



REPLY TO  
ATTENTION OF

**DEPARTMENT OF THE ARMY**  
SOUTH PACIFIC DIVISION, CORPS OF ENGINEERS  
1455 MARKET STREET  
SAN FRANCISCO, CALIFORNIA 94103-1399

June 5, 2004

CESPD-PDC

MEMORANDUM FOR Commander, Los Angeles District, ATTN: CESPL-PD, Mr. Lawrence (Larry) Walsh

Subject: Westminster, East Garden Grove, California, Flood Risk Management Feasibility Study, Review Plan Approval

1. Westminster, East Garden Grove, California, Flood Risk Management Feasibility Study, Review Plan that is enclosed is in accordance with Engineering Circular (EC) 1165-2-214, Review of Decision Documents, dated 15 Dec 2012. The South Pacific Division, Planning and Policy Division, Regional Business Technical Division, and Los Angeles District Support Team have reviewed the Review Plan that has been submitted. The South Pacific Division approves Westminster, East Garden Grove, California, Flood Risk Management Feasibility Study, Review Plan.
2. With MSC approval the Review Plan will be made available for public comment via the internet and the comments received will be incorporated into future revisions of the Review Plans. The Review Plan includes Independent External Peer Review.
3. I hereby approve the Review Plan which is subject to change as study circumstances require. This is consistent with study development under the Project Management Business Process. Subsequent revisions to the Review Plan after public comment or during project execution will require new written approval from this office.
4. Points of contact for this action are Mr. Kurt Keilman, CESPD-PDP, 415-503-6596, [kurt.keilman@usace.army.mil](mailto:kurt.keilman@usace.army.mil), and Mr. Paul Bowers, CESPD-PDC, 415-503-6556, [paul.w.bowers@usace.army.mil](mailto:paul.w.bowers@usace.army.mil).

***Building Strong From New Mexico All The Way To The Pacific!***

Encl

C. DAVID TURNER  
BG, EN  
Commanding

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**REVIEW PLAN**

**WESTMINSTER, EAST GARDEN GROVE, CALIFORNIA  
FLOOD RISK MANAGEMENT FEASIBILITY STUDY**

**LOS ANGELES DISTRICT**

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**MSC Approval Date: 28 May 2014**



**US Army Corps  
of Engineers®**

ENCL

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**REVIEW PLAN**

**WESTMINSTER, ORANGE COUNTY, CALIFORNIA  
FLOOD RISK MANAGEMENT FEASIBILITY STUDY  
LOS ANGELES DISTRICT**

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## 1. PURPOSE AND REQUIREMENTS

**Purpose.** This document outlines the Review Plan for the Westminster, East Garden Grove, California (Westminster), Flood Risk Management Feasibility Study. This feasibility study process is anticipated to culminate in a decision document to Congress for potential authorization of a new project.

### a. References.

- (1) Engineering Circular (EC) 1165-2-214, Civil Works Review Policy, 15 Dec 2012
- (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) CESP R 1110-1-8, South Pacific Division Quality Management Plan, 30 Dec 2002
- (6) Westminster Watershed Feasibility Phase Project Management Plan, October 2007

**b. Requirements.** This review plan was developed in accordance with EC 1165-2-214, 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 1165-2-214) and planning model certification/approval (per EC 1105-2-412).

## 2. REVIEW MANAGEMENT ORGANIZATION COORDINATION

The Review Management Organization (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 Planning Center of Expertise (FRM-PCX).

The RMO will coordinate with the Cost Engineering Agency Technical Review and 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.

The RMO for Type II IEPR (Section 6 below) is the US Army Corps of Engineers (USACE or Corps) Risk Management Center (RMC). Panel members will be selected using the National Academies of Science (NAS) policy for selecting reviewers. The District Chief of Engineering, as the Engineer-In-Responsible-Charge, will ensure that Type II IEPR is conducted in accordance with EC 1105-2-214, and will fully coordinate with the Chief of Construction, the Chief of Operations, and the Project Manager through the Pre-Construction Engineering and Design (PED) and Construction phases. The Project Manager will coordinate with the RMO to develop the review requirements and to include them in the Review Plan.

## 3. STUDY INFORMATION

**a. Decision Document.** The purpose of the study is to identify flood-related issues in the Westminster watershed study area and recommend a plan that will adequately address the identified issues. The report will present planning, engineering, and implementation details of the

recommended plan for approval by the Chief of Engineers and subsequent Congressional authorization. The scope and size of this study indicate that an EIS will likely be prepared.

**b. Study/Project Description.** The project is a General Investigations study undertaken to evaluate structural and non-structural Flood Risk Management (FRM) measures to reduce the risk of flooding in the Westminster Watershed. The Westminster feasibility study is being conducted in accordance with the study resolution adopted by the Committee on Public Works, House of Representatives on May 8, 1964, which reads as follows:

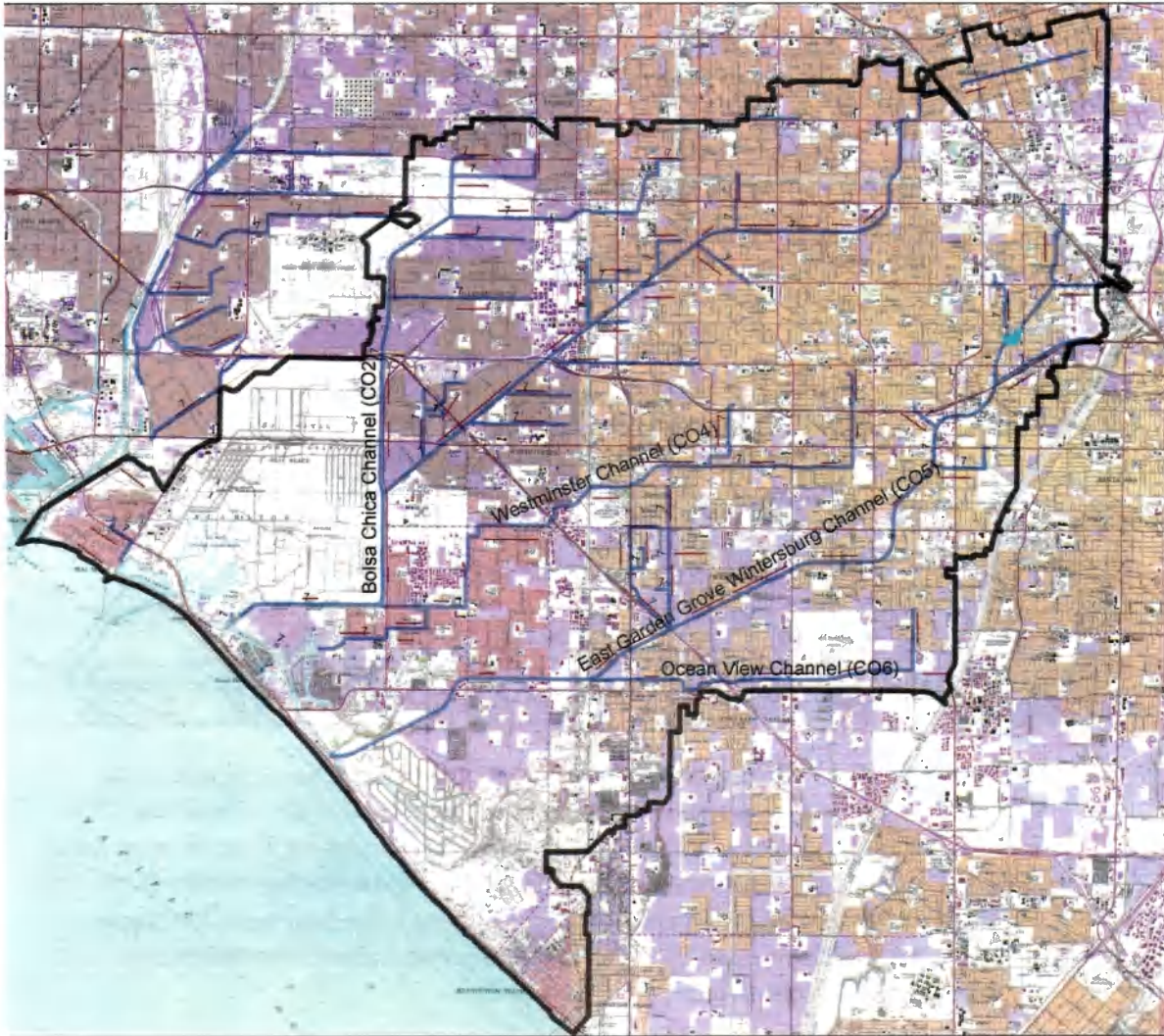
“Resolved by the Committee on Public Works of the House of Representatives, United States, that the Board of Engineers for Rivers and Harbors is hereby requested to review the reports on (a) San Gabriel River and Tributaries, published as House Document No. 838, 76th Congress, 3d Session; (b) Santa Ana River and Tributaries, published as House Document No. 135, 81st Congress, 1st Session; and (c) the project authorized by the Flood Control Act of 1936 for the protection of the metropolitan area in Orange County, with a view to determining the advisability of modification of the authorized projects in the interest of flood control and related purposes.”

The study has been re-scoped for completion in accordance with the SMART Planning Paradigm. As of February 2014, the study has completed the Alternatives Milestone. The feasibility phase of this project is cost shared 50 percent Federal, 50 percent non-Federal. The non-Federal sponsor for the study is Orange County Public Works (OCPW).

The study area is contained within the Westminster Watershed in western Orange County, California. The watershed is approximately 74 square miles and lies on a flat coastal plain that is almost entirely urbanized. Cities in the watershed include Anaheim, Stanton, Cypress, Garden Grove, Westminster, Fountain Valley, Los Alamitos, Seal Beach, and Huntington Beach.

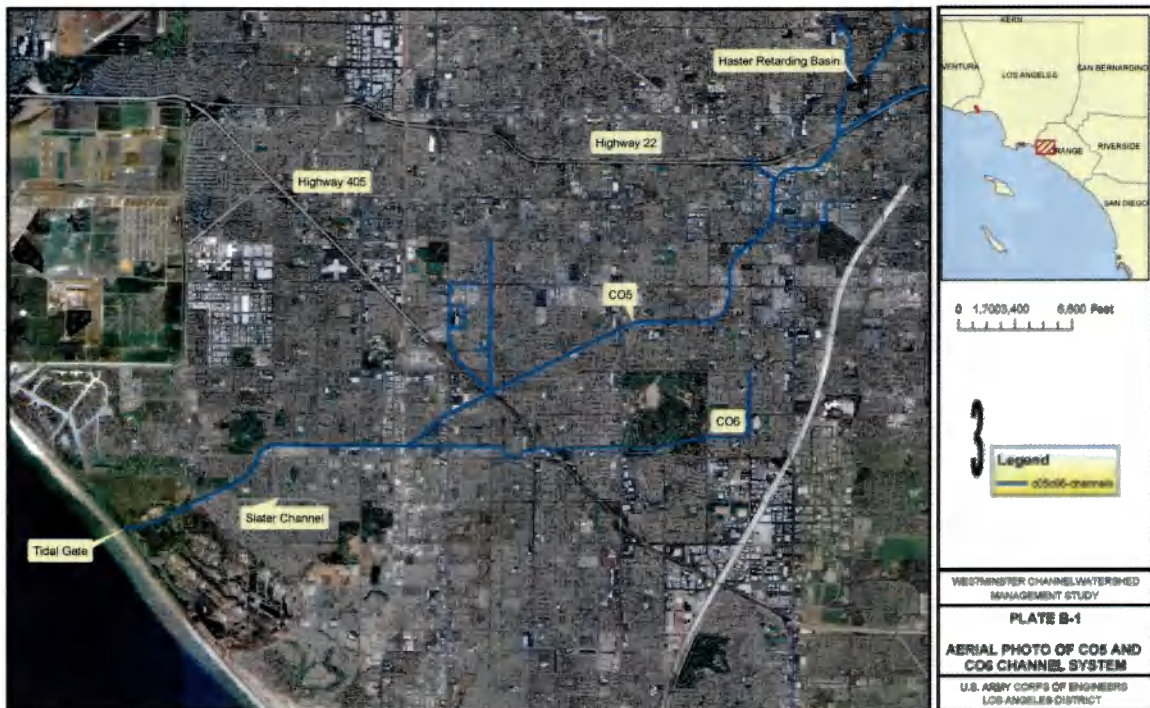
The watershed is part of the former floodplain of the Santa Ana River (SAR) which historically meandered through out the Westminster Watershed as far north as Anaheim Bay to as far south as Newport Bay. Channelization and large scale flood control improvements have constrained the Santa Ana River to the main stem channel on the eastern border of the Westminster Watershed. The Westminster Watershed is depicted in Figure 1.

**Figure 1: Westminster Watershed**



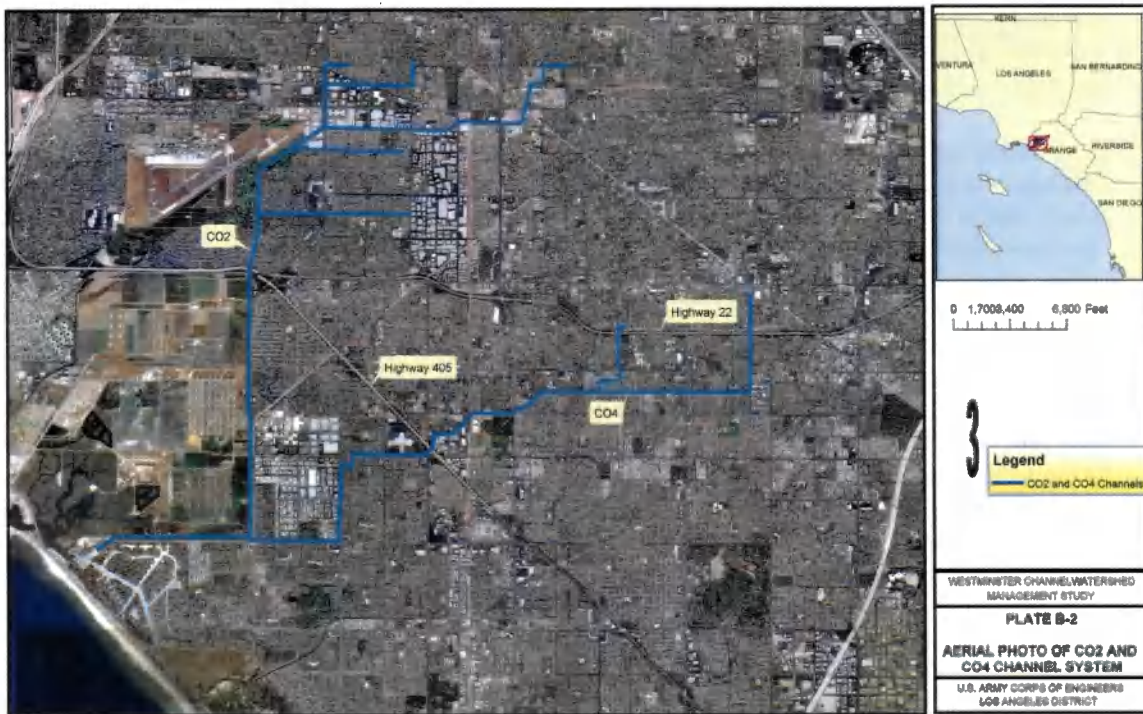
The feasibility study focuses on two channel systems located in the Westminster watershed: the East Garden Grove Wintersburg/Ocean View (CO5/CO6) and Westminster/Bolsa Chica (CO2 /CO4) channel systems and associated tributaries. The existing channel systems vary in length, geometry, channel lining, and width. The CO5/CO6 system is illustrated in Figure 2 and the CO2/CO4 system is illustrated in Figure 3.

**Figure 2: CO5/CO6 Channel System**



- East Garden Grove, Wintersburg Channel (EGGW, CO5) - The CO5 channel extends approximately eleven miles and begins upstream of Haster Basin (a.k.a. Twin Lakes Park) located in the City of Garden Grove and flows southwest through the cities of Santa Ana, Garden Grove, Westminister, and Huntington Beach before discharging into the Outer Bolsa Bay region of the Bolsa Chica Ecological Reserve. Stormwater from the CO5 Channel is passes through a tide gate into Outer Bolsa Bay then passes into Huntington Harbor and ultimately into the Pacific Ocean.
- Ocean View Channel (CO6) - The CO6 channel extends approximately four miles, is a tributary to the CO5 channel, and begins east of Mile Square Park in the City of Fountain Valley. The channel flows westerly through Mile Square Park to the City of Huntington Beach, where it discharges into the CO5 channel at a point northeast of the intersection of Gothard Street and Warner Avenue.

**Figure 3 – CO2/CO4 Channel System**



- Westminster Channel (CO4) - The CO4 channel extends approximately eight miles and is located in the cities of Huntington Beach, Westminster, and Garden Grove in Orange County, California. The channel begins at its confluence with CO2 in Huntington Beach and extends in a northeasterly direction into Westminster and Garden Grove.
- Bolsa Chica Channel (CO2) - The study will only include the most downstream segment of CO2 that extends from the CO2/CO4 confluence at the Bolsa Chica Street/Edinger Avenue intersection downstream to the Huntington Harbor outlet.

The study will not include reaches of CO2 upstream of the CO2/CO4 confluence. Orange County Public Works (OCPW) has indicated that the segment of the CO2 channel that are upstream of the CO2/CO4 confluence currently has sufficient capacity. Any residual flood risk associated with the channel will be managed by OCPW at a future date.

Based upon the analysis of identified problems, opportunities and existing conditions, two planning objectives were identified to direct formulation and evaluation of alternative plans. The planning objectives specific to this watershed, as defined by the PDT and participating stakeholders, directly address water and related land resources management practices. These planning objectives are to:

- 1) Reduce flood hazards, including risks to life safety and damages to private and public infrastructure by 2020.



- 2) Reduce flood impacts in the vicinity of Outer Bolsa Bay, including flooding along Pacific Coast Highway by 2020.

Most of the study scope will focus on FRM, specifically modifications to existing channels and the consideration of the possible addition of detention and retention basins. Potential mitigation for FRM measures will likely be limited to the lower reach of CO5, adjacent to outer Bolsa Chica Bay, due to the highly urbanized reaches of both flood control channel systems.

**c. Factors Affecting the Scope and Level of Review.** The decision document will present the findings of a feasibility study undertaken to evaluate structural and non-structural measures to reduce flood risks in the Westminster watershed. EC 1165-2-214 established thresholds that trigger IEPR: “In cases where there are public safety concerns, a high level of complexity, novel or precedent-setting approaches; where the project is controversial, has significant interagency interest, has a total project cost greater than \$45 million, or has significant economic, environmental and social effects to the nation, IEPR will be conducted.”

The main drainage channels within the watershed were originally built for agricultural purposes by local agencies. The channels were later modified in the 1950s and the 1960s, after the channelization of the Santa Ana River, to convey residual flood waters. Continued urbanization throughout the years has increased the impermeable area within the watershed and the amount of storm water runoff that enters the channel systems. The channels currently have insufficient capacity and flows begin to over top channel segments during the 4% storm event.

The Westminster Watershed is almost entirely urbanized with dense residential and commercial developments extending up to the edge of the channel right-of-way. Any flows that break out of the channel inundate structures adjacent to the channels and travel over land across the watershed, inundating residential and commercial structures along with public infrastructure. There are no features within the watershed to contain flows once they either break out of the channels or overtop the existing levees.

The dense development within the watershed limits any recommended channel improvements to within the channel right-of-way. The channel inverts will not be modified due to the limited elevation change within the watershed and the anticipated high groundwater table. Channel modifications will focus on widening the channel within the available right-of-way, modifying the geometry of the channels and replacing the existing lining of the channels. Existing levees in the downstream segments of the channel systems may be modified as part of the recommended plan, however; limited space within the channel right-of-way prevents construct of new levees in most areas. The study will analyze the impact of detention basins; however, due the limited open space within the watershed, the study has identified Mile Square Park as the only viable location for a detention basin.

There is a concern that upstream improvements will increase the flows at the mouth of the CO5 channel and may impact key areas along the downstream segment of the CO5 channel and downstream of the CO5 channel tidegate. The first area of concern is the Bolsa Chica Ecological Reserve (BCER). The BCER is an environmentally sensitive area that is home to numerous threatened and endangered species along with active oil wells. The CO5 channel currently bisects the reserve and discharges directly into the portion of the reserve known as Outer Bolsa Bay. Levees isolate the waters in the CO5 channel from the BCER; however, there is concerns that increase in flows in the CO5 channel may induced flooding in the region, inundate of the oil wells, and spread oil contaminated flood waters into environmentally sensitive habitat. Portions of the reserve are also mitigation sites that were developed as part of work done at the Port of Los Angeles. The study will have to ensure that there are no adverse impacts to these mitigation sites.

The other area that will potentially create challenges for the study is Huntington Harbor, located downstream of Outer Bolsa Bay and the CO5 channel outlet. This harbor consists of a series of manmade islands with numerous homes and channels. Flows from the CO5 channel pass through the harbor prior to entering the Pacific Ocean. There is a concern that any increase in flows from the CO5 channel may adversely impact Huntington Harbor. These impacts will be mitigated for as part of the study, however if there is a substantial increase in flows into the harbor then extensive hydraulic modeling may be required to accurately identify the magnitude of any impacts to the harbor. Huntington Harbor is a complex hydraulic system and any extensive modeling of the harbor could be very costly and time consuming. The exact extent of required analysis will not be known until all upstream improvements in the CO5 channel have been identified.

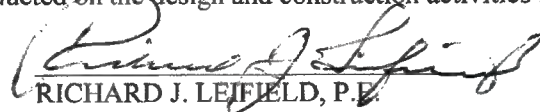
This project is anticipated to draw a lot of input from state and local agencies and there is a concern they may object to some of the potential measures that define the different alternatives. The Mile Square Park Detention Basin may not be acceptable to local agencies due to the impacts to local recreation. Mile Square Park is valued by the community due to the lack of open space in the region. Any detention basin in the park may have an adverse impact on the recreation facilities at the park that may not be easily mitigated for. OCPW already has expressed concerns with the measure and has stated that the County Board of Supervisors may not approve any plan with a detention basin in Mile Square Park. Another measure that may draw significant attention is the proposed ocean outlet connecting Outer Bolsa Bay to the Pacific Ocean. This outlet would bisect a state beach, eliminate beach parking, require modifications to a state highway, and could have significant environmental impacts to the bay. It is anticipated that numerous state resource agencies (including California Coastal Commission, California State Lands Commission, California Fish and Wildlife) may strongly object to the new ocean outlet.

Non-performance of the CO2/CO4 or the CO5/CO6 channel systems would lead to flooding of structures adjacent to the channel and additional flooding within the watershed. If the project did not perform in the BECR region then there is a risk that flood waters that have inundated oil fields could spread contaminates into the environmentally sensitive regions of the reserve.

This study is unlikely to contain influential scientific information or be a highly influential scientific assessment. The study also does not involve novel methods, present complex challenges to interpretation, contain precedent-setting methods or models, or present conclusions that are likely to change prevailing flood risk management practices. Based on the highly urban nature of the watershed and the length of the channels within the project area, it is anticipated that the cost of the recommended plan will exceed \$45 million. The governor of California has not requested an IEPR for the study.

In accordance with EC 1165-2-214, for any project where potential hazards pose a significant threat to human life (public safety); the Federal action is justified by life safety; or the failure of the project would pose a significant threat to human life, i.e. when life safety issues exist, a Type I IEPR is required. In addition, since design initiates in the decision document phase, a Safety Assurance Review (SAR) should be incorporated into the Type I IEPR when life safety issues exist.

The Los Angeles District Chief of Engineering has determined that, due to the history of flooding within the Westminster Watershed, there is a significant threat to human life associated with the Westminster, East Garden Grove Flood Risk Management project. If life safety issues are not minimized during the formulation of the Tentatively Selected Plan (TSP), a Type II IEPR, or Safety Assurance Review (SAR), will be conducted on the design and construction activities for the authorized project.

  
RICHARD J. LEIFIELD, P.E.  
Chief, Engineering Division

The District Chief of Engineering will ensure that Type II IEPR, or Safety Assurance Review (SAR), is conducted on design and construction activities. The SAR will consider whether the assumptions made during the feasibility phase for hazards remain valid through the completion of design. This review will also examine whether the project features adequately address redundancy, resiliency and robustness. There will be an emphasis on uncertainty due to factors such as climatic variability, and the remaining residual risk.

**d. In-Kind Contributions.** The Sponsor is expected to provide some in-kind work to successfully complete this study with the remaining to be provided in cash per the FCSA; however, the exact nature of the in-kind work is unknown at this time. All sponsor in-kind contributions will be peer reviewed per EC 1165-2-214.

#### 4. DISTRICT QUALITY CONTROL

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. DQC will be completed and DQC documentation will be provided to the ATR Team prior to initiation of any ATR effort.

**a. Documentation of DQC.** Non-Project Delivery Team (PDT) members and/or supervisory staff will conduct DQC review for major draft and final products, including products provided by the non-federal sponsor as in-kind services. It is expected that the Major Subordinate Command (MSC)/District QMP will address the conduct and documentation of this fundamental level of review. The conclusions/agreements reached should be documented, with copies retained by each participant and distributed to the ATR Lead and the PDT leader. The documentation shall become part of the project technical review file.

The software system DrChecks, Microsoft Word, or email may be used to document issues raised during the DQC. Specific issues raised in the review shall be documented in a comment, response, discussion, action required, action taken and, if appropriate, lessons learned format. Unresolved differences between the project delivery team and review team members shall be documented, along with the basis for the function chief's decision on the issue. The PDT member who developed the document being reviewed shall prepare a brief memorandum after each review that will document when the review was completed, who conducted the review, and any outstanding issues. This memo, along with the comments and responses, shall become part of the review team's records. These DQC reviews should be completed prior to major decision points in the planning process so that the technical results can be relied upon in setting the course for further study activities.

**b. Products to Undergo DQC.** For Westminster, the plan formulation, environmental resources, cultural resources, hydrology and hydraulic analyses, geotechnical analyses, civil design, economics, real estate and cost engineering products would undergo DQC. Products that summarize existing background information without using models or making assumptions, such as a Phase I Cultural Resources Survey or an existing condition levee report, will not normally undergo DQC other than to verify the accuracy of the summaries. The documents that the summaries are based on will be available at the time of the DQC for the reviewer to verify accuracy of the summaries.

**c. Required DQC Expertise.** Review teams shall be assigned representatives that are senior experienced staff that mirror the expertise of the PDT. A goal will be the establishment of an informed review team with full accountability to maintain objectivity. To ensure this objectivity, the members of the review teams must be independent from those who perform the work. DQC reviewers will need to have expertise similar to that outlined for the ATR team in Table 1 below.

## 5. AGENCY TECHNICAL REVIEW

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 policy, 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.** ATR will be performed for the Draft Report and the Final Report. The Hydraulic and Hydrologic Appendix and the Economic Analysis Appendix will each undergo scaled ATR prior to the completion of the Draft Report.

**b. Required ATR Team Expertise.** The Agency Technical Review Team (ATRT) will be comprised of individuals that have not been involved in the development of the decision document and will be chosen based on expertise, experience, and/or skills. The members will roughly mirror the composition of the PDT and, wherever possible, reside outside of the South Pacific Division (SPD) region. All Engineering and Construction ATR reviewers must be registered in the CERCAP system, per ECB 2013-28. It is anticipated that the team will consist of approximately ten reviewers. The ATR lead will be identified as soon as practical after study initiation. Additional ATRT members will be identified at the time the review is conducted after the TSP Milestone and will be presented in Attachment 1.

**Table 1: Agency Technical Review Team**

Discipline	Experience Needed for Review
ATR Lead/Plan Formulation	Plan formulation for multi-purpose projects, including flood risk management; familiarity with the “Planning Guidance Notebook” (ER-1105-100) and the Water Resources Council’s Principals and Guidelines. (Note: The ATR Lead is anticipated to also serve as the plan formulation ATR team member; however, depending on the availability of qualified ATR Leads, the lead may be from another discipline and/or may serve as ATR Lead only and not be responsible for any particular discipline review.)
Environmental Resources	Integration of environmental evaluation and compliance requirements pursuant to the “Procedures for Implementing NEPA” (ER 200-2-2), national environmental statutes, applicable executive orders, and other Federal planning requirements, into the planning of Civil Works projects. Experience and familiarity with the application of habitat evaluation models to assist with assessment of environmental impact(s) preferred.
Cultural Resources	Archaeologist familiar with records searches, cultural resource survey methodology, area of potential effects, Section 106 of the National Historic Preservation Act, and state and Federal laws/executive orders pertaining to American Indian Tribes.
Hydrology and Hydraulics	Hydrologist or hydraulic engineer proficient with river hydraulics, GEO-RAS, HEC-RAS, HEC-HMS, FLO-2D and associated one dimensional models, floodplain mapping, hydrologic statistics, sediment transport analysis, levees and floodwalls, channel stability analysis, risk and uncertainty analysis, non-structural solutions, and a number of other closely associated technical subjects.
Geotechnical Engineering	Geotechnical engineer familiar with sampling and laboratory testing, embankment stability and seepage analyses, planning analysis, and a number of other closely associated technical subjects.
Economics	Analysis of demographics, land use, recreation analysis, and flood damage assessments using HEC-FDA; use of RECONS model to address regional economic development associated with a project; discussion of other social effects (OSE) associated with flood risk, and well as OSE benefits from reduction in flood risk; economic justification of projects in accordance with current USACE policy.
Civil Design	Civil engineer with experience in designing grading plans and levees, levee stability, levee and bank-protection removal or modification, along with culvert design and modifications.

Discipline	Experience Needed for Review
Cost Engineering <sup>1</sup>	Cost estimating specialist competent in cost estimating for both construction and ecosystem restoration using MCACES/Mii; working knowledge of construction and environmental restoration; capable of making professional determinations based on experience.
Real Estate/Lands	Real estate specialist familiar with real estate valuation, gross appraisal, utility relocations, takings and partial takings as needed for implementation of Civil Works projects.
Risk Analysis	Interdisciplinary team members who can ensure that the decision document includes appropriate identification, analysis and written communication of risk and uncertainty. Can be combined with either H&H or Economics discipline.

<sup>1</sup>Coordination with the USACE Mandatory Center of Expertise (MCX) located in the Walla Walla District will be conducted as required by EC 1165-2-214.

The ATR Lead will participate in all scheduled IPRs, major decision meetings, and all milestone conferences, including the Civil Works Review Board (CWRB) at which the Lead will present the ATR findings for the study phase. In addition, the ATR lead will advise the PDT if additional ATR (“scaled ATR”) is necessary prior to the TSP milestone conference. Currently, only the H&H Analysis and Economic Analysis Appendices are anticipated to require scaled ATR.

**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 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 or 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 coordination (the vertical team includes the District, RMO, MSC, and HQUSACE), and the agreed upon resolution. The ATR team will prepare a Review Report which includes a summary of each unresolved issue; each unresolved issue will be raised to the vertical team for resolution. 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; 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 Completion of Agency Technical Review after each ATR event documenting that the issues raised by the ATR team have been resolved (or elevated to the vertical team). A Statement of Completion of Agency Technical Review should be completed, based on work reviewed to date, for any products that undergo a scaled ATR and the Draft and Final report documents. It is anticipated that only the H&H Analysis Appendix and the Economic Analysis Appendix will undergo a scaled ATR. For the draft and final feasibility reports, in addition to the ATR Lead preparing the Statement of Completion of Agency Technical Review, District Leadership will provide Certification of Agency Technical Review in accordance with EC 1165-2-214. A sample Statement of Agency Technical Review and District Certification of Agency 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 1165-2-214, 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:

**a. 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 1165-2-214.

**b. Type II IEPR.** Type II IEPR, or Safety Assurance Review (SAR), is managed outside the USACE and is 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.

**c. Decision on IEPR.** This decision document will present the details of a feasibility study undertaken to evaluate structural and non-structural FRM and ER (for mitigation) measures to address problems in the study area. EC 1165-2-214 set forth thresholds that trigger IEPR: Where there is a significant threat to human life; where the project has an estimated cost (including mitigation) of greater than \$45 million; where the Governor of an affected State requests a peer review by independent experts, or; where the DCW or the Chief of Engineers determines that the project study is controversial due to significant public dispute over either the size, nature, or effects of the project or the economic or environmental costs or benefits of the project .

This study is not expected to contain influential scientific information nor contain a highly influential scientific assessment. Although the project may be moderately complex, it is unlikely that this study will utilize precedent setting modeling or result in changes to existing policy. It is anticipated that this project would use typical materials and techniques, engage in standardized construction sequencing and acquisition planning, and follow typical design through construction scheduling.

This study area is highly urbanized and consequently there are public safety concerns. The study will be highly complex because of the extensive tributary system, the existing levee system, and the high degree of urbanization. This project has the potential to be controversial and will likely have significant agency and public interest. Impacts to public health, life, and safety may be a concern due to the flashy nature of the tributaries and the uncertainties within the existing flood protection system. Additionally, it is anticipated that this study will exceed a total project cost of \$45M.

For these reasons, Type I IEPR will be conducted. Type I IEPR is currently estimated to cost approximately \$175,000. Type I IEPR is a project cost. The Type I IEPR panel review will be federally funded. In-house costs associated with obtaining the Type I IEPR panel contract as well as responding to the Type I IEPR comments will be cost shared expenses. It is not anticipated that the public, including scientific or professional societies, will be asked to nominate potential external peer reviewers.

**d. Products to Undergo Type I IEPR.** Type I IEPR will be performed for the Draft Feasibility Report and the supporting technical appendices and analyses. The Draft Report will be provided to the IEPR panel before the report is released for public review. The full Type I IEPR panel will receive the entire Integrated Draft Feasibility Report/Environmental Document and all technical appendixes concurrent with public and agency review. Concurrent review is tentatively scheduled to begin in December 2014.

The final report to be submitted by the IEPR panel must be submitted to the PDT within 60 days of the conclusion of public review. A representative of the Type I IEPR panel may attend any public meeting(s) held during public and agency review of the draft report. The Los Angeles District will draft a response to the Type I IEPR final report and process it through the vertical team for presentation to the Deputy Commanding General of Civil and Emergency Operations (DCG-CEO) for approval. A Type I IEPR panel or OEO representative member will participate in Civil Works Review Board with the DCG-CEO, preferably in person. The USACE response will accompany the publication of the report of the Chief of Engineers for the project.

**e. Required Type I IEPR Panel Expertise.** The Type I IEPR Panel will be comprised of individuals external to the Corps of Engineers and will be chosen based on expertise, experience,



and/or skills. The expertise/disciplines represented on the Type I IEPR panel may be similar to those on the ATR team, but may be more specifically focused and generally won't involve as many disciplines/individuals except for very large and/or complex studies. The OEO will determine the final participants on the Type I IEPR panel. The required disciplines are outlined in Table 2 below.

**Table 2: Independent External Peer Review**

Discipline	Experience Needed for Review
Plan Formulation	Plan formulation flood risk management projects; familiarity with the "Planning Guidance Notebook" (ER-1105-100) and the Water Resources Council's Principals and Guidelines.
Environmental Resources	Integration of environmental evaluation and compliance requirements pursuant to the "Procedures for Implementing NEPA" (ER 200-2-2), national environmental statutes, applicable executive orders, and other Federal planning requirements, into the planning of Civil Works projects. Experience and familiarity with the application of habitat evaluation models to assist with assessment of environmental impact(s) preferred.
Hydrology and Hydraulics	Hydrologist or hydraulic engineer proficient with river hydraulics, GEO-RAS, HEC-RAS, HEC-HMS, FLO-2D and associated one dimensional models, floodplain mapping, hydrologic statistics, sediment transport analysis, levees and floodwalls, channel stability analysis, risk and uncertainty analysis, non-structural solutions, and a number of other closely associated technical subjects.
Geotechnical Engineering	Geotechnical engineer familiar with sampling and laboratory testing, embankment stability and seepage analyses, planning analysis, and a number of other closely associated technical subjects.
Economics	Analysis of demographics, land use, recreation analysis, and flood damage assessments using HEC-FDA; use of RECONS model to address regional economic development associated with a project; discussion of other social effects (OSE) associated with flood risk, and well as OSE benefits from reduction in flood risk; economic justification of projects in accordance with current USACE policy.
Civil Design	Civil engineer with experience in designing grading plans and levees, levee stability, levee and bank-protection removal or modification, along with culvert design and modifications.
Cost Engineering	Cost estimating specialist competent in cost estimating for both construction and ecosystem restoration using MCACES/Mii; working knowledge of construction and environmental restoration; capable of making professional determinations based on experience.

**f. Documentation of Type I IEPR.** Type I IEPR panel comments will be compiled by the OEO and should address the adequacy and acceptability of the economic, engineering and environmental methods, model and analyses used. Type I 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. The IEPR is anticipated to take approximately 24 weeks to complete.

**g. Type II IEPR.** The study team will evaluate structural and non-structural measures to reduce the risk of flooding to the Westminster watershed and vicinity. If a structural solution is recommended for implantation, then Type II IEPR (Safety Assurance Review, or SAR) will be required for design and construction activities.

Since Type II IEPR may be required, the SAR will be incorporated into the Type I IEPR (EC 1105-2-214, Appendix D, paragraph 1.b(1)). The Review Panel will consider the following during the Type I IEPR: Is the quality and quantity of the surveys, investigations, and engineering sufficient for a concept design (ER 1110-2-1150); Are the models used to assess hazards appropriate?; Are the assumptions made for the hazards appropriate?, and; Does the analysis adequately address the uncertainty given the consequences associated with the potential for loss of life for this type of project?

## **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 of 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. MANDATORY AGENCY TECHNICAL REVIEW AND CENTER OF EXPERTISE (MCX) REVIEW AND CERTIFICATION**

All decision documents shall be coordinated with the Cost Engineering Agency Technical Review and Mandatory Center of Expertise (MCX), located in the Walla Walla District. The MCX will assist

in determining the expertise needed on the ATR team and Type I IEPR team, and in the development of the review charge(s). The MCX will also provide the Cost Engineering MCX certification. The RMO is responsible for coordination with the Cost Engineering MCX.

## **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 input and output data is still the responsibility of the users and is subject to DQC, ATR, and IEPR.

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.

**a. Planning Models.** The planning models to be used in the decision document are outlined in Table 3.

**Table 3: Planning Models**

<b>Model Name and Version</b>	<b>Brief Description of the Model and How It Will Be Applied in the Study</b>	<b>Certification / Approval Status</b>
HEC-FDA 1.2.5 (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 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 in the Westminster watershed to aid in the selection of a recommended plan to manage flood risk.	Certified
IWR-Planning Suite	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.	Certified
RECONS	RECONS is a Corps corporate model specifically developed to assess the Regional Economic Development (RED) impacts of Corps civil works projects. This model will be used to support discussion of the RED benefits associated with project implementation. The RECONS model will estimate the impacts to the local economy, in terms of income, employment and tax revenues, resulting from project construction.	Approved for Use
Others?	In addition to the RED benefits discussed above, the Other Social Effects (OSE) and Environmental Quality (EQ) accounts will also be addressed. Any models or analytical tools (such as Excel spreadsheets) used or created to evaluate these benefits will be discussed with the RMO prior to use in the study to determine if planning certification or approval is required.	
CHAP Model	The Combined Habitat Assessment Protocols (CHAP) Model provides the capability to assess environmental habitat value. CHAP is a simple accounting and appraisal tool that is a scientifically advanced methodology used to measure habitat quality by evaluating biodiversity within a habitat type and/or structural condition. The CHAP results in a Habitat and Biodiversity (HAB) metric that produces a per acre value for each homogeneous polygon delineated. Species, habitats and functions are used to develop values for the different sites and management actions.	Certification Required – Currently pending Regional Certification

**b. Engineering Models.** The following are considered to be engineering models as opposed to planning models and undergo a different review and approval process for usage. Engineering tools anticipated to be used in this study are outlined in the Table 4.

**Table 4: Engineering Models**

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 the LCR. [For a particular study the model could be used for unsteady flow analysis or both steady and unsteady flow analysis. The review plan should indicate how the model will be used for a particular study.]	H&H Community of Practice Preferred Model
FLO-2D – v2009	FLO-2D is a dynamic flood routing model that simulates channel flow, unconfined overland flow and street flow. It can simulate a flood over complex topography and roughness while reporting on volume conservation; the key to accurate flood distribution. The model uses eight potential flow directions to predict the progression of a flood hydrograph over a system of square grid elements.  As an H&H Approved for Use model, written justification for use of the model on this study will be prepared by the PDT and reviewed by the ATR team in accordance with Enterprise Standard 08-101.	Approved for Use
HEC - 1	Hydrologic Engineer Center 1 – Flood Hydrograph Package (HEC-1) is designed to compute all ordinary flood hydrographs associated with a single recorded or hypothetical storm.  As an H&H Approved for Use model, written justification for use of the model on this study will be prepared by the PDT and reviewed by the ATR team in accordance with Enterprise Standard 08-101.	Approved for Use
MCACES or MII	These are cost estimating models	Enterprise Model

**10. REVIEW SCHEDULE AND COSTS**

**a. ATR Schedule and Cost.** The ATR process for this document will follow the following timeline. Timing is dependent on annual Appropriations, and therefore may change. Actual dates will be scheduled once the period draws closer. Table 5 summarizes the tentative end dates for each anticipated ATR event. The review will included the listed documents along with applicable documents produced as in-kind services by the non-Federal sponsor.

Document	End Date	SMART Milestone
H&H Analysis Appendix	14-Oct	Prior to TSP Conference
Economic Analysis Appendix	14-Oct	Prior to TSP Conference
Draft Feasibility Report (includes all technical appendices)	15-Jan	During Concurrent Review
Final Feasibility Report (includes all technical appendices)	15-Mar	Prior to Civil Works Review Board

Additional scaled ATR efforts that focus on individual technical appendices may be added based on the input of the ATR Team Lead. It is anticipated that there will be no major changes to the draft report after the Final Report is developed and the ATR for the document will be less intensive than the ATR for the Draft Report document.

The PDT district shall provide labor funding by cross charge labor codes. Funding for travel, if needed, will be provided through government order. The Study Manager will work with the ATR Leader to ensure that adequate funding is available and is commensurate with the level of review needed. Any funding shortages will be negotiated on a case by case basis and in advance of a negative charge occurring. The ATR is estimated to cost between \$80,000 and \$95,000. This cost may change as the study progresses.

**b. Type I IEPR Schedule and Cost.** The full IEPR panel will receive the entire Integrated Draft Feasibility Report/Environmental Document and all technical appendixes concurrent with public and agency review. Based on the current study schedule, this will be in December of 2014. The final report to be submitted by the IEPR panel must be submitted to the PDT within 60 days of the conclusion of public review.

Type I IEPR is currently estimated to cost \$250,000 and is a project cost. The Type I IEPR panel review cost will be 100% federally funded. In-house costs associated with obtaining the Type I IEPR panel contract as well as responding to Type I IEPR comments will be cost shared expenses.

**c. Model Certification/Approval Schedule and Cost.** The use of certified or approved models for all planning activities is required by EC 1105-2-412. This policy is applicable to all planning models currently in use, models under development and new models. The appropriate PCX will be responsible for model certification/approval. The goal of certification/approval is to establish that planning products are theoretically sound, compliant with USACE policy, computationally accurate, and based on reasonable assumptions. The use of a certified or approved model does not constitute technical review of the planning product. Independent review of the selection and application of the model and the input data and results is still required through conduct of DQC, ATR, and, if appropriate, IEPR. Independent review is applicable to all models, not just planning models. The planning models (including the certification/approval status of each model) to be used in the development of the decision document are described in Table 6.

**Table 6: Planning Models Requiring Certification**

Model Name	Model Type	Requirement	Proponent	PCX	Status
CHAP	Env. Rest.	Corporate Cert	ECO/PCX	ER	Pending Regional Certification

Model certification and approval for all identified planning models will be coordinated through the PCX as needed. Regional Certification for the CHAP model will be obtained prior to the TSP Milestone in November. Project schedules and resources will be adjusted to address this process for certification and PCX coordination.

Per Enterprise Standard 08-101, all hydrology and hydraulic Approved for Use Models (including FLO 2D and HEC-1) will require a written justification by PDT members supporting their use for the study. The justifications will be provided to the ATR team for review and approval once funding becomes available.

## 11. PUBLIC PARTICIPATION

The public and agencies will have multiple opportunities to participate in this study. The earliest opportunity will be as part of the public scoping process during the first year of the study.

Public review of the Draft Feasibility Report will occur after issuance of the policy guidance memo and concurrence by HQUSACE that the document is ready for public release. Public review of the draft report will begin approximately one month after the completion of the ATR process and policy guidance memo. The period will last a minimum of 45 days. 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 IEPR team prior to completion of the final Review Report and to the ATR team 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.

It is not anticipated that the public, including scientific or professional societies, will be asked to nominate potential external peer reviewers for this study.

## 12. REVIEW PLAN APPROVAL AND UPDATES

The SPD 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.

### **13. REVIEW PLAN POINTS OF CONTACT**

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

- Los Angeles District Project Delivery Team Planning contact, at (213) 452-3804
- South Pacific Division District Support Team Lead, at (415) 503-6556
- Program Manager for the Planning Center of Expertise for Flood Risk Management, at (415) 503-6852



**ATTACHMENT 1: TEAM ROSTERS**

**PRODUCT DELIVERY TEAM**

<b>Name</b>	<b>Discipline</b>	<b>Phone</b>	<b>Email</b>
Brian Whelan	Project Manager	213-452-4005	Brian.A.Whelan@usace.army.mi
Larry Walsh	Study Manager/Planning	213-452-3804	Lawrence.f.walsh@usace.army.
Roxanne Vidaurre	Civil Design	213-452-3643	Roxanne.R.Vidaurre@usace.arm
Tom Keeney	Environmental Analysis	213-452-3875	Thomas.W.Keeney@usace.army
Mylene Perry	Hydrology & Hydraulics	213-452-3551	Mylene.M.Perry@usace.army.m
Mike Hallisy	Economics	213-452-3815	Michael.J.Hallisy@usace.army.
Alex Hernandez	Cost Engineering	213-452-3699	Alejandro.A.Hernandez@usace.
TBD	Real Estate/Lands		
John Killeen	Cultural Resources	213-452-3861	John.J.Killeen@usace.army.mil
Jeffrey Devine	Geotechnical Engineering	213-452-3579	Jeffrey.D.Devine@usace.army.
Anabel Ronquillo	Soils & Materials	213-452-3605	Anabel.Ronquillo@usace.army.

**AGENCY TECHNICAL REVIEW TEAM**

<b>Name</b>	<b>Discipline</b>	<b>Phone</b>	<b>Email</b>
TBD	ATR Lead/Plan		
TBD	Civil Design		
TBD	Environmental Resources		
TBD	Hydrology Operations		
TBD	Hydraulics		
TBD	Economics		
TBD	Cost Engineering		
TBD	Real Estate/Lands		
TBD	Cultural Resources		
TBD	Geotechnical Engineering		

**TYPE I INDEPENDENT EXTERNAL PEER REVIEW PANEL**

<b>Name</b>	<b>Discipline</b>	<b>Phone</b>	<b>Email</b>
TBD	Plan Formulation		
TBD	Environmental Resources		
TBD	Hydrology and Hydraulics		
TBD	Geotechnical Engineering		
TBD	Civil Design		
TBD	Economics		
TBD	Cost Engineering		

**VERTICAL TEAM**

<b>Name</b>	<b>Discipline</b>	<b>Phone</b>	<b>Email</b>
Paul Bowers	District Support Team Lead	415-503-6556	<a href="mailto:Paul.W.Bowers@usace.army.mil">Paul.W.Bowers@usace.army.mil</a>
Pauline Acosta	Regional Integration Team	202-761-4085	<a href="mailto:Pauline.M.Acosta@usace.army.m">Pauline.M.Acosta@usace.army.m</a>

**PLANNING CENTER OF EXPERTISE  
FLOOD RISK MANAGEMENT**

<b>Name</b>	<b>Discipline</b>	<b>Phone</b>	<b>Email</b>
Eric Thaut	Program Manager, PCX Flood Risk Management	415-503-6852	<a href="mailto:Eric.W.Thaut@usace.army.mil">Eric.W.Thaut@usace.army.mil</a>

**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 <type of product> for <project name and location>. The ATR was conducted as defined in the project's Review Plan to comply with the requirements of EC 1165-2-209 and, subsequently, EC 1165-2-214. 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 DrChecks<sup>sm</sup>.

SIGNATURE

Name

ATR Team Leader

Office Symbol/Company

\_\_\_\_\_  
Date

SIGNATURE

Name

Project Manager

Office Symbol

\_\_\_\_\_  
Date

SIGNATURE

Name

Architect Engineer Project Manager<sup>1</sup>

Company, location

\_\_\_\_\_  
Date

SIGNATURE

Name

Review Management Office Representative

Office Symbol

\_\_\_\_\_  
Date

**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

Chief, Engineering Division

Office Symbol

\_\_\_\_\_  
Date

SIGNATURE

Name

Chief, Planning Division

Office Symbol

\_\_\_\_\_  
Date

<sup>1</sup> Only needed if some portion of the ATR was contracted

**ATTACHMENT 3: REVIEW PLAN REVISIONS**

<b>Revision Date</b>	<b>Description of Change</b>	<b>Page / Paragraph Number</b>

**ATTACHMENT 4: ACRONYMS AND ABBREVIATIONS**

<b>Term</b>	<b>Definition</b>	<b>Term</b>	<b>Definition</b>
AFB	Alternative Formulation Briefing	OMB	Office and Management and Budget
ASA(CW)	Assistant Secretary of the Army for Civil Works	O&M	Operation and Maintenance
ATR	Agency Technical Review	OEO	Outside Eligible Organization
ATRT	Agency Technical Review Team	OMRR&R	Operation, Maintenance, Repair, Replacement and Rehabilitation
CEFMS	Corps of Engineers Financial Management System	OSE	Other Social Effects
CESPD	Corps of Engineers, South Pacific Division	OWPR	Office of Water Project Review
CWRB	Civil Works Review Board	PCX	Planning Center of Expertise
DQC	District Quality Control	PDT	Project Development Team
DST	District Support Team	PED	Preconstruction Engineering and Design
DX	Directory of Expertise	PMP	Project Management Plan
EA	Environmental Assessment	PMIP	Planning Models Improvement Program
EC	Engineering Circular	QCP	Quality Control Plan
EIS	Environmental Impact Statement	QMP	Quality Management Plan
EO	Executive Order	RED	Regional Economic Development
ER	Engineering Regulation or Ecosystem Restoration	RIT	Regional Integration Team
FDR	Flood Damage Reduction	RP	Review Plan
FEMA	Federal Emergency Management Agency	RTS	Regional Technical Specialist
FRM	Flood Risk Management	SET	Science and Engineering Technology
HQUSACE	Headquarters, USACE	TEN	Technical Excellence Network
IEPR	Independent External Peer Review	TRSS	Technical Review Strategy Session
ITR	Independent Technical Review	USACE	US Army Corps of Engineers
LCR	Little Colorado River	VE	Value Engineering
MSC	Major Subordinate Command	WRDA	Water Resources Development Act
MVD	Mississippi Valley Division		
NED	National Economic Development		
NEPA	National Environmental Policy Act		
NER	National Ecosystem Restoration		