DEPARTMENT OF THE ARMY
PACIFIC OCEAN DIVISION, U.S. ARMY CORPS OF ENGINEERS
FORT SHAFTER, HAWAII 96858-5440

REPLY TO
ATTENTION OF

6 Dec 12

CEPOD-PDC

MEMORANDUM FOR COMMANDER HONOLULU ENGINEER DISTRICT (CEPOH-PP-C/CINDY BARGER), BUILDING 230, FORT SHAFTER, HI 96858-5440

SUBJECT: Review Plan Approval for the Keopu-Hienaloli Streams Continuing Authorities Program Section 205 Flood Risk Management Project Feasibility Report, Island of Hawaii, Hawaii

1. References:

a. Engineering Circular 1165-2-209, Civil Works Review Policy, 31 January 2010, and Change 1, 31 January 2012.

b. Policy Memorandum #1, HQ USACE, CECW-P, 19 January 2011, subject: Continuing Authority Program Planning Process Improvements.

c. Review Plan for the Keopu-Hienaloli Streams Section 205 Feasibility Report, Island of Hawaii, Hawaii, Honolulu District, U.S. Army Corps of Engineers.

2. The enclosed Review Plan (reference 1.c.) for the Keopu-Hienaloli Streams, Island of Hawaii, Hawaii, flood risk management feasibility report was prepared IAW references 1.a. and 1.b. The Pacific Ocean Division Civil Works Division is the lead office to execute this Review Plan. This plan does include Type I Independent External Peer Review.

3. I approve this Review Plan. It is subject to change as circumstances require, consistent with project development under the Project Management Business Process. Subsequent revisions to this Review Plan or its execution will require new written approval from this office.

4. The point of contact for this memorandum is Mr. Russell Iwamura, Senior Economist, Civil Works Integration Division, at 808-835-4625 or email Russell.K.Iwamura@usace.army.mil.

Encl

GREGORY J. GUNTER
Colonel, EN
Acting Commander

REVIEW PLAN

KEŌPŪ-HIENALOLI STREAMS FLOOD RISK MANAGEMENT PROJECT
ISLAND OF HAWAI'I, HAWAI'I

Feasibility Study

Continuing Authorities Program (CAP)
Section 205 of the Flood Control Act of 1948
Public Law 80-858

U.S. Army Corps of Engineers, Honolulu District

Keōpū Stream (Photo Courtesy Oceanit, Inc.)

MSC Approval Date: 6 December 2012
Last Revision Date: 19 November 2012

US Army Corps of Engineers ®

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REVIEW PLAN

KEŌPŪ-HIENALOLI STREAMS FLOOD RISK MANAGEMENT PROJECT
ISLAND OF HAWAIʻI, HAWAIʻI

Feasibility Study

Continuing Authorities Program (CAP)
Section 205 of the Flood Control Act of 1948
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1. PURPOSE AND REQUIREMENTS

a. Purpose. This Review Plan defines the scope and level of peer review for the Keōpū-Hienaloli Streams Flood Risk Management (FRM) Project, Island of Hawai'i, Hawai'i, Feasibility Study, Continuing Authorities Program (CAP), Section 205 of the Flood Control Act of 1948, Public Law 80-858.

This Review Plan was developed using the U.S. Army Corps of Engineers (USACE) National Planning Center of Expertise (PCX) review plan template dated 15 June 2011.

b. References.

(1) Engineer Circular (EC) 1165-2-209, Civil Works Review Policy, 31 January 2010 and Change 1, 31 January 2012.

(2) EC 1105-2-412, Assuring Quality of Planning Models, 31 March 2011.

(3) Engineer Regulation (ER) 1110-1-12, Quality Management, 30 September 2006.

(4) ER 1105-2-100, Planning Guidance Notebook, Appendix F, CAP, Amendment #2, 31 January 2007.

(5) ER 1105-2-100, Planning Guidance Notebook, Appendix H, Policy Compliance Review and Approval of Decision Documents, Amendment #1, 20 November 2007.

(6) Keōpū-Hienaloli Streams FRM Project, Island of Hawai'i, Hawai'i, Feasibility Phase, Project Management Plan (PMP), dated October 2006.

(7) Director of Civil Works Policy Memorandum #1, "CAP Planning Process Improvements," dated 19 January 2011.

(8) USACE Pacific Ocean Division (POD) Quality Management Plan, December 2010.

(9) USACE Honolulu District (POH) Civil Works Review Policy (ISO CEPOH-C 12203) 1 November 2010.

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, CAP decision documents are subject to cost engineering review and certification (per EC 1165-2-209), the Director of Civil Works Policy Memorandum #1, and the Value Management Plan

requirements in the Project Management Business Process Reference 8023G and the ER 11-1-321, Change 1.

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 PCX or the Risk Management Center (RMC), depending on the primary purpose of the decision document. In accordance with EC 1165-2-209, as a CAP project, the RMO for the peer review effort described in this Review Plan is POD as the Major Subordinate Command (MSC). As needed, the POD will seek assistance or direct POH to coordinate with the National FRM-PCX.

POD will coordinate with the Cost Engineering Mandatory Center of Expertise (MCX) to ensure the appropriate expertise is included on the review teams to assess the adequacy of cost estimates, construction schedules and contingencies. As a FRM study, there are potential life safety issues associated with flooding and reducing risk of flooding to the residents of Kailua-Kona, Hawaiʻi. POD will coordinate with the RMC, as appropriate, for review of these life safety issues.

3. STUDY INFORMATION

a. Authority. This project is authorized under Section 205 of the Flood Control Act of 1948, as amended. Section 205 is one of the legislative authorities within the CAP under which the Secretary of the Army, acting through the Chief of Engineers, is authorized to plan, design, and implement certain types of water resources projects without additional project specific congressional authorization. CAP projects are water resource related projects of smaller scope, cost, and complexity than typical USACE Civil Works projects which require specific authorization by Congress. Under the delegated authority of Section 205, USACE is authorized to plan, design and construct flood risk management projects without project specific congressional authorization.

b. Decision Document. An integrated feasibility study and environmental assessment (EA) is being prepared for this project. The purpose of the document is to identify a federally recommended plan to reduce flood risk to the town and residents of Kailua-Kona. As a CAP project, the POD Commander will be approving the decision document.

c. Project Sponsor. The non-Federal sponsor for the project is County of Hawaiʻi, Department of Public Works (DPW).

d. Study/Project Description. The Keōpū and Hienaloli watersheds are situated in the North Kona District on the west slopes of the Hualālai and Mauna Loa Mountains on the Island of Hawaiʻi. These basins are positioned in an east-west direction and are located at approximately 156 degrees west longitude and 27 degrees north latitude. The study area extends from Hualālai (approximate elevation 7,800 feet) on the east to the Pacific Ocean on the west, and approximately 0.6 mile to the north of and just south of Keōpū Heights Subdivision Road.

Kailua, the principal urban center in North Kona, is located at the lower elevations of these watersheds (See Figure 1).

The purpose of the feasibility study will be to identify and formulate potential alternatives that address flood mitigation and to identify a federally recommended plan to POD for approval and construction authorization. These alternative plans will be evaluated for engineering adequacy, economic viability, environmental acceptability, and project sponsor support. An analysis of the alternative plans that address flood mitigation will be conducted to determine the National Economic Development (NED) alternative. Although some analysis was completed during the preliminary assessment portion of the feasibility phase to establish the need for further investigation, the feasibility study will develop, in detail, all needs to be addressed. Detailed analysis of the alternative considered during the preliminary assessment, as well as additional alternatives that are appropriate, will be undertaken. The recommended plan, which may be the locally preferred plan and not the NED Plan, must meet engineering and functional criteria, be economically feasible, have acceptable environmental impacts, and be acceptable to the non-federal sponsor.

The feasibility phase will conclude with the POD Commander's approval of the feasibility report and its findings. The feasibility study will be cost shared equally between the Federal government and the non-Federal Sponsor.

e. Factors Affecting the Scope and Level of Review. As a CAP project, the project risks are minimal. The primary review issue for the feasibility study is the potential for life safety issues related to FRM. The Project Delivery Team (PDT) is assuming that an IEPR will be required. Consistent with EC 1165-2-209, Mr. Todd Barnes, POH Chief of Engineering and Construction, concurs with the assessment that there are potential life safety issues at this stage in plan formulation.

During plan formulation, the study analyses will determine if the project requires redundancy, resiliency, and/or robustness, unique construction sequencing, or a reduced or overlapping design construction schedule to address life safety issues. If life safety issues are minimized during the formulation of the Tentatively Selected Plan (TSP), POH will request an exemption from IEPR consistent with EC 1165-2-209.

The study does not meet the other criteria for consideration for IEPR outlined in EC 1165-2-209:

- As a CAP project, the estimated cost of construction is estimated at $10 million or less.

- There has been no request nor expected to have a request by the Governor of Hawaiʻi for peer review by independent experts.

- No significant public dispute has been voiced over any aspect of the proposed project, including the size, nature, or effects of neither the project nor the economic or environmental cost or benefit of the project.

- The study is not likely to contain influential scientific information or be a highly influential scientific assessment.

- At this time, there has been no charge by a Federal or state agency that the project is likely to have a significant adverse impact on environmental, cultural or other resources under the jurisdiction of the agency after implementation of proposed mitigation plans. There has been no request by a head of a Federal or state agency for peer review by independent experts.

- At this time, POH has determined that an EA would be adequate National Environmental Policy Act (NEPA) documentation for this project. In the event that the EA results in a finding of significant impact, an Environmental Impact Statement will be developed and reviewed consistent with EC 1165-2-209.

- The project is not controversial.

- The project is anticipated to have negligible adverse impacts on scarce or unique tribal, cultural, or historic resources.

- The project is anticipated not to have substantial adverse impacts on fish and wildlife species and their habitat prior to the implementation of mitigation measures.

- The project is anticipated to have no more than a negligible adverse impact, before implementation of mitigation measures, on a species listed as endangered or threatened under the Endangered Species Act (ESA) of 1973 or the critical habitat of such species designated under ESA.

- The project study does not involve the rehabilitation or replacement of existing hydropower turbines, lock structures, or flood control gates within the same footprint and for the same purpose as an existing water resources project.

- There is ample experience within USACE and industry to treat the activity as being routine.

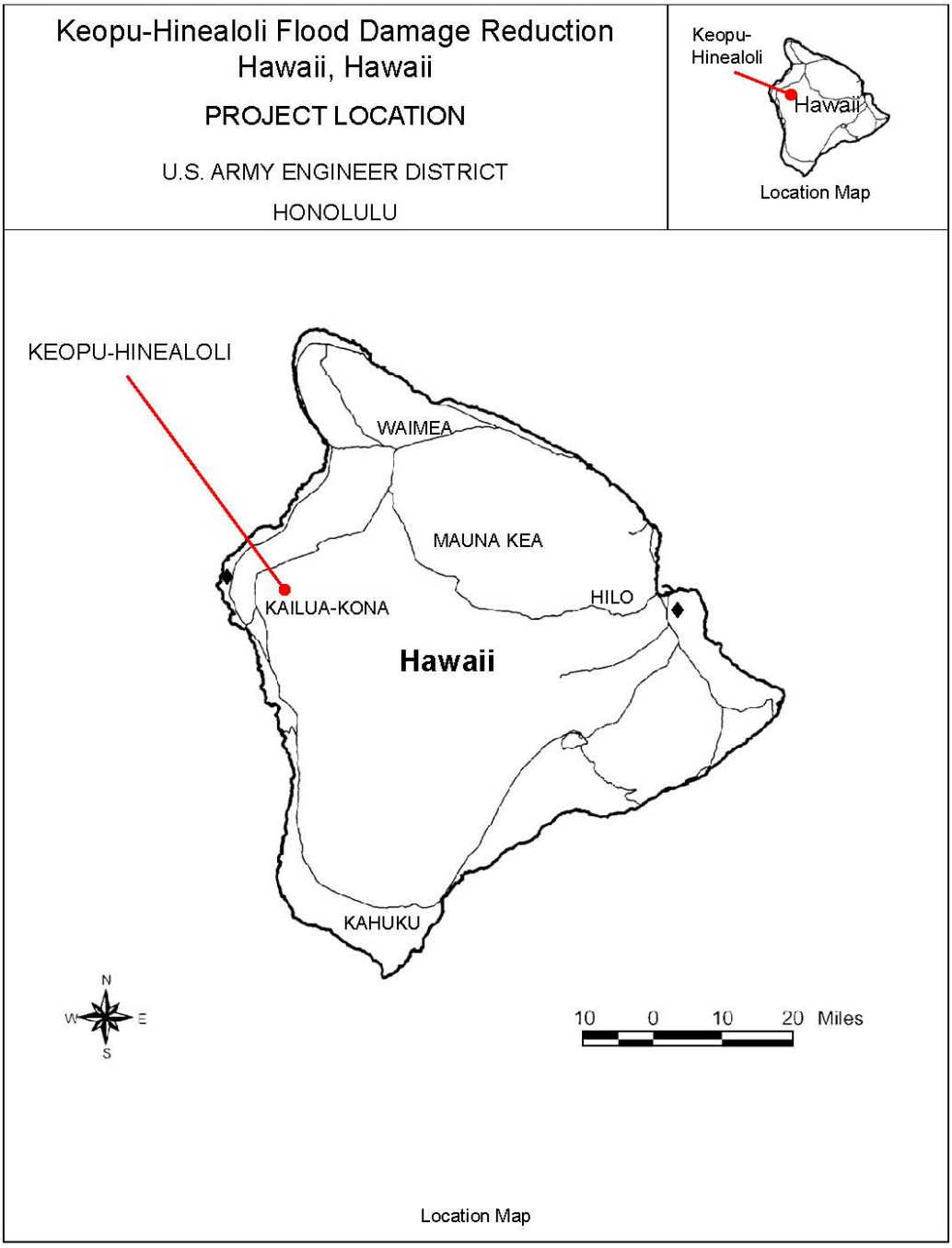
- The study is not likely to contain influential scientific information or be a highly influential scientific assessment.

- The project is not likely to have significant interagency interest.

- The project is not expected to incorporate challenging technical solutions.

- The information in the decision document or 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 practice.

Figure 1: Keōpū-Hieanaloli Stream Location Map



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f. In-Kind Contributions. Products and analyses provided by the non-Federal sponsor as in-kind services are subject to DQC, ATR, and IEPR. The anticipated in-kind services from the non-Federal sponsor are discussed in the PMP for the study. All non-Federal work-in-kind will be subject to DQC, ATR, and IEPR with the review of the feasibility study and EA.

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 PMP. POH shall manage the DQC process. Documentation of DQC activities is required and should be in accordance with the Quality Manuals of POH and POD.

a. Documentation of DQC. Consistent with the POH Quality Manual, DQC will be documented using the POH DQC review table. When all comments have been addressed and back checked, the DQC lead will sign a DQC certification in compliance with the POH Quality Manual. The DQC comments and responses will be provided for the ATR team at each review.

b. Products to Undergo DQC. The following products will be subject to DQC:

(1) Draft and final integrated feasibility study/EA

(2) All technical reports and appendices developed in support of the integrated feasibility study/EA.

(3) The draft and final EA decision.

c. Required DQC Expertise. The following expertise is needed for DQC:

- FRM plan formulation;
- Economics with expertise in FRM;
- Hydraulic engineering with expertise in tropical/flash flood systems and Executive Order (EO) 11988 Floodplain Management; and
- Environmental specialist with expertise in Civil Works environmental compliance including NEPA, National Historic Preservation Act (NHPA), Clean Water Act (CWA) Section 404(b)(1) alternatives analysis; and EO 11988 Floodplain Management.

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 POD and is conducted by a qualified team from outside the POH 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 POD.

a. Products to Undergo ATR. The following products will be subject to ATR:

(1) Draft and final integrated feasibility study/EA

(2) All technical reports and appendices developed in support of the integrated feasibility study/EA.

(3) The draft and final EA decision.

b. Required ATR Team Expertise. The following ATR expertise is required for this project. Because the project is small, where possible ATR team members will address multiple disciplines and emphasis. POD will identify the final make-up of the ATR team and identify the ATR team leader in consultation with the Project Manager (PM), vertical team and other appropriate centers of expertise. Once identified, the ATR team members for this study and a brief description of their credentials will be added in Attachment 1.

Table 1: ATR Required Expertise

ATR Team Members/Disciplines	Expertise Required
ATR Lead	The ATR lead should be a senior professional preferably with experience in preparing flood damage reduction decision documents (i.e. Section 205 CAP Study) 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). The ATR Lead must be from outside POD.
Planning	The Planning reviewer should be a senior water resources planner with experience in flood risk management, CAP projects and compliance with EO 11988 Floodplain Management.
Economics	The Economics reviewer should be a senior economist with experience in FRM and CAP projects.

ATR Team Members/Disciplines	Expertise Required
Environmental Resources	The Environmental reviewer should have experience in CAP projects and Civil Works environmental compliance, including NEPA, NHPA, CWA Section 404(b) (1) alternatives analysis; and EO 11988 Floodplain Management. Familiarity with the Habitat Equivalency Protocol (HEP) methodology for stream systems will also be required for review of the study specific ecosystem output model.
Hydrology and Hydraulic Engineering	The Hydrology and Hydraulic Engineering reviewer will be an expert in the field of hydrology and hydraulics and have experience and understanding of tropical and/or flash flood systems. With knowledge on proposed measures of open channel dynamics, levels, and enclosed channel systems.
Cost Engineering	The Cost Engineering reviewer will have experience in flood risk management and CAP projects.
Real Estate	The Real Estate reviewer will have experience in flood risk management and CAP projects.

c. Documentation of ATR. DrChecks[sm] 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 been 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[sm] 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 POH, POD, and possibly the FRM-PCX 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 DrChecks[sm] 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 (STR) certifying that the issues raised by the ATR team have been resolved (or elevated to the vertical team). A STR should be completed, based on work reviewed to date, for the draft report, and final report. A sample STR 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 by an Outside Eligible Organization (OEO) external to 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 (SAR)) 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 SAR, is managed by the Risk Management Center (RMC) and is conducted on design and construction activities for hurricane, storm, and FRM 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.

a. Decision on IEPR. There is a potential for life safety issues related to flood risk management reduction measures such as levees, channel alterations, and considerations of work in flood plains. Consistent with the Director of Civil Works Policy Memorandum #1 dated 19 January 2011; Section 205 studies have the potential for life safety issues and require a Type I IEPR. As the tentatively selected plan is formulated, POH may determine that life safety issues are minimal. In this event, POH will coordinate with POD and FRM-PCX and seek an appropriate waiver from the IEPR requirement.

Since the project is a FRM project, a Type II IEPR is anticipated on the design and construction of this 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.

b. Products to Undergo Type I IEPR. The draft integrated feasibility study/EA and draft EA decision and supporting technical documentation will undergo a Type I IEPR. The IEPR will be scheduled with the public review of the report.

c. Required Type I IEPR Panel Expertise. The following IEPR expertise is required for this project. Because the project is small, where possible IEPR panel members will address multiple disciplines and emphasis. POD will identify the final make-up of expertise required for the IEPR team in consultation with the PM, vertical team and other appropriate centers of expertise.

Table 2: IEPR Required Expertise

IEPR Panel Members/Disciplines	Expertise Required
Economics	The Economics Panel Member should be a senior economist with experience in FRM projects.

IEPR Panel Members/Disciplines	Expertise Required
Environmental	The Environmental Panel Member should have experience in NEPA, NHPA, CWA Section 404(b) (1) alternatives analysis; and EO 11988 Floodplain Management. No federally listed endangered species occur in the study area.
Engineering	The Engineering Panel Member should have experience in hydraulic engineering in tropical and/or flash flood systems. With knowledge on proposed measures of open channel dynamics, levels, and enclosed channel systems.

d. Documentation of Type I IEPR. The IEPR panel will be selected and managed by an 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 5.c. 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 POD 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 MANDATORY CENTER OF EXPERTISE (MCX) REVIEW AND CERTIFICATION

For CAP projects, ATR of the costs may be conducted by pre-certified district cost personnel within the region or by the Walla Walla Cost MCX. The pre-certified list of cost personnel has been established and is maintained by the Cost MCX at: https://kme.usace.army.mil/EC/cost/CostAtr/default.aspx. The cost ATR member will coordinate with the Cost MCX for execution of cost ATR and cost certification. The Cost MCX will be responsible for final cost certification and may be delegated at the discretion of the Cost MCX.

9. MODEL CERTIFICATION AND APPROVAL

a. Planning Models. The approval of planning models under EC 1105-2-412 is not required for CAP projects. The POD Commander is responsible for assuring models for all planning activities are technically and theoretically sound, compliant with USACE policy, computationally accurate, and based on reasonable assumptions. Planning models are defined as any models and analytical tools that planners use to define water resource management problems and opportunities to formulate potential alternatives to address problems and take advantage of opportunities, to evaluate potential effects of alternatives and to support decision making. The selection and application of the model and the input and output data are still the responsibility of the users and are subject to DQC, ATR, and IEPR (if required).

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

Table 3: Planning Models and Certification/Approval Status

Model Name and Version	Brief Description of the Models and How It Will Be Applied in the Study	Certification / Approval Status
HEC-FDA 1.2.4 (Flood Damage Analysis)	The Hydrologic Engineering Center's Flood Damage Reduction Analysis (HEC-FDA) program provides the capability for integrated hydrologic engineering and economic analysis for formulating and evaluating FRM plans using risk-based analysis methods. The program will be used to evaluate and compare the future without- and with-project plans along the Keōpū-Hienaloli Streams to aid in the selection of a recommended plan to manage flood risk.	Certified
Institute of Water Resources (IWR) Planning Suite	This model assists with formulating plans, cost-effectiveness, and incremental cost analysis (CE/ICA), which are required for ecosystem restoration projects. An "annualizer" module has been included to allow for easy	Certified

Model Name and Version	Brief Description of the Models and How It Will Be Applied in the Study	Certification / Approval Status
	calculations of equivalent annual average values, total net values, and annualizing non-monetary benefits and calculating costs. IWR Planning Suite will be used to conduct the CE/ICA necessary to identify the appropriate level of compensatory mitigation.	
Keōpū-Hienaloli Streams Study Site Specific Spreadsheet Mitigation Model	Depending on the TSP, an ecosystem output model may be required to assess the mitigation requirements for this study. In the absence of any regionalized ecosystem output model that quantifies habitat benefits for stream habitats in Hawaiʻi, a customized spreadsheet model will be developed specifically for use on the Keōpū-Hienaloli Streams Flood Risk Management Project. This is considered to be an appropriate approach, as a spreadsheet model can be tailored to focus on metrics that are directly applicable to the project mitigation objective. In particular, habitat quality parameters contained within the model can serve as a key dataset for quantification of habitat impacts and benefits in the spreadsheet model. In addition, elements of the HEP approach will be used, as State of Hawaiʻi Division of Aquatic Resources has conducted a state wide stream and watershed assessment using this approach, providing focused baseline information on stream functions throughout the State, including Keōpū-Hienaloli Streams.	Model will be reviewed during ATR.

b. Engineering Models. 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 initiative, many engineering models have been identified as preferred or acceptable for use on USACE studies and these models should be used whenever appropriate. The selection and application of the model and the input and output data are still the responsibility of the users and are subject to DQC, ATR, and IEPR (if required).

The following engineering models are anticipated to be used in the development of the decision document:

Table 4: Engineering Model and Approval Status

Model Name and Version	Brief Description of the Model and How It Will Be Applied in the Study	Approval Status
Microcomputer	The MCACES MII construction cost estimating software,	Cost

Model Name and Version	Brief Description of the Model and How It Will Be Applied in the Study	Approval Status
Aided Cost Engineering System (MCACES) 2nd Generation (MII)	developed by Building Systems Design, Inc., is a tool used by cost engineers to develop and prepare all USACE Civil Works cost estimates. Using the features in this system, cost estimates are prepared uniformly allowing cost engineering throughout USACE to function as one virtual cost engineering team.	Engineering MCX Required Model
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 Keōpū-Hienaloli Streams and its tributaries.	HH&C CoP Preferred Model

10. REVIEW SCHEDULES AND COSTS

a. ATR Schedule and Cost. The ATRs for this study will be accomplished in accordance with the cost and schedule in the PMP. As of the approval date of this Review Plan, the ATRs of the various documents are scheduled as follows:

- Draft report review – November 2013.
- Final report review – September 2014.
- Estimated cost: $56,800.

b. Type I IEPR Schedule and Cost. The IEPR for this study will be accomplished in accordance with the cost and schedule in the PMP. As of the approval date of this Review Plan, the IEPR is scheduled as follows:

- Draft report review – April 2014.
- Estimated Contract Cost - $75,000.

Pursuant to Section 2034 of Water Resource Development Act of 2007, this amount is 100% federally funded.

- Estimated cost for the POH and FRM-PCX coordination of the IEPR: $40,000.

This estimate was developed using the Type I IEPR Standard Operating Procedure table provided by the PCXs. This amount is cost-shared between USACE and the non-federal Sponsor.

c. Model Certification/Approval Schedule and Cost. The Keōpū-Hienaloli Stream site specific ecosystem output model will be used on a one-time basis. The review of the single use site specific model will take place during the ATR of the draft document.

11. PUBLIC PARTICIPATION

The Federal government and the project sponsor will conduct public involvement as related to submission of the feasibility study and EA. The Federal government and the project sponsor will arrange, conduct, monitor, and evaluate each public workshop/public meeting. The "public" will include all affected or interested non-USACE entities as well as other Federal, state, and local government entities and officials; public and private organizations; and individuals.

A Public Involvement Plan will be developed for the feasibility study to guide the public participation process. Small group meetings will be conducted to collect specific information relevant to study goals and objectives and provide information to key stakeholders and interest groups relevant to the study goals and objectives. At the Hawai'i County Mayor's request, a public meeting will be conducted near the end of the study to inform the public of the proposed plan and to solicit their comments. The project sponsor will be responsible for providing the meeting/workshop facility. The Federal government and the project sponsor will work together to develop the public notice for the meeting, the appropriate mailing list for the public notice, and the content of the meeting including the agenda and any visual aids that are necessary. The Federal government and sponsor will jointly preside over the meeting. The mailing list and agenda from the EA public meeting will be used as a starting point.

12. REVIEW PLAN APPROVAL AND UPDATES

The POD Commander is responsible for approving this Review Plan. The POD Commander's approval reflects vertical team input (involving the POH, POD, and possibly the FRM-PCX and HQUSACE) 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. POH is responsible for keeping the Review Plan up to date. Minor changes to the review plan since the last POD Commander approval are documented in Attachment 3. Significant changes to the Review Plan (such as changes to the scope and/or level of review) will be re-approved by the POD Commander following the process used for initially approving the plan. The latest version of the Review Plan, along with the POD Commander's approval memorandum, will be posted on the POH webpage. The latest Review Plan will also be provided to the POD and FRM-PCX.

13. REVIEW PLAN POINTS OF CONTACT

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

Honolulu District
Ms. Debbie Solis
Project Manager
Civil and Public Works Branch
Programs and Project Management Division
U.S. Army Corps of Engineers, Honolulu District
Building 230, Room 307
Ft. Shafter, HI 96858-5440
Telephone: (808) 835-4035

Review Management Organization/Pacific Ocean Division
Mr. Russell Iwamura
Economist
U.S. Army Corps of Engineers, Pacific Ocean Division
Building 525 CEPOD-PDC
Ft. Shafter, HI 96858-5440
Telephone: (808) 835-4625

ATTACHMENT 2: SAMPLE STATEMENT OF TECHNICAL REVIEW FOR DECSION DOCUMENTS

COMPLETION OF AGENCY TECHNICAL REVIEW

The ATR has been completed for the *<type of product>* for Keōpū-Hienaloli Streams FRM Project. 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 USACE policy. The ATR also assessed the 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 DrChecks[sm].

SIGNATURE _____ _____

Name Date
ATR Team Leader
Office Symbol/Company

SIGNATURE _____ _____

Name Date
Project Manager
Office Symbol

SIGNATURE _____ _____

Name Date
Architect Engineer Project Manager[1]
Company, location

SIGNATURE _____ _____

Name Date
Review Management Office Representative
Office Symbol

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.

SIGNATURE _____ _____

Name Date
Chief, Engineering Division
Office Symbol

SIGNATURE _____ _____

Name Date
Chief, Planning Division
Office Symbol

[1] Only needed if some portion of the ATR was contracted

ATTACHMENT 3: REVIEW PLAN REVISIONS

Table 8: Review Plan Revisions

Revision Date	Description of Change	Page / Paragraph Number

ATTACHMENT 4: ACRONYMS AND ABBREVIATIONS

Table 9: Standard Acronyms and Abbreviations

Term	Definition	Term	Definition
ATR	Agency Technical Review	NED	National Economic Development
CAP	Continuing Authorities Program	NEPA	National Environmental Policy Act
CWA	Clean Water Act	NHPA	National Historic Preservation Act
DQC	District Quality Control/Quality Assurance	OMRR&R	Operation, Maintenance, Repair, Replacement, and Rehabilitation
EA	Environmental Assessment	OEO	Outside Eligible Organization
EC	Engineer Circular	PCX	Planning Center of Expertise
EIS	Environmental Impact Statement	PDT	Project Delivery Team
EO	Executive Order	PMP	Project Management Plan
ER	Engineer Regulation	POD	U.S. Army Corps of Engineers, Pacific Ocean Division
ESA	Endangered Species Act	POH	U.S. Army Corps of Engineers, Honolulu District
FRM	Flood Risk Management	RMC	Risk Management Center
HQUSACE	Headquarters, U.S. Army Corps of Engineers	RMO	Review Management Organization
IEPR	Independent External Peer Review	SAR	Safety Assurance Review
IWR	Institute of Water Resources	TSP	Tentatively Selected Plan
MCX	Mandatory Center of Expertise	USACE	U.S. Army Corps of Engineers
MSC	Major Subordinate Command		