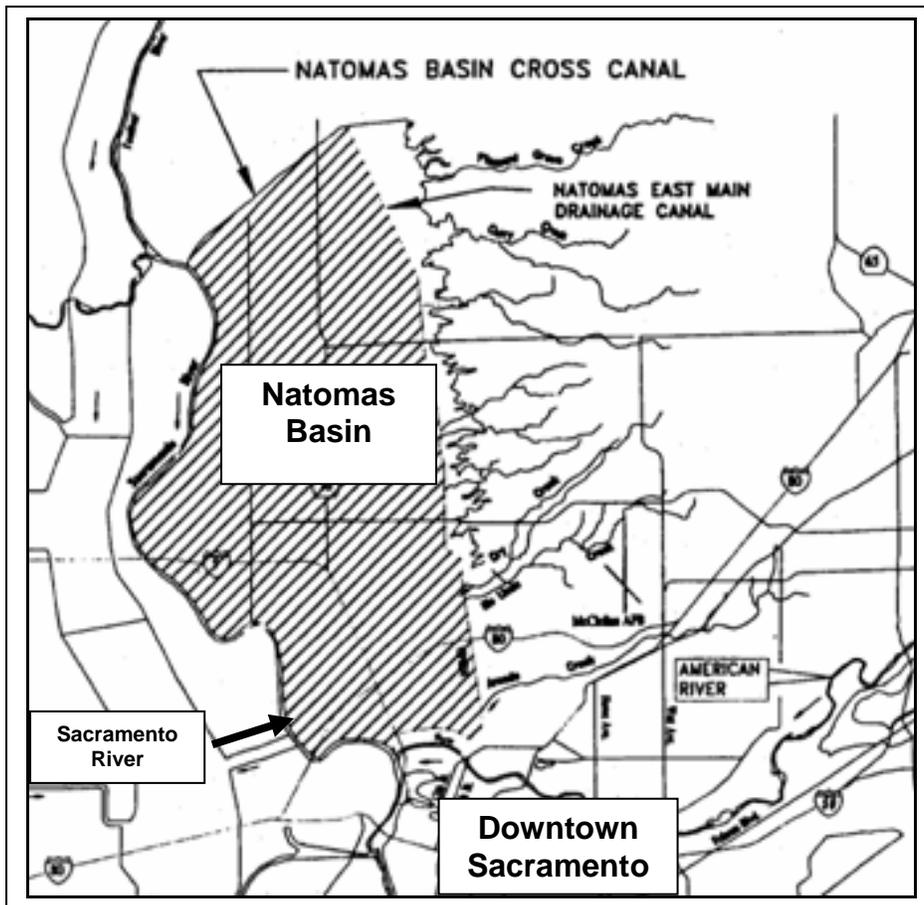


American River Watershed, California Natomas Common Features General Reevaluation Report

Peer Review Plan



**US Army Corps
of Engineers®**

September 2007

PURPOSE AND SCOPE

The purpose of this Peer Review Plan (PRP) for the Natomas GRR is to ensure that the quality of the GRR report meets the standards and expectations of the public, policy, regulations and applicable laws. It is a form of deliberation involving an exchange of judgments about appropriateness of methods, and techniques used. This peer review involves the review of the study products by specialists not involved in producing the product within the Corps and by those who are outside of the Corps for those areas of significant risk and magnitude.

This PRP is a collaborative product of the Project Delivery Team (PDT) at the Sacramento District and the USACE Planning Center of Expertise for Flood Damage Reduction (PCX FDR) at the South Pacific Division. The PRP is part of the overall Project Management Plan Quality Control Plan (QCP) for the GRR report.

INTRODUCTION

Background and Authorization

The Natomas GRR is part of the American River Watershed Common Features project. The authorization process for the Natomas project began with the 1991 American River Watershed Feasibility Study to identify reasonable design solutions that could be implemented to reduce the flood threat to Sacramento. Subsequent reports and authorization include:

- 1996 Supplemental Information Report (SIR) - identified three comprehensive plans to reduce flood damages in Sacramento. As a first step to a comprehensive flood control plan, Congress authorized the features common to each of the three plans.
- Water Resources Development Act (WRDA) of 1996 - authorized the Common Features Project that included 12 miles of levee modifications along the east bank of the Sacramento River downstream from the Natomas Cross Canal.
- WRDA of 1999 – authorized the modification of the north and south levees of the Natomas Cross Canal to ensure that they are consistent with the level of protection provided by the authorized modifications along the east bank of the Sacramento River.
- 2002 Second Addendum to the SIR – The report recommended that the WRDA 1999 features be implemented and that the Natomas GRR study proceed separately.

Project Description

The 55,000 acre Natomas Basin is surrounded by approximately 41 miles of levees that were initially constructed from dredged material in the early 1900's. Located in northern Sacramento and southern Sutter Counties, the basin's close

proximity to downtown Sacramento is resulting in explosive growth in residential, commercial and industrial development. The Sacramento Metropolitan Airport is also located in the basin. After the record storms and runoff of 1997, the Sacramento River east levee protecting the Natomas basin was found to have serious underseepage problems, resulting in the initiation of the GRR. The Natomas GRR will investigate the flood problems and develop sound engineering solutions to reduce the risk of flooding and realize opportunities for ecosystem restoration in the Natomas Basin.

The authorized project primarily consists of improvements to the levees surrounding the Natomas Basin. One of the objectives of the project would be to increase flood protection against the computed 100-year flood event to the Natomas Basin. The GRR study will also investigate other measures such as setback levees, flow diversion and non-structural measures. This planning effort will also determine construction-related environmental impacts, including effects to the Federally threatened giant garter snake.

SCOPING OF THE PEER REVIEW

The level of the peer review is commensurate with the significance of the information being reviewed as described below.

Independent Technical Review (IRT)

The District is responsible for reviewing the technical aspects of the Natomas GRR documents through an approach called "independent technical review" (ITR). ITR is a critical examination by the ITR team consisting of persons not involved in the day-to-day technical work that supports the GRR document. ITR is intended to confirm that the work was done in accordance with clearly established professional principles, practices, codes and criteria.

External Peer Review (EPR)

External Peer Review (EPR) is a critical examination by qualified persons outside of the Corps and not involved in the day-to-day production of the GRR is necessary. The degree of independence required for technical review of certain aspects of the project studies has increased to the EPR level due to the project magnitude (costs and benefits, complexity, interagency interest) and project risk (potential for catastrophic flooding and loss of life and controversy). The EPR will be conducted to identify, explain, and comment upon assumptions that underlie the analyses and whether the interpretations of analysis and conclusions based on analysis are reasonable.

Study Disciplines and Level of Review

The study disciplines or expertise that will need to be reviewed along with their complexity and significance and commensurate level of review are shown in the Table 1. No technical information is considered to be highly influential scientifically nor precedent setting.

TABLE 1. LEVEL OF REVIEW

DISCIPLINE	MAGNITUDE AND RISK	LEVEL OF REVIEW
Geotechnical	<ul style="list-style-type: none"> • complex and controversial nature of the geotechnical parameters of the levee and foundation. • significant interagency interest • probable loss of life due to catastrophic flooding 	ITR + EPR
Economic Analysis	<ul style="list-style-type: none"> • novel and nontraditional benefit categories • high cost of project • high damages/benefits caused by catastrophic and deep flooding 	ITR + EPR
Hydraulics	<ul style="list-style-type: none"> • controversial nature of the criteria • significant interagency interest • probable loss of life due to catastrophic flooding 	ITR + EPR
Hydrology	low risk and magnitude	ITR
Plan Formulation	low risk and magnitude	ITR
Civil Engineering	low risk and magnitude	ITR
Structural Engineering	low risk and magnitude	ITR
Cost Engineering	low risk and magnitude	ITR
Surveys & Mapping	low risk and magnitude	ITR
Real Estate	low risk and magnitude	ITR
Environmental	low risk and magnitude	ITR
Cultural Resources	low risk and magnitude	ITR

CONDUCTING THE REVIEW

ITR

The seamless ITR will be ongoing throughout the study. The PDT will be working with the ITR Team counterparts to review technical products. These informal reviews are documented. A formal ITR review of the product of the first phase of the study, the Feasibility Scoping Meeting (F3) document, is scheduled for October 2007. Formal ITR of subsequent documents will take place as they are completed. A public meeting will be held for the draft final document prior to

the final ITR review. The public comments will be made available to the ITR Team before their final review.

EPR

In addition to the ITR, the products of the disciplines identified above will undergo EPR. The EPR will be conducted by individual correspondence to the EPR Team members. The first EPR for the pre-project conditions is scheduled to be held in November 2007. EPR comments, evaluation and draft treatment of comments will be provided to the ITR team for their information and use. A public meeting will be held for the draft final document prior to the final EPR review. The public comments will be made available to the EPR Team before their final review.

Public Review and Comment

There are several mechanisms in place for public input and review. Several public scoping meetings were held in July 2002 to present information on the preliminary plans for levee modification and to receive comments from the public. Information obtained in these scoping meetings is being used to assist in plan formulation and to complete the draft environmental documents necessary to meet both Federal and State requirements.

The Corps' Levee Seepage Task Force conducted a review in 2003. Because of the magnitude and anticipated cost of the recommended work, and because deep underseepage was a newly recognized concern in the Sacramento Valley, the Corps and its non-Federal partners, the State of California Reclamation Board and the Sacramento Area Flood Control Agency (SAFCA), determined that a panel of experts should be convened to review and refine the Corps' guidelines for evaluating the risk of underseepage and for designing remedial measures. Based on its findings, the Corps developed a new Standard Operating Procedure Engineering Design Guidance 2003 (SOP EDG-03) for Geotechnical Levee Practice. This new guideline is being used in the design, review and evaluation of the Natomas levees.

The Corps' PDT study team has representatives from the State of California, SAFCA, and the County of Sacramento. The PDT meetings, which are held at least monthly, review and discuss study findings and future plans.

The draft GRR will be made available to the public for comment and a public meeting will be held where oral presentations on scientific issues can be made to the reviewers by interested members of the public. The public comments will be made available to the ITR and EPR Teams before their final review.

Certification

The Sacramento District Commander will certify that the quality control process for each document has been completed and that all identified ITR and EPR technical issues have been resolved.

REVIEW TEAMS

ITR Team

The ITR team, consisting of Corps employees not involved in the study, was selected by the Corps based upon factors such as the project scope, complexity and size; sponsor/customer expectations; public scrutiny; life safety; technical expertise required; and other appropriate guidelines. The group of reviewers is sufficiently broad and diverse to fairly represent the relevant scientific and engineering perspectives and fields of knowledge.

For security purposes, the Corps ITR Team is not given in this document that is to be posted on the internet. The ITR Team is shown in the Project Management Plan for the study and can be obtained by contacting the project manager or ITR Team chairperson.

EPR Team

The members of the EPR Team are shown in Table 2 below. Subject matter experts from outside the Corps have been identified by each respective Sacramento District technical function and confirmed by the PCX FDR. The EPR team for geotechnical engineering for earthen levees is the Levee Review Board for the State of California Department of Water Resources. The Corps' Engineering Research and Design Center is a member of the EPR team because there is limited expertise in this discipline. The public, scientific and professional societies were not utilized in the selection of the EPR reviewers.

TABLE 2. EXTERNAL PEER REVIEWERS

DISCIPLINE	REVIEWER
Geotechnical	U.S. Army Corps of Engineers Engineering Research and Design Center Univ. of Calif. at Berkeley Shannon & Wilson
Economics	Nobel Consultants, Inc.
Hydraulics	TBD

Enclosure F - Quality Control Plan

CESPK-PM-C

22 June 2007

QUALITY CONTROL PLAN

GENERAL REEVALUATION REPORT NATOMAS COMMON FEATURES, CALIFORNIA

1. References:

- a. Quality Control Plan for Sacramento District; 11 March 2004
- b. ER 5-1-11, U.S. Army Corps of Engineers Business Process; 17 August 2001.
- c. ER 1105-2-100, Planning Guidance Notebook; 22 April 2000.
- d. ER 1110-1-12, Quality Management; 1 June 1993.
- e. CESPDP R 1110-1-8, Quality Management Plan; 30 December 2002.
- f. CESPDP-ET-P Memorandum; Processing of Planning Reports in the South Pacific Division; 31 July 2000.

2. Objective

The objective of this Quality Control Plan (QCP) is to establish a basis of review that will result in the production of a high-quality general reevaluation report. Quality control is defined as the evaluation of technical products and processes to ensure compliance with applicable laws, regulations, policies, and sound technical practices of each discipline.

3. Quality Management Methodology

- a. Quality Control Plan: The QCP is a project-specific document that provides a framework for developing the project and conducting the technical review. The QCP is included as an appendix of the Project Management Plan (PMP). The QCP identifies the project documents to be reviewed, the development team, the review team, and the schedule and costs for both product development and review. A QCP is prepared for every project and service. The PDT develops the QCP when the product is resourced for development by in-house staff.
- b. Roles & Responsibilities:
 1. **Project Manager** - The PM ensures adequate funding for the PDT and ITR teams, verifies that QC certification requirements are completed prior

to product approval, monitors partner satisfaction, and facilitates issue resolution.

2. **Project Delivery Team (PDT)** - The PDT develops technical data, prepares technical documents, and allows sufficient time for an ITR. PDT members are responsible to: request seamless review sessions with their ITR counterparts during project development; respond to ITR comments according to the ITR schedule; and, participate in dispute resolution.
3. **Independent Technical Review Team (ITRT)** - The ITRT includes senior technical and policy experts (with 5+ years of experience) and mirrors the PDT in disciplines. The ITRT provides unbiased, independent, and seamless review of each major project product. ITR Team members may be from any technical discipline, support office, cost-share partner, or consultant; however, the ITRT should not include any PMs or RMs.
4. **ITRT Chairperson** - The ITRT Chair coordinates the ITR of documents and materials identified in the QCP with the ITRT, PDT, PMs, RMs, and others. The selection of the ITRT Chair is a cooperative effort between the PM, RM, and Functional Chief; however, the ultimate decision rests with the Functional Chief responsible for the project phase. It is the ITRT leader's responsibility to distribute review materials and reports to the ITRT members for comment. The ITRT Chair shall: review all comments; resolve any disagreements between disciplines; eliminate duplicate comments; consolidate all comments into an organized set by discipline; and, forward the comment set to the PM and PDT. The ITRT Chair shall also: lead ITR meetings; ensures proper documentation of the review process; and facilitate (along with the PM) resolution of disagreements between the ITRT and PDT. The ITRT Chair assists the PM in monitoring ITRT costs and schedules, keeps the Functional Chief and PM informed of review status, and makes a formal recommendation to the Functional Chief regarding certification.
5. **External Peer Review Team** – Provide a scientific/ technical review of the methods & models used. Works with discipline counterpart. Provides written comments. See PRP.
6. **External Peer Review POC** – In SPK, coordinates external peer review. Assures reviews, responses and backchecks are done within schedule. POC troubleshoots issues.
7. **External Peer Review Manager** – In the FDRPCX in SPD has overall management responsibilities of the review. Assures adequacy of review.

8. **Resource Manager (RM)** - The 1st Line Supervisor assigns personnel to the PDT and ITRT, participates in the technical review strategy session, resolves discipline-specific technical issues, and provides mentoring for technical product development. The RM is also responsible for the quality of discipline-specific technical products.
 9. **Functional Chief** - The Functional Chief ensures the quality of primary project products including decision documents and plans and specifications. The Functional Chief mediates the resolution of technical issues, approves the QCP / QCC, and advises the Commander on the adequacy of the completed product for final certification. The Functional Chief also chairs in-house technical review conferences.
 10. **CESPD District Support Team (DST)** – The primary role of the District Support Team is to assist the district in delivering quality products to their customers. In the context of quality management, this includes providing oversight and quality assurance of the district’s overall quality management program, assisting the district with project specific issues, performing policy reviews for delegated actions, and processing district products through Washington.
 11. **Project Partner** - The partner must communicate their technical and quality management requirements for the project and participate as PDT and potentially as ITRT members.
- c. Seamless Review: The review team needs to be actively involved throughout the project development process and must maintain constant communication with the PM, ITRT Chair, PDT, and RMs. In order to ensure that the efforts of each discipline are in compliance with current policy and technical criteria, each technically specific sub-product must be reviewed before integration into the overall project. PDT members must consult with their ITRT counterparts at appropriate points throughout project development to discuss: major assumptions; functional decisions; analytical approaches; and, significant calculations in order to preclude the possibility of significant comments arising during the final ITR. Each discipline is responsible to engage their own counterpart at the appropriate time, document the discussions and resulting agreements, and transmits this information to the ITRT Chair and PM. All seamless review sessions should be documented and included with the formal ITR documentation for QC certification.
 - d. Independent Technical Review: An ITR is conducted by the ITRT following completion of the draft and final products. The ITRT findings are documented in a Memorandum for Record (MFR) that is distributed to the PDT. The ITRT Chair prepares a lessons-learned report at the conclusion of the final ITR.

1. **Review Methodology** - The ITRT is assembled with the initiation of product development process to facilitate early seamless review. The first ITR will be conducted following completion of the draft documents. The ITRT will generate formal comments in Dr Checks. Based on the nature of the feedback, a formal comment review conference may be held between the ITRT and the PDT. The PDT responds to comments in Dr. Checks. The ITRT considers the responses to the review comments and identifies any disagreements requiring resolution. Any issues which cannot be agreed upon between the PDT and ITRT shall be elevated for resolution. If necessary, the PDT prepares a formal MFR addressing issue resolution decisions, citing decisions reached, the organizational elements involved, and individual(s) responsible for the decision(s). The PDT revises responses to comments in Dr. Checks and the ITRT members close out comments in Dr. Checks. The ITRT Chair assembles the QC Certification package, prepares final documentation for the review process, and certifies that the project QC review is complete. The QC Certification package is forwarded to the PM for the coordination with the responsible Functional Chief and the District Commander for formal approval. Finally, the ITRT Chair is responsible for compiling a lessons-learned report at the conclusion of the ITR effort.

2. **Comment Structure** – Each ITRT comment shall contain the following four elements:
 - ❑ A clear statement of the concern, including information on the deficiency or incorrect application of policy, procedures, or criteria;
 - ❑ The basis of the concern as it relates to law, policy, guidance, criteria, or partner/client requirements;
 - ❑ Significance of the concern, and how the concern could affect the technical or decision-making process; and,
 - ❑ The specific actions needed to resolve the concern.

Typographic errors and other minor stylistic changes should not be included in the formal ITR MFR. These comments should be forwarded to the PM and the PDT independently.

3. **Roles and Responsibilities** –
 - ❑ ITRT Chair. The ITRT Chair functions primarily as a review facilitator for large and/or complex projects. The ITRT Chair reviews both the QCP and PMP for any special or unique conditions and coordinates review of each product. During the review process, the ITRT Chair will (a) encourage all ITRT members to develop substantive comments; (b) verify that each comment is complete; (c) raise “red flags” quickly when problems arise; (d) minimize redundancy among ITRT comments by consolidating comments; (e)

apply a standard of consistency to the comments; (f) ensure that the review comments are substantive, constructive, and relevant to the project; and (g) encourage all ITRT members to actively engage in seamless review. Furthermore, the ITRT Chair (a) ensures continuing backcheck of PDT correction efforts until full resolution is accomplished; (b) prepares the ITR MFR including a crosscheck of project requirements, major assumptions, and other critical concerns; (c) assembles the QC certification package for approval; and (d) maintains the in-progress ITRT files. As appropriate, the ITRT Chair presents the ITR activities, findings, and issues at milestone conferences. The ITR Chair may be asked to attend PDT meetings in an advisory role concerning ITR issues and in informal PDT seamless review and milestone conferences.

- ITRT Members. ITRT members are responsible for the development of meaningful discipline-specific comments that are expressed in a clear and concise manner. ITRT members shall participate in the Issue Resolution Process in a professional manner, seeking the best possible solution, and conduct a backcheck to ensure that all resolved issues have been appropriately addressed in the ITR and project documents. ITRT members are expected to regularly participate with their PDT counterparts in the seamless review process.

4. Product Description

The Natomas Common Features, California, General Reevaluation Report was initiated in November 2004.

5. Quality Objectives

The Natomas Common Features, California, General Reevaluation Report will be reviewed according to the following quality objectives:

- Assumptions used as the basis of the feasibility phase;
- Identification of planning objectives and constraints;
- Consistency with Corps authority and budget policy;
- Range of alternatives considered;
- Justification for policy exemptions and streamlining initiatives.

6. Review Schedule

The review process schedule will coincide largely with the overall product development schedule; however, several additional milestones are applicable solely for the development and engagement of the ITRT, as follows:

Event	Review	Milestone
-------	--------	-----------

F3 Pre-Conference Document	September/October 2007	November 2007
F4 Conference Document	June 2008	August 2008
AFB Conference Document	January 2009	March 2009
Draft GRR & EIS-EIR	April 2009	May 2009
Final GRR & EIS-EIR	July 2009	August 2009

The PDT anticipates a need of four (4) week to conduct an ITR. Since SPD and HQUSACE requires receipt of each draft product four (4) weeks in advance of the respective conference, the initiation of each formal ITR will be eight (8) weeks prior to the scheduled conference date.

7. Review Cost Estimate

The review process will consist of five events: 1) seamless review; 2) ITR of the F3 Conference Report; 3) ITR of the F4 or F4A Conference Report; 4) ITR of the draft general reevaluation report; and, 5) ITR of the final general reevaluation report. The costs associated with all five review events have been incorporated into the cost estimate for Technical Review Documents, as shown in Table 4 of Section 3.D of the PMP. A detailed breakdown of this estimate has been compiled as follows:

Event	Team Size	Total Days	Estimated Cost
Seamless Review	13	32.5	\$29,250
F3 Pre-Conf. Doc.	8	16	\$14,400
F4 Pre-Conf. Doc.	10	20	\$18,000
Draft GRR & EIR	13	32.5	\$29,250
Final GRR & EIR	13	32.5	\$29,250
Total (rounded)		133	\$120,000

This estimate assumes different levels of review across the review team for each product as well as participation by one member from the non-Federal sponsor's organization. The estimate calculates cost at the burdened labor rate of \$900.00 per person-day.

8. Project Delivery Team (PDT)

The members of the Project Delivery Team, including their functional organization and contact information, are listed in Enclosure E of the PMP.

9. Independent Technical Review Team (ITRT)

In accordance with recent guidance, the Independent Technical Review of any post-authorization decision document scheduled for transmittal to Congress for authorization must be reviewed by another Corps district. The ITR will be conducted by the Los Angeles District. The review chair and most of the ITRT are in the Los Angeles District. The ITRT members are shown in the following table:

Name/Organization	Role	# Years Experience	Phone
	ITR Chair/ Economics		
	Plan Formulation		
	Environmental Coordinator		
	Biologist		
	Cultural Resources/ Archaeologist		
	Hydrologic Engineer		
	Hydraulic Engineer		
	Geotechnical Engineer		
	Material Engineer		
	Cost Engineer		
	Civil Design		
	Real Estate		