Restoration
ATR	Agency Technical Review	NEPA	National Environmental Policy Act
CSDR	Coastal Storm Damage Reduction	O&M	Operation and maintenance
DPR	Detailed Project Report	OMB	Office and Management and Budget
DQC	District Quality Control/Quality Assurance	OMRR&R	Operation, Maintenance, Repair, Replacement and Rehabilitation
DX	Directory of Expertise	OEO	Outside Eligible Organization
EA	Environmental Assessment	OSE	Other Social Effects
EC	Engineer Circular	PCX	Planning Center of Expertise
EIS	Environmental Impact Statement	PDT	Project Delivery Team
EO	Executive Order	PAC	Post Authorization Change
ER	Ecosystem Restoration	PMP	Project Management Plan
FDR	Flood Damage Reduction	PL	Public Law
FEMA	Federal Emergency Management Agency	QMP	Quality Management Plan
FRM	Flood Risk Management	QA	Quality Assurance
FSM	Feasibility Scoping Meeting	QC	Quality Control
GRR	General Reevaluation Report	RED	Regional Economic Development
Home District/MSD	The District or MSD responsible for the preparation of the decision document	RMC	Risk Management Center
HQUSACE	Headquarters, U.S. Army Corps of Engineers	RMO	Review Management Organization
IEPR	Independent External Peer Review	RTS	Regional Technical Specialist
ITR	Independent Technical Review	SAR	Safety Assurance Review
LRR	Limited Reevaluation Report	USACE	U.S. Army Corps of Engineers
MSC	Major Subordinate Command	WRDA	Water Resources Development Act