

REVIEW PLAN

BERRYESSA CREEK ELEMENT COYOTE AND BERRYESSA CREEK, CALIFORNIA SANTA CLARA COUNTY, CALIFORNIA DESIGN WORK PRODUCTS

San Francisco District



South Pacific Division Approval Date: Pending
Last Revision Date: 12 April 2016



**US Army Corps
of Engineers®**

REVIEW PLAN

BERRYESSA CREEK ELEMENT

TABLE OF CONTENTS

1. PURPOSE AND REQUIREMENTS..... 3

a. Purpose. 3

b. References...... 3

c. Requirements...... 3

2. REVIEW MANAGEMENT ORGANIZATION (RMO) COORDINATION..... 3

3. PROJECT DESCRIPTION..... 4

a. Project Authority...... 4

b. Location, History, and Description. 4

c. Project Delivery Team 13

d. Vertical Team...... 13

e. H&H Models 13

4. WORK PRODUCTS TO BE REVIEWED 13

5. DISTRICT QUALITY CONTROL, BCOES, AND VALUE ENGINEERING 14

a. District Quality Control (DQC) and BCOES Activities. 14

b. District Quality Control Management. 14

c. Management of BCOES. 16

d. Management of Value Engineering 17

6. AGENCY TECHNICAL REVIEW (ATR) MANAGEMENT 17

a. Agency Technical Review (ATR) Activities...... 17

b. Agency Technical Review Team (ATRT)...... 18

c. ATRT Disciplines. 18

d. Communication of ATR...... 20

e. Funding of ATR...... 20

f. Timing and Schedule...... 21

g. ATR Review Responsibilities...... 21

h. ATR Resolution of Disputes. 22

i. Certification of ATR...... 23

7. INDEPENDENT EXTERNAL PEER REVIEW MANAGEMENT 23

a. Open Type I Independent External Peer Review (IEPR) Comments...... 23

8. POLICY AND LEGAL COMPLIANCE REVIEW 25

9. PUBLIC AND AGENCY REVIEW.....	25
10. REVIEW SCHEDULES AND COSTS.....	26
<i>a. DQC Schedule and Cost.</i>	26
<i>b.ATR Schedule and Cost.</i>	26
11. REVIEW PLAN APPROVAL AND UPDATES.....	26
12. POINTS OF CONTACT.....	27
ATTACHMENT 1: PROJECT DOCUMENTS AND TEAM ROSTERS.....	29
<i>DISTRICT QUALITY CONTROL TEAM</i>	30
ATTACHMENT 2: SAMPLE DQC CERTIFICATION SHEET.....	32
ATTACHMENT 3: SAMPLE ATR CERTIFICATION SHEET.....	34
ATTACHMENT 4: ACRONYMS AND ABBREVIATIONS.....	36
ATTACHMENT 5: SUMMARY OF CHANGES TO THE REVIEW PLAN	37

1. PURPOSE AND REQUIREMENTS

a. Purpose.

This Review Plan defines the scope and level of quality management activities for design work products needed for the Berryessa Creek element of the Coyote and Berryessa Creeks, Santa Clara County, California, flood risk management project. Specifically, this Review Plan describes the level of review required for the work products specified in section 4 of the PMP, “Tasks Needed to Complete PED Phase”. The project data is also available in P2 (#353541).

b. References.

- (1) Engineer Circular (EC) 1165-2-214, Civil Works Review, 15 December 2012
- (2) Engineer Regulation (ER) 1110-2-1150, Engineering and Design for Civil Works Projects, 31 Aug 1999
- (3) ER 1110-1-12, Engineering and Design Quality Management, 21 Jul 2006
- (4) ER 415-1-11, Biddability, Constructability, and Operability, 1 September 1994
- (5) Water Resources Development Act (WRDA) 2007 H. R. 1495 Public Law 110-114, 8 Nov 2007
- (6) CESPDR 1110-1-8, Quality Management Plan; 30 December 2002
- (7) Army Regulation 15-1, Committee Management, 27 November 1992 (Federal Advisory Committee Act Requirements)
- (8) Project Management Plan (PMP) for the Berryessa Creek, California project, September 2010
- (9) National Academy of Sciences, Background Information, and Confidential Conflict Of Interest Disclosure, BI/COI FORM 3, May 2003

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, the total project cost and project benefits must be periodically updated during construction; these costs and benefits review will be handled outside of this review plan, following the current Corps guidance for such reviews.

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 design and implementation documents is the Risk Management Center (RMC). Normally the RMC serves as RMO only for projects that require IEPR Type II. In this case, the previous Review Plan assumed that IEPR Type II would be needed but, as described in

this update, the knowledge gained through the design process now indicates that it is not required. The RMC will manage the Agency Technical Review (ATR) effort described in this Review Plan. San Francisco District will manage DQC and the Policy and Legal Compliance Review efforts. The RMC will also coordinate with the Cost Engineering Mandatory Center of Expertise (MCX) to ensure the appropriate expertise is included on the review teams to assess the adequacy of cost estimates, construction schedules, and contingencies.

3. PROJECT DESCRIPTION

a. Project Authority.

The Coyote and Berryessa Creeks flood control project was authorized by the Water Resources Development Act of 1990, Pub. L. No. 101-640, §101(a)(5), 103 Stat. 4604 (1990):

“(a) Projects With Report of the Chief of Engineers. -- Except as provided in this subsection, the following projects for water resources development and conservation and other purposes are authorized to be carried out by the Secretary substantially in accordance with the plans, and subject to the conditions, recommended in the respective reports designated in this subsection:

(5) Coyote and Berryessa Creeks, California. -- The project for flood control, Coyote and Berryessa Creeks, California: Report of the Chief of Engineers, dated February 7, 1989, at a total cost of \$56,300,000, with an estimated first Federal cost of \$39,000,000 and an estimated first non-Federal cost of \$17,300,000.”

In November 1993, Congress authorized an exception to Section 902 of the Water Resources Development Act of 1986 for this project in the National Defense Authorization Act for Fiscal Year 1994, Pub. L. No. 103-160, § 2855, 107 Stat. 1547.

b. Location, History, and Description.

The Berryessa Creek watershed is located in Santa Clara County, California, south of the San Francisco Bay (Figure 1). Berryessa Creek is a tributary to the Coyote Creek system, which flows into the southernmost end of the San Francisco Bay. The Berryessa Creek project is a single-purpose flood risk management project and is an element of the Coyote Creek and Berryessa Creeks flood control project authorized by Congress in 1990. The authorized project extends approximately 4.5 miles along Berryessa Creek from 600-foot upstream of Old Piedmont Road to 50-foot downstream of Calaveras Boulevard.

After Congressional authorization in WRDA 1990, discussion with the non-federal Sponsor, Santa Clara Valley Water District (SCVWD), and interested environmental groups and community members indicated that the project did not have economic justification or wide support in the community. During preconstruction engineering studies in 1993, project refinements sought to alleviate adverse effects through the use of a rectangular concrete channel to minimize removal of the riparian zone in the upstream reach. Again, this refined project met with opposition from the community and was subsequently not considered for construction. Furthermore, refined costs and benefits resulted in a project with costs exceeding the benefits, thereby precluding Federal involvement.

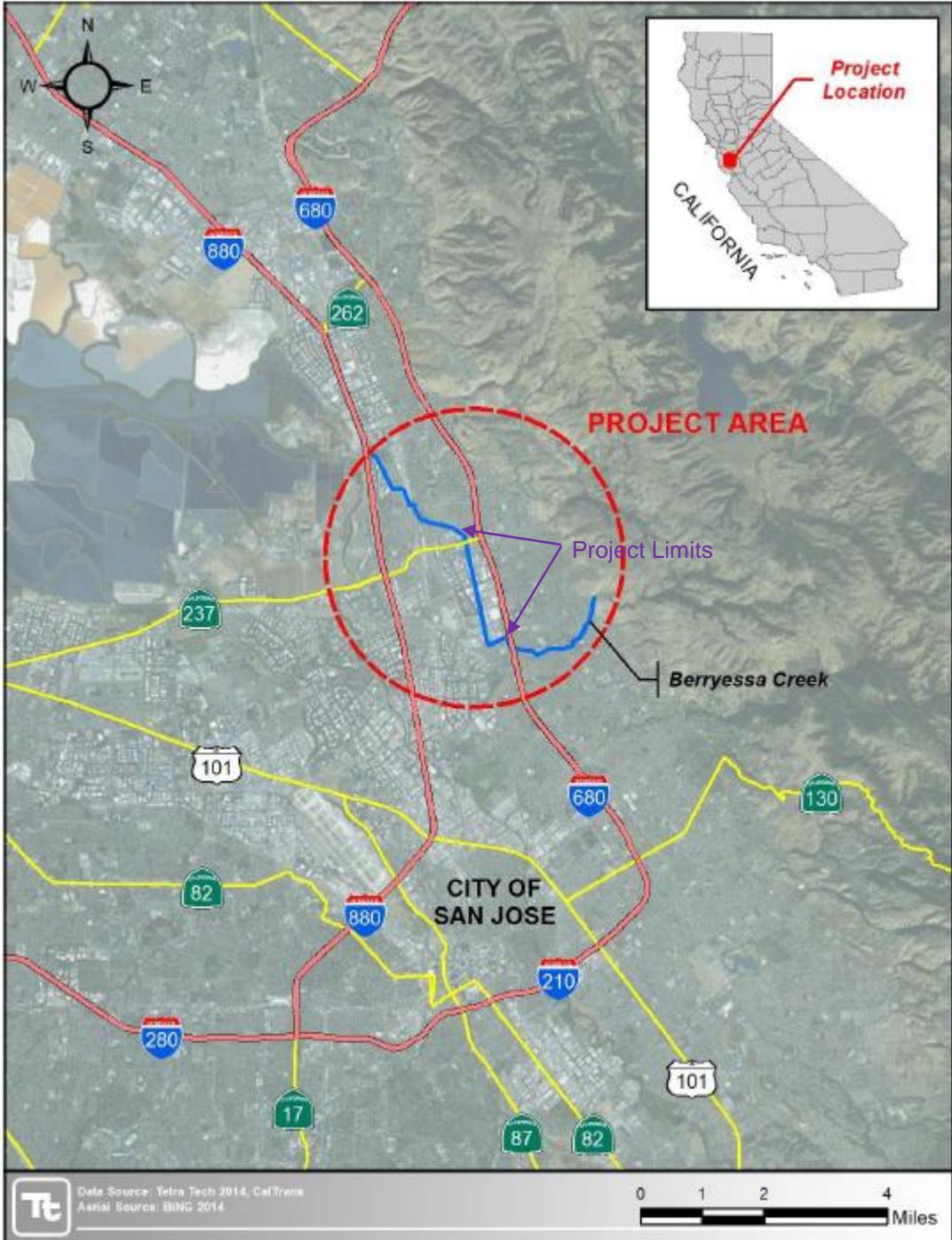


Figure 1 Location Map

In 2001, SCVWD requested that the U.S. Army Corps of Engineers (Corps) reevaluate flood risk management alternatives along Berryessa Creek to find a more economical and environmentally acceptable solution. The reevaluation renewed public and non-Federal Sponsor support for the project. The GRR/EIS was initiated to assess the feasibility of modifying the Federally-authorized project to reduce flood risks in the Berryessa Creek study area. During the course of the GRR/EIS, Berryessa Creek was separated in two distinct geographic areas: upstream of I-680 and downstream of I-680. The analysis indicated that no flood risk management alternative upstream of I-680 was economically justified. Thus, in 2013, the reach downstream of I-680 was proposed for implementation as a stand-alone element of the authorized project.

The selected plan recommended for implementation would provide capacity to convey a median 0.01 exceedance probability discharge from I-680 to Calaveras Boulevard. The plan would consist of an earthen trapezoidal channel section with varying bottom widths and 2H: 1V side slopes.



Figure 2 Selected Plan

The Berryessa Creek Project (based on the analysis contained in the GRR/EIS), consists of flood risk management improvements for approximately 2.2 miles of Berryessa Creek extending from the I-680 to Calaveras Boulevard (Figure 2). The Selected Plan consists of an earthen trapezoidal channel section with varying bottom widths. Concrete floodwalls would be constructed (Figure 5 and Figure 6), as needed, where bank stabilization is required and to support construction of access roads on top of the channel bank. Other plan features include streamlining the transitions at the bridge crossings, concrete lining of the invert and channel side slopes, improvement of the channel junctions with Los Coches Creek and Piedmont Creek, replacement of a Union Pacific Railroad (UPRR) trestle bridge with concrete box culverts that do not impact channel capacity, and revisions to the bottom widths to fit the channel into the existing right-of-way (ROW). The recent design revisions and associated hydraulic improvements allowed for the removal of the in-channel access road and reduces the height of floodwalls above the ground level.

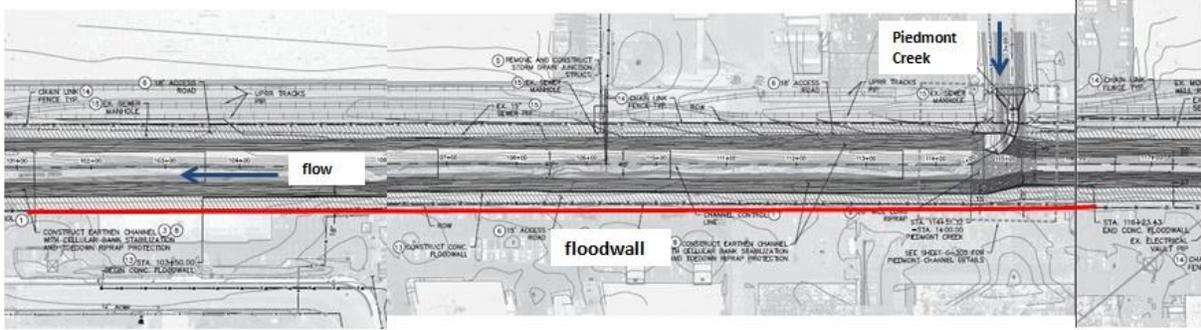


Figure 3 Plan view of Floodwall between Piedmont Creek confluence and Calaveras Blvd

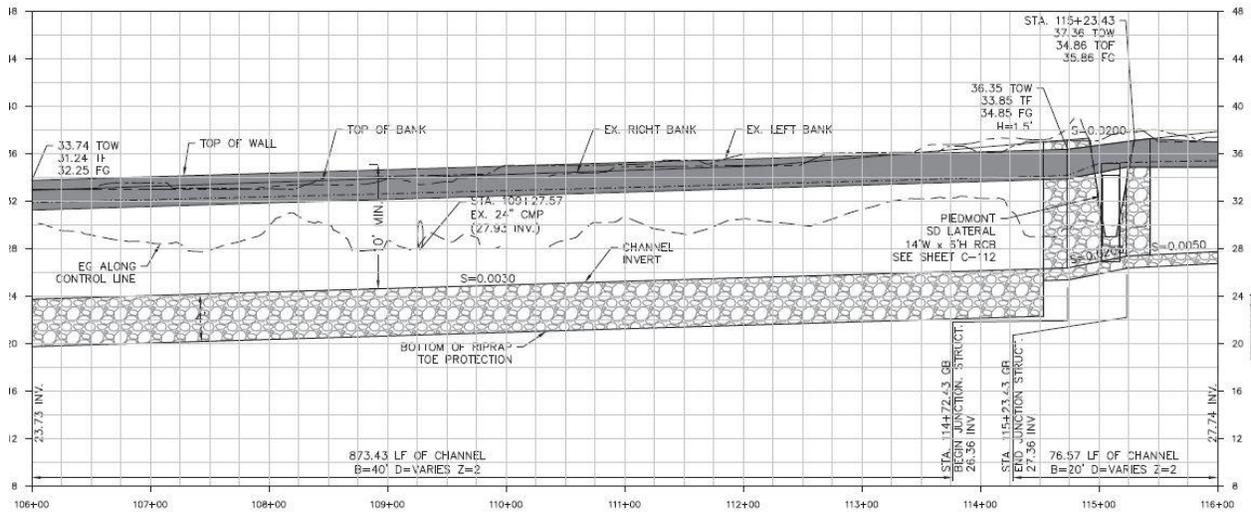


Figure 4 Profile of Floodwall

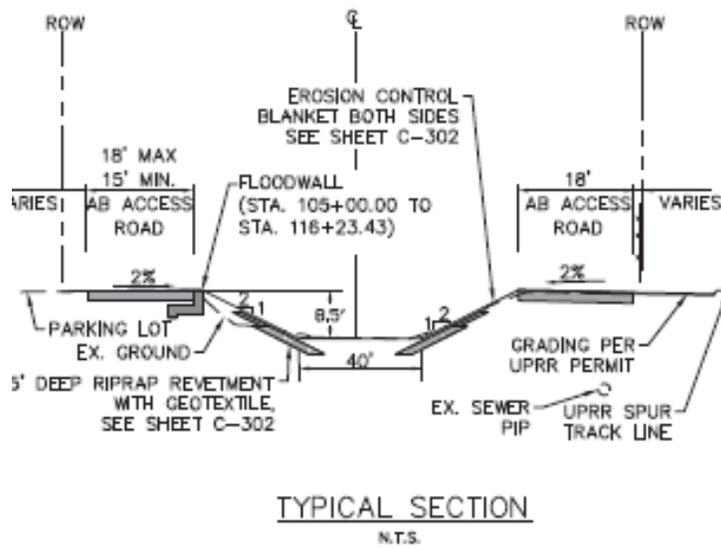


Figure 5 Typical Floodwall Section

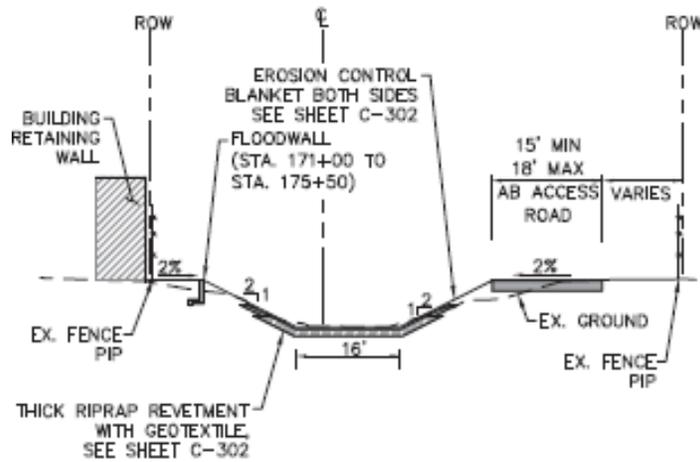


Figure 6 Typical Floodwall Section

Channel widening and deepening are designed in combination with floodwalls to meet the desired level of conveyance performance for the project. The extent of armoring, including toe down depths and armor rock gradation, varies from section to section. In narrow reaches, the toe protection may be continuous across the channel bottom to maintain the integrity of the channel configuration. The channel profile requires construction of grade control elements at bridge or utility crossing locations to prevent down-cutting of the channel bed.

The project includes access roads on the top of each channel bank that allow maintenance equipment to have closer access to the channel for maintenance and repairs. The access road surfaces will be paved or graded and compacted to withstand flood flows, and a cross slope for drainage will be provided.

The project provides the construction of transitions from the proposed floodwalls to the existing wingwalls at Montague Expressway, UPRR culvert, Los Coches Street (including the pedestrian bridge), and Calaveras Boulevard. These wingwalls will provide transitions between the proposed channel/floodwalls and the existing bridge structures and provide for the continued structural integrity of the bridge foundations and abutments. Additionally, abutment and pier protection for bridges has been designed for the bridges at Ames Avenue and Yosemite Drive to protect the piers/abutments from the increased flow volumes, and potential undermining that could result from the planned deepening of the channel at these locations.

Directly upstream of the Los Coches Street Bridge crossing, a 50-linear-foot concrete transition structure is provided, which transitions the 40-foot-wide-bottom trapezoidal channel to a 60-foot-wide rectangular channel section. The transition will be off center to allow for the realignment of the Arroyo de los Coches channel confluence and will also provide space for an access road. The Piedmont Creek earthen channel will be modified to transition into a 14-foot-wide by 6-foot-high reinforced concrete box (RCB) culvert. The confluence angle will also be modified from the existing 90-degree confluence to approximately 30 degrees to improve the channel hydraulics.

The project proposes the replacement of the existing railroad trestle bridge (Station 161+00) with a double-barrel box concrete culvert. The concrete culvert will have openings of approximately 10-feet by 11-feet and will be cast in-place with steel reinforcement. New railroad tracks will need to be rebuilt on top of the new double-barrel, reinforced concrete box culvert. New ballast rock will be imported along with new tracks.

Life Safety Issues and Determination

1. *Is the project justified by life safety?*

Yes. The project is a flood risk management project. The project is located in the heart of Silicon Valley in the cities of Milpitas and San Jose. This is a highly industrialized area with many high tech firms in addition to some limited residential. Figure 7 shows flood inundation of the project vicinity for a 1-percent flood without project condition. In the pre-project condition, the Berryessa Creek channel doesn't have adequate capacity to convey a 1-percent flood.

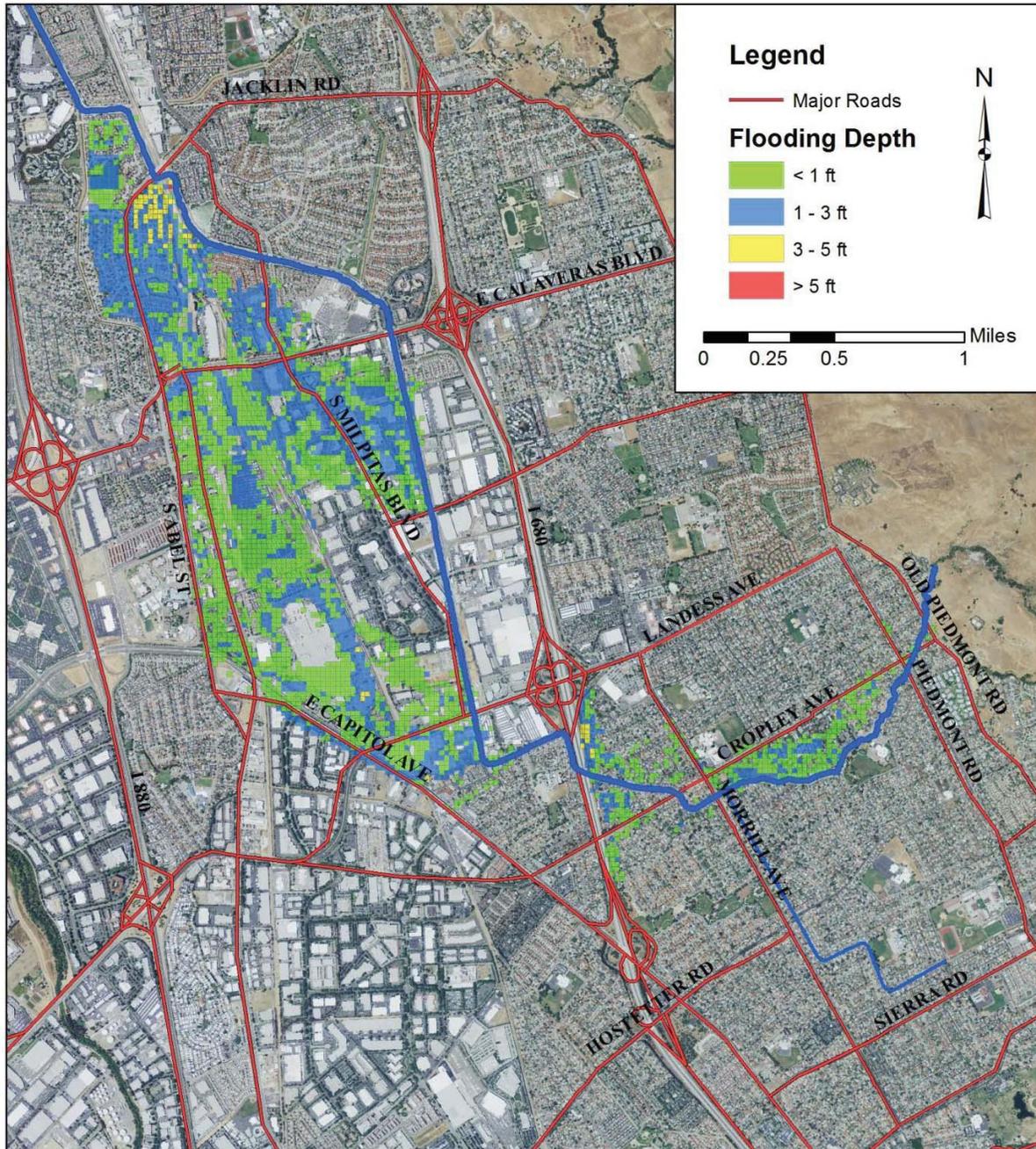


Figure 7 0.01 Exceedance Probability without project condition

2) *Would the project's failure pose a significant threat to human life (public safety)?*

No. The threat to human life is low. The project's floodwall system provides 73 percent assurance from overtopping during a 0.01 exceedance probability event, and is not fully loaded during the design discharge. The floodwall system varies in height from 2 to 3 feet and runs from Station 171+00 to 175+50 and Station 105+00 to 116+23 along the left bank. The floodwalls

will be constructed in areas where the channel proximity to the project ROW prohibits channel widening and deepening in order to convey a median 0.01 exceedance probability discharge from I-680 to the end of project reach. No inundation modeling has been performed for “a breach with project conditions” to compare to without project inundation. However, the inundated areas would be similar to the current without project condition of 3 feet in depth with low velocity sheet flows (1-2 feet/sec) that would pose non-catastrophic, nuisance flooding. The floodwalls are located in the areas where the existing top of bank grade does not provide the minimum channel depth for the design event. These areas also coincide with the existing without-project break-out locations. The floodwalls are exposed only on the channel side. The backside of the floodwalls will be backfilled and compacted to support the access road that runs parallel to the channel. In a high flow event, these floodwalls will see only the hydrostatic loads from the channel flows with a short duration of rainfall. The cantilevered floodwalls have a 4.5 foot wide base and extend a maximum of 2 feet above the ground surface. Water will not overtop the banks and floodwall system until about a 0.002 exceedance probability event. Based on the project design analyses, it is expected a few areas upstream of the project would experience break out flow before the water reached the project design elevation. The break out flows would occur in a less populated area than the project area. They are expected to be more of a nuisance level and will be addressed in the project’s Emergency Action Plan. These break out flows also would provide early warning to potential floodwall overtopping, and there is a low likelihood of floodwall breach from, or prior to, overtopping. Therefore, the overall threat to human life will be low.

3) *Does the project involve the use of innovative materials or techniques where the engineering is based on novel methods, presents complex challenges for interpretations, contains precedent setting methods or models, or presents conclusions that are likely to change prevailing practices?*

No. The project does not involve the use of innovative materials or techniques where the engineering is based on novel methods or complex challenges.

4) *Does the project design require redundancy, resiliency, or robustness?*

No. Redundancy, resiliency and robustness are not required for this project. However, a robust design was implemented in the structural design of the floodwall system. The intent of the robust design is to improve the integrity of the channel bank and minimize the effects of a high-flow condition.

5) *Does the project have unique construction sequencing or a reduced overlapping design construction schedule?*

Yes. The project requires construction staging to avoid increasing flood risks downstream, while adhering to the project schedule. Hydraulic analyses were performed by the non-Federal Sponsor, the Santa Clara Valley Water District, to identify possible staging methods. The recommended reaches for construction extend from 500 feet upstream of the Piedmont Creek confluence to just downstream of the UPRR trestle bridge, and from downstream of I-680 to 1,200 feet upstream of Montague Expressway. The non-Federal Sponsor is constructing another project downstream of the USACE project. The USACE project must not be completed prior to the non-Federal Sponsor finishing construction of the downstream project unless measures are taken to reduce channel flow conveyance to that of the existing downstream capacity until the downstream project is completed. In addition, the construction of the USACE project must be

completed prior to the Milpitas BART Station Project in December 2017. Since it is desirable start the USACE project in 2016 to allow for a delay due for the 2016-2017 rainy season and still meet the December 2017 deadline for BART, the project must be staged to ensure that flooding is not induced downstream of the project reach.

c. Project Delivery Team

The complete project documents listed in Attachment 1 are being developed by the Architect/Engineer (A/E) contractors, Noble Consultants/Tetra Tech. The project delivery team (PDT) is comprised of individuals directly involved in the development of the design and implementation documents. Individual contact information and disciplines are presented in Attachment 1. Any in-kind work potentially provided by the non-Federal Sponsor will undergo review by the PDT for a determination of adequacy; products will ultimately undergo District Quality Control (DQC). All products will undergo additional reviews as appropriate, such as Agency Technical Review (ATR).

d. Vertical Team.

The Vertical Team includes the management of the San Francisco District, the District Support Team (DST) of the South Pacific Division, and the Regional Integration Team (RIT), HQUSACE staff. Specific points of contact for the Vertical Team can be found in Attachment 1.

e. H&H Models

The Enterprise Standard (ES)-08101 Software Validation for the Hydrology, Hydraulics and Coastal Community of Practice (HH&C CoP) describes the process the Hydrology, Hydraulics and Coastal Community of Practice (HH&C CoP) of USACE shall follow to use and validate engineering software for use in planning studies and to satisfy the requirements of the Corps' Scientific and Engineering Technology (SET) initiative. This guidance applies to all USACE elements, Major Subordinate Commands (MSCs), and district commands having Civil Works responsibility and using engineering models and analytical tools for planning. 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. This study will be using HEC-HMS for the revised hydrologic study and HEC-RAS for the channel design. Both software are on the preferred list for usage.

4. WORK PRODUCTS TO BE REVIEWED

The work products generated by the A/E contractors for the Preconstruction Engineering and Design (PED) phase of the project include:

- Revised Hydrology Report
- Design Documentation Report (DDR), Construction Cost Estimates and Plans & Specifications (P&S)

Project document information and the names of the A/E firms are presented in Attachment 1.

Cost increases and minor design changes during PED were found to warrant preparation of on a Post-Authorization Change Validation Report, which will provide a basis to execute a Project Partnership Agreement (PPA) to implement construction of the Berryessa Creek project. The purpose of the Validation Report is to evaluate and determine if the cost increases and minor design changes are consistent with existing 1990 WRDA project authorization and 2014 GRR approved modified plan. The changes are primarily cost driven and do not represent a substantial design change or change in conditions that would warrant re-formulation. As such, the Validation Report is expected to meet the requirements for delegated Major Subordinate Command (MSC) approval by the South Pacific Division (SPD) Commander in accordance with criteria per ER1105-2-100 and Appendix G (Post-Authorization Changes). The Validation Report should be completed by the end of April 2016.

5. DISTRICT QUALITY CONTROL, BCOES, AND VALUE ENGINEERING

a. District Quality Control (DQC) and BCOES Activities.

DQC is an internal review process of the science and engineering work products focused on fulfilling the project quality requirements defined in the Project Management Plan (PMP). DQC activities will consist of Quality Checks and Reviews, supervisory reviews, PDT reviews, including input from the non-Federal Sponsor, and biddability, constructability, operability, environmental, and sustainability (BCOES) reviews of design and implementation documents. DQC efforts will include the necessary expertise to address compliance with applicable Corps policy.

b. District Quality Control Management.

The DQC has been managed by the San Francisco District in accordance with Major Subordinate Command (MSC) and District Quality Management Plans. Currently the 30%, 60%, and 90% DQC have been performed; no major design deficiencies on Structural, Hydrology & Hydraulics modeling or Geotechnical designs were found. All work products will undergo DQC through the 100% design. Senior staff who did not prepare the work products will conduct DQC for the study, then their management certifies that DQC took place. All work products will be reviewed within the San Francisco District to ensure they meet project and non-Federal Sponsor's objectives, comply with regulatory and engineering guidance, and meet USACE and non-Federal Sponsor's expectations of quality. This review process will be properly documented and a certification sheet (see example in Attachment 2) will be issued separately for each work product. The Technical Lead will document the DQC process. This includes recording comments, responses to comments and the back-checking process. This will typically be done through the use of DrChecks. See EC 1165-2-214 Appendix C for the detailed process.

DQC Discipline	Experience Needed for Review
Civil Design	Senior Civil engineer with experience in channel modification and design, levee and bank-protection removal or modification, earthen channels, and operations and maintenance requirements.
Cost Engineering	Senior 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.
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 with ESA, riparian habitat, and permitting requirements.
Geotechnical Engineering	Senior Geotechnical engineer familiar with sampling and laboratory testing, embankment stability and seepage analyses, soils analysis, foundation design, planning analysis.
Hydrology and Hydraulics	Senior Hydrologist or hydraulic engineer proficient with river hydraulics, GEO-RAS, HEC-RAS and associated one-dimensional models, hydrologic statistics, sediment transport analysis, shoaling mechanics and rates, channel stability analysis, risk and uncertainty analysis.
Real Estate	Senior Realty Specialist familiar with the civil works process, including knowledge of project milestones and schedules, and real estate regulation, ER 405-1-12. Realty Specialist shall have experience providing reports for studies and authorizing documents, advising the non-Federal Sponsor in their role to provide all Lands, Easements, Rights of Way, and Relocations (LERRs). Realty Specialist shall have experience coordinating with the RE Division on crediting of LERRs.
Plan Formulation & Economics for EDR	Senior planner and economist familiar with civil works planning and policy, including knowledge of ER 1105-2-100 and post-authorization change procedures and criteria.

c. Management of BCOES

BCOES review is defined as a process that ensures that biddability, constructability, operability, environmental, and sustainability issues are properly considered in contract documents. A BCOES review is performed after the ATR for the scheduled work product reviews and is typically reviewed by the Construction Branch personnel from the District that will be responsible for administering the construction contracts associated with the project.

Biddability and constructability are defined as the ease with which a designed project can be built, as well as the ease with which the contract documents can be understood, bid, administered, and executed within the timeframe of the contract duration. Operability refers to the ease with which a project can be operated and maintained. Environmental review addresses the protection of air, water, land, animals, plants, and other natural resources from the effects or impacts of construction and operation of the project. Sustainability refers to the completed project's ability to maintain itself functionally, and thereby minimize future O&M financial obligation to the fullest extent possible, and still be environmentally compliant.

(1). Communication of BCOES.

The communication plan for the BCOES is as follows:

1. The BCOES review team will use DrChecks to document the BCOES process.
2. The Technical Lead, or their designee, shall deliver the P&S to the BCOES review team for their review.
3. The Technical Lead, or their designee, shall inform the BCOES review team when all responses to their comments have been entered into DrChecks and request that the team back-check their comments.
4. The BCOES review team back checks their comments in DrChecks. The BCOES back-check ensures that the comments made during the review have been incorporated or were addressed to the reviewers' satisfaction. Typically, the back-check will be conducted on the final documents by the original reviewer or someone within their division. The comments incorporated by the customer may be closed by the Technical Lead. The back-check process is managed by the Technical Lead, or their designee to ensure that any BCOES comments and resolutions that were contrary to any previous ATR comments and resolutions have been identified and a consensus for the final resolution has been determined and agreed upon by all review participants. A back-check must be completed prior to final BCOES Certification.
5. Reviewers may "agree to disagree" with any comment response and initiate the resolution process. The Technical Lead, or their designee, will resolve all disputes by working with the PDT, BCOES review team, and the Section Chiefs of the affected disciplines.
6. BCOES certification is conducted upon completion of the BCOES review.

(2). Certification of BCOES.

The BCOES certification is a memorandum as required by Reference (4) that attests to the completion of the BCOES review process. The BCOES certification is to be signed by the

Chief of Engineering Branch, Chief of Planning Branch, Chief of Construction Branch, and Chief of Engineering Technical Services. Certification is predicated on a final, satisfactory back-check

d. Management of Value Engineering

The current estimated cost for construction of the Federal project elements and betterments at Berryessa Creek Project is \$20.35M. A VE study was completed in October 2014 by Value Management Strategies, Inc. on the GRR plans, specifications, and cost estimate. The cost of the VE study was \$62,000. Only one VE study recommendation to replace a Union Pacific Railroad Bridge without a shoo-fly was incorporated during finalization of design and construction documents.

6. AGENCY TECHNICAL REVIEW (ATR) MANAGEMENT

The ATR for the Berryessa Creek Element project has been managed by the RMO. There were no significant risks of structural or seepage failure found by the subject-matter experts in the 60% and 90% design reviews. All conflicting comments have been successfully resolved and closed out in ATR resolution conference. Contact information is provided in Attachment 1 of this Review Plan. A list of ATR reviewers describing qualifications and years of relevant experience will be provided in Attachment 1 upon conferring with the RMO and updated as new ATR reviewers are selected.

a. Agency Technical Review (ATR) Activities.

The ATR team has reviewed all applicable work products. All comments have been satisfactorily addressed. A description of the points of emphasis for work products reviewed is described below.

When reviewing the DDR, the ATR team verified that it is sufficiently detailed for each technical specialty. The criteria that were used, the critical assumptions which were made, and the analytical methods that were used will be evident for possible further review and historical documentation. The team verified that the project documents contain summaries of important calculation results and selected example calculations for all critical elements of the design.

When reviewing the P&S, the ATR team verified that they are prepared in accordance with ER 1110-2-1200 and the Architect/Engineering/Construction CADD standards along with Tri-Service Spatial Data Standards. The team also verified that the P&S contain all necessary information required to bid and construct the plan documented in the DDR and also reviewed the design for BCOES aspects of the design.

b. Agency Technical Review Team (ATRT).

The ATRT was comprised of senior USACE personnel that have not been involved in the development of the work products and were chosen based on expertise, experience, and skills. The members roughly mirrored the composition of the PDT, and come from outside of the San Francisco District, with an ATR Lead was assigned from outside the South Pacific Division. The ATRT was supplemented by outside experts as appropriate. The ATRT varied in number and composition depending on the work product being reviewed. All ATR reviewers that are part of the Engineering and Construction Communities of Practice (CoP) were certified in the CERCAP system, which can be found at:

<https://maps.crrel.usace.army.mil/apex/f?p=105:LOGIN:9274481004113>.

c. ATRT Disciplines.

The table below lists the primary disciplines of expertise and experience needed for the ATR.

ATR Discipline	Experience Needed for Review
ATR Lead/Flood Risk Management/Engineering	The ATR lead should be a senior engineer with a minimum of 10 years of experience working on flood risk management projects, familiar with Corps civil works design and construction processes; and able to interpret authorizations into project performance requirements. The lead should also have the necessary skills and experience to lead a virtual team through the ATR process.
Civil Design	Civil engineer with a minimum of 10 years of experience in channel modification and design, levee and bank-protection removal or modification, earthen channels, and operations and maintenance requirements.
Construction Management	Engineer with a minimum of 10 years of construction management experience in channel modification, levee and bank-protection removal or modification, earthen channels, concrete bypasses, ecosystem restoration techniques, sampling and laboratory testing, ESA, fishery resources, riparian habitat, dredged material management and a number of other closely associated technical subjects for both construction and ecosystem restoration and capable of making professional determinations based on experience.

ATR Discipline	Experience Needed for Review
Structural Engineering	Structural engineer with a minimum of 10 years of experience in re-enforced concrete design and evaluation for floodwalls, bridges, or buildings. Experience with AASHTO and state road and bridge standards as well as practical knowledge of construction methods and techniques as it relates to structural portions of project is encourage.
Cost Engineering	Cost estimating specialist should have 10 or more years demonstrated in the preparation of 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.
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 with ESA, and riparian habitat.
Geotechnical Engineering	Geotechnical engineer should have 10 years, or more of experience in geotechnical engineering. Team member must be familiar with sampling and laboratory testing, embankment stability and seepage analyses, soils analysis, foundation design, planning analysis, and a number of other closely associated technical subjects.
Hydrology and Hydraulics	Hydrologist or hydraulic engineer should have 10 years, or more of experience in conducting and evaluating hydrologic and hydraulic analysis for flood risk management projects. The team member should be proficient with river hydraulics, GEO-RAS, HEC-RAS and associated one-dimensional models, hydrologic statistics, sediment transport analysis, shoaling mechanics and rates, channel stability analysis, risk and uncertainty analysis, and a number of other closely associated technical subjects.
Plan Formulation for EDR	Plan Formulation technical specialist with expertise in civil works planning and policy, including knowledge of ER 1105-2-100 and post-authorization change procedures and criteria.

d. Communication of ATR.

The communication plan for the ATR is as follows:

1. The team will use DrChecks to document the ATR process. The San Francisco District DrChecks representative will facilitate the creation of a project portfolio in the system to allow access by all PDT and ATRT members. An electronic version of the document, appendices, and any significant and relevant public comments shall be posted in PDF or Word format at least one business day prior to the start of the comment period.
2. The PDT shall send the ATR Team Leader the digital files of the document and appendices for each ATRT member such that the copies are received at least one business day prior to the start of the comment period.
3. At the discretion of the ATRT, the PDT shall host an ATR kick-off meeting virtually, or on-site, to orient the ATRT during the first week of the comment period. If funds are not available for an on-site meeting, the PDT shall provide a presentation about the project, including photos of the site, for the team.
4. The Technical Lead shall inform the ATR Team Leader when all responses have been entered into DrChecks and conduct a briefing to summarize comment responses to highlight any areas of disagreement.
5. A revised electronic version of the report and appendices with comments incorporated shall be posted for use during back checking of the comments.
6. Team members shall contact ATR members or leader as appropriate to seek clarification of a comment's intent or provide clarification of information in the report. Discussions shall occur outside of DrChecks but a summary of discussions may be provided in the system.
7. Reviewers will be encouraged to contact PDT members directly via email or phone to clarify any confusion. DrChecks shall not be used to post questions needed for clarification.
8. The ATR Team Leader and the Technical Lead will prepare a memo certifying that ATR has been completed and all technical issues have been resolved.
9. ATR Lead should be invited in PDT conference calls whenever key decisions are made.

e. Funding of ATR.

1. The Project Manager (PM) shall provide labor funding by cross charge labor codes. Funding for travel, if needed, will be provided through government order. The PM will work with the ATR Team Leader to ensure that adequate funding is available and is

commensurate with the level of review needed. The current cost estimate for ATR reviews varies depending on the work product, with an estimated range from \$30,000 to \$60,000. Any funding shortages will be negotiated on a case-by-case basis and in advance of a negative charge occurring.

2. The ATR Team Leader shall provide organization codes for each team member and a responsible financial point of contact (CEFMS responsible employee) for creation of labor codes.
3. Reviewers shall monitor individual labor code balances and alert the PM to any possible funding shortages.

f. Timing and Schedule.

1. Throughout the development of the implementation documents, the team will conduct seamless review to ensure timeliness and quality of the work product.
2. ATRs will be conducted on the 60% draft versions of the work products; and if changes are made to the 60% draft version, those changes will be reviewed in the 90% version of the document.
3. At the discretion of the PDT, a “page-turn” session may be held by the PDT to review the draft version to ensure consistency across the disciplines and resolve any issues prior to the start of ATR. Writer/editor services will be performed on the draft prior to ATR as well.
4. The ATR process for all work products will follow timelines and milestones given in the project’s P2 schedule. The P2 schedule will be kept current and updated at least annually. Actual dates will be scheduled once the period of review draws closer. All products produced for these milestones will be reviewed, including those produced as in-kind services by the non-Federal Sponsor (should that be applicable to this project), and products developed by contractors.

g. ATR Review Responsibilities.

1. ATRT responsibilities are as follows:
 - a. Reviewers shall review the work products to confirm that work was done in accordance with established professional principles, practices, codes, and criteria and for compliance with laws and policy. Comments on the report shall be submitted into DrChecks.
 - b. Reviewers shall pay particular attention to one’s discipline but may also comment on other aspects as appropriate. Reviewers that do not have any significant comments pertaining to their assigned discipline shall provide a comment stating this fact.

- c. Grammatical and editorial comments shall not be submitted into DrChecks. Comments should be submitted to the ATR Team Leader via electronic mail using tracked changes feature in the Word document or as a hard copy mark-up. The ATR Team Leader shall provide these comments to the Project Planner.
 - d. Review comments shall contain these four principal elements:
 - i. a clear statement of the concern
 - ii. the basis for the concern
 - iii. the significance of the concern
 - iv. specific actions needed to resolve the comment
2. PDT Team responsibilities are as follows:
- a. The team shall review comments provided by the ATRT in DrChecks and provide responses to each comment using “*Concur*”, “*Non-Concur*”, or “*For Information Only*”. *Concur* responses shall state what action was taken and provide revised text from the report if applicable. *Non-Concur* responses shall state the basis for the disagreement or clarification of the concern and suggest actions to negotiate the closure of the comment.
 - b. Team members shall contact the PDT and ATRT managers to discuss any “Non-Concur” responses prior to submission.

h. ATR Resolution of Disputes.

- 1. Reviewers shall back check PDT responses to the review comments and either close the comment or attempt to resolve any disagreements. Conference calls shall be used to resolve any conflicting comments and responses.
- 2. Reviewers may “agree to disagree” with any comment response and initiate the resolution process. If reviewer and responder cannot resolve a comment, it should be brought to the attention of the ATR Team Leader and, if not resolved by the ATR Team Leader, it should be brought to the attention of the Engineering Chief who will need to sign the certification. ATRT members shall keep the ATR Team Leader informed of problematic comments. The vertical team will be informed of any policy variations or other issues that may cause concern during a HQUSACE review.

i. Certification of ATR.

To fully document the ATR process, a report of technical review will be prepared and any unresolved comments should be documented in the report. A statement of review completion will be signed by the ATR Team Leader and the District's Engineering, Technical Services Division Chief and the Director of Risk Management Center once all issues raised by the reviewers have been addressed to the review team's satisfaction and the final version is ready for submission. Indication of this concurrence will be documented by the signing of a certification statement by the MSC's Chief of Engineering and Construction (Attachment 3). A summary report of all comments and responses will follow the statement and accompany the report throughout the report approval process. An interim certification will be provided by the ATR Team Leader to indicate concurrence with the report to date until the final certification is performed when the work product is considered final.

J. Cost Engineering Mandatory Center of Expertise Review and Certification

All decision documents shall be coordinated with the Cost Engineering MCX, located in the Walla Walla District. The MCX will assist in determining the expertise needed on the ATR team. The MCX will also provide the Cost Engineering MCX certification. The RMO is responsible for coordination with the Cost Engineering MCX.

k. ATR of Post-Authorization Change EDR

Single expert plan formulation ATR will be conducted by the Sacramento District (SPK) for the EDR commensurate with the scope of the scope of analysis and post-authorization changes.

7. INDEPENDENT EXTERNAL PEER REVIEW MANAGEMENT

EC 1165-2-214 requires that a Type II Independent External Peer Review (IEPR)/Safety Assurance Review (SAR) shall be conducted for any project where the Federal action is justified by life safety, or where failure of the project would pose a significant threat to human life. The Chief of Engineering Branch of SPN concurs that based on the findings of the DQC and ATR, the potential hazards or risks pose a low threat to human life and recommends to not perform Type II IEPR.

a. Open Type I Independent External Peer Review (IEPR) Comments.

Independent External Peer Review (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 Type I IEPR was conducted on the combined Final General Reevaluation Report and Environmental Impact Statement. A few of the IEPR comments were essentially left open (closed in DrChecks, pending satisfactory resolution in a later phase of the project), and have been resolved during the Preconstruction, Engineering, and Design (PED) phase of the project. The following IEPR comments have been resolved during PED:

Final Panel Comment 1:

The impact of sedimentation is not included in the hydraulic modeling aspect of channel design. Panel Final Back Check Response (FPC#1):

Concur

The Panel understands that USACE will address sediment removal in the O&M manual and that other sedimentation issues will be investigated further during the PED phase of the project.

Resolution: Noble Consultants, Inc. has been hired by San Francisco District (SPN) to continue the existing hydrological analysis including the preliminary sedimentation analysis from the GRR as the basis. Sufficient details related to channel modification, sediment removal designs have been addressed at 90% design submittals.

Final Panel Comment 2:

The operations and maintenance plan does not present sufficient details related to sediment removal and maintenance of clear channel conditions.

Panel Final Back Check Response (FPC#2):

Concur

The Panel recognizes USACE intent to make revisions to the report stating that the O&M plan will be developed during the PED phase of the project.

Resolution: Noble Consultants, Inc. has been hired by San Francisco District (SPN) to continue the existing hydrological analysis including the preliminary sedimentation analysis from the GRR as the basis. Sufficient details related to channel modification, sediment removal designs have been addressed at 90% design submittals. The PDT will follow up to ensure that the Operations and Maintenance Manual including sediment removal be prepared after 100% design submittals completed in accordance with Engineer Regulations ER 1101-2-401 and the USACE's generic O&M Manual, covering the Federal requirements for successful maintenance of channel and floodwalls.

Final Panel Comment 7

The use of the current NOAA Atlas 14 Volume 6 precipitation-frequency data could alter hydrological model design discharges and affect the channel design parameters.

Panel Final Back Check Response (FPC#7):

Concur

The Panel concurs with the USACE response that hydrology as presented in the report is adequate for the feasibility phase. The panel also understands that a re-evaluation of the hydrology will be performed during the PED phase of the project.

Resolution: San Francisco District (SPN) met with South Pacific Division (SPD) to discuss a path forward on the review of the hydrology analysis. It was recommended that the review be incorporated into the Review Plan for the PED phase. The hydrology analysis could not be reviewed by the ATR at the 60% submittal with the other products since it needed resolution sooner. The non-Federal Sponsor, Santa Clara Valley Water District (SCVWD), contracted with Tetra Tech to address the IEPR comment. The revised report and data was DQCed by Mr. Benjamin Snyder (SPN) and SCVWD personnel. There was no ATR review leader for this product since it was a single element. The transfer of information was conducted by SPN and sent to Mr. Thomas Gambucci, P.E., hydraulic engineer from the Rock Island District. Mr. Gambucci was the ATR reviewer for the hydrology analysis for the feasibility phase; therefore,

he met the qualifications to be the reviewer. Mr. Snyder had a kick off meeting with Mr. Gambucci to explain the background and what the analysis entailed. DrChecks was used to document the ATR process. All concerns resulting from the ATR of the project have been fully resolved. The ATR certification was signed by Mr. Gambucci on 23 March 2015.

8. POLICY AND LEGAL COMPLIANCE REVIEW

Policy and legal compliance review are usually only conducted on decision documents, and the subsequent design and implementation documents are based on these policy and legally compliant documents. 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, compliance with the authorized project, and the presentation of findings in decision documents.

9. PUBLIC AND AGENCY REVIEW

Because all work products are design and implementation work products and not study/decision documents, there will be no formal agency or public review for any of the work products listed in this review plan. However, the appropriate resource agencies will be consulted in the development of the plans and specifications. Also, the ATR and IEPR reports for the work products will be posted to a public website.

For public participation, San Francisco District will provide an opportunity for public comment by posting the approved RP on the public website, located at:

<http://www.spn.usace.army.mil/Missions/Regulatory/PublicNotices.aspx>.

This is not a formal comment period and there is no set timeframe for the opportunity for public comment. If and when comments are received, the PDT will consider them and decide if revisions to the review plan are necessary. This engagement will ensure that the peer review approach is responsive to the wide array of stakeholders and customers, both within and outside the federal government

10. REVIEW SCHEDULES AND COSTS

a. DQC Schedule and Cost.

Task	Cost	Completion Date
DQC review on 30% Design Documents	\$14,000	10 February 2015
DQC review on 60% Design Documents	\$14,000	1 June 2015
DQC review on 90% Design Documents	\$10,000	2 December 2015
DQC review on Validation Report	\$1,000	18 March 2016

b. ATR Schedule and Cost

Task	Cost	Completion Date
Review Hydrology by the Rock Island District	\$5,000	12 March 2015
ATR Team submit design comments on 60% Designs	\$25,000	1 June 2015
ATR Team submit design comments on 90% Designs	\$15,000	25 Jan 2016
ATR (Single Expert Plan Formulation) on Validation Report	\$2,500	25 March 2016

11. REVIEW PLAN APPROVAL AND UPDATES

The RMO is responsible for endorsing this Review Plan for MSC approval. The MSC (South Pacific Division) is responsible for approving the Review Plan. An MSC approval letter is required for each review plan and must be included in the posted version of the Review Plan. The San Francisco District requests that the South Pacific Division Commander approve this Review Plan as described in Appendix B, Section 5, of EC 1165-2-214.

The Review Plan is a living document and may change as the project progresses. The San Francisco District is responsible for keeping the Review Plan up to date. Future minor changes to the Review Plan will be documented in Attachment 5. Significant changes to the Review Plan (such as changes to the scope and/or level of review) will be re-approved by the South Pacific Division Commander following the process used for initially approving the plan.

12. POINTS OF CONTACT

Questions about this Review Plan may be directed to the Technical Lead, George Fong (415-503-6889; George.G.Fong@usace.army.mil) or the Project Manager, Amanda Cruz (415-503-5955; Amanda.B.Cruz@usace.army.mil)

**INDEPENDENT EXTERNAL PEER REVIEW (IEPR) TYPE II ASSESSMENT AND
AGENCY TECHNICAL REVIEW (ATR) ASSESSMENT**

I have assessed the conditions in the Review Plan for the Berryessa Creek Flood Control Project in Santa Clara County, CA to verify if there is a significant threat to human life or public safety. I concur with the project delivery team's life safety and project performance risk assessment presented in Section 3b of this Review Plan. I concur there are potential hazards, or risks that pose a low threat to human life in the floodplain. For this reason I recommend that an IEPR Type II Safety Assurance Review is not required. Project features to be constructed consist of channel deepening and widening, and concrete floodwalls in combination with raised top of bank sections that provide protection from the prescribed design event. The proposed structures and appurtenances of the project meet current respective design criteria and would successfully perform to the design capacity event. The district will perform a District Quality Control (DQC) review for all products, and a biddability, constructability, operability, environmental, and sustainability (BCOES) review, where applicable. The district will coordinate ATR appropriate to the scope of each product described in this review plan.

for 

Lyn Gillespie, P.E.

4-14-16

Date

Chief of Engineering and Technical Services
San Francisco District, USACE

ATTACHMENT 1: PROJECT DOCUMENTS AND TEAM ROSTERS

PROJECT DOCUMENTS

A/E Contractor: Tetra Tech, Irvine, CA

- Revised Hydrology Report

A/E Contractor: Noble Consultants, Novato, CA.

- Initial Design Documentation Report (DDR)
- Construction Plans and Specifications
- Construction Cost Estimates

PROJECT DELIVERY TEAM

Name	Discipline	Phone	Email
Noble/Tetra Tech	Design/Engineering	415-884-0727	epolson@nobleconsultants.com
George Fong	Civil Design/Technical Lead	415 503-6889	George.G.Fong@usace.army.mil
Emmanuel Lee	Construction Management	415 859-1664	Emmanuel.Lee@usace.army.mil
Cameron Sessions	Cost Engineering	916-557-7896	Cameron.L.Sessions@usace.army.mil
Amanda Cruz	Environmental	415 503-6955	Amanda.B.Cruz@usace.army.mil
Craig Conner	Flood Risk/Policy	415 503-6903	Craig.S.Conner@usace.army.mil
Michael Stevens	Geotechnical Engineering	415-503-6917	Michael.G.Stevens@usace.army.mil
Patrick O'Brien	Hydrology & Hydraulics	415 503-6901	Patrick.S.O'Brien@usace.army.mil
Amanda Cruz	Project Management	415 503-6955	Amanda.B.Cruz@usace.army.mil
Bonivee Delapaz	Real Estate	415-503-6745	Bonivee.A.Delapaz@usace.army.mil
Aaron McGregor	Plan Formulation & Economics for EDR	415-503-6843	Aaron.R.Mcgregor@usace.army.mil

DISTRICT QUALITY CONTROL TEAM

Name	Discipline	Phone	Email
Rita Foti	Civil Design	415 503-6750	Rita.M.Foti@usace.army.mil
James Gehle	Construction Management	415 289-3301	James.E.Gehle@usace.army.mil
Jeff Ide	Cost Engineering	415 503-6890	Jeffrey.T.Ide@usace.army.mil
Bill Brostoff	Environmental	415 503-6867	William.N.Brostoff@usace.army.mil
Paul Schimelfenyg	Geotechnical Engineering	415-503-6916	Paul.Schimelfenyg@usace.army.mil
Janice Lera-Chan	Hydrology & Hydraulics	415 503-6738	Janice.M.Lera-Chan@usace.army.mil
Paul Zianno	Real Estate	415-557-6993	Paul.V.Zianno@usace.army.mil
Jim Howells	Plan Formulation & Economics for EDR	415-503-6850	James.A.Howells@usace.army.mil

AGENCY TECHNICAL REVIEW TEAM

Name	Discipline	Phone	Email
James Lagrone	ATR Lead	904-232-2437	james.w.lagrone@usace.army.mil
Tanis Toland	FRM/Policy	916-557-7680	Tanis.J.Toland@usace.army.mil
Gordon Grimes	Civil Design / Construction Management	904-232-1126	Gordon.E.Grimes@usace.army.mil
Danette Goss	Structural Engineering	904-232-1672	Danette.B.Goss@usace.army.mil
Matthew Cunningham	Cost Engineering	904-232-1043	Matthew.W.Cunningham@usace.army.mil
Steven Mitchell	Environmental Resources	916-557-7680	Steven.P.Mitchell@usace.army.mil
Michael Ramsbotham	Geotechnical Engineering	916-557-7174	Michael.D.Ramsbotham@usace.army.mil
Robert Tucker	Hydrology & Hydraulics	904-232-1197	Robert.C.Tucker@usace.army.mil
Scott Miner	Plan Formulation for EDR	916-557-6695	Scott.P.Miner@usace.army.mil

VERTICAL TEAM

Name	Discipline	Phone	Email
To Be Determined	District Support Team		
To Be Determined	Regional Integration Team		
To Be Determined	SPD: Business Technical Div.		

ATTACHMENT 2: SAMPLE DQC CERTIFICATION SHEET

**DISTRICT QUALITY CONTROL CERTIFICATION
COMPLETION OF QUALITY CONTROL ACTIVITIES**

The District has completed the (insert work product here) for the Berryessa Creek Element of the Coyote and Berryessa Creeks, Santa Clara County, California, flood risk management project.

Certification is hereby given that all quality control activities appropriate to the level of risk and complexity inherent in the product have been completed.

GENERAL FINDINGS

Compliance with clearly established policy principles and procedures, utilizing clearly justified and valid assumptions, has been verified. This includes assumptions; methods, procedures and materials used in analyses; alternatives evaluated; the appropriateness of data used and level of data obtained; and the reasonableness of the results. The undersigned recommends certification of the quality control process for this product.

[Name of DQC member]
[Position Title]
[Office Symbol]

Date _____

ATTACHMENT 3: SAMPLE ATR CERTIFICATION SHEET

**STATEMENT OF TECHNICAL REVIEW
COMPLETION OF AGENCY TECHNICAL REVIEW**

The San Francisco District has completed the review of the (insert work product here) for the Berryessa Creek Element of the Coyote and Berryessa Creeks, Santa Clara County, California, flood risk management project. Notice is hereby given that an agency technical review (ATR) that is appropriate to the level of risk and complexity inherent in the project has been conducted as defined in the Review Plan. 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 result, including whether the product meets the customer’s needs consistent with law and existing Corps policy. All comments resulting from the ATR have been resolved.

James Lagrone
ATR Team Leader
CESAJ-EN-DW

Date

Lyn Gillespie, P.E.
Chief, Engineering & Technical Services Division
CESPN-ET

Date

Nathan J. Snorteland
Director of Risk Management Center
CEJWR-RMC

Date

CERTIFICATION OF AGENCY TECHNICAL REVIEW

A summary of all comments and responses is attached. Significant concerns and the explanation of the resolution are as follows:

(Describe the major technical concerns, possible impact and resolution)

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

Clyde Y. Okazaki, P.E.
Chief, Business Technology Division
CESPD-RBT

Date

ATTACHMENT 4: ACRONYMS AND ABBREVIATIONS

Term	Definition
A/E	Architect and Engineer
ATR	Agency Technical Review
ATRT	Agency Technical Review Team
BCOES	Biddability, Constructability, Operability, Environmental, and Sustainability
CoP	Community of Practice
DDR	Design Documentation Report
DQC	District Quality Control/Quality Assurance
DST	District Support Team
DX	Directory of Expertise
EC	Engineer Circular
EDR	Engineering Documentation Report
ESA	Endangered Species Act
HQUSACE	Headquarters, U.S. Army Corps of Engineers
ICW	Inspection of Completed Works
IEPR	Independent External Peer Review
LERR	Lands, Easements, Rights of Way, and Relocations
MSC	Major Subordinate Command
NEPA	National Environmental Policy Act
OMRR&R	Operation, Maintenance, Repair, Replacement and Rehabilitation
PDT	Project Delivery Team
PED	Preconstruction, Engineering, and Design
PL	Public Law
PM	Project Manager
P&S	Plans and Specifications
RIT	Regional Integration Team
RMC	Risk Management Center
RMO	Review Management Organization
ROW	Right of Way
SAR	Safety Assurance Review
USACE	U.S. Army Corps of Engineers
WRDA	Water Resources Development Act

ATTACHMENT 5: SUMMARY OF CHANGES TO THE REVIEW PLAN

This page will document all of the minor changes that were made to the Review Plan after its approval by the South Pacific Division Commander.

Date	Description of Changes
26 March 2016	Plan Formulation and Economics for Validation Report were added
29 March 2016	The following Sections were updated: The answers of the five questions of Life safety issues and Determination; Project Description; ATR Management; DQC, BCOES, and Value Engineering; IEPR Management