



**DEPARTMENT OF THE ARMY**  
CORPS OF ENGINEERS, NORTHWESTERN DIVISION  
PO BOX 2870  
PORTLAND OR 97208-2870

CENWD-RBT

05 DEC 2012

MEMORANDUM FOR Commander, Portland District (CENWP-PM-PPM/Karen Robison)

SUBJECT: Review Plan (RP) Approval for Green Peter Dam Issue Evaluation Study, Oregon, Portland District

1. References:

a. Memorandum, CENWP-EC-DS, 30 November 2012, subject: Green Peter Dam Issue Evaluation Study, Review Plan Submittal (Encl).

b. EC 1165-2-209 Change 1, Civil Works Review Policy, 31 January 2012.

2. Reference 1.a. above has been prepared in accordance with reference 1.b. above.

3. The RP has been coordinated with the Business Technical Division, Northwestern Division, U.S. Army Corps of Engineers, and with the Risk Management Center, which is the lead office and Review Management Office (RMO) to execute this plan. The RP includes District Quality Control and Agency Technical Review. The RMO Point of Contact is Tom Bishop, 303-963-4556.

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

5. For further information, please contact Mr. Steve Bredthauer, NWD Technical Review Program Manager, at (503) 808-4053, or Ms. Laila Berre, NWD Dam Safety Program Manager, at (402) 996-3830.

Encl

  
ANTHONY C. FUNKHOUSER, P.E.  
COL, EN  
Commanding

CF: CENWD-DDE



**DEPARTMENT OF THE ARMY**  
**CORPS OF ENGINEERS, PORTLAND DISTRICT**  
**PO BOX 2946**  
**PORTLAND OR 97208-2946**

**30 NOV 2012**

**CENWP-EC-DS**

**MEMORANDUM FOR Commander, Northwestern Division (CENWD-DE)**  
**(Stephen Bredthauer, Technical Review Program Manager, CENWD-RBT)**

**SUBJECT: Green Peter Dam Issue Evaluation Study, Review Plan Submittal**

- 1. Enclosed for Major Subordinate Command (MSC) Commander approval is Green Peter Dam Issue Evaluation Study Review Plan. This Plan has been prepared according to EC 1165-2-209, Civil Works Review Policy, and has been endorsed by the Risk Management Center (RMC).**
- 2. If you have any further questions, please contact Mehdi Roshani, Project Manager, at (503) 808-4988 or email at Mehdi.Roshani@usace.army.mil.**

**FOR THE COMMANDER:**

**LANCE A. HELWIG, P.E.**  
**Chief, Engineering and Construction**  
**Division**

**Encl**

**CF:**  
**CENWD-RBT (Berre, Laila)**



**DEPARTMENT OF THE ARMY**  
RISK MANAGEMENT CENTER, CORPS OF ENGINEERS  
13952 DENVER WEST PARKWAY SUITE 200  
GOLDEN, CO 80401

REPLY TO  
ATTENTION OF  
CEIWR-RMC-WD

CEIWR-RMC

20 Nov 2012

MEMORANDUM FOR: Commander, Portland District, ATTN: CENWP-EC-DS

SUBJECT: Risk Management Center Endorsement – Green Peter Dam Review Plan

1. The Risk Management Center (RMC) has reviewed the Review Plan (RP) for Green Peter Dam, dated 16 November 2012, and concurs that this RP provides for an adequate level of peer review and complies with the current peer review policy requirements outlined in EC 1165-2-209 "Civil Works Review Policy", dated 31 January, 2010.
2. This review plan was prepared by Portland District, reviewed by Northwestern Division and the RMC, and all review comments have been satisfactorily resolved.
3. The RMC endorses this document to be approved by the MSC Commander. Upon approval of the RP, please provide a copy of the approved RP, a copy of the MSC Commander's approval memorandum, and a link to where the RP is posted on the District website to Tom Bishop, RMC Senior Review Manager ([thomas.w.bishop@usace.army.mil](mailto:thomas.w.bishop@usace.army.mil)).
4. Thank you for the opportunity to assist in the preparation of this RP. Please coordinate all aspects of the Agency Technical Review and any changes to the RP with the Risk Management Center. For further information, please contact Tom Bishop at (303) 963-4556.

Sincerely,

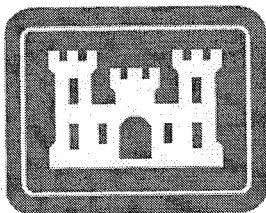
A handwritten signature in black ink, appearing to read "Julie L. Allen".

Julie L. Allen P.E.  
Review Manager  
Risk Management Center

CF:  
CEIWR-RMC-ZA (Mr. Snorteland)  
CENWD-CE (Division Quality Manager)

**Review Plan  
U.S. Army Corps of Engineers  
Portland District  
Northwestern Division**

**Green Peter Dam  
Issue Evaluation Study**



**US Army Corps  
of Engineers®**

*16 November 2012*

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## 1. Introduction

### a. Purpose

This Review Plan is intended to ensure a quality engineering Dam Safety Issue Evaluation Study developed by the Corps of Engineers. ER 11110-2-11156, "Dam Safety Policy and Procedures" dated 28 Oct 2011, Chapter 8 describes the Issue Evaluation Study (IES) Plan development, review, and approval process. This Review Plan has been developed for Green Peter Dam. This Review Plan was prepared in accordance with EC 1165-2-209, "Civil Works Review Policy", and covers the review process for the Green Peter Dam Phase 1 IES Report. The IES is a study that may lead to additional studies, modeling, or NEPA consultation. NEPA compliance would occur during the Dam Safety Modification Study Phase. Because the Phase 1 IES is used to justify a Phase 2 Issue Evaluation Studies and potentially Dam Safety Modification (DSM) studies, it is imperative that the vertical teaming efforts are proactive and well coordinated to assure collaboration of the report findings, conclusions, and recommendations, and that there is consensus at all levels of the organization with the recommended path forward.

### b. Project Description and Information

Green Peter Dam is one of 13 flood control dams in the populated Willamette Valley. Important communities located downstream are Foster (population 8,925, 7 miles), Lebanon (population 12,231, 27 miles), and Albany (population 50,158, approximately 40 miles). The Project is dual-purpose: flood control and power development. It was constructed starting in 1963 and completed in 1967. Major features include a concrete gravity section that includes the spillway, regulating outlets and penstocks, and a detached powerhouse. The powerhouse is located on the right side of the downstream toe and has two turbines with a combined generating capacity of 80,000 kilowatts. The concrete gravity structure rises 380 feet from the lowest point of the foundation to the crest at elevation 1020 feet above sea level. Crest length of the dam is about 1,380. The dam consists of 29 monoliths, and contains approximately 1,142,000 cubic yards of concrete. Seepage control is accomplished by a single line grout and drain curtains installed for the full length of the dam near the upstream side. The grout curtain also extends approximately 100 to 360 feet beyond the dam into the abutments to cutoff abutment seepage through the abutment and buried paleo river channel. There is also a secondary downstream drainage gallery and drainage tunnel in the foundation located approximately 125 to 150 downstream of the upstream drainage curtain. In addition, there is significant area beneath two monoliths where a major foundation shear was partially mined out and replaced with concrete and

extensive consolidation grouting of the foundation rock. The 100 foot long spillway has two bays and a crest elevation of 968.7 feet above msl. There are two low level regulating outlets controlled by 5.5 by 10ft hydraulically operated slide gates. Three 18-foot diameter steel penstocks are provided. The lake at a maximum summer conservation pool (El. 1010) and maximum pool (PMF surcharge) retains approximately 410,000 and 430,000 acre-feet of water, respectively.

The IES study will review the Project information, conduct a PFMA with qualitative risk assessment of failure modes and then develop quantitative risk assessment for the critical failure modes.



### c. Levels of Review

IES Reviews shall include:

- District Quality Control (DQC)
- Agency Technical Review (ATR)
- RMC Reviews shall include:
- Quality Control and Consistency Review (RMC staff and/or external experts)

**Independent External Peer Review (IEPR)** is applied in cases that meet certain criteria. This IES is not a decision document and does not cover work requiring a Type I or Type II IEPR. Issue Evaluation Studies are used to justify Dam Safety Modification Studies. If this project requires a Dam Safety Modification Study, both Type I and Type II IEPR will be conducted.

### d. Review Team

**Review Management Office:** The USACE Risk Management Center (RMC) is the Review Management Organization (RMO) for dam safety related work, including this IES. Contents of this review plan have been coordinated with the RMC and the Northwestern Division, the Major Subordinate Command (MSC). Informal coordination with NWD will occur throughout the IES development, including briefings to the NWD Dam Safety Committee and Program Review Board updates. In-Progress Review (IPR) team meetings with the RMC, NWD, and HQ will be scheduled on an "as needed" basis to discuss programmatic, policy, and technical matters. The NWD Dam Safety Program Manager will be the POC for vertical team coordination. This review plan will be updated for each new project phase.

**Agency Technical Review Team:** Geotechnical Engineer, Geologist and Structural Engineer should have expertise in seismic stability of concrete gravity dam and powerhouse. In addition, the hydraulic engineer should have experience in water management of complex multi-projects.

**Required ATR Team Expertise:** The ATR team will be chosen based on each individual's qualifications and experience with similar projects. ATR team member shall be a registered engineer with minimum 10 years of experience.

**ATR Lead:** The ATR team lead is a senior registered professional engineer with extensive experience in preparing Civil Works documents and conducting ATRs (or ITRs). The lead has the necessary skills and experience to lead a virtual team through the ATR process. The ATR lead may also serve as a reviewer for a specific discipline,



in this case, Structural Engineering, Geotechnical Engineering, Mechanical Engineering, Electrical Engineering, and Hydraulic Engineering.

**Geotechnical Engineer** - shall have experience in the field of geotechnical engineering, analysis, design, and construction of mass concrete gravity dams. The geotechnical engineer shall have experience in subsurface investigations, rock and soil mechanics, seismic stability of stratified bedrock with bedding plane shears, internal erosion (seepage and piping), slope stability evaluations. The geotechnical engineer shall have knowledge and experience in the forensic investigation of seepage, settlement, stability, and deformation problems associated with high head concrete dams and appurtenances constructed on rock foundations.

**Engineering Geologist** - shall have experience in assessing internal erosion (seepage and piping) beneath mass concrete gravity dams constructed on volcanic bedrock formations. The engineering geologist shall be familiar with identification of geological hazards, exploration techniques, field and laboratory testing, and instrumentation. The engineering geologist shall be experienced in the design of grout curtains and must be knowledgeable in grout theology, concrete mix designs, and other materials used in foundation seepage barriers and consolidation grouting.

**Hydraulic Engineer** – shall have experience in the analysis and design of hydraulic structures related to dams including the design of hydraulic structures (e.g., spillways, outlet works, stilling basins, and penstocks). The hydraulic engineer shall be knowledgeable and experienced with the routing of inflow hydrographs through multipurpose flood control reservoirs utilizing multiple discharge devices, Corps application of risk and uncertainty analyses in flood damage reduction studies, and standard Corps hydrologic and hydraulic computer models used in drawdown studies, dam break inundation studies, hydrologic modeling and analysis for dam safety investigations. In addition, the Hydraulic Engineer should be knowledgeable in the operation of complex system of multiple dams.

**Mechanical Engineer** – shall have experience in machine design, machine rehabilitation and familiarity with design of mechanical gates and controls for flood and power control structures.

**Structural Engineer** – shall have experience and be proficient in performing stability analysis, finite element analysis, seismic time history studies, external stability analysis including foundations on high head mass concrete dams. The structural engineer shall have specialized experience in the design, construction and analysis of concrete dams.

**Economist (or Consequence Specialist)** – shall be knowledgeable of policies and guidelines of ER 1110-2-1156 as well as experienced in analyzing flood risk management projects in accordance with ER 1105-2-100, the Planning Guidance Notebook. The economist shall be knowledgeable and experienced with standard Corps computer models and techniques used to estimate population at risk, life loss, and economic damages.

## 2. Requirements

### a. Reviews

The review of all work products will be in accordance with the requirements of EC 1165-2-209 by following the guidelines established within this review plan. All engineering and design products will undergo District Quality Control Reviews.

#### i. District Quality Control (DQC)

DQC is the review of basic science and engineering work products focused on fulfilling the project quality requirements. DQC will be performed for all district engineering products by staff not involved in the work and/or study. Basic quality control tools include a plan providing for seamless review, quality checks and reviews, supervisory reviews, Project Delivery Team (PDT) reviews, etc.

#### ii. Agency Technical Review (ATR)

ATR is 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 the 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 ATR team reviews the various work products and assure that all the parts fit together as a coherent whole. ATR teams will be comprised of senior USACE personnel (Regional Technical Specialists, etc.), and may be supplemented by outside experts as appropriate. To assure independence, the leader of the ATR team shall be from outside the home Major Subordinate Command (MSC).

#### iii. Independent External Peer Review (IEPR)

IEPR is the most independent level of review, and is applied in cases that meet certain criteria. This IES is not a decision document and does not cover work requiring a Type I or Type II IEPR. Issue Evaluation Studies are used to justify Dam Safety Modification Studies. If this project requires a Dam Safety Modification Study, both Type I and Type II IEPR will be conducted.

*iv. Policy and Legal Compliance Review*

Policy and Legal Compliance Review is required for decision documents. Since this IES is not a decision document it does not require a Policy and Legal Compliance Review. If this project requires a Dam Safety Modification Study, a Policy and Legal Compliance Review will be conducted.

*v. Peer Review of Sponsor In-Kind Contributions*

There will be no in-kind contributions for this IES.

***b. Approvals****i. Review Plan Approval and Updates*

The MSC for this IES is the Northwestern Division. The MSC Commander is responsible for approving this Review Plan. The Commander's approval reflects vertical team input (involving the Portland District, MSC, RMC and HQUSACE members) as to the appropriate scope and level of review for the study and endorsement by the RMC. Like the PMP, the Review Plan is a living document and may change as the study progresses. The District is responsible for keeping the Review Plan up to date. Minor changes to the review plan since the last MSC Commander approval will be documented in an Attachment to this plan. Significant changes to the Review Plan (such as changes to the scope and/or level of review) should be re-endorsed by the RMC and re-approved by the MSC Commander following the process used for initially approving the plan. The latest version of the Review Plan, along with the Commanders' approval memorandum, will be posted on the District's webpage and linked to the HQUSACE webpage.

*ii. IES Report*

The IES Report shall undergo a DQC and formal ATR. After the ATR, the PDT will present the IES to the Quality Control and Consistency (QCC) Panel for review. The district and the risk assessment cadre present the IES risk assessment, IES findings, conclusions, and recommendations for review. After the QCC meeting, the Risk Cadre and RMC will certify that the risk estimate was completed in accordance with the Corps' current guidelines and risk management best practices. The IES will then be presented to the Senior Oversight Group (SOG). The SOG generally consists of the following members: Special Assistant for Dam Safety (Chair); CoP & Regional Representatives to include Geotechnical and Materials CoP Leader, Structural CoP Leader, and Hydraulics and Hydrologic CoP Leader; Regional representatives determined by Special Assistant for Dam Safety; Corps Business Line & Program Representatives to include DSPM, Flood Damage Reduction, Navigation, Programs, and Director, Risk Management Center; and any other Representatives determined by the Special Assistant for Dam

Safety. The District Dam Safety Officer (DSO), the MSC DSO, and the SOG Chairman will jointly approve the final IES after all comments are resolved.

### 3. Guidance and Policy References

- ER 5-1-11, USACE Business Process
- EC 1165-2-209, Civil Works Review Policy, 31 Jan 2010
- ER 1110-2-1156, Safety of Dams – Policy and Procedure, 28 Oct 2011
- ER 1110-1-12, Quality Management, 31 Mar 2011

### 4. Summary of Required Levels of Review

The dam safety program follows the policy review process described in EC1165-2-209, Civil Works Review Policy. The RMC will be the review management office for the ATR, and the RMC must certify that the risk assessment was completed in accordance with the USACE current guidelines and best risk management practices. A Quality Control and Consistency (QCC) review will be conducted including the district, MSC, and RMC. The district and the risk assessment cadre will present the IES risk assessment, IES findings, conclusions, and recommendations for review. After resolution of QCC review comments, the MSC and HQUSACE will complete quality assurance and policy compliance review.

### 5. Models

#### a. General

The use of certified or approved models for all planning activities is required by EC 1105-2-407. The EC defines planning models as any models and analytical tools that planners use to define water resources management problems and opportunities, to formulate potential alternatives to address the problems and take advantage of the opportunities, to evaluate potential effects of alternatives, and to support decision-making. The EC does not cover engineering models. Engineering software is being addressed under the Engineering and Construction (E&C) Science and Engineering Technology (SET) initiative. Until an appropriate process that documents the quality of commonly used engineering software is developed through the SET initiative, engineering type models will not be reviewed for certification and approval. The responsible use of well-known and proven USACE developed and commercial engineering software will continue and the professional practice of documenting the application of the software and modeling results will be followed.

**b. List**

Model	Status
HEC RAS	
MMC products for loss of life and economics derived from HEC RAS	

**6. Review Schedule**

Project Phase / Submittal	Review Start	Review Complete
DQC Review	4/7/2014	4/18/2014
ATR Review	5/12/2014	6/12/2014
Report Revisions and Back-check	6/13/2014	6/27/2014
Submit Report to QCC	6/30/2014	6/30/2014
QCC Review	6/30/2014	7/15/2014
Report Revisions	7/16/2014	7/31/2014
Submit Report to SOG	8/1/2014	8/1/2014
SOG Review	8/1/2014	8/18/2014
Report Revisions	8/19/2014	9/3/2014

**7. Public Participation**

Public participation will not take place until the IES phase is completed. Public and stakeholder coordination has been performed to inform interested parties about the DSAC 2 rating and ongoing IES. Findings of the Final IES will also be shared with appropriate stakeholders. If this project results in a Dam Safety Modification Study (DSMS), future public coordination will occur for NEPA compliance.

**8. Cost Estimate**

Task Description	Review Start	Review Cost
DQC Review	4/7/2014	\$34,000
ATR Review	5/12/2014	\$105,000
QCC Review	6/30/2014	\$100,000
SOG Review	8/1/2014	\$21,000

## 9. Execution Plan

### a. District Quality Control

#### i. General

DQC will be conducted after completion of the final draft IES. DQC requires both supervisory oversight and District technical experts. The district will conduct a robust DQC in accordance with EC 1165-2-209, Civil Works Review Policy, the District's Quality Management Plan, and ER 1110-2-12, Quality Management. Documentation of DQC activities is required and will be in accordance with the District and MSC Quality manuals. The DQC and ATR will be in series. Comments and responses from DQC will be available for the ATR team to review through ProjNet DrChecks.

#### ii. DQC Review and Control

The District DSAC Project Manager will schedule DQC review meetings. The in progress review meetings should include PDT members from Geotechnical, Dam Safety, Hydrology & Hydraulics, Structures, Mechanical, General Engineering, Cost Engineering, Project Management, Planning, and Operations as applicable. DQC Review will be conducted on the completed final draft IES including all Sections and Appendixes and will include comments, back-check and IES revisions. ProjNet DrChecks review software will be used to document reviewer comments, responses and associated resolutions. Comments should be limited to those that are required to ensure the adequacy of the product.

### b. Agency Technical Review

#### i. General

Draft ER 1110-2-1156, Chapter 8 describes the purpose, process, roles and responsibilities for an IES in addition to the submittal, review, and approval process. The Risk Management Center (RMC) is responsible for coordinating and managing agency technical review of the IES Report in accordance with EC 1165-2-209. The ATR Lead will be an RMC team member unless otherwise approved by the RMC Director. The ATR Lead in cooperation with the PDT, MSC, and vertical team will determine the final make-up of the ATR team.

#### ii. ATR Review and Control

Reviews will be conducted in a fashion which promotes dialogue regarding the quality and adequacy of the IES and baseline risk assessment necessary to achieve the purposes of the IES. The ATR team will review the IES report which includes supporting risk and stability analysis documentation. A QCC of the baseline risk estimate and supporting documentation will be performed under the leadership of the RMC.

Therefore, the level of effort for each ATR reviewer is expected to be between 16 and 32 hours. DrChecks review software will be used to document reviewer comments, responses and associated resolutions. Comments should be limited to those that are required to ensure the adequacy of the product. The RMC in conjunction with the MSC, will prepare the charge to the reviewers, containing instructions regarding the objective of the review and the specific advice sought. A kick off meeting will be held with the ATR team to familiarize reviewers with the details of the project.

The four key parts of a 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 plan selection, recommended plan components, efficiency (cost), effectiveness (function/outputs), implementation responsibilities, safety, Federal interest, or public acceptability.
- (4) The probable specific action needed to resolve the concern – identify the action(s) that the PDT must take to resolve the concern.

In some situations, especially addressing incomplete or unclear information, comments may seek clarification in order to then assess whether further specific concerns may exist. The ATR documentation in DrChecks will include the text of each ATR concern, the PDT response, a brief summary of the pertinent points in any discussion, including any vertical coordination, and lastly the agreed upon resolution. The ATR team will prepare a Review Report which includes a summary of each unresolved issue; each unresolved issue will be raised to the vertical team for resolution. Review Reports will be considered an integral part of the ATR documentation and shall also:

- (1) Disclose the names of the reviewers, their organizational affiliations, and include a short paragraph on both the credentials and relevant experiences of each reviewer.
- (2) Include the charge to the reviewers prepared by the RMC in accordance with EC 1165-2-209, 7c.
- (3) Describe the nature of their review and their findings and conclusions.
- (4) Include a verbatim copy of each reviewer's comments and the PDT's responses.

ATR may be certified when all ATR concerns are either resolved or referred to HQUSACE for resolution and the ATR documentation is complete. Certification of ATR should be completed, based on work reviewed to date, for the final report. A draft certification is included in Attachment 1.

**10. Review Plan Points of Contact**

<b>Name/Title</b>	<b>Organization</b>	<b>Email/Phone</b>
Mehdi Roshani, Project Manager	NWP-EC-DS	Mehdi.Roshani@usace.army.mil
Tom Bishop / Review Manager	CEIWR-RMC	thomas.w.bishop@usace.army.mil



ATTACHMENT 1

COMPLETION OF AGENCY TECHNICAL REVIEW

The Agency Technical Review (ATR) has been completed for the <type of product> for <project name and location>. The ATR was conducted as defined in the project's Review Plan to comply with the requirements of EC 1165-2-209. During the ATR, compliance with established policy, principles and procedures, utilizing justified and valid assumptions, was verified. This included review of: assumptions, methods, procedures, and material used in analyses, alternatives evaluated, the appropriateness of data used and level obtained, and reasonableness of the results, including whether the product meets the customer's needs consistent with law and existing US Army Corps of Engineers policy. The ATR also assessed the District Quality Control (DQC) documentation and made the determination that the DQC activities employed appear to be appropriate and effective. All comments resulting from the ATR have been resolved and the comments have been closed in DrChecks<sup>sm</sup>.

SIGNATURE

Name  
ATR Team Leader  
Office Symbol/Company

Date

SIGNATURE

Name  
Project Manager (home district)  
Office Symbol

Date

SIGNATURE

Name  
Architect Engineer Project Manager<sup>1</sup>  
Company, location

Date

SIGNATURE

Nathan Snorteland  
CEIWR-RMC

Date

CERTIFICATION OF AGENCY TECHNICAL REVIEW

Significant concerns and the explanation of the resolution are as follows: Describe the major technical concerns and their resolution. As noted above, all concerns resulting from the ATR of the project have been fully resolved.

SIGNATURE

Name  
Chief, Engineering Division (home district)  
Office Symbol

Date

SIGNATURE

Name  
Dam Safety Officer<sup>2</sup> (home district)  
Office Symbol

Date

<sup>1</sup> Only needed if some portion of the ATR was contracted.  
<sup>2</sup> Only needed if different from the Chief, Engineering Division.

**ATTACHMENT 2: TEAM ROSTERS**

**Table 1 - District PDT**

Role	Team Member	Phone #	Email Address
Project Manager	Mehdi Roshani	503-808-4988	Mehdi.Roshani@usace.army.mil
Project Engineer	Dave Scofield	503-808-4867	David.H.Scofield@usace.army.mil
Structural Engineer	Mehdi Roshani	503-808-4988	Mehdi.Roshani@usace.army.mil
Mechanical Engineer	James Boag	503-808-4927	James.M.Boag@usace.army.mil
Electrical Engineer	William Fortuny	503-808-4794	William.B.Fortuny@usace.army.mil
Geologist	Richard Gunsolus	503-808-4854	Richard.A.Gunsolus@usace.army.mil
Hydraulic Engineer	James Burton	503-808-4852	James.C.Burton@usace.army.mil
Dam Safety Engineer	Salina Hart	503-808-4894	Salina.N.Hart@usace.army.mil
Operations Engineer	Steven Gardner	541-367-5124	Steven.R.Gardner@usace.army.mil
Economist	TBD		

**Table 2 - District DQC Team**

Role	Team Member	Phone #	Email Address
Structural Engineer	Travis Adams	503-808-4954	Travis.M.Adams@usace.army.mil
Geologist	Jeremy Britton	503-808-4851	Jeremy.P.Britton@usace.army.mil
Hydraulic Engineer	James Crain	503-808-4838	James.D.Crain@usace.army.mil

**Table 3 - Risk Cadre**

Role	Team Member	Phone #	Email Address
Project Manager	Jenni Reichard		
Lead	Gabriela Lyvers		
Lead	Damon Amlung		

**Table 4 - RMC Points of Contact**

Role	Team Member	Phone #	Email Address
Senior Advisor	Rich Allwes		
Technical Advisor	Chris Hogan		

Table 5 – ATR Team

Role	Team Member	Phone #	Email Address
TBD	TBD		
TBD	TBD		

Table 6 – QCC Team

Role	Team Member	Phone #	Email Address
TBD	TBD		
TBD	TBD		