



REPLY TO  
ATTENTION OF

**DEPARTMENT OF THE ARMY**  
SOUTH PACIFIC DIVISION, CORPS OF ENGINEERS  
1455 MARKET STREET  
SAN FRANCISCO, CALIFORNIA 94103-1389

2 AUG 2014

CESPD-PDC

MEMORANDUM FOR Commander, Los Angeles District, ATTN: CESPL-PD, Mr. Jonathan (Jon) Vivanti

Subject: Arroyo Seco, Los Angeles County, California, Ecosystem Restoration Feasibility Study, Review Plan Approval

1. Arroyo Seco, Los Angeles County, California, Ecosystem Restoration 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 Arroyo Seco, Los Angeles County, California, Ecosystem Restoration 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 and Taking Care of People!***

Encl

  
R. MARK TOY, P.E.  
COL(P), EN  
Commanding

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**REVIEW PLAN**

**ARROYO SECO, LOS ANGELES COUNTY, CALIFORNIA  
ECOSYSTEM RESTORATION  
FEASIBILITY STUDY**

**LOS ANGELES DISTRICT**

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**MSC Approval Date:** Pending

**Last Revision Date:** June 2014



**US Army Corps  
of Engineers**   
Los Angeles District

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**REVIEW PLAN  
ARROYO SECO, LOS ANGELES COUNTY, CALIFORNIA  
ECOSYSTEM RESTORATION FEASIBILITY STUDY  
LOS ANGELES DISTRICT**

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## 1. PURPOSE AND REQUIREMENTS

**a. Purpose** - This Review Plan defines the scope and level of peer review for the Arroyo Seco, Los Angeles County, California Ecosystem Restoration Feasibility Study.

### b. References

- (1) Engineering Circular (EC) 1165-2-214 "Civil Works Review", 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) Arroyo Seco Watershed Management Study PMP, May 2005
- (6) CESP/SPD Regulation 110-1-8, Quality Management Plan (QMP), 30 Dec 2002
- (7) Memorandum for Commander, SPD, Arroyo Seco Policy Issue Discussion with SPD and Follow-up Action Resolution, 26 March 2013
- (8) Memorandum for SPD-RIT, Rescoping of Arroyo Seco Ecosystem Restoration Study, dated 12 December 2013

**c. 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 (RMO) COORDINATION

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

The RMO will coordinate with the Civil Works Cost Engineering and Agency Technical Review 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 ECO-PCX will also coordinate with the National Flood Risk Management Planning Center of Expertise (FRM-PCX) and the RMC to ensure that review teams with appropriate expertise are assembled. External review panel members will be selected using the National Academies of Science (NAS) policy for selecting reviewers.

### 3. STUDY INFORMATION

**a. Decision Document** - This document outlines the Review Plan for the Arroyo Seco, Los Angeles County, California, Ecosystem Restoration Feasibility Study. This feasibility study process is anticipated to culminate in a decision document approved by the Chief of Engineers and forwarded to Congress for potential authorization of a new project. At this time, the study will proceed with the preparation of an Environmental Impact Statement (EIS)/Environmental Impact Report (EIR) as part of the integrated feasibility study document.

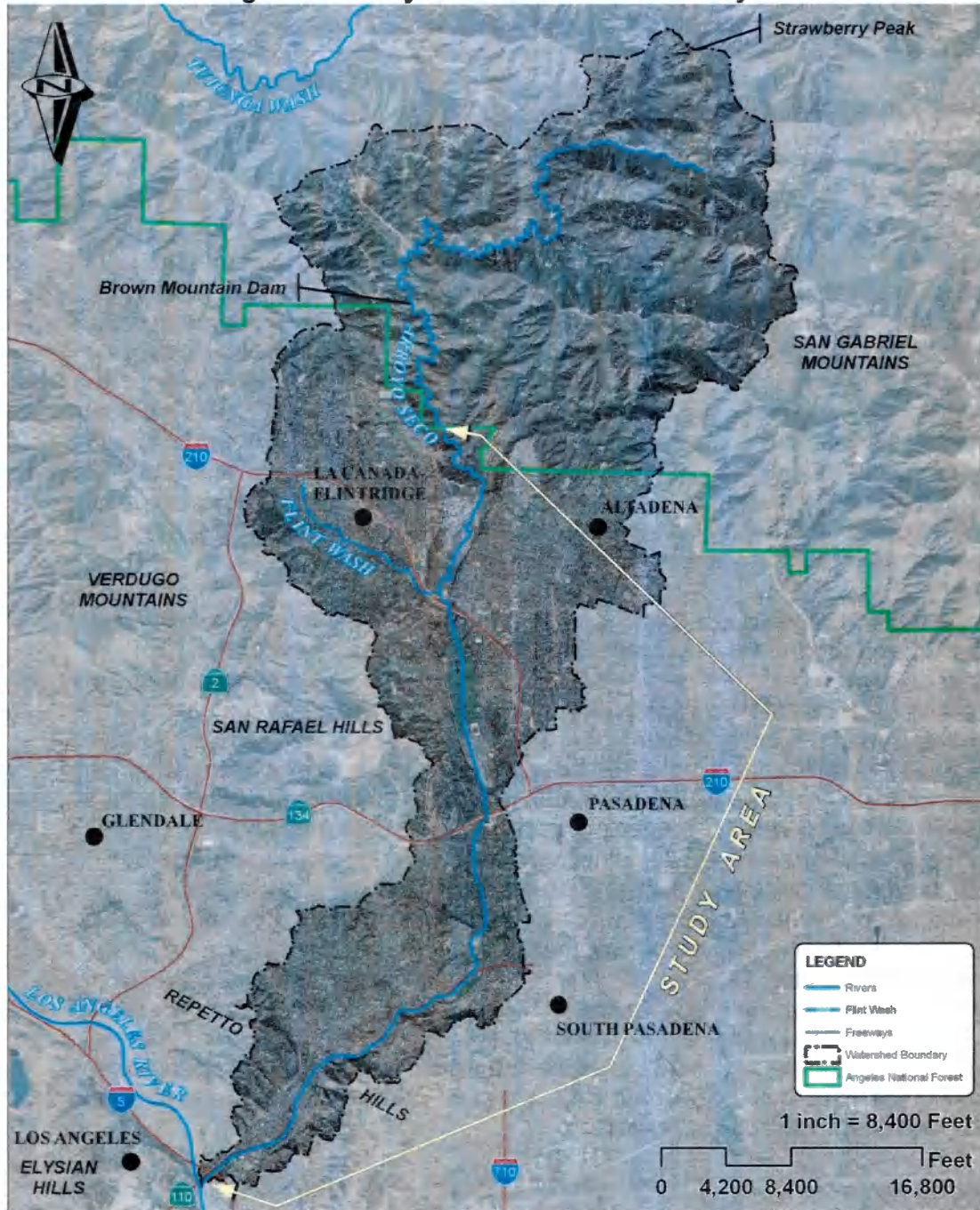
**b. Study/Project Description** - The study area consists of the 47-square mile Arroyo Seco watershed in central Los Angeles County (see Figure 1). The 22-mile Arroyo Seco drainage is a major sub-watershed of the Los Angeles River watershed. The Los Angeles River ultimately drains into the Pacific Ocean, in Long Beach, California. The project area footprint extends from the Angeles National Forest boundary downstream for 11 miles to the boundary the Los Angeles River Ecosystem Restoration Study (the two study project areas do not overlap). There are four municipalities located within the study area: City of La Canada Flintridge, City of Pasadena, City of South Pasadena, City of Los Angeles and the unincorporated community of Altadena. The mountainous 32-square mile northern portion of the watershed, under the jurisdiction of the U.S. Forest Service, is not necessarily being considered for restoration sites in this study. However, potential impacts, primarily sedimentation due to the recent wildfires of 2009 which burned the entire upper watershed, will need to be considered.

During the last 150 years the lower and middle watershed have been extensively developed and urbanized. The Arroyo Seco is now located in one of the most densely populated parts of the country. Two of the most significant alterations to the Arroyo Seco include the construction of Devil's Gate Dam and the channelization of the lower Arroyo Seco. The Arroyo Seco is crossed and bounded by multiple-lane freeways. Hardscape are now found in the former floodplain of the stream. This watershed is significant for the region's economic well-being and is a significant natural and cultural resource to the State of California and the Nation. The Arroyo Seco provides urbanized communities with opportunities to interact with the natural environment, supports the local economy through regional recreational amenities and trails, houses a nationally significant cultural and historic corridor for the Arts and Crafts movement and is a vital regional transportation corridor. Although the drainage area is heavily urbanized, the Arroyo has perhaps the greatest amount of publicly held land along any stream course within Los Angeles County. The riparian and associated habitats such as oak woodland and coastal sage scrub are rare and significant. Several special status species in the area including Arroyo chub and least Bell's vireo are protected under the Federal Endangered Species Act.

Problems within the Arroyo Seco project area (the 11-mile reach below the Angeles National Forest which was channelized) are interrelated and are principally related to aquatic ecosystem degradation caused by disturbed, fragmented and displaced habitats, and altered hydrology of the watershed because of its channelization and damming. Opportunities include restoration of the creek hydrologic and sediment flow regime, improvement of riparian and aquatic habitat, restoration of habitat and connectivity along the creek corridor, groundwater recharge, and passive recreational enhancement. The primary planning constraint identified for the study is not to reduce or to jeopardize the

flood risk management function/capability of the Arroyo Seco system, including at Devil's Gate Dam.

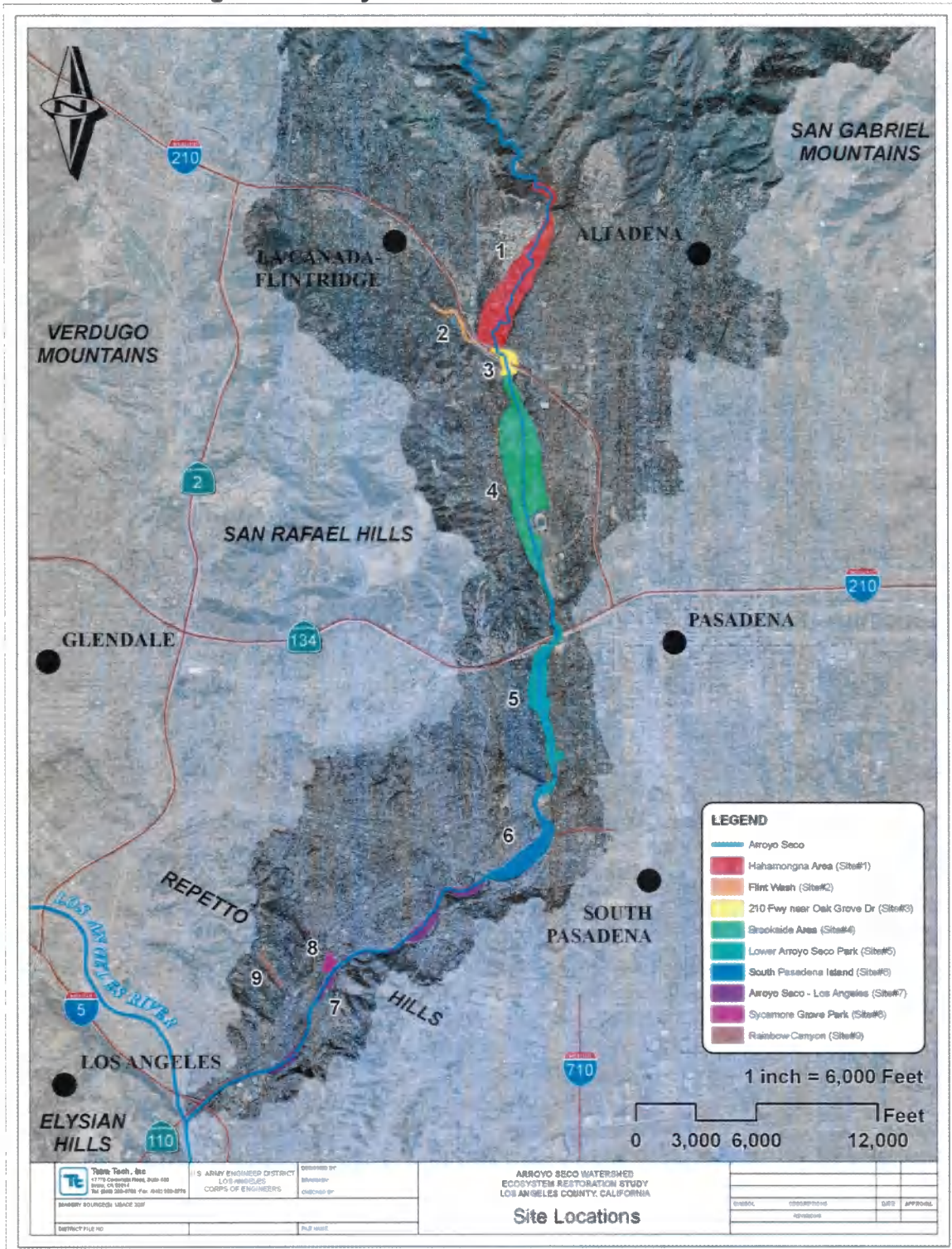
**Figure 1 – Arroyo Seco Watershed & Study Area**



Formulation of ecosystem restoration alternatives will consider nine tentatively identified sites within the project area (see Figure 2). Habitat restoration measures include floodplain reconnection, stream lengthening, creation of floodplain riparian and wetland habitat, downstream redistribution of trapped Devil's Gate Dam sediment, fish passage

facilities, non-native vegetation removal, de-armoring and widening stream reaches, bank stabilization, grade control structures, terracing, flow diversions into previously

**Figure 2 – Arroyo Seco Potential Restoration Sites**





established side channels, and creation of retention basins for groundwater recharge. A potential recommended plan cost could approach \$45M. The study is cost shared with the non-Federal Sponsor, Los Angeles County Flood Control District, a division of the Los Angeles County Department of Public Works (LACDPW).

Pertinent Study Guidelines: The Feasibility Scoping Meeting (FSM) for the originally scoped Watershed Ecosystem Restoration Feasibility Study was conducted in December 2011. Pursuant to a February 2013 In-Progress Review (IPR) and completion of follow-up action resolution memorialized in Memorandum for SPD Commander, dated March 2013, the study scope transitioned from the initial watershed-wide analysis to a feasibility-level effort culminating with a decision document. This is a General Investigation (GI) feasibility study that has been re-scoped for completion in accordance with SMART Planning. A study rescoping charrette with the vertical team was held in November 2013. This Review Plan supersedes the Arroyo Seco Watershed Ecosystem Restoration Feasibility Study Review Plan, as endorsed by the ECO-PCX in a memorandum to the SPD Commander, dated 22 November 2010.

### **c. Factors Affecting the Scope and Level of Review**

Potential Project Challenges: The challenge for restoration in the Arroyo Seco will be to find an approach which balances the effects of altered hydrology from urbanization channelization and damming that has caused nearly a complete loss in stream and floodplain habitat structure and function with achieving a stream restoration goal that is considered to be in a least degraded and most ecologically dynamic state possible. As there will likely be significant interagency and stakeholder interest, a consensus building approach will need to be successfully developed in the plan formulation and evaluation process in order to arrive at a viable and defensible restoration solution. Regarding ecosystem restoration opportunities, some potential sites may be considered too heavily urbanized to justify economically, although they could potentially become part of locally preferred plans.

Level of Public Controversy: The Arroyo Seco Watershed, a sub-watershed of the Los Angeles River watershed, has become a treasure-trove of nationally recognized environmental and cultural resources. From the diverse natural beauty of its topography and habitats in the proximity to a large urban population, to the wide range of recreation and cultural resources within the watershed, the Arroyo Seco has gained national attention over the last 100-years. Notwithstanding the high level of stakeholder interest in the watershed for ecosystem restoration opportunities, including from numerous local cities, environmental resource agencies, and non-governmental organizations, it is recognized by the Corps and non-Federal Sponsor that the need to return biological function of the aquatic ecosystem will need to be in concert with flood risk management. These aspects will need to be made clear with the stakeholder group to avoid or minimize potential public controversy in expectations. The non-Federal Sponsor is aligned with the Corps that restoration of riparian habitat cannot be done in such a way that it would reduce the hydraulic capacity and operations of the Arroyo Seco, its tributary washes, and of Devil's Gate Dam, to convey or store damaging flood flows. Devil's Gate Dam and the channel system below the dam were built in the 1920s and '30s as a result of the need to manage inundation by torrential floods from the steep, erosion-prone mountain watershed.

Project Risks: For the assessment of risk, the potential to induce flooding, erosion and scour, especially with removal of armored channel sections, will need to be evaluated once the alternative plans are developed and appropriate measures taken to minimize risk to public safety and damage to structures and infrastructure. A preliminary assessment established that risk associated with non-performance could potentially be medium to high if channelized sections are removed. Risk associated with ecosystem restoration consists of weighing the benefits and uncertainties associated with using one restoration technique over another with regard to project cost, performance or ecological success. Monitoring with respect to project performance and achieving an output objective will be required. The effectiveness of revegetation efforts and eradication of exotic species are also uncertainties that need to be monitored, and as a result an adaptive management plan will need to be developed.

The recent Station Fire of late summer 2009, which burned the entire upper half the watershed within the Angeles National Forest poses the greatest risk to the watershed due to potential for significant mudslides and sedimentation downstream. Capacity within Devil's Gate Dam could be reduced, resulting in lowered flood protection for urbanized communities downstream. The County is currently developing a sediment removal project. The City of Pasadena relies on Arroyo Seco flows to recharge the Raymond Basin aquifer for drinking water. Dedicated recharge ponds need to be kept clear of fine sediments. In addition to affecting baseline conditions, long-term impacts of the post-fire risk will need to be considered.

A recent LACDPW study (Arroyo Seco Watershed Management Feasibility Study, Los Angeles County Department of Public Works, Water Resources Division Hydrology Section, April 2008) indicates that even after the rehabilitation of the Devil's Gate Dam in 1998, portions of the downstream concrete channel may be under capacity due to increased runoff into the channel. In addition, the engineered channel is aging and requires ongoing maintenance and repair operations. As indicated in a 2001 hydraulic study conducted by MWH Consultants (Montgomery Watson Harza (MWH), 2001, Arroyo Seco Watershed Restoration Feasibility Study Phase II, Technical Report, Hydrology, Hydraulics and Geomorphology, Engineering Information and Studies. May 24, 2001), isolated areas along the Arroyo Seco channel have less than the 100-year flood capacity. More areas were affected by the Capital Storm<sup>1</sup> Flood, the majority of which are open space or developed park areas adjacent to the Arroyo Seco channel. Detailed hydraulic modeling of the existing channel and floodplain is required to determine flood hazard areas more accurately. Revised flood risk information will be used in the assessment of alternative plans, including the constraint that the restoration features not increase flood damage and life safety risk within the watershed.

Project risks will also include assessment of potential groundwater recharge effects associated with a potential Federal restoration project to known groundwater contamination plumes in the region. Hazardous substances from materials used at the Jet Propulsion Laboratory (JPL), located on the northwestern edge of the study area, were disposed of into seepage pits in the 1940s and 1950s. Since then, contaminants such as perchlorate and volatile organic compounds have been found in groundwater beneath the JPL and in areas adjacent to the facility. The area has been placed on the

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<sup>1</sup> 170-year return period at the Devil's Gate Dam and about a 450-year return period at the Los Angeles River (MWH 2001).

USEPA National Priority List (Superfund) and has been undergoing groundwater treatment. Leakages from old or impaired septic systems in the La Cañada Flintridge area are also a potential source of groundwater contamination in the Arroyo Seco watershed.

Life Safety: 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 II IEPR is required. In addition, since design initiates during 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 Engineers is in agreement that should an ecosystem restoration project be implemented, the risk potential for induced flooding, erosion and scour along the Arroyo Seco in Los Angeles County, California with subsequent threat to human life, will need to be evaluated. If life safety issues are not minimized in the formulation for the recommended plan, a Type II IEPR, or Safety Assurance Review (SAR), will be conducted on the design and construction activities for the authorized project.

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

Level of Innovative/Interpretative/Influential Scientific Information: The document will contain a highly influential scientific assessment related to complex hydraulic, sediment transport, and ecological concepts in the context of a dynamic channel system in a highly urbanized environment. The scientific assessment will need to be defensible and will be subject to review by many federal, state, and local agencies, the environmental resource agencies, interest groups and other stakeholders. As the study will seek to provide ecosystem restoration incorporating historical attributes, a highly scientific assessment will be necessary to quantify net changes (both beneficial and adverse) between existing conditions and all alternative plans considered, with the goal of selecting a recommended plan that is viable and economically justified.

Redundancy, Resiliency, and/or Robustness in Design; Unique Construction: It is anticipated that one or more of the project alternatives will require redundancy, resiliency, and/or robustness. It is not known at this time whether the project will require unique construction sequencing or a reduced or overlapping design construction schedule. Consideration will be necessary to avoid construction activities during nesting season of threatened and endangered species, especially in the Hahamongna Area (alluvial basin of Devil's Gate Dam).

**d. In-Kind Contributions** - Products and analyses provided by the non-Federal sponsor as in-kind services are subject to DQC, ATR, and IEPR. The in-kind products and analyses to be provided by the non-Federal sponsor will include: survey and mapping data and multiple baseline technical reports, including hydraulics, water quality, groundwater, geotechnical, socioeconomic, real estate, HTRW, and environmental.

#### **4. DISTRICT QUALITY CONTROL (DQC)**

All decision documents (including supportive 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 Los Angeles 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 Major Subordinate Command (MSC).

**a. Documentation of DQC** - The DQC will be documented in a Microsoft Word memorandum showing the comments, responses and backcheck process performed by senior level individuals of respective disciplines related to the products within the Los Angeles District. This documentation and cover memorandum will be supplied to the ATR Team upon initiation of ATR.

**b. Products to Undergo DQC** - The draft and final integrated feasibility report per SMART planning decisional milestone requirements, and associated work products necessary to support development of these documents will undergo DQC review.

**c. Required DQC Expertise** - The DQC Team 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. DQC team members will represent the following disciplines: planning, economics, geotechnical, geology, hydrology and hydraulics, civil design, cost engineering, biology (ecology), environmental (NEPA), cultural resources, and real estate.

**d. Products Developed by Contractors** - The development and execution of a quality control plan for products developed by a contractor will be the responsibility of the contractor. The contractor's quality control plan will be reviewed and approved by the responsible function chief at the district. In order to maintain contractor responsibility, the contractor will be responsible for quality control of its own work. An overall quality control plan will be developed by the district that outlines quality control activities by the district for any portion of a product developed by in-house forces and quality assurance activities by the District for overseeing the contractor's quality control activities. These quality assurance activities will include actions to define the work for the contractor and ensure that the contractor meets the requirements of the contract, and they will also include an independent quality assurance review. The responsible function chief at the district will approve the overall quality control plan for the total product.

#### **5. AGENCY TECHNICAL REVIEW (ATR)**

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

outside experts as appropriate. The ATR team lead will be from outside the home MSC. ATR member requirements are described in paragraph b.

The leader of the ATR team will participate in milestone conferences and the Civil Works Review Board (CWRB) to address review concerns. The ATR leader must complete a statement of technical review for all final products and final documents. In the case of civil works decision documents forwarded to HQUSACE for review, a statement of technical review will accompany both draft and final documents. The ATR team leader, project manager, RMO, and the chief of the function shall certify that the issues raised by the ATR team have been resolved.

**a. Products to Undergo ATR** - The Arroyo Seco Feasibility Report will be an integrated document which includes all of the analysis necessary to satisfy NEPA and CEQA requirements. The Feasibility report and all of the Appendices (including those portions developed by contractors) will undergo ATR review. The first formal ATR review will be conducted after the completion of the Tentatively Selected Plan (TSP) milestone and completion of the Draft Report document as part of the concurrent review period. The next anticipated ATR review will take place for the Final Report. ATR review of the hydrology modeling and cost estimating will begin prior to initiation of first ATR review for the other technical elements in order to verify assumptions and results from the assessments that are used in development of the economic, environmental and plan formulation analysis.

**b. Required ATR Team Expertise** - The ATR team 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 reside outside of the Los Angeles District. It is anticipated that the team will consist of approximately ten reviewers. The ATR Lead will be from outside of the MSC. The ATR members will be identified with sufficient lead time prior to when the review is conducted and will be presented in Attachment 1.

**Table 1: Agency Technical Review**

Discipline	Experience Needed for Review
ATR Lead/Plan Formulation	Senior professional with extensive experience in preparing Civil Works decision documents and conducting ATR. Plan formulation for ecosystem restoration 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, Federal planning requirements, and preferably CEQA experience into the planning of Civil Works projects.
Biologist	Biologist familiar with non-native and native Southern California species, wetland restoration, montane ecosystems, riparian environments, and habitat modeling, within an urban context.
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.

Discipline	Experience Needed for Review
Hydrology and Hydraulics	Hydrologist or hydraulic engineer proficient with river and reservoir hydraulics, GEO-RAS, HEC-RAS, HEC-HMS, FLO-2D and associated one dimensional models, floodplain mapping, hydrologic statistics, sediment transport analysis (especially pertaining to post-fire sedimentation issues), levees and floodwalls, channel stability analysis, risk and uncertainty analysis, non-structural solutions, and a number of other closely associated technical subjects as these relate to ecosystem restoration features.
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.
Geology	Geologist familiar with subsurface characterization, seismic, groundwater, and HTRW concerns.
Economics	Analysis of demographics, land use, recreation analysis, use of IMPLAN model to address regional economic development associated with a project; discussion of other social effects (OSE) associated with ecosystem restoration, and well as OSE benefits; economic justification of projects in accordance with current USACE policy.
Civil Engineering	Civil engineer with experience in urban ecosystem restoration.
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; abbreviated cost/schedule risk analysis; total project cost summary.
Real Estate	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 Cost Engineering Mandatory Center of Expertise (MCX) located in the Walla Walla District will be conducted as required by EC 1165-2-214.

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

- (1) The review concern – identify the product’s information deficiency or incorrect application of policy, guidance, or procedures;
- (2) The basis for the concern – cite the appropriate law, policy, guidance, or procedure that has not be properly followed;
- (3) The significance of the concern – indicate the importance of the concern with regard to its potential impact on the plan selection, recommended plan components, efficiency (cost), effectiveness (function/outputs), implementation responsibilities, safety, Federal interest, or public acceptability; and
- (4) The probable specific action needed to resolve the concern – identify the action(s) that the reporting officers must take to resolve the concern.

In some situations, especially addressing incomplete or unclear information, reviewers may seek clarification in order to then assess whether further specific concerns may exist. Reviewers are encouraged to contact PDT members to resolve issues and clarify concerns through webinars, video teleconferencing, teleconference, email and/or phone. If an issue cannot be resolved this way, and the funds are available, reviewers may be flown in to visit the project site and resolve the issue face to face.

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

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

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

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

## **6. INDEPENDENT EXTERNAL PEER REVIEW PLAN (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:

- **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.
- **Type II IEPR.** Type II IEPR, or Safety Assurance Review (SAR), are managed outside the USACE and are conducted on design and construction activities for hurricane, storm, and flood risk management projects or other projects where existing and potential hazards pose a significant threat to human life. Type II IEPR panels will conduct reviews of the design and construction activities prior to initiation of physical construction and, until construction activities are completed, periodically thereafter on a regular schedule. The reviews shall consider the adequacy, appropriateness, and acceptability of the design and construction activities in assuring public health safety and welfare.

**a. Decision on IEPR** - This decision document will present the details of a feasibility study undertaken to evaluate structural and non-structural ecosystem restoration 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 area is highly urbanized and consequently there are public safety concerns. The potential to increase the risk of flooding, erosion and scour, especially with removal of armored channel sections, will need to be evaluated once the alternative plans for ecosystem restoration are developed and appropriate measures taken to minimize risk to public safety and damage to structures and infrastructure. Validation that the restoration features will not increase current flood damage risk within the watershed will be necessary. Potential reduction in capacity of the Devil's Gate Dam due to effects and timing of sedimentation impacts related to upstream recent and future burn areas will need to be considered. It is anticipated that this project could approach a total implementation cost of \$45M.

Type I IEPR: For the reasons stated above, Type I IEPR will be required. Type I IEPR is currently estimated to cost approximately \$250,000. 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.



Type II IEPR: The purpose of this project is ecosystem restoration, with the condition that any potential restoration project will not compromise the flood risk management function/capability of the Arroyo Seco system, including at Devil's Gate Dam. At this time, it is not expected that a Type II IEPR will be necessary. The undertaking of Type II IEPR (SAR) will be further addressed during the Type I IEPR effort

**b. Products to Undergo Type I IEPR** - Type I IEPR will be performed for the Draft Feasibility Report and the supporting technical appendices and analyses. Interim Corps and/or contractor products for hydrology, hydraulic design, geotechnical engineering, civil design and economics will be provided before the draft 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. Also to be provided will be any public written or oral comments submitted to USACE project delivery team for the project.

**c. 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 will not involve as many disciplines/individuals except for very large and/or complex studies. The PDT should make the initial assessment of what expertise is needed based on the PMP and the factors affecting the scope and level of review described in the review plan and may suggest candidates. The Outside Eligible Organization (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
Environmental Resources	Team member experienced in NEPA/CEQA process and analysis, and have a biological or environmental background that is familiar with the project area (or similar area) and ecosystem restoration in urban areas. 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 embankment stability and seepage analyses, cutoff walls and grade control stabilizers, and stream restoration practices.

Discipline	Experience Needed for Review
Economics	Analysis of demographics, land use, recreation analysis, CE/ICA, flood damage assessments using HEC-FDA; use of IMPLAN model to address regional economic development associated with a project; discussion of other social effects (OSE) associated with ecosystem restoration and flood risk management.
Civil Engineering	Civil engineer with experience in grading plans, levee stability, bank-protection, detention/retention basins, cutoff walls, grade control structures, and culvert design.

**d. 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 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 home MSC Commander. DQC and ATR augment and complement the policy review processes by addressing compliance with pertinent published Army policies, particularly policies on analytical methods and the presentation of findings in decision documents.

## **8. COST ENGINEERING AND ATR MANDATORY CENTER OF EXPERTISE (MCX) REVIEW AND CERTIFICATION**

All decision documents shall be coordinated with the Cost Engineering and ATR 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 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 the input and output data is still the responsibility of the users and is subject to DQC, ATR, and IEPR (if required).

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

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

Model Name and Version	Brief Description of the Model and How It Will Be Applied in the Study	Certification/ Approval Status
HEC-FDA 1.2.5	The Hydrologic Engineering Center's Flood Damage Reduction Analysis (HED-FDA) program provides the capability for integrated hydrologic engineering and economic analysis for formulating and evaluating flood risk management plans using risk-based analysis methods. The program will be used to evaluate and compare the future without-and with-project plans along the Arroyo Seco 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	Certified

	the additive effects of each combination, or "plan." IWR-PLAN can assist with 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 decisions variables.	
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 revenue, resulting from project construction.	Approved for use
Other	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.	Need for certification will be determined through coordination with appropriate RMO
CHAP Accounting Method	The Combined Habitat Assessment Protocol (CHAP) Provides the capability to assess environmental habitat value. CHAP is an accounting and appraisal tool that is an advanced scientific 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.	Pending approval for one time use by ECO- PCX

**b. Engineering Models** - The Following engineering models are anticipated to be used in the development of the decision document:

<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>
MCASES or MII	These are cost estimating model that was developed by Building Systems Design Inc. The US Army Corps Engineers began using this model in 1989.	CoP Preferred
HEC-FDA 1.2.5	This model, developed by the US Army Corps of Engineers' Hydrological Engineering Center, will assist the PDT in applying risk analysis methods for flood damage reduction studies as required by EM 1110-2-1419. This program provides a repository for both the economic and hydrologic data required for the analysis, provides the tools needed to understand the results, calculates the expected annual damages and the equivalent annual damages, computes the annual exceedence probability and the conditional non-exceedence probability, implements the risk-bases	CoP Preferred

	analysis procedures contained in EM 1110-2-1619.	
HEC-RAS 4.0	The function of this model is to complete one-dimensional hydraulic calculations for a full network of natural and manmade channels. This modeling has yet to be completed. HEC-RAS major capabilities include – user interface, hydraulic analysis, data storage and management, graphics and reporting.	CoP Preferred
HEC-HMS	This model, developed by the US Army Corps of Engineers' Hydrological Engineering Center is designed to simulate the precipitation-runoff processes of dendritic watershed systems. The model will be used to compute peak discharges within the watershed for different storm event frequencies.	CoP Preferred

## 10. REVIEW SCHEDULES AND COSTS

**a. ATR Schedule and Cost** - The PDT district shall provide labor funding by cross charge labor codes. Funding or travel, if needed, will be provided through government order. The project manager will work with the ATR Team Lead to ensure that adequate funding is available and is commensurate with the level of review needed. The current cost estimate for this review is \$80,000 to \$100,000. The ATR team lead shall provide organization codes for team members and a responsible financial point of contact (CEFMS responsible employee) for creation of labor codes. Reviewers shall monitor individual labor code balances and alert the ATR Team lead to any possible funding shortage.

The next major milestone review will be the Draft Feasibility Report which is targeted for February 2015. As referenced in Section 5a, there will be an earlier ATR review of the hydrology and cost estimating products prior to the concurrent review for the Draft Feasibility Report. It is expected that the hydrology baseline product will be ready for review about 75 days prior to the Alternatives Milestone. The cost estimating work product will be available for review at least 60 days before the TSP Milestone. The ATR will occur simultaneously with the IEPR and Public Review. Upon conclusion of the IEPR and Public Review, changes and comments will be submitted back to the ATR Lead for a final review and approval. One Review Report will be prepared for the review of the Draft Report and Draft Final Report.

(1) The ATR process for this document followed the timeline below.

Review Milestone	Scheduled/Actual Date
<b>Watershed Study</b>	
Public Workshop/Scoping Meeting Milestone	October 2006
ATR of Draft Baseline Conditions Report	November 2010
Feasibility Scoping Meeting	February 2011
<b>Conversion from Watershed Study to GI Ecosystem Restoration Study, and align with SMART</b>	FY2014
ATR of Hydrology Engineering products	November 2014

ATR of Cost Engineering products	December 2014
ATR of Feasibility Draft Report, Supporting technical products	February 2015
PDT Responses	March 2015
ATR Backcheck	March 2015
ATR Certification / Report	April 2015

**b. IEPR Schedule and Cost** – The full IEPR panel will receive the entire Integrated Draft Feasibility Report and all technical appendixes concurrently with public and agency review. Based on the current study schedule, this will be in February 2015. 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 \$250000 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** - Planning and engineering models to be used in this study have been certified or approved. If study analyses require the use of non-certified models in the future, the study schedule and budget will be refined accordingly.

## 11. PUBLIC PARTICIPATION

The public and agencies will have opportunities to participate in this study. The study has already undergone the public scoping process when the study was originally initiated as a watershed study. One or more public workshops will be held prior to the Tentatively Selected Plan milestone. Oral and written comments from these workshops will be provided to the ATR and IEPR teams. Public review of the draft feasibility report will occur after concurrence by HQUSACE that the document is ready for public release. Public review of the draft report will begin pursuant to the PDT obtaining a legal sufficiency review. The public review period will last a minimum of 45 days as required for an EIS. Comments received during the public comment period of the draft report will 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. However, it is anticipated that 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, as necessary. A comment resolution meeting will take place if needed to decide upon the best resolution of the comments. A summary of the comments and resolutions will be included as an appendix to the final EIS/EIR. The public will be notified via the stakeholder mailing list and local newspapers when the final decision document,

associated review reports, and USACE responses to IEPR comments will be available for viewing via internet, and at local public libraries and municipalities.

## 12. REVIEW PLAN APPROVAL AND UPDATES

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

## 13. POINTS OF CONTACT

Questions about this Review Plan may be directed to the following points of contact:

<b>Name</b>	<b>Title</b>	<b>Phone Number</b>
Priyanka Wadhawan	Study Manager/Planning	(213) 452-3802
Paul Bowers	SPD District Support Team Lead	(415) 503-6556
Jodi Creswell	ECO-PCX	(309) 794-5448

## ATTACHMENT 1: TEAM ROSTERS

### PROJECT DELIVERY TEAM

First	Discipline	Phone	Email
John Killeen	Archaeology	213-452-3861	<a href="mailto:John.J.Killeen@usace.army.mil">John.J.Killeen@usace.army.mil</a>
Brian Whelan	Project Manager	213-452-4005	<a href="mailto:Brian.A.Whelan@usace.army.mil">Brian.A.Whelan@usace.army.mil</a>
Debbie Lamb	Environmental Coordinator	213-452-3798	<a href="mailto:Deborah.L.Lamb@usace.army.mil">Deborah.L.Lamb@usace.army.mil</a>
Priyanka Wadhawan	Plan Formulation	213-452-3802	<a href="mailto:Priyanka.Wadhawan@usace.army.mil">Priyanka.Wadhawan@usace.army.mil</a>
Tom Keeney	Biologist	213-452-3875	<a href="mailto:Thomas.W.Keeney@usace.army.mil">Thomas.W.Keeney@usace.army.mil</a>
David Silvertooth	Hydrology & Hydraulics	213-452-3569	<a href="mailto:David.L.Silvertooth@usace.army.mil">David.L.Silvertooth@usace.army.mil</a>
TBD	Geotech	213-452-	<a href="mailto:@usace.army.mil">@usace.army.mil</a>
Mark Chatman	Geotech	213-452-3585	<a href="mailto:Mark.Chatman@usace.army.mil">Mark.Chatman@usace.army.mil</a>
Jeannine Hogg	Economics	213-452-3816	<a href="mailto:Jeannine.H.Hogg@usace.army.mil">Jeannine.H.Hogg@usace.army.mil</a>
TBD	Cost Estimating	213-452-3739	<a href="mailto:@usace.army.mil">@usace.army.mil</a>
Lisa Sandoval	Asset Management	213-452-3147	<a href="mailto:Lisa.M.Sandoval@usace.army.mil">Lisa.M.Sandoval@usace.army.mil</a>
Roxanne Vidaurre	Design	213-452-3643	<a href="mailto:Roxanne.R.Vidaurre@usace.army.mil">Roxanne.R.Vidaurre@usace.army.mil</a>

### AGENCY TECHNICAL REVIEW TEAM

Name	Discipline	Phone	Email	Exper. (yrs)
TBD	ATR Manager/Plan Formulation			
TBD	Environmental Resources			
TBD	Biologist			
TBD	Cultural Resources			
TBD	Hydrology and Hydraulics			
TBD	Geotechnical Engineering			
TBD	Economics			
TBD	Civil Engineering Design			
TBD	Cost Engineering <sup>1</sup>			
TBD	Real Estate/Lands			

<sup>1</sup>The cost engineering team member nomination will be coordinated with the NWW Cost Estimating Center of Expertise as required. That PCX will determine if the cost estimate will need to be reviewed by PCX staff.



### INDEPENDENT EXTERNAL PEER REVIEW PANEL

Name	Discipline	Phone	Email
TBD	Environmental Resources		
TBD	Hydrology and Hydraulics		
TBD	Geotechnical Engineering		
TBD	Civil Engineering Design		
TBD	Economics		

### VERTICAL TEAM

Name	Discipline	Phone	Email
Paul Bowers		415-503-6556	<a href="mailto:Paul.W.Bowers@usace.army.mil">Paul.W.Bowers@usace.army.mil</a>
Pauline Acosta		202-761-4085	<a href="mailto:Pauline.M.Acosta@usace.army.mil">Pauline.M.Acosta@usace.army.mil</a>

### ECOSYSTEM RESTORATION PLANNING CENTER OF EXPERTISE

Name	Discipline	Phone	Email
Jodi Creswell	Biologist	309-794-5448	<a href="mailto:Jodi.K.Creswell@usace.army.mil">Jodi.K.Creswell@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 Ecosystem Restoration Feasibility Study for Arroyo Seco, Los Angeles County, California. The ATR was conducted as defined in the project’s Review Plan to comply with the requirements of EC 1165-2-209. During the ATR, compliance with established policy principles and procedures, utilizing justified and valid assumptions, was verified. This included review of: assumptions, methods, procedures, and material used in analyses, alternatives evaluated, the appropriateness of data used and level obtained, and reasonableness of the results, including whether the product meets the customer’s needs consistent with law and existing US Army Corps of Engineers policy. The ATR also assessed the District Quality Control (DQC) documentation and made the determination that the DQC activities employed appear to be appropriate and effective. All comments resulting from the ATR have been resolved and the comments have been closed in DrChecks<sup>sm</sup>.

SIGNATURE

Name  
ATR Team Leader  
Office

\_\_\_\_\_  
Date

SIGNATURE

Brian Whelan  
Project Manager  
CESPL-PM-C

\_\_\_\_\_  
Date

SIGNATURE

Name  
Review Management Office Representative  
Office

\_\_\_\_\_  
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

Richard Leiffeld  
Chief, Engineering Division  
CESPL-ED

\_\_\_\_\_  
Date

SIGNATURE

Josephine Axt, PhD  
Chief, Planning Division  
CESPL-PD

\_\_\_\_\_  
Date

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



**DEPARTMENT OF THE ARMY**  
MISSISSIPPI VALLEY DIVISION, CORPS OF ENGINEERS  
P.O. BOX 80  
VICKSBURG, MISSISSIPPI 39181-0080

REPLY TO  
ATTENTION OF:

CEMVD-PD-L

29 July 2014

MEMORANDUM FOR Commander, South Pacific Division  
ATTN: (Leigh Skaggs, CESP-D-PSD)

SUBJECT: Arroyo Seco, Los Angeles County, CA, Ecosystem Restoration Feasibility Study, Los Angeles District, Ecosystem Planning Center of Expertise Recommendation for Review Plan Approval

1. References:

- a. Engineering Circular (EC) 1165-2-214, Water Resources Policies and Authorities, CIVIL WORKS REVIEW, 15 December 2012
- b. EC 1105-2-412, Assuring Quality of Planning Models, 31 March 2011
- c. Engineering Regulation (ER) 1110-2-12, Quality Management, 30 Sep 2006

2. The enclosed Review Plan (RP) complies with all applicable policy and provides an adequate Agency Technical Review (ATR) of the plan formulation, engineering, and environmental analyses, and other aspects of plan development. The Ecosystem Restoration Planning Center of Expertise (ECO-PCX) has reviewed the RP.

3. The RP includes a risk informed decision analysis with regards to requirements to conduct a Type I Independent External Peer Review (IEPR). It is currently anticipated that a Type I IEPR will be performed as the study area is highly urbanized and the analyses will be conducted to ensure that restoration features will not increase current flood damage risk within the watershed. The project costs may approach a total implementation cost of \$45 M.

4. The Study Team anticipates use of the HEC-FDA 1.2.5, IWR Planning Suite both of which are certified models. They plan to use RECONS which is a regional economic model that is approved for use. They plan to use the Combined Habitat Assessment Protocol to evaluate ecosystem benefits. The ECO-PCX and SPD are working together to initiate external review of this model and the ECO-PCX is conducting ATR of the application of CHAP on this project.

5. The ECO-PCX coordinated review of this Review Plan with the FRM-PCX.

6. Upon approval by the MSC Commander, please provide the approved RP, the MSC Commander's approval memorandum, and the link to the District posting of the RP to Jodi Creswell. When substantive revisions are made to the RP, due to a decision on IEPR, models that will be used, changes in project scope, or Corps policy, a revised RP should be provided to the ECO-PCX for review. Non-substantive changes do not require further PCX review.

CEMVD-PD-L

SUBJECT: Arroyo Seco, Los Angeles County, CA, Ecosystem Restoration Feasibility Study,  
Los Angeles District, Ecosystem Planning Center of Expertise Recommendation for Review  
Plan Approval

7. Thank you for the opportunity to assist in the preparation of the Review Plan. We look forward to continuing to work with you on ATR, IEPR, and Model Review.

CRESWELL.JODI.  
K.1231223858

Digitally signed by CRESWELL.JODI.K.1231223858  
DN: c=US, o=U.S. Government, ou=DoD, ou=PKI,  
bu=USA, cn=CRESWELL.JODI.K.1231223858  
Date: 2014.07.29 16:10:40 -05'00'

Enclosures (1)

Jodi Creswell  
Operational Director,  
National Ecosystem Planning  
Center of Expertise

CF:

CEMVD-PD-N (Wilbanks, Lachney, Creswell)  
CESPD-PDS (Kennedy, Keilman, Cowan, Thaut)  
CESPD-PD-C (Bowers)  
CESPL-PM-C (Whelan)  
CESPL-PD (Axt, Vivanti, Wadhawan)  
CECW-SPD (Schwichtenberg, Acosta)  
CEMVP-PD-F (Knollenberg)  
CENWS-EN-ER (Scuderi)



DEPARTMENT OF THE ARMY  
LOS ANGELES DISTRICT, U.S. ARMY CORPS OF ENGINEERS  
915 WILSHIRE BOULEVARD, SUITE 930  
LOS ANGELES, CALIFORNIA 90017

CESPL-PD

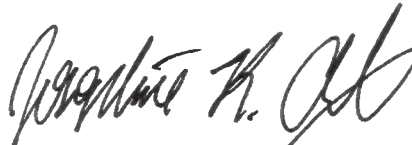
15 July 2014

MEMORANDUM FOR Commander, South Pacific Division (CESPD-PDS-P-Chief, Planning  
Lawrence Skaggs)

SUBJECT: Transmittal of Review Plan for Arroyo Seco Ecosystem Restoration Study, Los  
Angeles, California

1. Reference: EC 1165-2-214.
2. Enclosed for review and approval is the Review Plan for Arroyo Seco Ecosystem Restoration Study, Los Angeles, California. The District has coordinated review of the document with the ECO-PCX and the FRM- PCX.
3. Point of contact for this feasibility study is Priyanka Wadhawan, Lead Planner, Water Resources Planning Section A, at (213) 452-3802, or [priyanka.wadhawan@usace.army.mil](mailto:priyanka.wadhawan@usace.army.mil).

Encl

  
JOSEPHINE R. AXT, Ph.D.  
Chief, Planning Division