



REPLY TO
ATTENTION OF

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

CESPD-RBT

MEMORANDUM FOR Commander, Los Angeles District, ATTN: CESPL-PM-C, Mr. Drew Savage

Subject: Tucson Drainage Area Flood Control Project, Tucson, AZ, Review Plan Approval

1. Tucson Drainage Area Flood Control Project Review Plan that is enclosed is in accordance with Engineering Circular (EC) 1165-2-214, Review of Decision Documents, dated 15 Dec 2012. The South Pacific Division, Planning and Policy Division, Regional Business Technical Division, and Los Angeles District Support Team have reviewed the Review Plan that has been submitted.

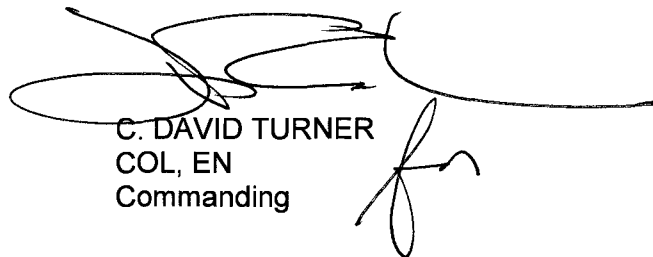
2. With MSC approval the Review Plan will be made available for public comment via the internet and the comments received will be incorporated into future revisions of the Review Plans. The Review Plan includes Independent External Peer Review Type II Safety Assurance Review (SAR).

3. I hereby approve the Review Plan which is subject to change as study circumstances require. This is consistent with study development under the Project Management Business Process. Subsequent revisions to the Review Plan after public comment or during project execution will require new written approval from this office.

4. Points of contact for this action are Mr. Boniface (Boni) Bigornia, CESPD-RBT, 415-503-6567, boniface.g.bigornia@usace.army.mil and Mr. Paul Bowers, CESPD-PDC, 415-503-6556, paul.w.bowers@usace.army.mil.

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

Encl
Review Plan


C. DAVID TURNER
COL, EN
Commanding

REVIEW PLAN

TUCSON DRAINAGE AREA FLOOD CONTROL PROJECT-

TUCSON, ARIZONA

Prepared by:

U.S Army Corps of Engineers
Los Angeles District

July 24, 2013



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

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REVIEW PLAN

TUCSON DRAINAGE AREA FLOOD CONTROL PROJECT-

TUCSON, ARIZONA

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REVIEW PLAN

TUCSON DRAINAGE AREA FLOOD CONTROL PROJECT-

TUCSON, ARIZONA

July 24, 2013

1. INTRODUCTION.

a. Purpose. This Review Plan (RP) defines the scope and level of quality management activities for the Tucson Drainage Area Flood Control Project in Tucson Arizona. The non-federal sponsor is the Pima County Regional Flood Control District (sponsor). The complete project was fully designed from 1995 to 2003 and complies with all quality management policies in place during that time period. Descriptions of project features, construction phasing and previous quality control activities are included in section 2 of this plan. Figure 1 provides an overview of the entire project. Currently, all project features have either been built or have been awarded a construction contract. The final construction contract included a base bid and four incremental work items to allow for portions of the project to be built as funding became available. Construction of the final two incremental work items is pending the release of funding. This RP will describe the levels of quality control and assurance this project received throughout the preconstruction, engineering and design (PED) phase and what quality management activities are required for the remaining work products associated with this project. The previously completed quality management activities will be the basis of justification for the Los Angeles District's (SPL) risk informed decision not to undertake the additional levels of review described in the current Civil Works Review Policy, EC 1165-2-214, for the project phases and increments that have been fully designed and/or completed construction with the exception of a Type II Independent External Peer Review/Safety Assurance Review (Type II IEPR/SAR). A Type II IEPR/SAR will be conducted to review the entire system of flood control project features, including those that have been previously constructed.

b. References.

- (1) ER 1110-2-1150, Engineering and Design for Civil Works Projects, 31 Aug 1999
- (2) ER 1110-1-12, Engineering and Design Quality Management, 1 Jun 1993, rev. 31 Mar 2011
- (3) ER 1110-2-401, Engineering and Design Operation, Maintenance, Repair, Replacement, and Rehabilitation Manual for Projects and Separable Elements Managed by Project Sponsors, 30 Sep 1994
- (4) WRDA 1999, Public Law 106-53, 17 Aug 1999
- (5) EC 1165-2-214, Civil Works Review Policy, 15 Dec 2012
- (6) Army Regulation 15-1, Committee Management, 27 November 1992 (Federal Advisory Committee Act Requirements)
- (7) National Academy of Sciences, Background Information and Confidential Conflict Of Interest Disclosure, BI/COI FORM 3, May 2003

c. Review Requirements. This review plan was developed in accordance with EC 1165-2214, which establishes the procedures for ensuring the quality and credibility of U.S. Army Corps of Engineers (USACE) decision and implementation documents through independent review. All appropriate levels of review (DQC, ATR and IEPR/SAR) will be included in this RP and any levels not included will require documentation in the Review Plan of the risk-informed decision not to undertake that level of review. The RP identifies the most important skill sets needed in the reviews and the objective of the review and the specific advice sought, thus setting the appropriate scale and scope of review for the individual project.

2. PROJECT DESCRIPTION.

a. Project Authority. The Tucson Drainage Area Flood Control Project was authorized under the authority given in Section 6 of the Flood Control Act of 1938 (dated 28 June 1938), which states:

“The Secretary of War (now Secretary of the Army) is hereby authorized and directed to cause preliminary examinations and surveys for flood control...at the following named localities: Gila River and tributaries, Arizona, New Mexico.”

Funding was authorized in accordance with the provisions of Section 101 of the Water Resources Development Act of 1999 (WRDA 1999, Public Law 106-53), provides that \$40,000,000.00 in Federal funds is authorized for the Project.

b. Project Location. The Tucson Drainage Area Flood Control Project is located in the central part of the City of Tucson, Pima County, Arizona.

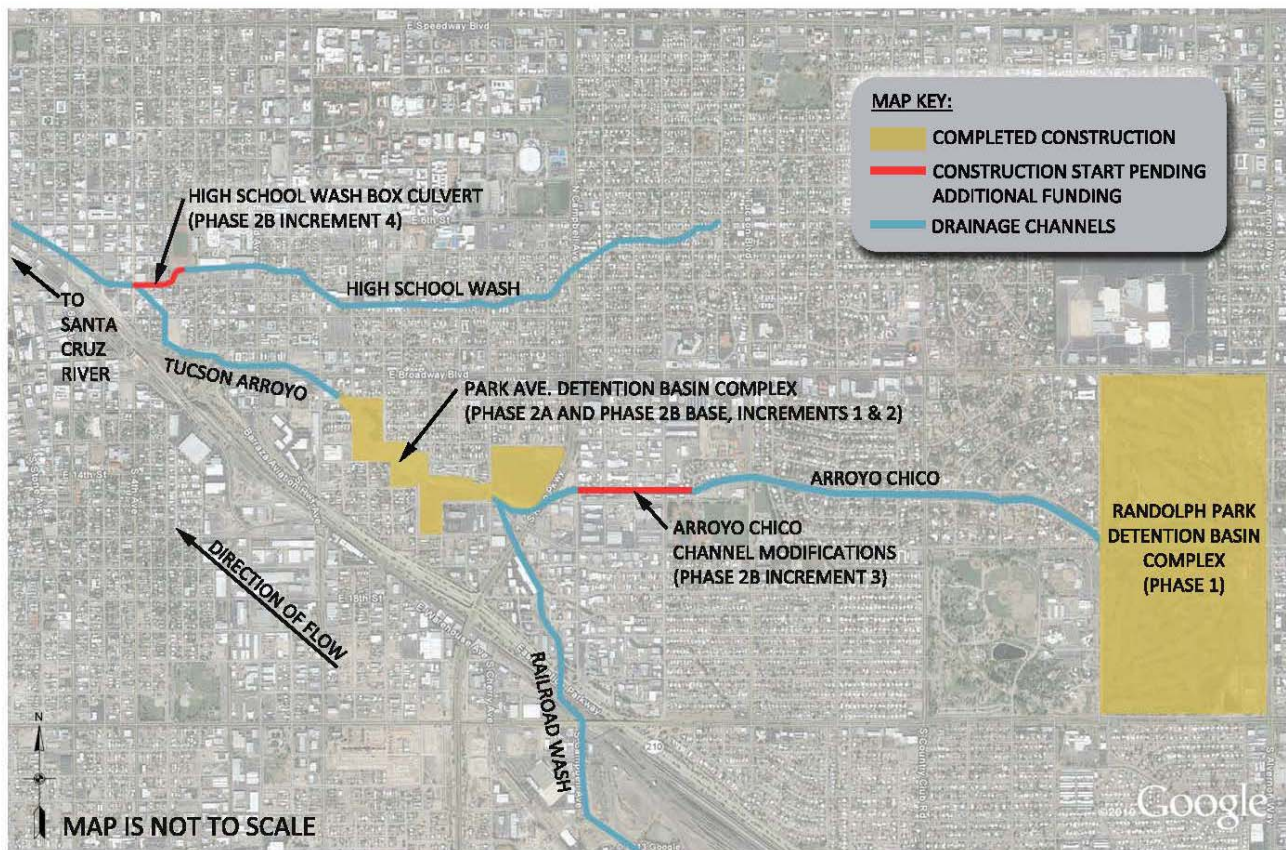


Figure 1 - Project Map

c. Project Description. The Tucson Drainage Flood Control Project provides ecosystem restoration, recreation and flood protection for floods up to and including the 100-year flood along the Arroyo Chico and Tucson Arroyo in the City of Tucson, AZ. The complete project encompasses the Randolph Park Detention Basin Complex (built by the sponsor), Park Avenue Detention Basin Complex, channel improvements along the Arroyo Chico between

the two basin complexes, and a new reinforced concrete box (RCB) culvert to improve the confluence between the High School Wash and Tucson Arroyo. The Park Avenue Detention Basin Complex and Channel Improvements portion of the Tucson Drainage Area Flood Control Project includes the Park Avenue Detention Basin Complex, Arroyo Chico Channel Modifications and the new High School Wash Box Culvert. The Design Documentation Report (DDR), Plans and Specifications (P&S) were prepared under contract with an Architect-Engineering (AE) Firm. Personnel rosters for SPL's Project Development Team (PDT) and the AE's Technical Development Team are included in Appendix D. The Randolph Park Detention Basin Complex is integral to the function of the complete project and will be evaluated as a part of the Type II IEPR/SAR. The following describes each project feature:

(1) Randolph Park Detention Basin Complex - The Randolph Park Detention Basin Complex consists of six detention basins and was designed and built by the Local Sponsor with construction completed in 1996. The Local Sponsor received a general credit totaling \$7,980,000 that was applied against the cost of all project flood control features. The six detention basins are designed to intercept incoming flows from the upstream reaches of the Arroyo Chico and its tributaries and store volumes up to a 100-year level flood event.

(2) Park Avenue Detention Basin Complex – The Park Avenue Detention Basin Complex is a group of four detention basins located along the Arroyo Chico between Kino Blvd. and Park Ave. Basin's 1, 2 & 3 are in-line with the Arroyo Chico and are designed to provide flood protection for up to a 100-year event and provide 15-acres of ecosystem restoration. Basin 4, labeled the Tucson Unified School District (TUSD) Basin, is set offline and is designed to fill via a side weir between 25-year to 100-year events. The TUSD basin contains recreation and athletic field facilities.

(3) Arroyo Chico Channel Modifications – The existing Arroyo Chico channel between Parkway Terrace and Campbell Avenue requires modifications within the current right-of-way to convey flows from the 100-year flood event. The modifications include deepening the channel by four feet, adding five-foot high concrete vertical side walls for bank protection and flow conveyance, and replacing three side street dip crossings with reinforced concrete box (RCB) culverts. The channel bottom will be widened to thirty feet and will remain an earthen surface.

(4) High School Wash Box Culvert – The new High School Wash Box Culvert is designed to reduce the 100-year flood plain of High School Wash and reduce the confluence impact on the Tucson Arroyo. A new 8-ft by 10-ft RCB culvert will replace and reroute an existing RCB culvert that runs under the high school field just east of Third Avenue. The existing RCB culvert will be cut and plugged. The new RCB culvert will connect with recently completed channel improvements under the intersection of Eighth Street and Fourth Avenue.

d. Project PED, Quality Management and Construction History. The Park Avenue Detention Basin Complex and Channel Improvements portion of the Tucson Drainage Area Flood Control Project has been completely designed and awarded a construction contract. The following summary is an overview of PED and construction activities that have occurred to date:

(1) Design Documentation Report (DDR) Approved in 2002. The DDR included the Park Avenue Detention Basin Complex, Arroyo Chico Channel Modifications and the High School Wash Box Culvert. The DDR was prepared by an AE firm under contract with the Los Angeles District and

underwent full quality assurance and quality control reviews consistent with ER 1110-1-12, Engineering and Design Quality Management, 1 Jun 1993. The technical review report from the AE firm, the Contractor Statement of Quality Control and Los Angeles District Statement of Quality Assurance are included in Appendix A for reference.

(2) Plans and Specifications (P&S) Approved in 2006. The P&S included the design of the Park Avenue Detention Basin Complex, Arroyo Chico Channel Modifications and the High School Wash Box Culvert. The P&S were prepared by an AE firm under contract with the Los Angeles District and underwent full quality assurance and quality control reviews consistent with ER 1110-1-12, Engineering and Design Quality Management, 1 Jun 1993. District level quality control reviews were completed in 2002 and 2003. A roster of reviewers and the associated DrChecks reports with their comments are included in Appendix A for reference. The Biddability, Constructability, Operability, and Environmental (BCOE) review was completed in Jan 2006. A copy of the BCOE Certificate is included in Appendix A for reference.

(3) Construction Contract Invitation For Bid (IFB) in 2006. The IFB received a single bid which greatly exceeded the funding available. The strategy for award was revised to reduce the scope on the P&S and negotiate with the only bidder. Ultimately, the reduced scope only included the TUSD Basin from the Park Avenue Detention Basin Complex and was referred to as Phase 2A. The remaining Basin's 1, 2 & 3 from the Park Avenue Detention Basin Complex, the Arroyo Chico Channel Modifications and the High School Wash Box Culvert were labeled as Phase 2B. *(Note: although not officially labeled as such, the Randolph Detention Basin Complex was considered to be Phase 1)*

(4) Phase 2A Construction Contract Award and Notice to Proceed (NTP) in 2006. The Phase 2A portion of the project was negotiated from the original contractor bid after it was determined that the complete project could not be constructed for the amount of funds available at the time of advertisement (see above item 3 for details).

(5) Phase 2A Construction Complete in 2008.

(6) Phase 2B Construction Contract Advertised and Awarded in 2010. The Phase 2B portion of the project was re-advertised and awarded a construction contract separate from the previously awarded Phase 2A contract. Using the continuous contract clause with incremental awards procurement strategy, the Phase 2B contract was set up to include a base bid and four incremental work items in order to complete construction over multiple years as funding became available. The base bid was for Basin 3, Increment 1 for Basin 2, Increment 2 for Basin 1, Increment 3 for the Arroyo Chico Channel Modifications and Increment 4 for the High School Wash Box Culvert. Additional quality assurance and quality control reviews were conducted prior to advertising the Phase 2B contract. A list of review comments, the Contractor Statement of Quality Control, Los Angeles District Statement of Quality Assurance and BCOE Certificate are included in Appendix A for reference.

(7) Phase 2B Base Bid Construction, Increment 1 and 2 Construction Complete in 2012. The NTP for the base bid, increments 1 and 2 was issued in 2010 and construction completed in 2012.

(8) Phase 2B Increment 3 and 4 Pending Construction. The NTP for increments 3 and 4 is pending additional funding.

3. WORK PRODUCTS.

a. Description of Work Products. Work products subject for review under this RP are the P&S for construction of Tucson Drainage Flood Control Project - Park Avenue Detention Basin Complex and Channel Improvements Phase 2B Increment's 3 & 4 and the Operations, Maintenance, Repair, Replacement and Rehabilitation (OMRR&R) Manual for the entire Phase 2A and Phase 2B project. Work products for project features that have completed construction were reviewed and approved utilizing the quality management policy in place at the time they were designed and built. The DDR, P&S for Phase 1, Phase 2A and Phase 2B (including the Base Bid plus Increment's 1 & 2), will only be subject to Type II IEPR/SAR for their performance and role within the complete Tucson Drainage Area Flood Control Project system.

(1) P&S for Phase 2B Increments 3 and 4 – P&S for Increments 3 and 4 include the design for the Arroyo Chico Channel Modifications and the High School Wash Box Culvert.

(2) OMRR&R Manual for Phase 2A and Phase 2B – The OMRR&R Manual for Phase 2A and Phase 2B will outline all responsibilities of the sponsor for the operation, maintenance, repair, replacement, and rehabilitation of the completed project consistent with ER 1110-2-401.

b. Required Level of Review. The required level of review for each work product is identified below.

(1) P&S for Phase 2B Increments 3 and 4 – The Los Angeles District has made a risk informed decision not to undertake the additional levels of review described in the current EC 1165-2-214 Civil Works Review Policy, based upon quality management policy in place at the time of design and the previously completed quality assurance reviews, quality control reviews and BCOE reviews as described in section 2, paragraph d of this RP. Appendix A contains records of the previous quality control reviews. Review team rosters and DrChecks comment reports are included for reference. The following describes the required level of review for the Phase 2B Increments 3 and 4 P&S.

i. District Quality Control (DQC) –DQC reviews of the P&S for Phase 2B Increments 3 and 4 will not be required based on the work products being reviewed, completed and approved in 2006 utilizing the quality management policy in place prior to the implementation of EC 1165-2-214 Civil Works Review Policy. The equivalent to DQC was performed by the AE designer's quality control reviews and the Los Angeles District quality assurance review. The Contractor Statement of Quality Control and Los Angeles District Statement of Quality Assurance are included in Appendix A for reference.

ii. Agency Technical Review (ATR) – ATR of the P&S for Phase 2B Increments 3 and 4 will not be required based on the work products being reviewed, completed and approved in 2006 utilizing the quality management policy in place prior to the implementation of EC 1165-2-214 Civil Works Review Policy. The AE designer's Independent Technical Review and Los Angeles District's BCOE review serve to satisfy the technical review requirements that would have taken place during an ATR. The Contractor Statement of Quality Control and Los Angeles District BCOE Certificate are included in Appendix A for reference.

iii. Type II Independent External Peer Review / Safety Assurance Review (Type II IEPR/SAR) – The P&S and construction of Phase 2B Increments 3 and 4 are subject to a Type II IEPR/SAR based on the Los Angeles District Chief of Engineering Division’s assessment on potential hazards which can pose a threat to human life. The Type II IEPR/SAR panel will evaluate the entire Tucson Drainage Area Project flood control system, including the DDR and all previously constructed components.

(2) OMRR&R Manual for Phase 2A and Phase 2B - The following describes the required levels of review for the OMRR&R Manual.

i. District Quality Control (DQC) – The OMRR&R Manual is an implementation document and will require DQC reviews.

ii. Agency Technical Review (ATR) – The OMRR&R Manual is an implementation document and will require an ATR to ensure the adequacy of all policy and scientific information presented within the document.

iii. Type II Independent External Peer Review / Safety Assurance Review (Type II IEPR/SAR) – The OMRR&R Manual will be reviewed during the Type II IEPR/SAR for the adequacy of all science, engineering, public health, safety and welfare information presented within the document.

4. SCOPE OF REVIEW.

a. DQC. District Quality Control is the review of basic science and engineering work products focused on fulfilling the project quality requirements defined in the Project Management Plan (PMP). SPL will continue to follow the Standard Operating Procedures as outlined in ER 1110-1-12 Quality Management where the DQC will consist of Quality Checks and Reviews, supervisory reviews, Project Delivery Team (PDT) Reviews including input from the Local Sponsor, and Biddability, Constructability, Operability, Environmental, and Sustainability (BCOES) Reviews.

b. ATR. The ATR team will review the OMRR&R Manual. A brief description of the points of emphasis is below, followed by general review guidelines for the ATR team, ATR team responsibilities and PDT responsibilities.

(1) Emphasis of Review. - When reviewing the OMRR&R Manual, the ATR team should verify that the requirements adequately maintain the conditions assumed during design and validated during construction and verify that the project monitoring will adequately reveal any deviations from the assumptions made for performance.

(2) General Review Guidelines. - ATR is undertaken to "ensure the quality and credibility of the government's scientific information" in accordance with EC 1165-2-214 and ER 1110-1-12. In order to ensure incorporation of Corps national experience for Flood Risk Management Projects (as updated per post-Katrina investigations), and in addition to the DQC, an ATR will also be performed. Moreover, all provisions and checklists for SAR contained in EC 1165-2-214 will be incorporated into the charge to the ATR team.

(3) ATR Team Responsibilities are as follows:

i. Reviewers shall review project authorization material and the design documents 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 design documents shall be submitted into DrChecks.

ii. 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.

iii. 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.

iv. Review comments shall contain these principal elements:

- A clear statement of the concern – identify the product's information deficiency or incorrect application of policy, guidance, or procedures.
- The basis for the concern, such as law, policy, or guidance – cite the appropriate law, policy, guidance, or procedure that has not be properly followed.
- Significance for the concern – indicate the importance of the concern with regard to its potential impact on the plan selection, recommended plan components, efficiency (cost), effectiveness (function/outputs), implementation responsibilities, safety, Federal interest, or public acceptability.
- Specific actions needed to resolve the comment – identify the action(s) that the PDT must take to resolve the concern.

v. The "Critical" comment flag in DrChecks shall not be used unless the comment is discussed with the ATR manager and/or the Technical Project Leader first.

(4) PDT Responsibilities are as follows:

i. The PDT shall review comments provided by the ATR team 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.

ii. Team members shall contact the PDT and ATR managers to discuss any "Non-Concur" responses prior to submission.

c. Type II IEPR/SAR. The reviews shall consider 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.

(1) Type II IEPR/SAR Charge. The Review Management Organization (RMO) will develop the charges for the review, per EC 1165-2-214. The charges will contain the instructions regarding the objective of the peer review and the specific advice sought. Reviewers shall be charged with reviewing scientific and technical matters, leaving policy determination for USACE and the Army. The charge should specify the structure of the review comments to fully communicate the reviewer's intent by including: the comments, why it is important, any potential consequences of failure to address, and suggestions on how to address the comment. It should include specific technical questions while also directing reviewers to offer a broad evaluation of the overall document. The charge should be determined in advance of the selection of the reviewers.

(2) General Review Guidelines. SPL shall provide reviewers with sufficient information, including background information about the project, to enable the reviewers to understand the data, analytic procedures, and assumptions. Reviewers shall be informed of applicable access, objectivity, reproducibility and other quality standards under the federal laws governing information access and quality. Information distributed for review must include the following disclaimer: "This information is distributed solely for the purpose of pre-dissemination review under applicable information quality guidelines. It has not been formally disseminated by USACE. It does not represent and should not be construed to represent any agency determination or policy." The panel of experts established for the review of this project shall:

- i. Conduct the review for the subject project in a timely manner in accordance with the study and RP schedule.
- ii. Follow the "Charge", but when deemed appropriate by the team lead, request other products relevant to the project and the purpose of the review.
- iii. Receive from USACE any public written and oral comments provided on the project.
- iv. Provide timely written and oral comments throughout the development of the project, as requested.
- v. Offer any lessons learned to improve the review process.
- vi. Submit reports in accordance with the review plan milestones.
- vii. During the Construction Phase, two 2-day site visits shall be scheduled for the panel to monitor the progress of construction and review critical construction operations, as described in the charge. The site visits should coincide with the 20% and 60% levels of construction. The site visits shall terminate with an exit briefing, which will be scheduled by the Project Manager and will be conducted at the Tucson Resident Office. Each reviewer shall document each site visit with a Field Visit report. The Field Visit reports will include a checklist, photographs and text summarizing observations and information noted during each site visit. The Field Visit Reports shall be included in the Type II IEPR/SAR Review Report as an appendix.

5. DOCUMENTATION OF REVIEW.

a. DQC Documentation. DrChecks review software will be used to document all DQC comments, responses and associated resolutions accomplished through the review process. Comments should be limited to those that are required to ensure adequacy of the product. In some situations, especially addressing incomplete or unclear information, comments may seek clarification in order to then assess whether further specific concerns may exist.

b. DQC Certification. To fully document the DQC process, a Completion of District Quality Control statement will be prepared for each product reviewed. The DQC documentation will include the text of each comment, the PDT response, a brief summary of the pertinent points in the ensuing discussion, including any vertical coordination, and the agreed upon resolution. Certification by the DQC team leaders and the Technical Project Leaders will occur once issues raised by the reviewers have been addressed to the review team's satisfaction. Indication of this concurrence will be documented by signing the Completion of District Quality Control and Certification of District Quality Control documents (Appendix E).

c. ATR Documentation. The communication and documentation plan for the ATR is as follows:

(1) The team will use DrChecks to document the ATR process. The Technical Project Leader will facilitate the creation of a project portfolio in the system to allow access by all PDT and ATR team members. An electronic version of the documents, appendices, and any significant and relevant public comments shall be posted in Adobe Acrobat PDF format at an ftp site at least one business day prior to the start of the comment period.

(2) The PDT shall send the ATR team leader one hard copy of the documents for each ATR team member such that the copies are received at least one business day prior to the start of the comment period.

(3) The PDT shall host an ATR kick-off meeting virtually to orient the ATR team during the first week of the comment period. If funds are not available for an on-site meeting, the PDT shall provide a presentation about the project, including photos of the site, for the team.

(4) The Technical Project Leader shall inform the ATR team leader when all responses have been entered into DrChecks and conduct a briefing to summarize comment responses to highlight any areas of disagreement.

(5) A revised electronic version of the documents with comments incorporated shall be posted at an ftp site for use during back checking of the comments.

(6) PDT members shall contact ATR team members or leader as appropriate to seek clarification of a comment's intent or provide clarification of information in the report. Discussions shall occur outside of DrChecks but a summary of discussions may be provided in the system.

(7) Reviewers will be encouraged to contact PDT members directly via email or phone to clarify any confusion. DrChecks shall not be used to post questions needed for clarification.

d. ATR Resolution. The comment resolution process for ATR is as follows:

(1) Reviewers shall backcheck PDT responses to the review comments and either close the comment or attempt to resolve any disagreements. Conference calls shall be used to resolve any conflicting comments and responses.

(2) Reviewers may “agree to disagree” with any comment response and 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 team leader. If the ATR team leader is unable to resolve the issue, the ATR team leader will implement the guidelines as described below.

(3) The ATR team will identify significant issues that they believe are not satisfactorily resolved and will note these concerns in the Technical Review Certification documentation. The ATR team will prepare a Review Report which includes a summary of each unresolved issue. Review Reports will be considered an integral part of the ATR documentation. Annotated ATR comments will be provided to the RMC and the RMC will notify the District of closure of each phase of ATR or identify issues remaining for resolution.

(4) Significant unresolved ATR concerns that are documented by the RMC will be forwarded through the MSC to the HQ USACE RIT, including basic research of Corps guidance and an expression of desired outcome, for further resolution in accordance with the policy issue resolution process described in ER 1110-2-12 or Appendix H, ER 1105-2-100, as appropriate. HQ USACE may choose to defer the issue to the policy compliance review process or address it directly. At this point the ATR documentation for the concern may be closed with a notation that the concern has been elevated for resolution by HQ USACE. Subsequent submittals of reports for MSC and/or HQ USACE review and approval shall include documentation of the issue resolution process.

e. ATR Certification. The ATR shall be certified in accordance with EC 1165-2-214. Certification by the ATR team leader and the Technical Project Leader will occur once issues raised by the reviewers have been addressed to the review team’s satisfaction or deferred by HQ USACE to a separate process. To fully document the ATR process, a statement of technical review will be prepared for each product reviewed. The ATR documentation will include the text of each ATR comment, the PDT response, a brief summary of the pertinent points in the ensuing discussion, including any vertical coordination, and the agreed upon resolution. Indication of this concurrence will be documented by the signing the Completion of Agency Technical Review and Certification of Agency Technical Review documents (Appendix F).

f. Documentation of Type II IEPR/SAR. Dr Checks review software will be used to document Type II IEPR/SAR comments and aid in the preparation of the Review Report. Comments should address the adequacy and acceptability of the economic, engineering and environmental methods, models, and analyses used. Type II IEPR/SAR comments should be limited to those that are required to ensure adequacy of the product. The four key parts of a quality review comment will normally include:

(1) The review concern – identify the product’s information deficiency or incorrect application of policy, guidance, or procedures.

(2) The basis for the concern – cite the appropriate law, policy, guidance, or procedure that has not been properly followed.

(3) The significance of the concern – indicate the importance of the concern with regard to its potential impact on the design components, efficiency (cost), effectiveness (function/outputs), implementation responsibilities, safety, Federal interest, or public acceptability.

(4) The probable specific action needed to resolve the concern.

g. Type II IEPR/SAR Report. The review team will prepare a review report. All review panel comments shall be entered as team comments that represent the group and be non-attributable to individuals. The team lead is to seek consensus, but where there is a lack of consensus, note the non-concurrence and why. A suggested report outline is: an introduction, the composition of the review team, a summary of the review during design, a summary of the review during construction, any lessons learned in both the process and/or design and construction, and appendices for conflict of disclosure forms, for comments to include any appendices for supporting analyses and assessments of the adequacy and acceptability of the methods, models, and analyses used. All comments in the report will be finalized by the panel prior to their release to USACE for each review plan milestone.

h. Type II IEPR/SAR Certification. The MSC Chief of Business Technical Division will approve the final Type II IEPR/SAR report. After receiving the report from the panel, the District Chief of Engineering shall consider all comments contained in the report and prepare a written response for all comments and note concurrence and subsequent action or non-concurrence with an explanation. The District Chief of Engineering shall submit the panel's report and District responses to the MSC for final MSC Commander approval and then make the report and responses available to the public on the District's website.

6. REVIEW TEAM.

a. DQC Review Team. Reference is made to ER 1110-1-12 Quality Management that identifies the activities, roles and responsibilities for the DQC of this project. A DQC review team roster required for the reviews is included in Appendix B.

b. ATR Review Team. The ATR team will be established per ER 1110-1-12 and EC 1165-2-214. The Corps will manage the ATR internally and it will be conducted by individuals and organizations that are separate and independent from those that accomplished the work, in accordance with policy. As stipulated in EC 1165-2-214, the RMO is responsible for assigning the ATR team members. ATR members will be sought from the following sources: regional technical specialists (RTS); appointed subject matter experts (SME) from other districts; senior level experts from other districts; Center of Expertise staff; appointed SME or senior level experts from the responsible district; experts from other Corps commands; contractors; academic or other technical experts; or a combination of the above. The ATR Team Leader will be a Corps of Engineers employee outside SPD. The disciplines required for the ATR, and the expertise required within each disciplines, are included in Appendix C.

c. Type II IEPR/SAR Review Team. The RMO for Type II IEPR/SAR reviews is the USACE Risk Management Center (RMC). Panel members will be selected using the National Academies of Science (NAS) policy for selecting reviewers. An RMC contract will be utilized to acquire services to manage the Type II IEPR/SAR. The review will be managed by an independent organization outside of the Corps. Panel members will be selected using the National Academies of Science (NAS) policy for selecting reviewers. Type II IEPR is not exempted by statute from

the Federal Advisory Committee Act (FACA). The disciplines required for the Type II IEPR SAR, and the expertise required within each disciplines, is included in Appendix C.

7. SCHEDULE/COSTS.

a. DQC Schedule. The DQC schedule for the Phase 2A and Phase 2B OMRR&R Manual will follow the timeline as shown below:

OMRR&R Manual, Phase 2A, Phase 2B, Base Bid, Increment's 1 & 2	
Submit to Phase 2B, Increment's 1 and 2 to DQC	Nov-13
Incorporate comments and re-submit	Nov-13
Comment Resolution Meeting, If Required	Nov-13
Complete Backcheck	Nov-13
SPL Certification of DQC	Dec-13
OMRR&R Manual, Phase 2B, Increment's 3 & 4	
Submit to Phase 2B, Increment's 3 and 4 to DQC	Jun-14
Incorporate comments and re-submit	Jun-14
Comment Resolution Meeting, If Required	Jun-14
Complete Backcheck	Jul-14
Certification of DQC	Aug-14

b. DQC Funding. It is anticipated that the total cost for the DQC identified within this plan will be approximately \$15,000. The cost of DQC will be solely the responsibility of USACE due to the Local Sponsor having fulfilled their cost sharing requirements for this project.

c. ATR Schedule. The ATR schedule for the Phase 2A and Phase 2B OMRR&R Manual will follow the timeline as shown below:

OMRR&R Manual, Phase 2A, Phase 2B, Base Bid, Increment's 1 & 2	
Submit to Phase 2A & 2B, Increment's 1 and 2 to ATR	Feb-14
Incorporate comments and re-submit	Apr-14
Comment Resolution Meeting, If Required	May-14
Complete Backcheck	Jun-14
Certification of ATR	Jun-14
OMRR&R Manual, Phase 2B, Increment's 3 & 4	
Submit to Phase 2B, Increment's 3 and 4 to ATR	Sep-14
Incorporate comments and re-submit	Sep-14
Comment Resolution Meeting, If Required	Sep-14
Complete Backcheck	Oct-14
Certification of ATR	Nov-14

d. ATR Funding. It is anticipated that the total cost for the ATR identified within this plan will be approximately \$30,000. The cost of ATR will be solely the responsibility of USACE due to the Local Sponsor having fulfilled their cost sharing requirements for this project.

e. Type II IEPR/SAR Schedule. The Type II IEPR/SAR process for the Tucson Drainage Area Flood Control Project will follow the timeline shown below:

IEPR/SAR Procurement	Dec-13
Design	
Submit to Type II IEPR/SAR	Jan-14
Incorporate comments and re-submit	Feb-14
Comment Resolution Meeting, If Required	Feb-14
Complete Backcheck	Feb-14
SPD Approval of Type II IEPR/SAR Responses	Mar-14
Construction	
Incr. 3 & 4 Construction Contract Award	Jan-14
Type II IEPR/SAR Kick-off Meeting	Feb-14
Incr. 3 Type II IEPR/SAR Site Visit 20% Construction	May-14
Incr. 3 Type II IEPR/SAR Site Visit 60% Construction	Sep-14
Incr. 4 Type II IEPR/SAR Site Visit 20% Construction	May-14
Incr. 4 Type II IEPR/SAR Site Visit 60% Construction	Sep-14
Construction Completion	Dec-14
Type II IEPR/SAR Final Report	Jan-15

f. Type II IEPR/SAR Funding. It is anticipated that the total cost for the Type II IEPR/SAR identified within this plan will be approximately \$75,000. The cost of panels for Type II IEPR/SAR will be solely the responsibility of USACE due to the Local Sponsor having fulfilled their cost sharing requirements for this project. The PDT will complete an RMC contract capacity request, Independent Government Estimate and Scope of Work. The RMC will transfer SAR contract capacity to the MSC/District for completion of the Type II IEPR/SAR.

8. PUBLIC COMMENT.

To ensure that the peer review approach is responsive to the wide array of stakeholders and customers, both within and outside the Federal Government, this Review Plan will be published on the district’s public internet site following approval by SPD at <http://www.spl.usace.army.mil/Missions/CivilWorks/ReviewPlans.aspx>. This is not a formal comment period and there is no set timeframe for the opportunity for public comment. If and when comments are received, the PDT will consider them and decide if revisions to the review plan are necessary. All significant public comments will be made available to the Type II IEPR/SAR review team prior to starting the review. The public is invited to review and submit comments on the plan as described on the website.

9. POINTS OF CONTACT.

Questions about this Review Plan may be directed to the applicable District Project Delivery Team, Lead Supervisor, Mrs. Emili Kolevski, P.E at 213-452-3659, or to the Project Manager, Drew Savage at 602-230-6936. The Chief, Engineering Division is Mr. Rick Leifield, P.E. at 213-452-3629. Inquiries to the MSC should be directed to Mr. Paul Bowers at 415-503-6556.

10. REVIEW PLAN APPROVAL.

In order to ensure the RP is in compliance with the principles of EC 1165-2-214, the RP must be approved by the applicable MSC, in this case the Commander, SPD. Once the RP is approved, the District will post it to its district public website and notify SPD.

The Los Angeles District requests that the South Pacific Division approve this Review Plan as described in Appendix B of EC 1165-2-214 and endorse the decision that the quality management policies in place at the time this project was designed and awarded a construction contract satisfies the need for additional DQC reviews and an ATR of the Plans and Specifications for Phase 2B - Increment's 3 and 4. The OMRR&R Manual will comply with current guidance and complete DQC, ATR and Type II IEPR/SAR reviews. In addition, a Type II IEPR/SAR will be conducted on the entire Tucson Drainage Area Flood Control Project, including the plans, specifications and construction of Phase 2B - Increment's 3 & 4 and all previously constructed project features.

APPENDIX A: QUALITY MANAGEMENT REFERENCES

Per U.S. Army Corps of Engineers Circular No. 1165-2-214, dated 15 December 2012, Appendix B, Section 6, "in posted documents, lists of the names of USACE reviewers should not be displayed".

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APPENDIX B: DQC REVIEW TEAM ROSTER

Per U.S. Army Corps of Engineers Circular No. 1165-2-214, dated 15 December 2012, Appendix B, Section 6, "in posted documents, lists of the names of USACE reviewers should not be displayed".

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APPENDIX C – ATR AND TYPE II IEPR/SAR PANEL MEMBER EXPERTISE

TYPE II IEPR/SAR Panel Members/Disciplines	Expertise Required
Civil Engineer	The Civil Engineer panel member should be a registered professional from academia, a public agency, or an Architect-Engineer or consulting firm with 10 or more years of experience in design of flood control structures including RCB culverts and open channels utilizing sandy and hard (caliche) soils. Experience utilizing RCB culverts and concrete flood walls in the design of bank protection and channels for large civil works projects is required. Demonstrated knowledge regarding site layout, surveying, construction techniques, grading, hydraulic structures, erosion control, interior drainage, road design and retaining walls is required.
Hydrologic & Hydrologic Engineer	The H&H panel member should be a registered professional from academia, a public agency, or an Architect-Engineer or consulting firm with 15 or more years of experience in conducting and valuating hydrologic and hydraulic analyses for flood risk management projects. The panel member should be experienced in Flood Risk Management Projects, including large earth-fill, rock-fill, concrete or combination dams or systems of dams with their many hydraulic appurtenances such as gated and un-gated spillways, stilling basins, outlet works, control gates and valves, power intake structures, tunnels, conduits and approach and diversion channels and appurtenant control structures; and/or Local Flood Damage Reduction Projects including levees; floodwalls; gravity outlet and gate closure structures; pumping stations; detention basins; storm drainage structures; lined and unlined flood control channels and improvement structures. Active participation in related professional societies is encouraged. (Review work products, as necessary)
Geotechnical Engineer	Geotechnical Engineer panel member should be a registered professional geotechnical engineer from academia, a public agency, an Architect-Engineer or consulting firm with 20 years or more experience in geotechnical and earthquake engineering for critical flood risk management infrastructure. It is preferred that panel member possess a PhD degree in geotechnical engineering, although an MS degree is acceptable. Panel member will be a recognized expert in the analysis, design and construction of flood control channels on alluvial foundations with caliche outcroppings and extensive experience in subsurface investigations; liquefaction analyses; earthquake induced embankment deformations; seepage and slope stability analysis; design and construction of RCB culverts; concrete flood walls; and preparing plans and specifications for RCB culverts and open channels with bank protection. (Review work products, as necessary.)
Structural Engineer	Structural Engineer should be a registered professional from academia, a public agency, or an Architect-Engineer or consulting firm with 10 or more years of experience in design of hydraulic structures for large and complex civil works projects including concrete flood walls subject to erosion and undermining by direct high flows and meandering action. Also experience in design of hydraulic structures such as RCB culverts. Practical knowledge of construction methods and techniques as it relates to structural portions of projects is encouraged. (Review work products, as necessary)

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APPENDIX D: PDT AND AE TECHNICAL DEVELOPMENT TEAM ROSTERS

Per U.S. Army Corps of Engineers Circular No. 1165-2-214, dated 15 December 2012, Appendix B, Section 6, "in posted documents, lists of the names of USACE reviewers should not be displayed".

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APPENDIX E – SAMPLE DQC CERTIFICATION DOCUMENTS

**COMPLETION OF DISTRICT QUALITY CONTROL
ENGINEERING**

[project name and location]
[product type & short description of item]

The District Quality Control/Quality Assurance (DQC) Process for Engineering has been completed for the [product type & short description of item] for [project name and location]. The DQC was conducted as defined in the project’s Review Plan to comply with the requirements of EC 1165-2-214 and QMS Process 08506-SPD “District Quality Control/Quality Assurance (DQC) of Engineering Products”. During the DQC, compliance with established policy principles and procedures, utilizing justified and valid assumptions, was verified. This included review of: assumptions, methods, procedures, and material used in analyses, alternatives evaluated, the appropriateness of data used and level obtained, and reasonableness of the results, including whether the product meets the customer’s needs consistent with law and existing US Army Corps of Engineers policy. All important comments resulting from the DQC have been resolved and the comments have been closed in DrChecks. The DrChecks report documenting this is attached.

SIGNATURE

[Name]
Engineering PDT Member/Lead Engineer
[Office Symbol or Name of AE Firm]

Date

SIGNATURE

[Name]
DQC Team Leader
[Office Symbol of Responsible Section or Name of AE Firm]

Date

SIGNATURE

[Name]
Chief, [Responsible Section]
[Office Symbol of Responsible Section]

Date

SIGNATURE

[Name]
Chief, [Responsible Branch]
[Office Symbol of Responsible Branch]

Date

CERTIFICATION OF DISTRICT QUALITY CONTROL

Significant concerns and the explanation of the resolution are as follows:

[Describe the major technical concerns and their resolution]

As noted above, DQC has been conducted for this Engineering work product and all resulting concerns have been fully resolved.

This DQC Certification and the attached DrChecks report should be included as an appendix within the final report.

SIGNATURE

[Name]

Chief, Engineering

[Office Symbol of Engineering Organization]

Date

Instructions: [Input] – Information in Blue brackets and text is required. Once the input is provided, text should be formatted in black and the brackets should be deleted. Delete these instructions in the completed form.

APPENDIX F – SAMPLE ATR CERTIFICATION DOCUMENTS

COMPLETION OF AGENCY TECHNICAL REVIEW

[project name and location]
[product type & short description of item]

The Agency Technical Review (ATR) has been completed for [product type & short description of item] for [project name and location].

The ATR was conducted as defined in the project’s Review Plan to comply with the requirements of EC 1165-2-214. During the ATR, compliance with established policy principles and procedures, utilizing justified and valid assumptions, was verified. This included review of: assumptions, methods, procedures, and material used in analyses, alternatives evaluated, the appropriateness of data used and level obtained, and reasonableness of the results, including whether the product meets the customer’s needs consistent with law and existing US Army Corps of Engineers policy. The ATR also assessed the District Quality Control (DQC) documentation and made the determination that the DQC activities employed appear to be appropriate and effective. All comments resulting from the ATR have been resolved and the comments have been closed in DrChecks.

[Name]
ATR Team Leader
[Office Symbol of Responsible Section]

Date

[Name]
Project Manager
[Office Symbol of Responsible Section]

Date

[Name]
Review Management Office Representative
[Office Symbol of Responsible Section]

Date

CERTIFICATION OF AGENCY TECHNICAL REVIEW

Significant concerns and the explanation of the resolution are as follows:

[Describe the major technical concerns and their resolution]

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

[Name]

Chief, Engineering Division

[Office Symbol of Engineering Organization]

Date

Instructions: [Input] – Information in Blue brackets and text is required. Once the input is provided, text should be formatted in black and the brackets should be deleted. Delete these instructions in the completed form.