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

17 APR 2009

CESPD-PDC

MEMORANDUM FOR Commander, Sacramento District, ATTN: CESPK-PD, Mr. Parker

Subject: Review Plan approval for the Yuba River Basin, General Reevaluation Study.

1. The attached Review Plan for the Yuba River Basin, General Reevaluation Study, has been prepared in accordance with EC 1105-2-410.

2. The Review Plan will be made available for public comment, and the comments received will be incorporated into future revisions of the Review Plan. The Review Plan has been coordinated with the Flood Risk Management Planning Center of Expertise (PCX) of the South Pacific Division which is the lead office to execute this plan. For further information, contact the PCX, Mr. Thaut, at 415-503-6852.

3. The Review Plan includes independent external peer review.

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

JANICE L. DOMBI
COL, EN
Commanding

5 Encls
1. District Memo
2. Review Plan
3. FRM-PCX Memo
4. FRM-PCX Checklist
5. SPD Checklist

REVIEW PLAN

YUBA RIVER BASIN, CALIFORNIA
FLOOD RISK MANAGEMENT
GENERAL REEVALUATION STUDY

SACRAMENTO DISTRICT
CORPS OF ENGINEERS

April 2010

REVIEW PLAN

YUBA RIVER BASIN, CALIFORNA
GENERAL REEVALUATION STUDY
SACRAMENTO DISTRICT

TABLE OF CONTENTS

1. PURPOSE AND REQUIREMENTS 1
   A. Purpose 1
   B. Requirements 1
      (1) General 1
      (2) Technical Review Strategy Session. 1
      (3) District Quality Control 2
      (4) Agency Technical Review 2
      (5) Independent External Peer Review 3
      (6) Type I IEPR. 4
      (7) Type II IEPR (Safety Assurance Review) 5
      (8) Quality Control of Contracted Products 6
      (9) Computational Planning Model Certification 6
      (10) Planning Center of Expertise (PCX) Coordination 7
      (11) Review Plan Approval and Posting 7
      (12) Reporting Responsibilities 7
      (13) Policy/Legal Compliance Review and Decision Document Approval 8
      (14) Supporting Principles of the Review 9
      (15) Implementation 9
2. PROJECT AND STUDY DESCRIPTION 10
   A. Decision Document 10
   B. General Site Description of Project 10
   C. Project Background and Authorization 10
   D. Problems, Opportunities and Potential Solutions 17
   E. Studies, Associated Disciplines and Level of Difficulty/Challenge 18
   F. Project Magnitude and Risk 21
   G. Environmental Compliance 21
   H. Interagency and Public Interest 21
   I. Project Cost 22
   J. Local Sponsor In-Kind Contribution 22
   K. Study Process and Milestones 23
   L. Study Teams 23
      (1) Corps of Engineers 23
      (2) Local Sponsor 23
3. CONDUCTING THE REVIEW 23
   A. Technical Review Strategy Session and Past Reviews 23
   B. Management of the GRR Report Review 24

C. District Quality Control (DQC) ... 24
(1) General ... 24
(2) Working with ATRT Members ... 24
(3) Dispute Resolution ... 24
(4) Flood Risk Management Program ... 25
(5) Policy and Legal Compliance Review ... 25
(6) Documentation ... 25
(7) Cost ... 25
D. Agency Technical Review (ATR) ... 25
(1) Management of the ATR ... 25
(2) Product for Review ... 25
(3) ATR Team (ATRT) ... 25
(4) Coordination with ATRT Members during DQC ... 26
(5) Review of Costs ... 26
(6) Communication Plan ... 26
(7) Funding ... 27
(8) Conducting the Review ... 27
(9) Safety Assurance Review ... 28
(10) Policy and Legal Compliance Review ... 28
(11) Dispute Resolution ... 28
(12) Reporting in Submittals ... 28
(13) Certification ... 29
E. Independent External Peer Review ... 29
(1) Type 1 IEPR ... 29
(2) Type II IEPR (Safety Assurance Review) ... 33
F. Non-Federal Sponsor In-Kind Work ... 33
G. Contracted Products ... 33
4. PUBLIC AND AGENCY REVIEW ... 34
5. REVIEW SCHEDULE ... 34
6. CERTIFICATION OF MODELS ... 35
7. PCX COORDINATION & POINTS OF CONTACT ... 37
8. REVIEW PLAN APPROVAL AND POSTING ... 37

TABLES

Table 1 - Study Disciplines ... 18
Table 2 – Study and Review Schedule ... 35
Table 3 - Certification of Planning Models ... 36

FIGURES

Figure 1 – Vicinity Map
Figure 2 – Study Area Map
Figure 3 – Authorized Project Map
Figure 4 – Plan Reaches

APPENDICES

Appendix A Statement of Technical Review and Certification of Quality Assurance Review
Appendix B Review Plan Teams
Appendix C Acronyms and Abbreviations

REVIEW PLAN

YUBA RIVER BASIN, CALIFORNIA
GENERAL REEVALUATION STUDY
SACRAMENTO DISTRICT

1. PURPOSE AND REQUIREMENTS

A. Purpose

This document presents the Review Plan for the Yuba River Basin, California General Reevaluation Study (GRR). The Review Plan describes the review of basic science and engineering work products focused on fulfilling the project quality requirements defined in the Yuba River Basin Project Management Plan (PMP) dated March 2010. The Review Plan is a component of the PMP. The Yuba River Basin study is anticipated to cumulate in a decision document to Congress for potential project authorization.

B. Requirements

(1) General

As a result of the changes to the review process in Section 2034 of WRDA 2007, Engineering Circular (EC) 1165-2-209, Water Resources Policies and Authorities, Civil Works Review Policy, in January was issued. The new EC revises the technical and overall quality control review processes for decision documents. It formally distinguishes between technical review performed in-district (District Quality Control, "DQC") and out-of-district resources (formerly Independent Technical Review, "ITR," now Agency Technical Review, "ATR"). It also reaffirms the requirement for Independent External Peer Review (IEPR); this is the most independent level of review and is applied in cases that meet certain criteria where the risk and magnitude of a proposed project are such that a critical examination by a qualified team outside of USACE is warranted.

EC 1165-2-209 outlines the requirement of the three review approaches (DQC, ATR, and IEPR). This review plan addresses review of the decision document as it pertains to this approach and planning coordination with the appropriate PCX. The Yuba River Basin GRR will investigate flood risk management (FRM). Therefore, the PCX for FRM is considered to be the primary PCX for coordination. The Review Plan is a comprehensive life-cycle review strategy for document review from initial planning through design, construction, sponsor Operation, Maintenance, Repair, Replacement and Rehabilitation (OMRRR).

(2) Technical Review Strategy Session.

The independent technical review process begins with a technical review strategy session (TRSS). The TRSS forms the basis for the quality control plan for the GRR and is held early in the development phase. The planning function chief chairs the TRSS. Also attending is the project manager, other function chiefs and representatives of the non-Federal cost-sharing sponsor. CESPD's planning program manager also attends, in a quality assurance role. In addition to establishing the independent review team, the participants establish the level of review, identify documents to be reviewed and identify policy or major technical issues that needed to be brought to the attention of CESPD for resolution early in the study. This session should also be combined with other initial formulation/scoping meetings.

(3) District Quality Control

DQC is the review of basic science and engineering work products focused on fulfilling the project quality requirements defined in the Project Management Plan (PMP). It is managed in the Sacramento District and may be conducted by in-house staff as long as the reviewers are not doing the work involved in the study, including contracted work that is being reviewed. Basic quality control tools include a Quality Management Plan (QMP) providing for seamless review, quality checks and reviews, supervisory reviews, Project Delivery Team (PDT) reviews, etc. Additionally, the PDT is responsible for a complete reading of the report to assure the overall integrity of the report, technical appendices and the recommendations before the approval by the District Commander. The DQC of products and reports shall also cover any necessary National Environmental Policy Act (NEPA) documents and other environmental compliance products and any in-kind services provided by local sponsors.

DQC efforts will include the necessary expertise to address compliance with published Corps policy. When policy and/or legal concerns arise during DQC efforts that are not readily and mutually resolved by the PDT and the reviewers, the district will seek immediate issue resolution support from the MSC and HQUSACE in accordance with the procedures outlined in Appendix H, ER 1105-2-100 or other appropriate guidance.

MSC and district quality manuals will prescribe specific procedures for the conduct of DQC including documentation requirements and maintenance of associated records for internal audits to check for proper DQC implementation.

A Quality Control Plan (QCP) is included in the PMP for the subject study and addresses DQC. The CESPD/Sacramento District QMP addresses the conduct and documentation of this fundamental level of review. DCQ is required for this study.

(4) Agency Technical Review

EC 1165-2-209 recharacterized ATR (which replaces the level of review formerly known as Independent Technical Review) as an in-depth review, managed within USACE, and conducted by a qualified team outside of the home district that is not involved in the day-to-day production of a project/product. The purpose of this review is to ensure the proper application of clearly established criteria, regulations, laws, codes, principles and professional practices.

The USACE organization managing the review effort is designated the Review Management Organization (RMO). When preparing to initiate the review, the "charge" to the reviewers on both the ATR teams and IEPR panels will contain the instructions regarding the objective of the review and the specific advice sought. The RMO is responsible for preparing the charge. For ATR on the GRR, the RMO will be the Flood Risk Management Planning Center of Expertise (FRM PCX).

The ATR team reviews the various work products and assures that all the parts fit together in a coherent whole. ATR teams will be comprised of senior USACE personnel such as Regional Technical Specialists, and may be supplemented by outside experts as appropriate. To assure independence, the leader of the ATR team shall be from outside the home MSC. EC 1165-2-209 requires that DrChecks computer software https://www.projnet.org/projnet/) be used to document all ATR comments, responses, and associated resolution accomplished. This Review Plan outlines the proposed approach to meeting this requirement for the Yuba River Basin GRR. ATR is required for this study.

The ATR should address the basic communication aspects of the documents. Quality decision documents allow the public and stakeholders to understand the planning effort and its results, and enable decision makers to reach the same conclusions as the reporting officers. The Corps' Project Management Business Process directs that all projects, events, and issues of significant public interest have a communication plan. The goal is to provide accurate, timely, consistent information to the American public, stakeholders, and interested members of the Corps' team. Communication is most powerful when everyone, at every level, is able to rapidly respond to questions and tell the same story, the same way.

There shall be coordination with the Cost Engineering Directory of Expertise (DX) located in the Walla Walla District, which will provide the cost engineering review and resulting certification. The DX only reviews the cost estimate for the Recommended Plan. They do not review cost estimates for other alternatives for the AFB or Draft Report submittals, or any interim submittals.

ATR efforts will include the necessary expertise to address compliance with applicable published policy. When policy and/or legal concerns arise during ATR efforts that are not readily and mutually resolved by the PDT and the reviewers, the district will seek issue resolution support from the MSC and HQUSACE in accordance with the procedures outlined in ER 1105-2-100 (Appendix H), or other appropriate guidance.

(5) Independent External Peer Review

EC 1165-2-209 recharacterized the external peer review process. 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. IEPR is managed by an outside eligible organization (OEO) that is described in the Internal Review Code Section 501(c) (3), is exempted from Federal tax under Section 501(a), of the Internal Revenue Code of 1986; is independent; is free from conflicts of interest; does not carry out or advocate for or against Federal water resources projects; and has experience in establishing and administering IEPR panels. The scope of review will address all the underlying planning, engineering, including safety assurance, economics, and environmental analyses performed, not just one aspect of the project. This Review Plan outlines the planned approach to meeting this requirement. IEPR is required for this study. The IEPR will be limited to the technical aspects of the project only and will not address items dealing with the agency and administration's policy.

EC 1165-2-209 established thresholds that trigger IEPR: In cases where there are public safety concerns, a high level of complexity, novel or precedent-setting approaches; where the project is controversial, has significant interagency interest, has a total project cost greater than $45 million, or has significant economic, environmental and social effects to the nation, IEPR will be conducted.

The PCX is responsible for the accomplishment and quality of IEPR. Centers must use outside eligible organizations to manage the selection of panels, the conduct of the review, and the organization arid disposition of comments. IEPR will be conducted in addition to an ATR managed or conducted by the PCX. The ATR should be completed before initiating the IEPR.

PCX shall ensure that reviewers serving as Federal employees (including special government employees) comply with applicable Federal ethics requirements. In selecting reviewers who are not Federal government employees, PCX shall adopt or adapt the National Academy of Sciences' policy for committee selection with respect to evaluating the potential for

conflicts (e.g., those arising from investments; agency, employer, and business affiliations: grants, contracts and consulting income).

IEPR must be performed by subject matter experts from outside of USACE. Peer reviewers shall not have participated in development of the report, appendix, or other work product to be reviewed. PCXs are encouraged to rotate membership on standing panels across the pool of qualified reviewers. OEOs shall bar participation of scientists employed by USACE.

The three most important considerations in selecting reviewers are the credentials of the reviewers (which include affiliations as well as expertise), the absence of conflict of interest, and the independence of the group that selects the reviewers. Public perception may well have greater influence than the public understands in determining the fate of a project. It is often the case, however, that a minority of stakeholders reflect that "public" perception. Thus the OEO needs to structure the review such that good science, sound engineering, and public welfare are the most important factors that determine a project's fate. Review panels shall be credible and balanced, but that also have adequate knowledge of USACE complex guidance and analytical methods.

The Water Resources Development Act of 2007 included two separate requirements for review by external experts. The first, Section 2034, required independent peer review of project studies under certain conditions. The second, Section 2035, required a Safety Assurance Review (SAR) of “the design and construction activities for hurricane and storm damage reduction and flood damage reduction projects.” USACE policy extends this to all projects with life safety issues. IEPR is divided into two types; Type 1 IEPR is generally for decision documents and Type II is generally for implementation documents. The differing criteria for conducting the two types of IEPR can result in work products being required to have Type I IEPR only, Type II IEPR only, both Type I and Type II IEPR, or no IEPR.

(6) Type I IEPR.

Type I IEPR is conducted on project studies. It is of critical importance for those decision documents and supporting work products where there are public safety concerns, significant controversy, a high level of complexity, or significant economic, environmental and social effects to the nation.

Type I IEPR reviews are managed outside the USACE, panel members will be selected by an Outside Eligible Organization (OEO). The panels will conduct reviews that cover the entire project concurrent with the product development. For IEPR on decision documents, the RMO will be the appropriate PCX.

Type I IEPR is mandatory if any of the following are true:

• Significant threat to human life. The decision document phase is the initial concept design phase of a project. Therefore, when life safety issues exist, a Type I IEPR that includes a Safety Assurance Review is required;

• Where the estimated total cost of the project, including mitigation costs, is greater than $45 million based on a reasonable estimate at the end of the reconnaissance phase.;

• Where the Governor of an affected State requests a peer review by independent experts;

• 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.

For decision documents where a Safety Assurance Review is required, the panel should address the following questions for the selected alternative:

(a) In accordance with ER 1110-2-1150, is the quality and quantity of the surveys, investigations, and engineering sufficient for a concept design?

(b) Are the models used to assess hazards appropriate?

(c) Are the assumptions made for the hazards appropriate?

(d) Does the analysis adequately address the uncertainty given the consequences associated with the potential for loss of life for this type of project?

(4) Assess the considered and recommended alternatives from the perspective of systems. This includes (but is not limited to) aspects such as the hydraulic and hydrologic effects throughout a watershed, the impact on competing ports within an area of influence, or the impacts on resources used by transiting migratory species. It should also include systemic aspects being considered from a temporal perspective, including the potential effects of climate change.

(5) Receive from USACE any public written and oral comments provided on the project;

(6) Provide timely written and oral comments throughout the development of the project, as specified in the scope of work with the OEO; and

(7) Submit a final report, no more than 60 days following the close of the public comment period for the draft project study to enable the district to address all necessary actions before the final report is signed. The report will contain the panel's economic, engineering, and environmental analysis of the project study, including the panel's assessment of the adequacy and acceptability of the economic, engineering, and environmental methods, models, and analyses used. All comments in the report will be finalized prior to their release to USACE for each study phase.

(7) Type II IEPR (Safety Assurance Review)

In accordance with Section 2034 and 2035 of WRDA 2007, EC 1165-2-209 requires that all projects addressing flooding or storm damage reduction undergo a SAR during design and construction. Safety assurance factors (significant threat to human life, project cost thresholds, etc) must be considered in the planning and studies phases and in all reviews for those studies. This study will address safety assurance factors, which at a minimum will be included in the draft report and appendixes for public and agency review. Prior to preconstruction engineering and design (PED) for construction, the PMP will be updated to include a SAR with the selection of external panels to perform the independent external peer reviews during design and construction.

The Safety Assurance Review shall focus on the quality of the surveys and investigations, quality of in-kind-contributions and whether it is certifiable for credit in accordance with EC 1165-2-208, the range of alternatives considered, the models used to assess hazards, the level of uncertainty in assessments, and whether the quality and quantity of engineering per ER 1110-2-1150 are sufficient to ensure public welfare, safety, and health. The purpose of the Safety Assurance Review is to ensure that good science, sound engineering, and public health, safety, and welfare are the most important factors that determine a project's fate.

The objectives during the GRR study phase include assessing the risk and uncertainty for safety and functional objectives clearly estimating and displaying the probable performance of the selected plan in accordance with current risk and uncertainty analysis policy and criteria. Proposed project alternatives that do not satisfy the safety requirements shall be recommended for withdrawn from further consideration. This recommendation shall be discussed and agreed upon by the full PDT.

Factors to consider for a safety assurance review are:

(a) where the failure of the project would pose a significant threat to human life;

(b) cases where information 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;

(c) where the project involves the use of innovative materials or techniques;
(d) whether the project design lacks redundancy, resiliency, or robustness:

- redundancy - The use of multiple lines of defense that are linked to potential failure modes. The most vulnerable failure modes need the greatest redundancy.
- resilience - The use of enhancements to improve the ability of the system to sustain loads greater than the design load to achieve gradual failure modes over some duration rather than sudden failure modes.
- robustness - The use of more conservative assumptions to increase capacity to compensate for greater degrees of uncertainty and risk.

(e) the project has unique construction sequencing or acquisition plans;
(f) the project has a reduced or overlapping design construction schedule; or
(g) as directed by the Chief of Engineers.

The Review Management Office for Type II IEPR reviews is the USACE Risk Management Center (RMC) at IWR. Panel members will be selected using the National Academies of Science (NAS) policy for selecting reviewers.

(8) Quality Control of Contracted Products

The Sacramento District PM prepares a Quality Assurance Plan (QAP) that addresses the development and review efforts to be performed by the contractor and District staff. This document indicates whether the Corps is to perform a separate ATR in addition to the independent technical review required of the contractor.

The contractor develops and submits their project-specific Quality Control Plan (QCP) to the District for review and approval. The contractor shall perform a thorough QC-focused independent review of their work, as cited in their QCP, following the same basic procedures used when a project is developed by the District. The contractor shall include a QC Certification package, signed by a principle/partner in the firm, when forwarding the final project documents to the District. This certification shall serve to witness that all QC procedures required of the contractor have been properly completed.

The District performs a Quality Assurance (QA) overview of the contractor's QC process. QC differs from QA. QC is the process used to ensure that the execution of a task meets the agreed-upon project requirements in accordance with applicable laws, regulations, policies, and technical criteria requirements. QA provides oversight of the QC processes in order to ensure that cited QC procedures have been followed and to gage their effectiveness in producing a quality product. A small team of experienced District staff will normally perform the QA overview effort. As a minimum, one in-house person with significant diverse experience who knows the requirements associated with the project phase under development would review all documents prepared by a contractor to ensure that the product is consistent with project requirements and complies with Corps criteria, policy, and guidelines.

(9) Computational Planning Model Certification

Planning models 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. It includes all models used for planning, regardless of their scope or source, as specified in the following sub-paragraphs. Engineering models used in planning will be certified under a separate process.

When preparing to initiate review of a product, the "charge" to the reviewers on both the ATR teams and IEPR panels will contain the instructions regarding how the review should be

conducted as well as to evaluate the soundness of models and analytic methods. The RMO shall provide reviewers with sufficient information, including background information about key studies or models, to enable them to understand the data, analytic procedures, and assumptions used to support the key findings or conclusions.

The USACE Planning Models Improvement Program (PMIP) was established in 2003 to assess the state of planning models in the USACE and to make recommendations to assure that high quality methods and tools are available to enable informed decisions on investments in the Nation's water resources infrastructure and natural environment. The main objective of the PMIP is to carry out "a process to review, improve and validate analytical tools and models for USACE Civil Works business programs."

In carrying out this initiative, a PMIP Task Force was established to examine planning model issues, assess the state of planning models in the Corps, and develop recommendations on improvements to planning models and related analytical tools. The PMIP Task Force collected the views of Corps leaders and recognized technical experts, and conducted investigations and numerous discussions and debates on issues related to planning models. It identified an array of model-related problems, conducted a survey of planning models, prepared papers on model-related issues, analyzed numerous options for addressing these issues, formulated recommendations, and wrote a final report.

The Task Force considered ongoing Corps initiatives to address planning capability, and built upon these where possible. Examples include several efforts under the Planning Excellence Program (training, specialized planning centers of expertise, modeling); the Science & Engineering Technology (SET) initiative and associated Technical Excellence Network (TEN), which endeavors to provide uniform Science and Engineering tools and practices to the Corps and share them throughout; and recognition of existing Quality Assurance/Quality Control programs and internal technical review within the Districts.

(10) Planning Center of Expertise (PCX) Coordination

EC 1165-2-209 outlines PCX coordination in conjunction with preparation of the Review Plan. This Review Plan is being coordinated with the PCX for Flood Risk Management (FRM).

(11) Review Plan Approval and Posting

In order to ensure the Review Plan is in compliance with the principles of EC 1165-2-209 and the QMP of CESPD, the Review Plan must be approved by the Commander, South Pacific Division (SPD). Once the Review Plan is approved, the Sacramento District will post it to its district public website.

(12) Reporting Responsibilities

In general, the reporting responsibilities include:

(a) The PDT is responsible for project success and for delivering a quality product. The PDT is responsible for developing documents in accordance with the procedures and policies set forth in USACE engineering regulations and circulars. The PDT is supported by the Communities of Practice for the various disciplines.

(b) CESPD Office of Counsel is responsible for the legal review of each decision document and signing a certification of legal sufficiency.

(c) The CESPD Commander is responsible for ensuring policy and legal compliance.

(d) HQUSACE is responsible for confirming the technical, policy and legal compliance of planning products; supporting the resolution of issues requiring HQUSACE, ASA (CW) or OMB decisions; continuously evaluating the overall project development process, including the

review and policy compliance processes; and recommending appropriate changes when warranted.

Reporting of reviews in document submittals shall follow Exhibits H-3 through H-7 in ER 1105-2-100. For Intermediate Milestone and AFB submittals, the district will describe the status of all review activities and present any review documentation completed to date, including the status of unresolved issues and the most likely resolution. The documentation should address the PCX and Cost Engineering Directory of Expertise (DX) coordination and the application of the Cost Engineering DX technical review checklist.

For the AFB and draft report submittals, the district will provide the review certification(s) and the review documentation for the draft decision document, preliminary draft NEPA document, and the supporting analyses. Review will be complete for all supporting technical work products prior to document submission. Any unresolved review issues and the expected path to resolve these issues will be identified. The documentation will address the PCX and Cost Engineering Directory of Expertise (DX) coordination, review comments and certifications and, for the draft reports submission, include the Real Estate Gross Appraisal Review certification.

For final report submittals, the district will provide the documentation and certification of review and IEPR. The documentation will address the PCX and Cost Engineering DX coordination, review comments and certifications and include the Real Estate Gross Appraisal Review certification.

The project summary accompanying the final report will present the dates of the certifications of the technical and legal adequacy of the final feasibility report, describe the involvement of the PCX, describe the involvement of the Real Estate appraisal reviewer, and summarize the involvement of the Cost Engineering DX in the approval of the total project cost estimate.

(13) Policy/Legal Compliance Review and Decision Document Approval

In addition to the technical reviews, decision documents will be reviewed throughout the study process for their compliance with law and policy. These reviews culminate in Washington-level 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 Chief of Engineers.

Guidance for policy and legal compliance reviews and the GRR decision document approval process is addressed further in Appendix H, ER 1105-2-100. Technical reviews described in EC 1165-2-209 are to augment and complement the policy review processes by addressing compliance with published Army polices pertinent to planning products, particularly polices on analytical methods and the and the presentation of findings in decision documents.

DQC and ATR efforts are to include the necessary expertise to address compliance with published planning policy. Counsel will generally not participate on ATR teams, but may at the discretion of the district or as directed by higher authority. When policy and/or legal concerns arise during DQC or ATR efforts that are not readily and mutually resolved by the PDT and the reviewers, the district will seek issues resolution support from the MSC and HQUSACE in accordance with the procedures outlined in Appendix H ER 1105-2-100. IEPR teams are not expected to be knowledgeable of Army and administration polices, nor are they expected to address such concerns. An IEPR team should be given the flexibility to bring important issues to

the attention of decision makers. Legal reviews will be conducted concurrent with ATR of the draft and final report and environmental impact statement.

At the Washington level Civil Works Review Board (CWRB) briefing, Major Subordinate Commanders and District Commanders present the results of their water resources development studies and the recommendations contained in decision documents for projects that require authorization by Congress. The CWRB briefing will serve as the corporate checkpoint that the final decision report and NEPA document are ready for State and Agency Review as required by the Flood Control Act of 1944, as amended.

When it is determined that IEPR will be undertaken, the Chief of Engineers is required to notify the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives of the review, prior to the initiation of peer review. Upon MSC approval of each RP with Type I IEPR, the MSC will provide a copy of the signed MSC Approval Memo to its respective HQUSACE RIT. The RIT will then process a notification letter, signed by the Director of Civil Works (DCW) to both the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives with a copy to ASA (CW).

(14) Supporting Principles of the Review

The supporting principles of the review are:

(1) The PDT is responsible for project success and for delivering a quality product in accordance with ER 5-1-11. The PDT is responsible for developing documents in accordance with the procedures and policies set forth in USACE engineering regulations and circulars. The PDT, supported by the district Communities of Practice, is knowledgeable of USACE water resources policies and procedures.

(2) Home district Office of Counsel is responsible for the legal review of each decision document and signing a certification of legal sufficiency.

(3) MSC Commanders are responsible for ensuring policy and legal compliance, and documenting technical, policy and legal compliance for decision documents that have been delegated to MSCs for review and approval in accordance with ER 1165-2-502.

(4) At the Civil Works Review Board briefing, the District Commander will address the review, including the major concerns expressed and how they were resolved. The MSC Commander will present the certifications of technical, legal and policy compliance, and any MSC quality assurance observations. They should discuss the review process and results, including the involvement of the Planning Centers of Expertise, IEPR team, and any significant and/or unresolved technical, legal or policy compliance concerns. The leader of the ATR team will participate in the CWRB to address review concerns.

(5) HQUSACE is responsible for confirming the technical, policy and legal compliance of planning products; supporting the resolution a f issues requiring HQUSACE, ASA (CW) or OMB decisions; continuously evaluating the overall project development process, including the review and policy compliance processes (including responsibilities delegated to MSCs); and recommending appropriate changes when warranted.

(15) Implementation.

The costs associated with DQC and ATR will be shared in accordance with the project purpose(s) and the phase of work. The costs associated with Type I IEPR, excluding the costs of contracts for panels, are also cost shared. The costs of contracts for Type I IEPR panels will be a Federal expense and will not exceed $500,000 unless the Chief of Engineers determines that a higher cost may be appropriate in a specific case.

All costs associated with Type II IEPR, will be shared in accordance with the project purpose and the phase of work. In planning for a Type II review, estimates will need to include the cost for the RMO to administer and manage the Type II review and the cost of the independent panel. The cost of a Type II review through completion of construction should be reasonable and scalable, a function of the complexity and duration, and managed as opposed to a carte-blanche approach. The table below provides a guideline for scaling Type II review costs. The higher the total project cost the more appropriate to plan a lower percentage of the project cost; however, the more complex the project is, the more appropriate to plan a higher percentage of the project cost

Type II Review Cost Guideline	
Total Project Cost	Range
$0 to <$15 million	0.90 to 1.50%
$15 million to $45 million	0.50 to 1.20%
>$45 million	0. 10 to 0.85%

2. PROJECT AND STUDY DESCRIPTION

A. Decision Document

The decision document being prepared is the Yuba River Basin, California General Reevaluation Report that is being developed in accordance with ER1105-2-100. This report has been prepared to support the next major milestone for the Yuba River Basin General Reevaluation study - the Alternative Formulation Briefing (AFB). The purpose of the AFB, as stated in ER 1105-2-5, Appendix H, is to confirm that the plan formulation and selection process, the tentatively selected plan, and the definition of Federal and non-Federal responsibilities are consistent with applicable laws, statutes, Executive Orders, regulations and current policy guidance. The goal is to obtain a HQUSACE endorsement of the tentatively selected plan, to identify and resolve any legal or policy concerns that would otherwise delay or preclude Washington-level approval of the draft report. As stated in ER 1105-2-5, the AFB Report would be comparable to a draft report that is about 75 percent complete.

The Marysville Ring Levee project is a separable element of the Yuba River Basin project. An Engineering Documentation Report (EDR) has been prepared to support the PPA. Construction of ring levee improvements is scheduled to begin in 2010.

B. General Site Description of Project

As shown in Figure 1, the Yuba River Basin GRR study area is located in western Yuba County 50 miles north of Sacramento, California. The study area is a portion of the Yuba-Feather-Bear Rivers watershed. These three rivers originate in the Sierra Nevada and generally flow southwest in the mountains and foothills and then south in the Central Valley. Figure 2 shows the GRR study area that is generally bounded by the Yuba, Feather and Bear Rivers and the Western Pacific Interceptor Canal (WPIC). The study area includes Reclamation District (RD) 784 and the cities of Linda, Olivehurst and Arboga. The lower portion of RD 784 is being developed into a residential area called Plumas Lake (see Figure 4).

C. Project Background and Authorization

The study area has a long history of flood problems. The Sacramento River Flood Control Project (SRFCP) was authorized in 1917 to construct a system of levees and bypasses to reduce the risk of flooding to areas in the Sacramento valley. This project was completed in the

1950's. In 1987, the Sacramento River Flood Control System Evaluation was authorized for a comprehensive analysis of the SRFCP. The Marysville/Yuba City area, which was included as Phase II of that analysis, was identified to need about 25 miles of remedial levee repairs so that they function as designed. Local interests contributed "betterment" funds to provide additional construction features to further reduce the risk of flooding to certain developed areas in southern Yuba County.

Authority was provided in the Flood Control Act of 1962 (Public Law 87-874) directing the Corps of Engineers to study flood control problems along northern California streams including the Sacramento River and its tributaries. The Yuba River Flood Control Project investigation was initiated in 1991. The feasibility study was completed in 1998 with subsequent project authorization in the Water Resources Development Act (WRDA) of 1999 (Public Law 106-53). The relevant language in Section 101, Project Authorizations, states:

> "(a) PROJECTS WITH CHIEF'S REPORTS. - 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, described in the respective reports designated in this subsection:
>
> …YUBA RIVER BASIN, CALIFORNIA. - The project for flood damage reduction, Yuba River Basin, California: Report of the Chief of Engineers dated November 25, 1998, at a total cost of $26,600,000, with an estimated Federal cost of $17,350,000 and an estimated non-Federal cost of $9,250,000."

The authorized project as shown in Figure 3 includes levee modifications on 6.1 miles of the left bank of the Yuba River upstream of the confluence with the Feather River, 10 miles of levee on the left bank of the Feather River downstream of the confluence of the Yuba River, and 5 miles of the levee surrounding the City of Marysville (ring levee). The project would increase flood protection against the 0.5 percent chance (200-year) flood event to the upper portion of RD784 that includes the communities of Linda, Olivehurst, Arboga, and 0.333 percent chance (300-year) event to Marysville. The project sponsor is the State of California Central Valley Flood Protection Board, whose local partners are the Yuba County Water Agency and Reclamation District 784.

A Design Agreement for cost sharing was signed on 13 June 2000 for pre-construction, engineering and design (PED) studies. During PED studies, new geotechnical analyses on the levees resulted in the requirement for increased underseepage remediation and the study scope was expanded to include levees that were not part of the authorized project, significantly increasing the cost of the tentatively recommended plan. These changes required a GRR study and a recommendation for reauthorization by Congress.

> Due to the increased cost, the authorization was modified in WRDA 2007 as follows:
> SEC. 3041. YUBA RIVER BASIN PROJECT, CALIFORNIA.
> The project for flood damage reduction, Yuba River Basin, California, authorized by section 101(a)(10) of the Water Resources Development Act of 1999 (113 Stat. 275), is modified—
> (1) to authorize the secretary construct the project at a total cost of $107,700,000, with an estimated Federal cost of $70,000,000 and an estimated non-Federal cost of $37,700,000; and
> (2) to direct the Secretary to credit, in accordance with section 221 of the Flood Control Act of 1970 (42 U.S.C. 1962d– 5b), toward the non-Federal share of the cost of the

project the cost of work carried out by the non-Federal interest for the project before the date of the partnership agreement for the project.

Non-Federal interests felt the urgent need to make necessary levee improvements prior to the Corps completing post-authorization studies to reduce the flood risk to communities in RD 784, including the Plumas Lake development in the southern part of the basin. This area was shown to be prone to catastrophic flooding and local interests urgently needed to lessen the severe flood risk. Due to the urgency for flood protection, the Yuba County Water Agency (YCWA) and Three Rivers Levee Improvement Agency (TRLIA) have already constructed levee strengthening for the entire study area (reaches 1 through 6 on Figure 4), the last segment of local work is scheduled to be awarded later this year. As a result, the GRR will not result in any new construction but will identify what would have been the federal plan if the local work had not been accomplished in accordance with the provisions of Section 104.

Significant State and local investments have been made protecting the Lower RD 784. Local interests desire to maximize the potential Section 104 credit available as a result of this advance work. The GRR is working toward formulating a Federal plan, consistent with current Corps policy and legally sufficient for presentation in the GRR. The Locally Preferred Plan (LPP) will be included in the report and will be given full consideration. However based upon our evaluations to date, it appears that the LPP contains uneconomical increments and will differ from the plan that maximized net economic development to the nation as a whole, the NED plan.

Analysis will be continued of the LPP within the "system of accounts" to identify the Federal interest in the work completed. That evaluation includes a comprehensive comparison of alternatives for Environmental Quality (EQ), Regional Economic Development (RED), and Other Social Effects (OSE). This effort is in conjunction with the National Economic Development (NED) identification. The system of accounts does not, however, increase the "cost-benefit" ratio of the project. It provides decision makers other measures to better assess the merits of a given project and to make recommendations which may deviate from the NED plan.

Utilization of the system of accounts may provide adequate justification for recommending a plan other than the NED plan; however in such a case it is likely that the Federal participation would be limited to the NED plan. Determination of the Federal and non-Federal cost allocation and, subsequently, the consideration of credit, will need to be determined.

We have identified a preliminary NED plan that includes reaches 1, 2, 3 and 6 on Figure 4. This does not include all work accomplished by locals. As a result, locals indicated a desire to have the GRR address the LPP consistent with all local work that includes reaches 4 and 5, and to consider increased federal participation above what could be supported by the tentative NED plan.

The levee surrounding Marysville is a hydraulically separate element of the Yuba River Basin project and has only minor changes from the authorized project. It was approved for construction as a separable project element on 12 February 2008 while the remainder of the Yuba River Basin study is proceeding as a GRR for reauthorization.

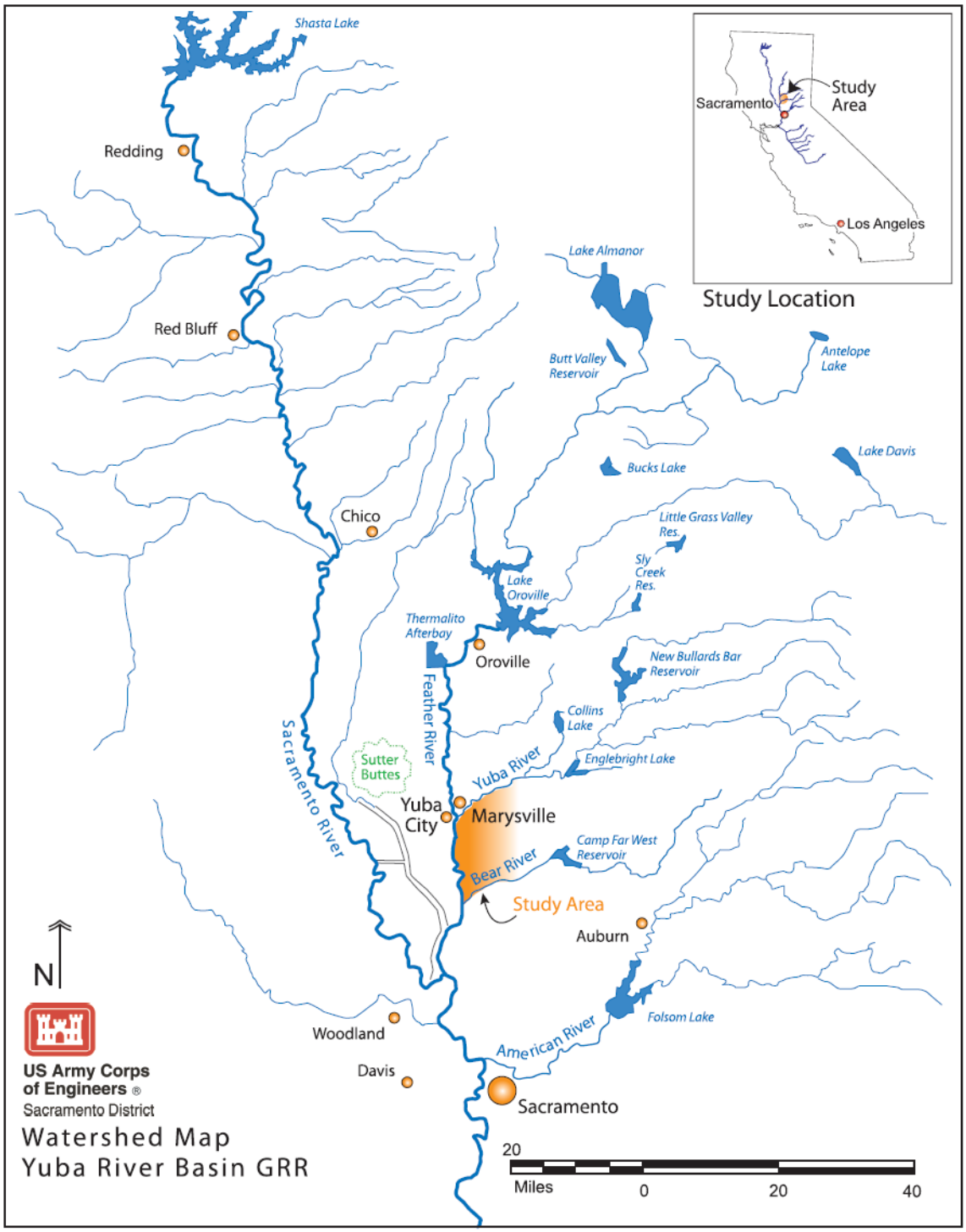


Figure 1 Vicinity Map

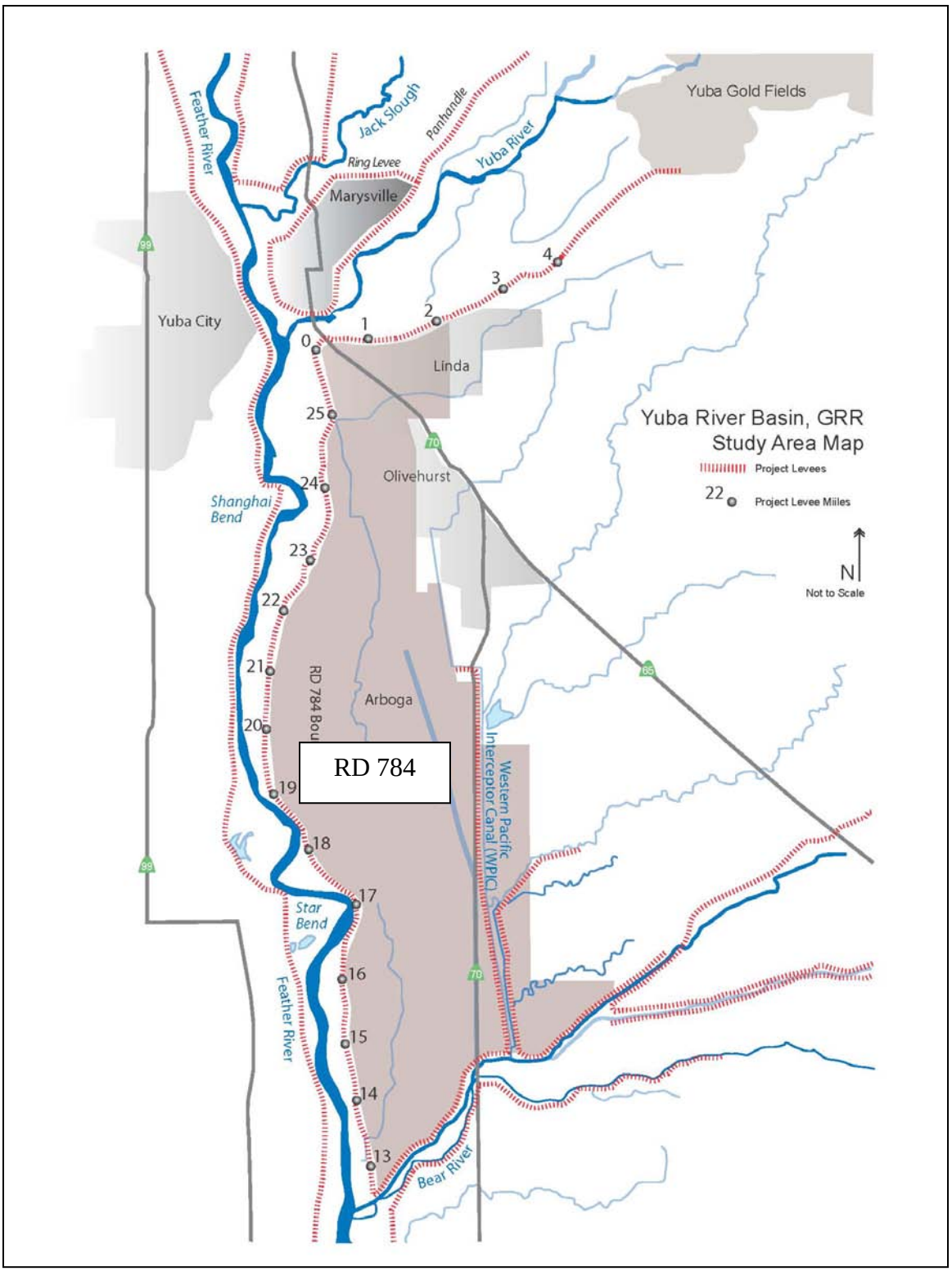


Figure 2 Study Area

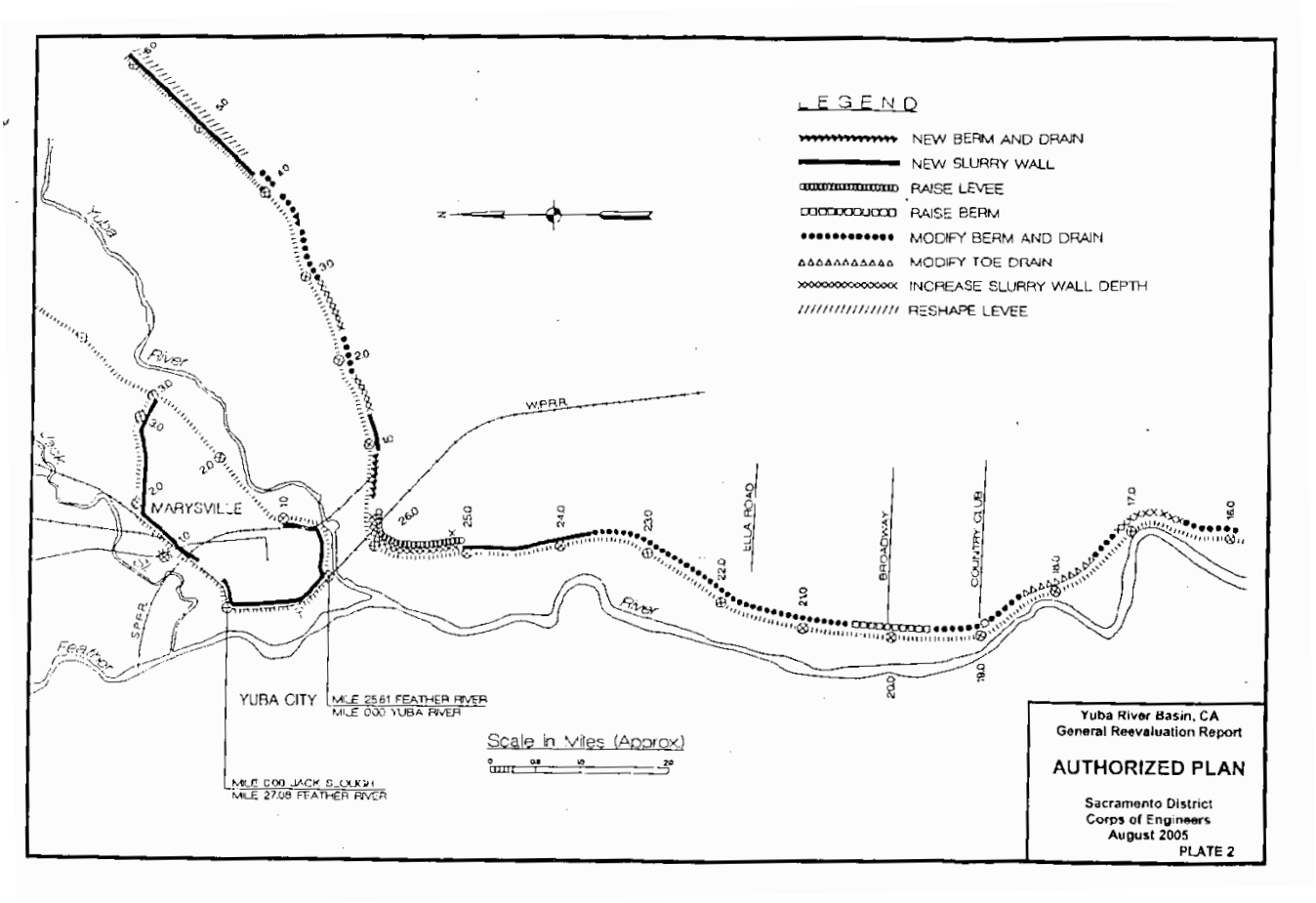


Figure 3 Authorized Plan

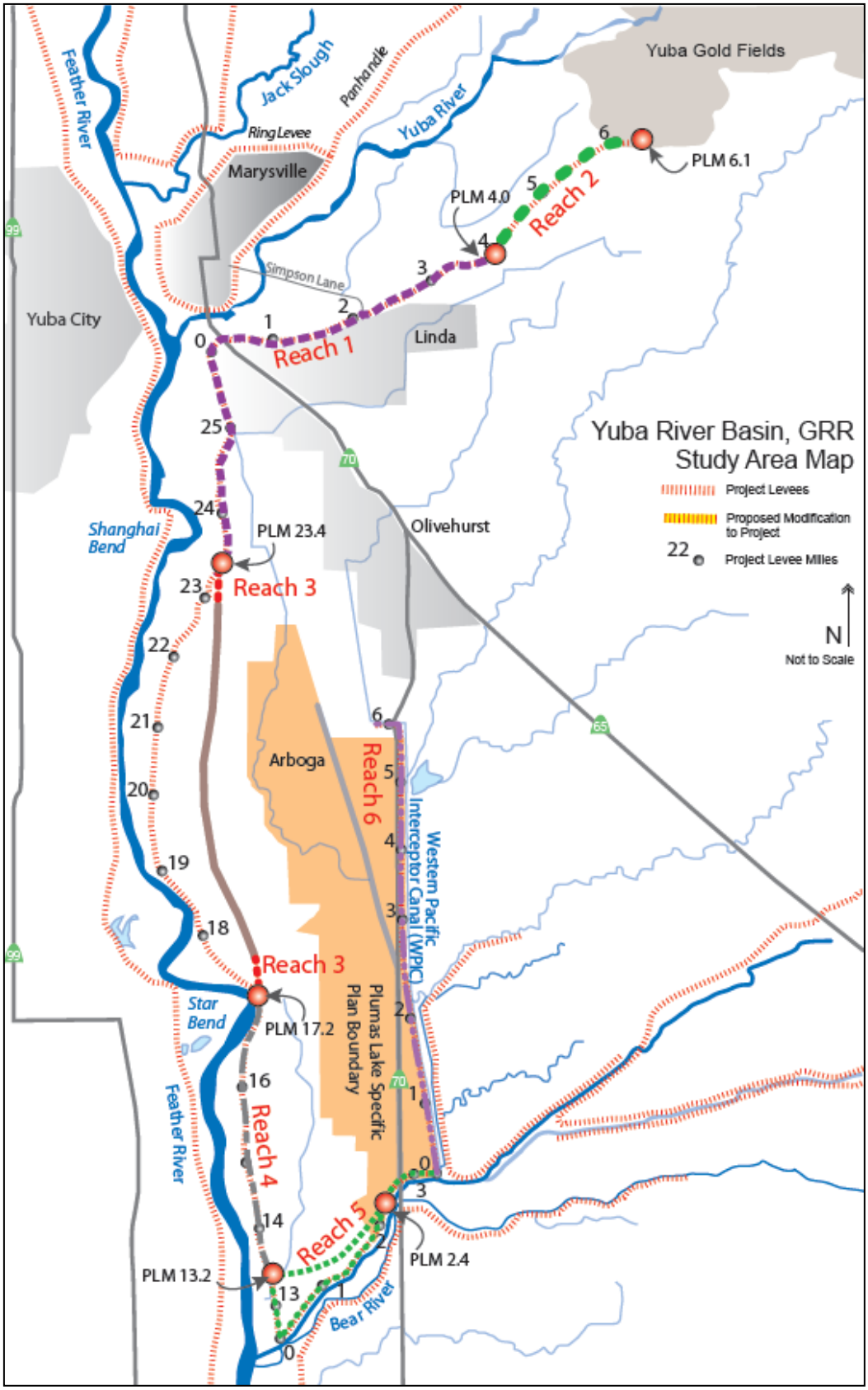


Figure 4 Plan Reaches

The purpose of the study is to identify and evaluate Flood Risk Management (FRM) options in the Yuba River Basin project study area. The decision document will present planning, engineering, and implementation details of the recommended plan to allow final design and construction to proceed subsequent to approval and authorization of the recommended plan. The study will evaluate both structural and non-structural FRM measures.

D. Problems, Opportunities and Potential Solutions

The study will focus on FRM along the Yuba, Feather and Bear Rivers and the WPIC. The area has a long history of flooding and levees were built by local farmers in the 1800's to protect their land. Low, discontinuous levees were built by individual landowners from the 1840s to the 1890s. With the authorization of the Federal Sacramento River Flood Control Project (SRFCP) in 1917, the Corps and State began managing the project as a "regional system". Although the structures have seen extensive improvement and upgrades over the years, the underlying foundation of most of the levees and channels pre-date any State or Corps involvement and still retain their original materials which include dredged riverbed sands, soil and organic matter. The SRFCP, constructed to provide consistent system-wide flood protection, was completed in the 1930's and turned over to the State for operation and maintenance in 1953. The levees in the study area are part of this project.

Flooding has continued to occur due to levee seepage and stability problems. When the Yuba River levee failed in February 1986 near the communities of Linda and Olivehurst, the flooding caused one fatality, 32 people were injured, forced about 24,000 people to evacuate, over 1,000 homes and businesses were destroyed, over 3,000 homes and businesses were damaged, and caused an estimated $20 million (1986 dollars) in damages. The Feather River levee failed near Arboga in January 1997 resulting in a flood that caused four fatalities, left hundreds of people homeless, thousand of acres inundated, hundreds of homes damaged and property damages estimated at $41 million (1997 dollars).

Prompted by the 1986 flooding, the Sacramento River Flood Control Project (SRFCP) System Evaluation was initiated to conduct a comprehensive analysis of the integrity of the flood control system. The Yuba/Marysville area was Phase II of that project. About 25 miles of levee reconstruction were required to meet project design requirements. The reconstruction work was designed to restore the original design level of flood protection provided by the SRFCP. Local interests provided "betterment" funds in order to increase the flood protection to areas protected by the Feather and Yuba Rivers. This work was completed in 1997.

The primary FRM problems in the study area are the risk to public safety and damages due to flooding from levee failure as a result of overtopping, through-seepage and under-seepage. There is an opportunity to reduce the flood risk by improving levees in place and by setting a levee back from the river. Potential FRM measures include relief wells, slurry walls, seepage/stability berms, relocating a drainage pump facility, improving levees in place and by setting some levees back from the river. Non-structural floodplain management measures such as flood warning, evacuation, education, and zoning, would also be included as part of the overall plan. Plan formulation for flood risk management would require the combining of the structural and non-structural measures into alternatives that are consistent with Corps policy including Executive Order 11988 that requires federal agencies to avoid to the extent possible the long and short-term adverse impacts associated with the occupancy and modification of flood plains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative. In accomplishing this objective, "each agency shall provide leadership and shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health,

and welfare, and to restore and preserve the natural and beneficial values served by flood plains in carrying out its responsibilities".

Primary ecosystem problems stem from a decline in the quantity and quality of riparian, wetland, and flood plain habitat. However, since there is no sponsor for ecosystem restoration, this purpose is not included in the project.

E. Studies, Associated Disciplines and Level of Difficulty/Challenge

The studies consist of many disciplines. The level of detail in the GRR will be sufficient to recommend a revised flood control plan for implementation, establish the baseline cost estimate, and assess the environmental and socioeconomic effects of the plan. Cost estimates will be based on quantity takeoffs, Microcomputer Aided Cost Estimating System (MCACES) level, and will include all real estate requirements. Analysis of alternatives will be conducted at a level of detail sufficient to effectively evaluate each alternative in terms of completeness, effectiveness, efficiency, and acceptability.

Environmental studies will involve preparation of a Supplemental Environmental Impact Statement (SEIS), consistent with all NEPA requirements, that is a supplement to the 1998 EIS that was prepared for the feasibility study. The SEIS will include the Environmental Impact Report (EIR) that is consistent with California Environmental Quality Act (CEQA) requirements.

The hydrology for the study was certified in August 2004 in accordance with CESPD R 1110-1-8, South Pacific Division Quality Management Plan.

A Value Engineering (VE) Study Report for Yuba-Feather River Basin, Marysville, California was completed. The VE Study was conducted in Marysville, CA, on 20-24 March 2006. The VE team was comprised of members of the Sacramento, Albuquerque and Los Angeles Districts. Results of the study were used by the PDT in development of the project alternatives. Another VE study will be conducted during the early design phase.

Although some aspects of the studies are complex, the project report will not contain influential scientific information or be a highly influential scientific assessment. Also, there is not significant public dispute as to the size, nature, or effects of the project or to the economic or environmental costs or benefits of the project The following table describes the study disciplines and level of difficulty.

Table 1 - Study Disciplines

Discipline/Area of Study	Level of Difficulty or Challenge
Hydraulic studies - The task includes all hydraulic analyses necessary for evaluation of alternatives and preparation of design and cost estimates for optimization studies and the development of the NED plan. Tasks will include establishing the criteria for each study task prior to design or modeling; reviewing and evaluating existing data and information on hydraulics in the study area channels; conducting field investigations; developing stage-discharge rating curves for use in the risk analysis. A hydraulic engineer will participate with other PDT members in risk analysis activities and report preparation; designing channels and culverts; determining the need for channel bed and/or bank protection; determining the need for new levees; analyzing interior flood control; evaluating the potential for inducing flooding; and analyzing risk and uncertainty.	The level of difficulty or results of this study are expected to be significant and challenging. The study area lies at the confluence of three rivers whose watersheds produce high peak flows resulting in very complex hydraulic analyses. Also, hydraulic analysis of the gold rush era goldfields along the Yuba River is complex. The hydraulic analysis is closely associated with determining levee stability and

	related risk of failure.
Geotechnical studies - These are studies to determine the geotechnical design requirements for increased flood protection or other project features. Possible developments may include the enlargement of existing levee embankments by additional fill or floodwalls, or the construction of setback or backup levees. Determination of the extent and usability of subsurface and laboratory information previously completed. The selection of the project site and the evaluation of alternative layouts, alignments, and components will be conducted. Investigations must be adequate to determine suitability and characteristics of the foundation materials, excavation slopes, and availability and characteristics of embankment materials. A geotechnical report will be prepared that presents the results of specific tasks and design analyses and may outline further studies that may be conducted after selection of the reevaluation study alternatives.	The level of difficulty or results of this study are expected to be significant and challenging. The stability of levees is controversial. The area has a long history of flooding and levees were built by local farmers in the 1800's to protect their land. Low, discontinuous levees were built by individual landowners from the 1840s to the 1890s. Although the structures have seen extensive improvement and upgrades over the years, the underlying foundation of most of the levees and channels pre-date any State or Corps involvement and still retain their original materials which include dredged riverbed sands, soil and organic matter.
Economic analysis - Values, evaluations, and structural characteristics (by land use) are determined using parcel information data, Marshal & Swift Valuation, and site visits. Existing conditions are evaluated and future land use changes evaluated. Damages are estimated for emergency costs, automobile damage, road damage and transportation costs savings. Depth-damage relationships used will come from other studies in the district with similar characteristics. Damages, with uncertainty, will be estimated for each flood plain event using risk analysis techniques. Stage-damage curves will be developed for use in the risk program to estimate expected annual damages (requiring flow-frequency, stage-flow, and levee-failure probability relationships from Engineering Division). The economist participates with other PDT members in risk analysis activities and report preparation. Benefits will be determined for several alternatives estimating damage under with- and without-project conditions. Findings from this analysis and a summary of the methods used will be included in an economic appendix.	The level of difficulty or results of this study are expected to be significant and challenging. Local interests have constructed significant portions of the flood risk management plan and are aggressively seeking to have this work included in the recommended plan in order to obtain financial credit. There is a high probability that some elements of the locally preferred plan will not be in the Federal interest thus producing a potential conflict.
Formulation and Evaluation of Alternatives – Alternative plans are developed and evaluated to meet the needs and desires of society as expressed in specific planning objectives consistent with the Federal Water Resources Council's Principles and Guidelines. These studies will (1) establish specific planning objectives for flood risk management, (2) define constraints and criteria for formulating an implementable plan, (3) identify management measures and alternatives that are effective and produce NED benefits at less cost than other measures, (4) compare alternatives in terms of economic cost and benefit, and identify the alternative that maximizes net NED benefits, (5) compare the plans in terms of cost and flood risk management NED benefits, (6) with the sponsor, identify and evaluate a locally preferred plan (LPP), and (7) reconcile differences between the NED plan and the LPP to develop a selected plan for recommendation that retains Federal interest.	The level of difficulty or results of this analysis is expected to be somewhat challenging. The study area is at the confluence of three major river systems and surrounded by levees.
Other Social Effects (OSE) - The OSE account describes the potential social effects of the project that are not covered by the National Economic	The level of difficulty or results of this study are not expected to be

Development (NED), Regional Economic Development (RED), and Environmental Quality (EQ) accounts. Particular effects evaluated as a part of the OSE include social effects such as health and safety, security of life, community impacts, and displacement of persons and businesses.	significant.
Hydrologic Studies – The hydrology has been certified for this study. However, this task includes reviewing and refining, if necessary, hydrologic data from the 1998 feasibility study particularly with regard to global warming. The hydrologic engineer will participate with other PDT members in risk analysis activities and report preparation. The task also includes any required interior drainage analysis. All data used will be included in a feasibility level hydrology report and included in the Engineering Appendix.	The level of difficulty or results of this study are not expected to be significant.
Civil Design - Develop and prepare feasibility-level quality design and cost estimates for the alternatives to be evaluated and final design and cost estimates for the recommended modifications to the authorized project and NED/NER plan. This includes preparation of a detailed Basis of Design (BOD) report that describes all aspects of the selected features. The BOD report will include planning and design assumptions, definition of and rationale for design features, plans and profiles of embankments, hydraulic structure features, relocations, channel details, bridge crossings, and operation and maintenance requirements.	The level of difficulty or results of this study are not expected to be significant.
Real Estate – This task includes a Real Estate Plan, gross appraisal, mapping, acquisition and other real estate analysis of all land requirements associated with the potential project.	The level of difficulty or results of this study are not expected to be significant.
Environmental, Fish And Wildlife – This task includes determination of impacts on species listed as endangered or threatened, or to the designated critical habitat of such species, under the Endangered Species Act, prior to implementation of mitigation species or their habitat, prior to implementation of mitigation Requirements of Section 7 of the Endangered Species Act, including a biological assessment and formal consultation with the USFWS, if necessary. Requirements of the State Endangered Species Act will also be completed. The social affects to the nation will be evaluated.	The level of difficulty or results of this study are not expected to be significant. There is not expected to be substantial adverse impacts on fish and wildlife species or their habitat, or more than negligible adverse impacts on species listed as endangered or threatened, or to the designated critical habitat of such species, under the Endangered Species Act, prior to implementation of mitigation.
Cultural, Historic or Tribal Resources - This study will describe all cultural resources within the area potentially affected by the selected flood damage reduction plan and assess the effects of alternatives on these resources. Also describe the range of additional future preservation, if required, and the associated costs. A determination will be made of the effects of the selected plan on any historical, architectural, and archeological, resources in the project area. Field surveys to locate cultural sites, in accordance with the National Historic Preservation Act of 1966, will be necessary. A report to document all survey results, outline significant past and present cultural resources, and describe the effects of the selected plan on cultural resources will be prepared and coordinated with the State Historic Preservation Officer. Any sites discovered during the survey will be evaluated for the National Register of Historic Places. Coordination with any Native Americans Tribes or individuals who may have an interest in the study is also necessary.	The level of difficulty or results of this study are not expected to be significant. There is not expected to be more than negligible adverse impacts on scarce or unique cultural, historic, or tribal resources.

F. Project Magnitude and Risk

The project magnitude is considered high overall. The cost of the project is high, over $350 million. There is nearly $7 billion value of development and over 60,000 residents in the floodplain. The environmental impacts due to the project are not considered high and will be mitigated to less than significant. It will be important to make sound planning assumptions in application of all the modeling and judgment and to do so will require application of multiple levels of review. Public and agency input will be sought in order to minimize the potential for controversy. Uncertainty of success of the project ultimately will be low to moderate if the proposed review processes are implemented because the methods used for evaluating the project are standard and the concept of implementing proposed project features is not innovative.

The potential for failure is high because of the complex nature of the hydraulics in the study area resulting in possible levee overtopping. With the project in place, the residual risk is high due to the continued development in the floodplain. A preliminary assessment of the project risks has determined that there is a significant threat to human life. Recent floods in the study area have resulted in many deaths, destruction of property and large scale evacuation. In February 1986, a levee holding back the storm-swollen river broke and flooding water covered 7,000 acres of land, killing 12 and forcing 50,000 residents to evacuate their homes. In 1997, a levee broke on the Yuba River near the town of Arboga resulting in flooding that killed three people and destroyed 850 homes.

G. Environmental Compliance

An EIS/EIR for the original authorized project was completed in 1998. The Corps is currently preparing a Supplemental EIS/EIR for the GRR.

H. Interagency and Public Interest

There is significant interagency and public interest due to the high potential for flooding. In 2006, DWR launched a multi-faceted initiative to improve public safety through integrated flood management. The FloodSAFE program is a collaborative statewide effort designed to accomplish five broad goals:

- Reduce the Chance of Flooding
- Reduce the Consequences of Flooding
- Sustain Economic Growth
- Protect and Enhance Ecosystems
- Promote Sustainability

All FloodSAFE program actions are designed to accomplish specific objectives that help satisfy the five goals. Examples include “providing 200-year level of protection to all urban areas in the Sacramento – San Joaquin Valley by December 31, 2025” and “establishing an interagency mitigation banking program that provides lasting environmental benefits by January 1, 2012.”

Recent State legislation, State Senate Bill 5 (SB5), dubbed the “Central Valley Flood Protection Act of 2008”, is designed to update the state’s near-dormant flood-protection plan and establish a higher level of flood protection – ultimately 200 years. Areas in the watersheds of the Sacramento and San Joaquin Rivers that already have 10,000 residents or are planned to have that many residents must achieve the 200-year standard by 2025. The Yuba River Basin Project is included in the Sacramento River basin. SB5 mandates that cities and counties incorporate flood hazards into their general plans and establish minimum standards for flood protection for new developments. Assembly Bill (AB162) requires cities and counties to increase their attention to flood-related matters in the land use, conservation, safety, and housing elements of their general plans.

After the 1986 and 1997 flooding events, millions of dollars were spent on levee improvements in the basin. More specifically, after the 1986 flood, the Corps of Engineers and the then California Reclamation Board initiated the Systems Evaluation Project, which was intended to strengthen study area levees. As a result, the Corps conducted levee improvement work on the RD 784 levees consisting of 5.2 miles of toe drains and stability berms, 6.2 miles of slurry walls, and 7.5 miles of levee height restoration that was completed in 1998 at a cost of about $32 million.

Following the 1997 flood, the Yuba County Water Agency (YCWA) initiated a Supplemental Flood Control Study to improve flood protection for Yuba County that would provide greater protection for improved public safety and economic security. The focus of this study was to go beyond improvements that would be provided under the System Evaluation Project. This study identified many cost effective measures to improve flood protection for RD 784 and surrounding areas. To address issues raised in the ongoing YCWA study, California voters approved the Costa-Machado Water Act of 2000 (Prop 13). Prop 13 has allocated $90 million for improved flood protection and environmental enhancement in the Feather River watershed and Colusa Drain, funding programs in Sutter, Colusa and Yuba Counties. These funds were used in part to produce a feasibility study and are also being used for implementation of the current project by the Three Rivers Levee Improvement Authority (TRLIA).

The County of Yuba adopted the Plumas Lake Specific Plan in 1993. The plan encompasses over 5,000 gross acres in the lower portion of RD 784 (see Figures 2 and 4) and allows for the construction of approximately 14,000 housing units, along with schools, parks, commercial and business park development. By 2003, infrastructure for a portion of this development was in place and construction of new homes had begun. County officials and local developers agreed to establish a Mello-Roos Community Facilities District (CFD) to generate the 30% local cost share requirement for use of the State's Proposition 13 funding and generate additional funding for project costs in excess of available Prop. 13 funds. As proposed, the CFD would provide net construction proceeds of approximately $12 million and another $36 million paid by the developers through an advanced funding agreement.

In 2003, the California Department of Water Resources (DWR) convened a meeting with local government agencies and the Corps to provide preliminary information on the Lower Feather River Floodplain Mapping Study. The preliminary results identified freeboard deficiencies and geotechnical issues on the RD 784 levees.

I. Project Cost

The Yuba River Basin project is very large with a total estimated cost for the tentatively selected plan at $352.5 million.

J. Local Sponsor In-Kind Contribution

It is planned that the non-Federal sponsors will contribute in-kind services for project management; public involvement, coordination and outreach; hydraulic analysis and data collection; and participating in reviews. In-kind services would be a project cost and cost-shared. Peer review for products produced as in-kind contributions would be treated the same as products produced by contract. Under EC 1165-2-209, the process of peer review is the same for Corps products and products developed under contract. DQC still needs to be performed by the home District, and ATR and IEPR also need to be performed for the overall report.

K. Study Process and Milestones

The study process consists of developing and evaluating alternative plans in accordance with established Corps criteria, consistent with the Federal Water Resources Council's Principles and Guidelines, resulting in a recommended plan for approval by Congress. The approval of the GRR cannot be delegated. The major reporting milestones and the corresponding CESPD milestone designation consist of:

- Study Initiation, F1
- Technical Review Strategy Session
- Public Scoping Meeting and Technical Review Conference, F2
- Study Scoping Meeting, F3
- Alternatives Review Conference, F4
- Alternative Formulation Conference, F4A
- Submission of Draft Final Report, F5
- Public Review on Draft Final Report, F6
- Feasibility Review Conference (FRC), F7
- Sacramento District Submission of Final Report, F8
- CESPD Commander's Notice of Project Approval and submission to HQUSACE, F9
- Civil Works Review Board (CWRB)
- State and Agency Review
- HQUSACE Chief of Engineer's Report to Congress

Reporting for milestones F2 to F4 have been completed. Subsequent milestones will utilize procedures in this review plan.

L. Study Teams

(1) Corps of Engineers

The Project Delivery Team (PDT) is comprised of those individuals and contractors directly involved in the development of the decision document. The Vertical Team includes District management, the HQUSACE District Support Team (DST) and the SPD Regional Integration Team (RIT) staff as well as members of the Planning Community of Practice. Specific points of contact are presented in Appendix B.

(2) Local Sponsor

Local sponsor representatives and contractors are included on the PDT. It is planned that the non-Federal sponsor will contribute in-kind services as described in paragraph 2. Non-Federal partners on the PDT are listed in Appendix B.

3. CONDUCTING THE REVIEW

A. Technical Review Strategy Session and Past Reviews

The independent technical review process for the post-authorization studies began with a technical review strategy session (TRSS) that was held early in the study process. The planning function chief chaired the TRSS, which was also attended by the project manager, other function chiefs and representatives of the non-Federal cost-sharing sponsor. The review team was established along with the level of review and the policy or major technical issues that needed to be brought to the attention of CESPD for resolution early in the study were identified.

There have been several reviews during development of the Yuba River Basin feasibility report and GRR. These reviews included internal Corps reviews as well as local agency and

public reviews and public meetings. Documentation of the feasibility report reviews for the authorized plan are shown in the 1998 feasibility report and EIS.

Reviews of the current GRR have been held as the report has been developed. A public scoping meeting was held in August 2004 to inform the public and public agencies of the study and obtain input, public opinions for the study, and to fulfill scoping requirements for the National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA).

B. Management of the GRR Report Review

The management of the review is a critical factor in assuring the independence of the various levels of review. With the issuance of the new guidance for Review Plans, the future reviews will change slightly. In all cases, the review must be accomplished by professionals that are at arms length and not associated with development of the work that is being reviewed. DQC reviews are managed and accomplished within Sacramento District. The ATR is managed by the FRM PCX with appropriate consultation with associated Centers of Expertise such as engineering and real estate. Since IEPR is required, the PCX will contract with the Outside Eligible Organization (OEO) to manage the review.

C. District Quality Control (DQC)

(1) General

The seamless review includes quality checks and reviews, supervisory reviews, Project Delivery Team (PDT) reviews, etc. To ensure specific discipline efforts are on target with regard to compliance with policy and criteria and an acceptable level of quality, sub-products are technically coordinated and reviewed before they are integrated into the overall project. For the Yuba River Basin GRR study, non-PDT members and/or supervisory staff will conduct this review for major draft and final products, including products provided by the non-Federal sponsors as in-kind services following review of those products by the PDT.

(2) Working with ATRT Members

During the review, PDT members consult with their ATRT counterparts at appropriate points throughout project development to discuss major assumptions and functional decisions, as well as analytical approaches and significant calculations, in order to preclude the possibility of significant comments arising during the final ATR. Reviewers need to be actively involved throughout the project development process and must maintain constant lines of communication with the PM, ATRT leader, PDT counterparts and others as appropriate. It is the responsibility of the PDT members to request these discipline-specific discussions with their ATRT counterparts throughout the project development process in a seamless manner. These discussions do not preclude ATRT members from making additional comments once the entire document is distributed for the formal ATR.

(3) Dispute Resolution

The ATRT leader coordinates and ensures backcheck of the PDT's product revision efforts based on the ATRT comments. Any comments, which have not been appropriately addressed, are coordinated between the PDT and ATRT for resolution. A face-to-face resolution of issues shall take place whenever necessary and feasible. If resolution is not accomplished at this level, the ATRT leader and PM shall follow the SPK Issue Resolution Process (IRP) to reach a decision in a timely manner. The purpose of the IRP is to escalate an issue in a timely manner up the chain-of-command for resolution when impasses are reached, in order to minimize adverse impacts on the project development schedule. The ATRT leader, PM, and concerned ATRT and

PDT members coordinate with the appropriate technical discipline supervisor, Branch Chief, and/or appropriate Functional Chief for resolution. If necessary to resolve policy issues, SPD and Headquarters (HQ) input shall be requested. The IRP shall also be applied if issues cannot be resolved during seamless review sessions between PDT and ATRT counterparts.

(4) Flood Risk Management Program

The Flood Risk Management program requires that the District Flood Risk Manager review all flood risk management projects for compliance with Executive Order 11988, Management of Flood Plains.

(5) Policy and Legal Compliance Review

DQC efforts are to address compliance with published planning policy. When policy and/or legal concerns arise during DQC efforts that are not readily and mutually resolved by the PDT and the reviewers, the district will seek issues resolution support from the MSC and HQUSACE.

(6) Documentation

Each discipline engages in their own counterpart discussions and documents the conclusions/agreements reached in an e-mail message forwarded to the ATRT leader and PM, with copies retained by each participant. All seamless reviews must be documented and included with the formal ATR documentation for QC certification.

(7) Cost

The cost of the DQC is estimated at $25,000.

D. Agency Technical Review (ATR)

(1) Management of the ATR

The ATR is managed by the PCX for FRM. The PCX for FRM will identify individuals to perform ATR. Sacramento District can provide suggestions on possible reviewers.

An ATR Manager outside CESPD shall be designated for the ATR process and will have expertise in project planning. The ATR Manager is responsible for providing information necessary for setting up the review, communicating with the Study Manager, providing a summary of critical review comments, collecting grammatical and editorial comments from the ATR team (ATRT), ensuring that the ATRT has adequate funding to perform the review, facilitating the resolution of the comments, and certifying that the ATR has been conducted and resolved in accordance with policy. ATR will be conducted for project planning, environmental compliance, economics, hydrology, hydraulic design, civil design, geotechnical engineering, cost engineering, real estate and cultural resources. Reviews of additional specific disciplines maybe identified if necessary.

(2) Product for Review

The ATR will be conducted for the AFB document, and the draft and final reports as shown in the review schedule in paragraph 5.

(3) ATR Team (ATRT)

The recommended ATRT as shown in Appendix B is comprised of the same team that conducted the ITR for the previous F4 document. This team will need to be approved by the PCX for conducting future ATR's. These individuals are outside Sacramento District, have not been involved in the development of the GRR and were selected based on expertise, experience,

and/or skills. The members roughly mirror the composition of the PDT with primary disciplines as shown in Table 1. The FRM-PCX is responsible for selecting any new team members.

(4) Coordination with ATRT Members during DQC

Seamless Review sessions for the DQC begin early and can occur at any time during the report development cycle. For the seamless review, ATRT members need to be actively involved throughout the project development process. To ensure specific discipline efforts are on target with regard to compliance with policy and criteria and an acceptable level of quality, sub-products are technically coordinated and reviewed before they are integrated into the overall project.

PDT members may consult with their ATRT counterparts during seamless review at appropriate points throughout the planning work to discuss major assumptions, analyses, and calculations to avoid significant comments later that could adversely affect project schedules and costs. The discussion should be documented in a memo and copies retained by each participant. However, these discussions will not preclude ATR Team members from making formal comments once the entire document is distributed for ATR. The ATR Team chair will be informed of all PDT meetings in advance by the PM and offered the opportunity to participate (in person or telephonically) as appropriate in an advisory role concerning ATR issues; however, the ATR Team Leader does not participate as a member of the PDT.

All seamless reviews must be documented and included with the formal ATR documentation for Quality Control certification.

(5) Review of Costs

The FRM PCX must coordinate with the Cost Engineering Directory of Expertise (DX) at the Corps' Walla Walla District to conduct the ATR of cost estimates, construction schedules and contingencies for the tentatively selected plan. The Cost Engineering DX will assign the reviewer(s) to the ATR team and will utilize USACE personnel and/or the private sector. The Cost Engineering DX will inform the FRM PCX and will assist the PCX with establishing the instructions for the IEPR. The documentation for the review should address the PCX and Cost Engineering DX coordination and the application of the Cost Engineering DX technical review checklist. It should also address the review of real estate costs.

(6) Communication Plan

The communication plan for the ATR is as follows:

(a) The team will use DrChecks computer software to document the ATR process. The Study Manager 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 Word format at: ftp://ftp.usace.army.mil/pub/ at least one business day prior to the start of the comment period.

(b) The PDT shall send the ATR manager one hard copy (with color pages as applicable) 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.

(c) The PDT shall host an ATR kick-off meeting virtually 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.

(d) The Study Manager shall inform the ATR manager when all responses have been entered into DrChecks and conduct a briefing to summarize comment responses to highlight any areas of disagreement.

(e) A revised electronic version of the report and appendices with comments incorporated shall be posted at ftp://ftp.usace.army.mil/pub/ for use during back checking of the comments.

(f) Team members shall contact ATRT 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.

(g) 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.

(h) The ATRT, the PDT, and the vertical team shall conduct an after action review (AAR) no later than 2 weeks after the policy guidance memo is received from HQUSACE for the for the Alternatives Formulation Briefing (AFB) document and draft reports.

(7) Funding

(a) The PDT district shall provide labor funding by cross charge labor codes. Funding for travel, if needed, will be provided through government order. The Study Manager will work with the ATR manager to ensure that adequate funding is available and is commensurate with the level of review needed. The current cost estimate is $75,000 for all ATR reviews. Any funding shortages will be negotiated on a case by case basis and in advance of a negative charge occurring.

(b) The team leader shall provide organization codes for each team members and a responsible financial point of contact (CEFMS responsible employee) for creation of labor codes.

(c) Reviewers shall monitor individual labor code balances and alert the ATRT Study Manager to any possible funding shortages.

(8) Conducting the Review

(a) ATRT responsibilities are as follows:

(1) Reviewers shall review conference material and the draft report 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.

(2) 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.

(3) Grammatical and editorial comments shall not be submitted into DrChecks. Comments should be submitted to the ATR manager via electronic mail using tracked changes feature in the Word document or as a hard copy mark-up. The ATR manager shall provide these comments to the Study Manager.

(4) Review comments shall contain these principal elements:

- a clear statement of the concern

- the basis for the concern, such as law, policy, or guidance
- significance for the concern
- specific actions needed to resolve the comment

(5) The "Critical" comment flag in DrChecks shall not be used unless the comment is discussed with the ATR manager and/or the Study Manager first.

(b) PDT Team responsibilities are as follows:

(1) 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.

(2) Team members shall contact the PDT and ATRT managers to discuss any "Non-Concur" responses prior to submission.

(9) Safety Assurance Review

The ATR will include safety assurance review factors. The study will address its requirements for addressing safety assurance factors, which at a minimum will be included in the draft report and appendixes for public and agency review. Prior to preconstruction engineering and design (PED) of the identified project for construction, the PMP will be revised to include safety assurance review. Safety assurance review will also be accomplished during construction.

(10) Policy and Legal Compliance Review

The ATR will address compliance with published planning policy. Counsel will generally not participate on ATR teams, but may at the discretion of the district or as directed by higher authority. When policy and/or legal concerns arise during the ATR effort that is not readily and mutually resolved by the PDT and the reviewers, the district will seek issues resolution support from the MSC and HQUSACE.

(11) Dispute Resolution

(a) 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. A face-to-face resolution of issues shall take place whenever necessary and feasible.

(b) Reviewers may "agree to disagree" with any comment response and close the comment with a detailed explanation. If reviewer and responder cannot resolve a comment, it should be brought to the attention of the ATR manager and, if not resolved by the ATR Manager, it should be brought to the attention of the planning chief who will need to sign the certification. ATRT members shall keep the ATR manager informed of problematic comments. The vertical team will be informed of any policy variations or other issues that may cause concern during HQ review.

(12) Reporting in Submittals

(a) The next document submittal is for the AFB. For the AFB submittal, the district will describe the status of all review activities and present any review documentation completed to date, including the status of unresolved issues and the most likely resolution. Technical work products that support the submittal materials (e.g.; surveying and mapping, hydraulics & hydrology, environmental/NEPA documentation, average annual damage and benefit computations, cost estimates, etc.) will have been subjected to review. The documentation should

address the PCX and Cost Engineering Directory of Expertise (DX) coordination and the application of the Cost Engineering DX technical review checklist. It should also address the heightened review of real estate costs.

(b) For the draft report submittal, the district will provide the review certification(s) and the review documentation for the draft GRR, preliminary draft NEPA document, and the supporting analyses. Review should be complete for all supporting technical work products prior to document submission. Any unresolved review issues and the expected path to resolve these issues should be identified. The documentation should address the PCX and Cost Engineering Directory of Expertise (DX) coordination and the application of the Cost Engineering DX technical review checklist. It should also address the review of real estate costs.

(c) For the final report submittal, the district will provide the documentation and certification of review and IEPR documentation. The documentation should address the PCX and Cost Engineering DX coordination and the application of the Cost Engineering DX technical review checklist. It should also address the heightened review of real estate costs. The project summary accompanying the final report will present the dates of the certifications of the technical and legal adequacy of the final feasibility report, describe the involvement of the PCX, and summarize the involvement of the Cost Engineering DX in the approval of the total project cost estimate and similar efforts in the approval of the real estate cost estimates.

(13) Certification

Indication of certification will be documented by the signing of a Statement of Technical Review and a Certification of Quality Assurance (Appendix A).To fully document the ATR process, a statement of technical review will be prepared and signed by the ATR Leader and Project Manager. Certification of Quality Assurance by the Chief, Engineering Division and the Chief, Planning Division will occur once issues raised by the reviewers have been addressed to the review team's satisfaction and the final report is ready for submission for HQ review. 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 lead to indicate concurrence with the report to date until the final certification is performed when the report is considered final.

E. Independent External Peer Review

(1) Type 1 IEPR

(a) IEPR Criteria

The PDT has determined that IEPR is required for this study as shown by the levels of difficulty or challenging aspects of the studies in Table 1. During the July 23, 2007 in progress review teleconference, the vertical team, including representatives from SPD and HQUSACE, were informed that IEPR would be conducted. However, no technical information is considered to be highly influential scientifically nor precedent setting. Also, it is not likely that the State Governor or other agency will request IEPR.

The IEPR panel will accomplish a review that covers the entire decision document. The panel will address all the underlying work including the engineering, economics, and environmental studies, not just one aspect of the project. The IEPR will not be involved in agency or administration policy review.

(b) Product for Review

The IEPR will be conducted for the draft report document, environmental impact statement and all technical appendixes. Of these products that will undergo IEPR, all will be reviewed by the PDT and undergo DCQ prior to submittal for IEPR. The ATR should also be completed before initiating the IEPR. This includes products that are produced by the non-Federal sponsors as in-kind services.

(c) Policy Compliance Review

IEPR teams are not expected to be knowledgeable of Army and administration polices, nor are they expected to address such concerns. An IEPR team should be given the flexibility to bring important issues to the attention of decision makers. Legal reviews will be conducted concurrent with ATR of the draft and final report and environmental impact statement.

(d) Safety Assurance Review

The IEPR will include a safety assurance review as required in EC 1165-2-209, Appendix D, paragraph 2.c.3. The panel should address the following questions for the selected alternative:

(a) In accordance with ER 1110-2-1150, is the quality and quantity of the surveys, investigations, and engineering sufficient for a concept design?
(b) Are the models used to assess hazards appropriate?
(c) Are the assumptions made for the hazards appropriate?
(d) Does the analysis adequately address the uncertainty given the consequences associated with the potential for loss of life for this type of project?

The objectives during the GRR study phase include assessing the risk and uncertainty for safety and functional objectives clearly estimating and displaying the probable performance of the selected plan in accordance with current risk and uncertainty analysis policy and criteria. Proposed project alternatives that do not satisfy the safety requirements shall be recommended for withdrawal from further consideration. This recommendation shall be discussed and agreed upon by the full PDT.

Prior to preconstruction engineering and design (PED) of the identified project for construction, the Review Plan will be revised to include a Type II Safety Assurance Review as identified in EC 1165-2-209, Appendix E. Safety assurance review will also be accomplished during construction.

(e) IEPR Panel Selection

It is anticipated that the IEPR panel will be selected and managed by Battelle, Inc. as the OEO, although panel members may be nominated by the USACE. It is not anticipated that the public, including scientific or professional societies, will be asked to nominate potential panel members.

Although the IEPR will address all the underlying planning, safety assurance, engineering, economic and environmental analyses of the study, the following primary disciplines or expertise are needed for the challenging aspects of the study as discussed in Table 1. It is anticipated that there would 3 to 4 panel members.

- Hydraulics: Experienced in the field of urban hydraulics, with a thorough understanding of the dynamics of the both open channel flow systems and floodplain hydraulics. Knowledge of the application of hydraulics for levees and flood walls in an urban environment with space constraints. Also, an understanding of computer modeling techniques that will be used for this project.

- Design and Geotechnical: Experienced in levee & floodwall design, post-construction evaluation, and rehabilitation. Also, experienced in levee and subsurface seepage analysis and remediation measures.
- Economics and Evaluation of Alternative Plans: Experienced in determining the values and structural characteristics using parcel information data, Marshal & Swift Valuation, and site visits; evaluating existing conditions and future land use changes; estimating damages with uncertainty using Corps risk analysis techniques and approved computer programs; formulation and evaluation of alternative plans based on flood risk management benefits, costs and trade-off analysis.

(f) Congressional Notification

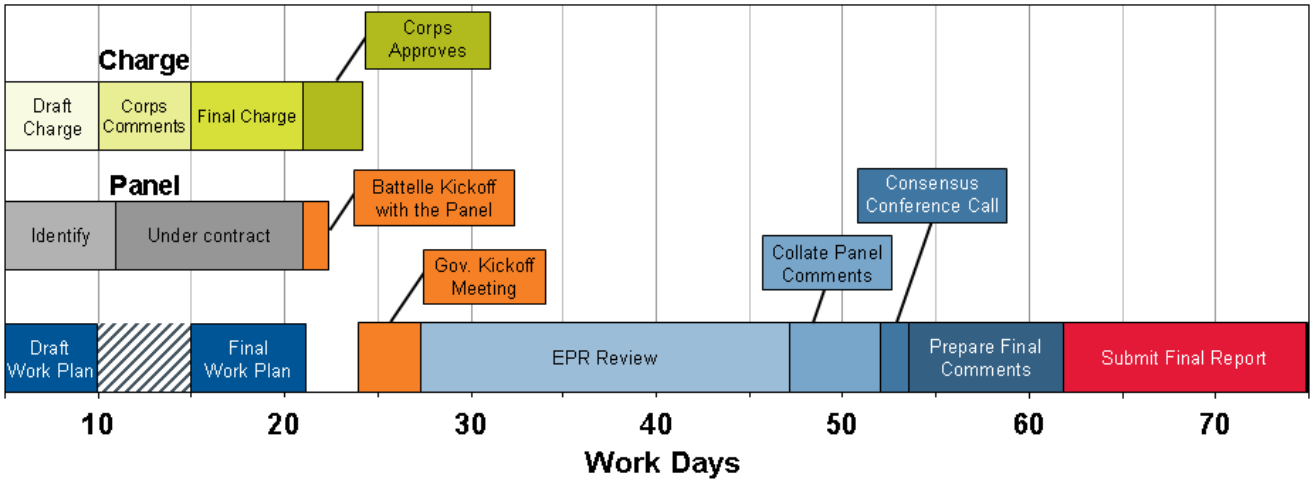
Prior to initiation of the IEPR review, pursuant to WRDA 2007 Section 2034(c)(4), the Chief of Engineers shall notify the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives of the review.

(g) Conducting the Review, Resolution of Issues and Documentation

Prior to initiation of the review, the Chief of Engineers shall notify the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives of the review. Upon MSC approval of the Review Plan, the MSC will provide a copy of the signed MSC Approval Memo to its respective HQUSACE RIT. The RIT will then process a notification letter, signed by the Director of Civil Works to both the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives with a copy to ASA (CW).

The schedule for the review of the various work products is shown in Table 2. The PCX will prepare a contract for Battelle, the OEO, which then selects the panel, develops the "charge" and work plan for the review as shown in the chart below. The chart is for a typical one time review and the length of time shown is approximate. For the GRR, the review will be accomplished in two phases. The initial phase will be for the technical appendices for the AFB document and the final phase will be for the entire draft report.

Timeline for Conducting Independent External Peer Reviews



An electronic version of the document, appendices, and any significant and relevant public comments shall be posted in Word format at ftp://ftp.usace.army.mil/pub/ at least one business day prior to the start of the IEPR comment period. The PDT shall also send each IEPR panel member one hard copy (with color pages as applicable) of the document and appendices such that the copies are received at least one business day prior to the start of the comment period.

The IEPR panel will use DrChecks to document the IEPR process. The Study Manager will facilitate the creation of a project portfolio in the system to allow access by all PDT and the OEO. The OEO will compile the comments of the IEPR panelists, enter them into DrChecks, and forwards the comments to the District. The District will consult the PDT and outside sources as necessary to develop a proposed response to each panel comment. The District will enter the proposed response to DrChecks, and then return the proposed response to the panel. The panel will reply to the proposed response through the OEO, again using DrChecks. This final panel reply may or may not concur with the District's proposed response and the panel's final response will indicate concurrence or briefly explain what issue is blocking concurrence. There will be no final closeout iteration.

PDT members shall contact IEPR panel members 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. The Study Manager shall inform the IEPR panel when all responses have been entered into DrChecks and conduct a briefing to summarize comment responses to highlight any areas of disagreement. A revised electronic version of the report and appendices with comments incorporated shall be posted at ftp://ftp.usace.army.mil/pub/ for use during back checking of the comments.

The District will consult the vertical team and outside resources to prepare an agency response to each comment. The initial panel comments, the District's proposed response, the panels reply to the District's proposed response, and the final District response will all be tracked and archived in DrChecks for the administrative record. However, only the initial panel comments and the final agency responses will be posted on the web site. This process will continue to be refined as experience shows need for changes.

The panel will submit to USACE a final Review Report containing the panel's analysis of the project study, including the panel's assessment of the adequacy and acceptability of the methods, models, and analyses used by the Corps of Engineers, to accompany the publication of the decision document. The final Review Report to be submitted by the IEPR panel must be submitted to the PDT within 60 days of the conclusion of public review and a representative of the IEPR panel must attend any public meeting(s) held during public and agency review of the draft GRR report. The Review Report from the panel will be considered and documentation presented on how issues were resolved or will be resolved by the District Engineer before the GRR report is signed.

Sacramento District, with assistance from the PCX, shall prepare a written proposed response to the IEPR Review Report, whether the views expressed in the report are adopted or not adopted, the actions undertaken or to be undertaken in response to the report, and the reasons those actions are believed to satisfy the key concerns stated in the report (if applicable). The proposed response will be coordinated with the MSC District Support Teams and HQUSACE to ensure consistency with law, policy, project guidance, ongoing policy and legal compliance review, and other USACE or National considerations.

Regardless of whether or not the views expressed in the IEPR Review Report are adopted, the district, with assistance from the RMO, shall prepare a written proposed response to the report, detailing any actions undertaken or to be undertaken in response to the report, and the reasons those actions are believed to satisfy the key concerns stated in the review report (if applicable). All Issues in the IEPR must be addressed. The proposed response will be coordinated with the MSC District Support Teams and HQUSACE to ensure consistency with law, policy, project guidance, ongoing policy and legal compliance review, and other USACE or National considerations.

The IEPR comments and responses will be discussed at the Civil Works Review Board (CWRB) with an IEPR panel or OEO representative in attendance. Upon satisfying its concerns, HQUSACE will determine the appropriate command level for issuing the formal USACE response to the IEPR Review Report. When the USACE response is issued, the district shall disseminate the final IEPR Review Report, USACE response, and all other materials related to the review on its website, and include them in the GRR decision document. The Chief of Engineers' report shall summarize the IEPR Review Report and USACE responses. This documentation will become a critical part of the review record and will be addressed in recommendations made by the Chief of Engineers.

(h) Cost

IEPR is a project cost and the panel review will be Federally funded. In-house costs associated with obtaining the IEPR panel contract as well as responding to IEPR comments will be cost shared expenses. The estimated cost for the IEPR is $123,000.

(2) Type II IEPR (Safety Assurance Review)

A Type II IEPR SAR shall be conducted on construction activities performed after the approval of the GRR. The panel will review the design and construction activities prior to initiation of physical construction and periodically thereafter until construction activities are completed. The review shall be on a regular schedule sufficient to inform the Chief of Engineers on the adequacy, appropriateness, and acceptability of the design and construction activities for the purpose of assuring that good science, sound engineering, and public health, safety, and welfare are the most important factors that determine a project's fate.

The SAR shall also include quality of in-kind-contributions and whether it is certifiable for credit in accordance with EC 1165-2-208, the range of alternatives considered, the models used to assess hazards, the level of uncertainty in assessments, and whether the quality and quantity of engineering per ER 1110-2-1150 are sufficient to ensure public welfare, safety, and health.

The District Chief of Engineering, as the Engineer-In-Responsible-Charge, is responsible for ensuring the Type II review is conducted according to EC 1165-2-209, and will fully coordinate with the Chief of Construction, the Chief of Operations, and the project manager through the Pre-Engineering and Design (PED) and construction phases. The project manager will coordinate with the RMO to develop the review requirements and to include them in the Review Plan. The RMO for Type II reviews is the USACE Risk Management Center at IWR.

F. Non-Federal Sponsor In-Kind Work

The Non-Federal sponsor in-kind work for the review has not yet been determined.

G. Contracted Products

Contracted products for the GRR include:

HDR, Inc. – Civil Design Appendix

Gulf South Research Corp. – NEPA Documentation

Each contracted product will include quality control in the scope-of-work for the contract. The contractor will be required to perform an independent quality control check and provide certification of review. The District would then perform a quality assurance check of the certification. The contracted work will also undergo DQC, ATRT and IEPR as part of the overall project documentation.

4. PUBLIC AND AGENCY REVIEW

The public and agencies have had and will have opportunities to participate in this study. Past public and agency reviews included those during development of the Yuba River Basin feasibility report 1992, 1996 and 1998 as documented in the 1998 EIS. Also, there was a public meeting at the initiation of the GRR in 2004 for the NEPA scoping process and most recently in 2010 for the EIS/EIR. Future public and agency reviews will be included during the report development process.

Public review of the draft GRR report will occur after issuance of the AFB policy guidance memo and concurrence by HQUSACE that the document is ready for public release. As such, public comments other than those provided at any public meetings held during the planning process will not be available to the review teams. Public review of the draft report will begin approximately 1 month after the completion of the ATR process and policy guidance memo. The period will last a minimum of 45 days as required for an Environmental Impact Statement.

A public workshop will be held during the public and agency review period. Comments received during the public comment period for the draft report would be provided to the IEPR team prior to completion of the final Review Report and to the ATRT before review of the final GRR. The public review of necessary state or Federal permits will also take place during this period. A formal State and Agency review will occur concurrently with the public review. However, it is anticipated that intensive coordination with these agencies will have occurred concurrent with the planning process.

Upon completion of the review period, comments will be consolidated in a matrix and addressed, if needed. A comment resolution meeting will take place if needed to decide upon the best resolution of comments. A summary of the comments and resolutions will be included in the document.

5. REVIEW SCHEDULE

Table 2 shows the review schedule.

Table 2 – Study and Review Schedule

Activities and CESPD Milestones	Date
Initiation of Reevaluation (F1)[1]	Completed
Public Scoping Meeting and Technical Review Conference (F2)	Completed
ITR of Feasibility Scoping Meeting (F3) Document	Completed
Feasibility Scoping Meeting (F3)	Completed
ITR of (F4) Document	Completed
Alternatives Review Conference (F4)	Completed
DQC of Alternatives Formulation Briefing (AFB) Conference (F4A) Document	June 2010
ATR of Alternatives Formulation Briefing (AFB) Conference (F4A) Document	June 2010
Alternatives Formulation Briefing Conference (F4A)	August 2010
DQC Draft Report (F5)	October 2010
ATR Draft Report (F5)	November 2010
Submit Draft Report to SPD/HQUSACE (F5)	December 2010
Initiate IEPR of Draft Report	February 2011
Begin 45-Day Public Review Period (F6)	March 2011
Public Meeting on draft GRR and SEIS/EIR (F6)	March 2011
Submittal of IEPR Report and Response to Comments	May - June 2011
Feasibility Review Conference (F7)	August 2011
DQC/ATR Final Report (F8)	October/November 2011
Final Reevaluation Report to CESPD (F8)	December 2011
Division Engineers Notice (F9)	December 2011
Civil Works Review Board (CWRB) Briefing	January 2012
State and Agency Review	January 2012
Chief of Engineer's Report	February 2012

[1] F1 is CESPD milestone designation.

6. CERTIFICATION OF MODELS

The computational models for planning or engineering to be employed in the study have either been developed by or for the USACE. Certification and approval for all identified planning models will be coordinated through the PCX. Project schedules and resources will be adjusted to address this process for certification and PCX coordination. The planning models used in this study are shown in Table 3.

Table 3 - Certification of Planning Models

Model Title and Use	Certification Status
HEC-FDA: This model, developed by the Corps' 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-based analysis procedures contained in EM 1110-2-1619 • Evaluates possible benefits of non-structural measures such as flood proofing by analyzing the relationships among flow (discharge), water-surface elevation, and flood frequency (probability) for the building site.	This model has been certified.
Various Habitat Evaluation Procedure (HEP) models. As habitat changes through time, either by natural or human-induced processes, we can quantify the overall suitability through time by integrating the areal extent-suitability product function over time. Thus, we can quantitatively compare two or more alternative management practices of an area with regards to those practices affecting species in that area. Furthermore, HEP allows us to quantify the effects of mitigation or compensation.	The Ecosystem Restoration Planning Center of Expertise (PCX) will need to certify or approve the HEP model used for the study. The PDT will coordinate with the Ecosystem PCX during the study for certification approval requirements.
IWR-Planning Suite. This software assists with the formulation and comparison of alternative plans. While IWR-PLAN was initially developed to assist with environmental restoration and watershed planning studies, the program can be useful in planning studies addressing a wide variety of problems. IWR-PLAN can assist with plan formulation by combining solutions to planning problems and calculating the additive effects of each combination, or "plan." IWR-PLAN can assist with plan comparison by conducting cost effectiveness and incremental cost analyses, identifying the plans which are the best financial investments and displaying the effects of each on a range of decision variables.	This model has been certified.
IMPLAN: This model is a technique to measure the quantitative impacts on Regional Economic Development (RED) due to project alternatives.	This model is in the process of being approved by the PCX but does not require certification.

The Science and Engineering Technology (SET) initiative endeavors to provide uniform science and engineering tools and practices to the Corps. Engineering models will be certified under a process established under SET. To date, no formal enterprise standard has been issued for certification of engineering models. An interim regional process for HH&C model selection (RGM CESPD-2007-006) will be followed. Engineering models anticipated to be used in this study are:

- MCACES or MII: This is a cost estimating model that was developed by Building Systems Design Inc. Crystal Ball risk analysis software will also be used.
- HEC-HMS: By applying this model the PDT is able to:
    - Define the watersheds' physical features
    - Describe the metrological conditions

- Estimate parameters
- Analyze simulations
- Obtain GIS connectivity

- HEC-ResSim: This model predicts the behavior of reservoirs and to help reservoir operators plan releases in real-time during day-to-day and emergency operations. The following describes the major features of HEC-ResSim
    - Graphical User Interface
    - Map-Based Schematic
    - Rule-Based Operations
- HEC-RAS: The function of this model is to complete one-dimensional hydraulic calculations for a full network of natural and man made channels. HEC-RAS major capabilities are:
    - User interface
    - Hydraulic Analysis
    - Data storage and Management
    - Graphics and reporting
- FLO-2D: FLO-2D is a two-dimensional flood routing model to predict flood hazards, simulating urban and river overbank flooding. FLO-2D routes a flood hydrograph while predicting floodwave attenuation due to flood storage.
- Groundwater Modeling System (GMS): This model is used to conduct seepage analysis.
- Utexas4: This model is used to conduct slope stability analysis of levees.

7. PCX COORDINATION & POINTS OF CONTACT

The appropriate PCX for this document is the Flood Risk Management Center of Expertise (FRM PCX) located at CESPD. This Review Plan will be submitted to the FRM PCX Director, for review and comment. Since it was determined that this project is high risk, an IEPR will be required. Also, the FRM PCX will manage the IEPR review. For ATR, the PCX will nominate the ATR team.

Questions about this Review Plan may be directed to Mr. Ted Werner (interim), Sacramento District Project Delivery Team Planning contact, at (916) 557-6753, or ted.a.werner@usace.army.mil, or to Mr. Eric Thaut, Program Manager for the Planning Center of Expertise for Flood Risk Management, at (415) 503-6852, or eric.w.thaut@usace.army.mil.

8. REVIEW PLAN APPROVAL AND POSTING

The South Pacific Division Commander is responsible for approving the RP. An MSC approval letter is required for each review plan and must be included in the posted version of the RP. The approval of each RP should be signed by the Commander. If there is disagreement over the scope, content or other aspects of the Review Plan, the MSC should coordinate resolution between the district and the RMO. Formal coordination with FRM-PCX will occur through the PDT District Planning Chief. The approved RP will be posted to the Sacramento District's public website. Any public comments on the RP will be collected by the Corps' Office of Water Project Review and provided to the Sacramento District for resolution and incorporation if needed.

This RP will serve as the coordination document to obtain vertical team consensus. Subsequent to PCX approval, the plan will be provide to the vertical team for approval. MSC approval of the plan will indicate vertical team consensus.

Upon approval of each RP with IEPR, CESPD will provide a copy of the signed Approval Memo to the HQUSACE Regional Integration Team (RIT) in charge of reviewing CESPD documents (see Appendix B). The RIT will then process a notification letter, signed by the HQUSACE Director of Civil Works to both the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives with a copy to ASA (CW).

The RP is a "living document" and shall be updated as needed during the study process. The FRM-PCX shall be provided an electronic copy of any revised approved RP. The PDT shall follow their DST's guidance for processing revised RPs for their respective MSCs.

APPENDIX A

STATEMENT OF TECHNICAL REVIEW COMPLETION OF QUALITY ASSURANCE REVIEW AND AGENCY TECHNICAL REVIEW

CERTIFICATION OF QUALITY ASSURANCE REVIEW AND AGENCY TECHNICAL REVIEW

YUBA RIVER BASIN, CALIFORNIA

STATEMENT OF TECHNICAL REVIEW
COMPLETION OF QUALITY ASSURANCE REVIEW AND AGENCY TECHNICAL REVIEW

The District has completed the GRR of the Yuba River Basin Project. Notice is hereby given that (1) a Quality Assurance review has been conducted as defined in the Quality Assurance Plan and (2) an agency technical review that is appropriate to the level of risk and complexity inherent in the project, has been conducted as defined in the project's Quality Management Plan. During the agency technical review, 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. The review also assessed the DQC documentation and made the determination that the DQC activities employed appear to be appropriate and effective. The agency technical review was accomplished by the Corps of Engineers. All comments resulting from QA and ATR have been resolved.

_____ _____
ATR Review Team Leader Date

_____ _____
Project Manager Date

YUBA RIVER BASIN, CALIFORNIA

CERTIFICATION OF QUALITY ASSURANCE REVIEW AND AGENCY TECHNICAL REVIEW

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 agency technical review of the project have been fully resolved.

_____ _____
Chief, Engineering Division Date

_____ _____
Chief, Planning Division Date

PEER REVIEW PLAN

YUBA RIVER BASIN, CALIFORNIA
GENERAL REEVALUATION STUDY

SACRAMENTO DISTRICT

APPENDIX B

REVIEW PLAN TEAMS

PROJECT DELIVERY TEAM (PDT)

Name	Discipline	Location	Phone
Mark Ellis	Project Manager	CESPK[1]	916-557-6892
Kim Carsell	Flood Risk Manager	CESPK	916-557-7635
Scott Parker	Study Manager/Plan Formulation	CESPK	916-557-7258
Richard Furman	Plan Formulation	CESPK	702-982-1451
Sara Schultz	Plan Formulation	CESPK	916-557-7368
Ted Werner	Plan Formulation	CESPK	916-557-6753
Jeannine Hogg	Economics	CESPL[2]	213-452-3816
Gary Bedker	Economics	CESPK	916-557-6707
Shellie Sullo	Environmental Analysis/Cultural Resources	CESPK	916-557-6818
John High	Hydrology/Reservoir Operations	CESPK	916-557-7136
Gene Maak	Hydraulics	CESPK	916-557-7020
Saba Siddiqui	Hydraulics	CESPK	916-557-6945
Sherman Fong	Cost Engineering	CESPK	916-557-6983
Laurie Parker	Real Estate/Lands	CESPK	916-557-6741
Ramchandra Singh	Civil Design	CESPK	916-557-6678
Erik James	Geotechnical Engineering	CESPK	916-557-5259
Elizabeth Wegenka	GIS	CESPK	916-557-7640
Kent Zenobia	Non-Federal Sponsor Representative	DWR[3]	916-574-2639
Ric Reinhardt	Non-Federal Contractor	MBK[4]	916-456-0253
Tom Engler	Non-Federal Contractor	MBK	916-456-0253
Don Morris	Non-Federal Contractor	CDM[5]	916-567-9900
Gary Tourttelotte	Non-Federal Contractor	GSR[6]	225-757-8088

[1] Corps of Engineers, Sacramento District,
[2] Corps of Engineers, Los Angeles District
[3] State of California Dept. of Water Resources, Sacramento
[4] Murray, Burns and Kienlan, Inc., Sacramento
[5] CDM, Sacramento
[6] Gulf South Research Corporation, Baton Rouge, Louisiana

AGENCY TECHNICAL REVIEW TEAM (ATRT)

Name	Discipline	Location	Phone	Discipline Description
Jane Ruhl	ATR Manager	CELRL	502-315-6862	Experienced in the planning process, Plan Formulation including formulating, and evaluating.
Roxanne Vidaurre	Civil Design	CESPL	213-452-3643	Experienced in developing feasibility-level quality design and cost estimates for the alternatives to be evaluated and final design and cost estimates for the recommended modifications to the authorized project and NED/NER plan. Prepares detailed Basis of Design (BOD) report that describes all aspects of the selected features, including planning and design assumptions, definition of and rationale for design features, plans and profiles of embankments, hydraulic structure features, relocations, channel details, bridge crossings, and operation and maintenance requirements.
Tiffany Kayama	Environmental Resources	CESPL	213-452-3845	Experienced in NEPA/CEQA process and analysis and ecosystem restoration and has a biological or environmental background.
Shih Chieh	Hydrology/ Reservoir Operations	CESPL	213-452-3571	Experienced in the field of urban hydrology and the effects of best management practices and low impact development on hydrology. Has an understanding of computer modeling techniques that will be used for this project.
Glenn Mashburn	Hydraulics	CESPL	213-452-3549	Experienced in the field of urban hydraulics, with a thorough understanding of the dynamics of the both open channel flow systems and floodplain hydraulics. Knowledge of the application of hydraulics for levees and flood walls in an urban environment with space constraints. The team member will have an understanding of computer modeling techniques that will be used for this project.

Arden Sansom	Economics	CESPN	415-503-6748	Experienced in determining the values and structural characteristics using parcel information data, Marshal & Swift Valuation, and site visits. Evaluates existing conditions and future land use changes. Estimates damages, with uncertainty, for each flood plain event using risk analysis techniques. Participates with other PDT members in risk analysis activities. Determines the benefits for project alternatives estimating damage under with- and without-project conditions.
Nathaniel Govan	Cost Engineering *	CESPL	213-452-3739	Experienced with cost estimating for civil works projects using MCACES and is a Certified Cost Engineer.
Steven Gale	Real Estate/Lands	CESPL	602-640-2016	Experienced in federal civil work real estate laws, policies and guidance with experience working with respective sponsor real estate issues.
Steven Dibble	Cultural Resources	CESPL	213-452-3849	Experienced in cultural resources and tribal issues, regulations, and laws.
Greg Dombrosky	Geotechnical Engineering	CESPL	213-452-3592	Experienced in levee & floodwall design, post-construction evaluation, and rehabilitation.

CESPL is Los Angeles District, CESPN is San Francisco District, South Pacific Division

* The cost engineering team member nomination will be coordinated with the Cost Estimating Directory of Expertise at Northwestern Division as required. The Directory will decide if the cost estimate will need to be reviewed by Directory Staff.

VERTICAL TEAM

Name	Discipline	Location	Phone	Email
Karen Berresford	District Support Team Mgr[1]	CESPD	415-503-6557	Karen.G.Berresford@usace.army.mil
Ken Zwickl	SPD Regional Integration Team[2]	HQUSACE	202-761-4085	Kenneth.J.Zwickl@usace.army.mil

[1]District Support Team (DST) – The DST is a group of Division Headquarters' resources which serve as the District advocate and expediter. DSTs are Regional assets which facilitate District execution of project-specific activities at the One Headquarters. DSTs participate in the vertical team as required, interfacing with the District and the Regional Integration team (RIT).

[2]Regional Integration Team (RIT) – A RIT is comprised of individuals focused on execution of the Civil Works missions. The RITs have a duty station in Washington, DC and represent the concerns of the Division and Districts to which they are assigned.

FLOOD RISK MANAGEMENT
PLANNING CENTER OF EXPERTISE
(FRM PCX)

Name	Discipline	Location	Phone	Email
Eric Thaut	Program Manager, PCX Flood Risk Management	CESPD	415-503-6852	Eric.W.Thaut@usace.army.mil

PEER REVIEW PLAN

YUBA RIVER BASIN, CALIFORNIA
GENERAL REEVALUATION STUDY

SACRAMENTO DISTRICT

APPENDIX C
ACRONYMS AND ABBREVIATIONS

Term	Definition	Term	Definition
ASA(CW)	Assistant Secretary of the Army for Civil Works	OMRR&R	Operation, Maintenance, Repair, Replacement and Rehabilitation
ATR	Agency Technical Review	OSE	Other Social Effects
CEQA	California Environmental Quality Act	PCX	Planning Center of Expertise
CESPD	Corps of Engineers, South Pacific Division	PDT	Project Development Team
DQC	District Quality Control	PPA	Project Partnership Agreement
DX	Directory of Expertise	PL	Public Law
EA	Environmental Assessment	QMP	Quality Management Plan
EC	Engineering Circular	RD	Reclamation District
EDR	Engineering Document Report	RED	Regional Economic Development
EIR	Environmental Impact Report	RMO	Review Management Organization
EIS	Environmental Impact Statement	WRCB	Water Resources Control Board
EO	Executive Order	WRDA	Water Resources Development Act
ER	Ecosystem Restoration	YCWA	Yuba County Water Agency
FDR	Flood Damage Reduction		
FEMA	Federal Emergency Management Agency		
FRM	Flood Risk Management		
GRR	General Reevaluation Report		
IEPR	Independent External Peer Review		
ITR	Independent Technical Review		
MSC	Major Subordinate Command		
NED	National Economic Development		
NER	National Ecosystem Restoration		
NEPA	National Environmental Policy Act		
O&M	Operation and maintenance		
OMB	Office and Management and Budget		