REVIEW PLAN

Revisions to Reservoir Regulation Manual

Cowanesque Lake
Tioga County, Pennsylvania

Baltimore District
U.S. Army Corps of Engineers

MSC Approval Date: 20 OCT 2014

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US Army Corps
of Engineers ®

TABLE OF CONTENTS

REVIEW PLAN
COWANESQUE LAKE
REVISIONS TO RESERVOIR REGULATION MANUAL

Paragraph & Title	Page
1. Purpose of Document	1
a. Purpose	1
b. Requirements	1
c. References	1
2. Review Management Organization	2
3. Background Information	2
a. Reservoir Regulation Manual	2
b. Project Description	2
c. Need for Revisions to Reservoir Regulation Manual	3
d. Factors Affecting Scope and Level of Review	4
e. Cost and Schedule	5
4. District Quality Control / Quality Assurance	5
a. Purpose	5
b. Process	
5. Agency Technical Review	5
a. Purpose	5
b. Process	5
c. ATR Team Expertise	6
d. Documentation	6
6. Independent External Peer Review	7
a. Purpose	7
b. Process	7
c. Decision on IEPR	9
7. Policy and Legal Compliance Review	9
8. Model Certification and Approval	9
a. Policy	10
b. Planning Models	10
c. Engineering Models	

9. Review Schedules and Costs 10
a. DQC Cost and Schedule 10
b. ATR Cost and Schedule 10
c. IEPR Cost and Schedule 10
d. Model Review Schedule and Cost 10

10. Public Coordination 10
a. Prior Activities 10
b. Current Activities 11

11. Review Plan Approval and Updates 11

12. Review Plan Points of Contact 11

Attachments

Attachment 1: Tasks, Schedules, and Costs 13
Attachment 2: Guidance and Charge to ATR Panel Members - *Draft* 14
Attachment 3: Team Rosters - *Preliminary* 19
Attachment 4: Statement of Technical Review 20
Attachment 5: Review Plan Revisions 22
Attachment 6: Abbreviations 23

REVIEW PLAN

COWANESQUE LAKE
REVISIONS TO RESERVOIR REGULATION MANUAL

1. PURPOSE OF DOCUMENT.

a. Purpose. The purpose of this Review Plan is to define the scope and level of peer review for updates and revisions to the existing Cowanesque Lake Reservoir Regulation Manual.

b. Requirements. Engineering Circular (EC) 1165-2-214, Water Resource Policies and Authorities - Civil Works Review, describes an accountable, comprehensive, life-cycle review strategy for Civil Works products. It establishes a seamless process for reviewing all projects progressing through the planning, design, and construction phases as well as through the operation, maintenance, repair, replacement and rehabilitation (OMRR&R) phases. The EC outlines four general levels of review: District Quality Control/Quality Assurance (DQC), Agency Technical Review (ATR), Independent External Peer Review (IEPR), and Policy and Legal Compliance Review.

Engineering Regulation (ER) 1110-2-240, Water Control Management, requires that all reservoirs, locks and dams, re-regulation and major control structures, and inter-related water resources systems have up-to-date regulation manuals. The water control plans contained in these manuals must be prepared with appropriate consideration given to all applicable Congressional Acts relating to operation of Federal facilities, i.e., Fish and Wildlife Coordination Act, National Environmental Policy Act, the Clean Water Act, etc. Recent litigation, court decisions, and U.S. Army Corps of Engineers (USACE) Office of Counsel opinions have determined that reservoir regulation manuals have the force of law.

Reservoir regulation manuals are therefore considered to be documents that require compliance with EC 1165-2-214. Guidance on the content and format of reservoir regulation manuals is also contained in ER 1110-2-8156, Preparation of Water Control Manuals, with additional guidance in Engineering Manual (EM) 1110-2-3600, Management of Water Control Systems. Information on water control plan development can also be found in ER 1105-2-100, Planning Guidance Notebook, and in ER 1165-2-119, Modifications to Completed Projects.

c. References.

- EC 1165-2-214, Water Resources Policies and Authorities, Civil Works Review, 15 December 2012.

- EC 1105-2-412, Assuring Quality of Planning Models, 31 Mar 2011.
- ER 1110-2-12, Quality Management, 30 Sep 2006.
- ER 1105-2-100, Planning Guidance Notebook, Appendix H, Policy Compliance Review and Approval of Decision Documents, Amendment #1, 20 Nov 2007.
- ER 1110-2-240, Water Control Management, 8 October 1982.
- ER 1110-2-8156, Preparation of Water Control Manuals, 31 August 1995.
- EM 1110-2-3600, Management of Water Control Systems, 30 November 1987.
- ER 1165-2-119, Modifications to Completed Projects, 20 September 1982.

2. REVIEW MANAGEMENT ORGANIZATION.

The Project Delivery Team (PDT) within the Baltimore District, Corps of Engineers (CENAB) has prepared this Review Plan. This Review Plan addresses the updates and revisions to the Cowanesque Lake Reservoir Regulation Manual in accordance with the requirements of EC 1165-2-214. The North Atlantic Division, Corps of Engineers (CENAD) is the Review Management Organization (RMO) for this effort and is responsible for managing the overall peer review described herein, to include approving this Review Plan and managing the ATR. Once approved, CENAB will post the Review Plan on its public website.

3. BACKGROUND INFORMATION.

a. Reservoir Regulation Manual. CENAB will prepare updates and revisions to the Cowanesque Lake Reservoir Regulation Manual (RRM) in accordance with ER 1110-2-240, ER 1110-2-8156, and EM 1110-2-3600. Assuming satisfactory completion of the DQC and ATR reviews, CENAD is the approving authority for this document. An IEPR is not considered to be necessary for this document for reasons described later in Section 6.

b. Project Description. Cowanesque Lake is a multiple purpose reservoir project constructed by the USACE. The reservoir is located on the Cowanesque River about two miles upstream of Lawrenceville in Tioga County, PA. The dam is 151 feet high and controls runoff from 298 square miles. The Cowanesque River is part of the Chemung River sub-basin which is, in turn, part of the larger Susquehanna River Basin draining 27,510 square miles in north-east Maryland, central Pennsylvania, and south-central New York. Cowanesque Lake contains about 54,875 acre-feet of flood control storage and about 29,875 acre-feet of conservation storage.

The original project was completed in 1980 to serve the Congressionally authorized purposes of flood risk management and recreation. Since completion, the project has prevented an estimated $283 million in flood damages (through FY 2013). Recently, recreation visitation has averaged about one million visitor-hours per year.

Following construction completion, a subsequent investigation resulted in the addition of a water supply purpose, including the reallocation of some flood control storage space to water supply storage space. Project modifications (primarily changes to the outlet tower configuration for accommodating the water supply storage space) were completed in 1990. Presently, the Susquehanna River Basin Commission (SRBC) owns about 23,500 acre-feet of dedicated water supply storage space in Cowanesque Lake. SRBC requests water supply releases from its storage space during low flow periods to compensate for downstream consumptive uses throughout the Susquehanna River Basin. Currently, SRBC makes such requests whenever observed flows at key stream gages fall below the annual Q7-10 values (average 7-day low flow occurring once in 10 years).

c. Need for Revisions to Reservoir Regulation Manual. The reservoir regulation manual for Cowanesque Lake was prepared in 1981 by CENAB and was then updated in 1983, 1990, and again in 2005. Revisions to the latest version are needed for several reasons:

- To update the format and style of the existing manual to meet current guidelines and regulations.
- To update various charts and plots to reflect trends since 2005.
- To update descriptions of data acquisition, processing, and dissemination methods to reflect current technology.
- To update contact and communication information.
- To revise the water supply release criteria to reflect changes requested by SRBC in support of its new basin wide low-flow management policies (i.e., to modify the water control plan).

This last item was the result of a joint Federal and non-federal study entitled "Ecosystem Flow Recommendations for the Susquehanna River Basin" published in 2010. The main objective of this study was to investigate the Basin's ecological flow needs (especially during low-flow periods) for the protection of species, natural communities, and key ecological resources. Important conclusions coming out of this study were the following: (1) seasonal flow recommendations are preferred to year-round flow recommendations because ecosystem flow needs are naturally seasonal, and (2) there should be no changes to the long-term monthly P95 flow rates (average flow for any particular month that is exceeded 95 percent of the time). This second recommendation was not meant to imply that the P95 flow rates should be maintained at all times; rather, it was meant to indicate that there should be no change to the P95 flow values shown on the monthly flow exceedance curves. In 2012, SRBC adopted a Low Flow Protection Policy reflecting these conclusions.

Subsequently, SRBC approached CENAB about a proposed change to the flow criteria for making releases from SRBC-owned water supply storage contained in Cowanesque Lake. SRBC requested this change so that water supply releases for consumptive use mitigation would be consistent with its recently adopted Low Flow Protection Policy. The proposed change would replace the existing annual Q7-10 trigger flow values for initiating water supply releases with monthly P95 flow values

to be applied only in the months of July, August, September, October, and November (JASON months). It is important to note that the actual release rate, once water supply releases begin, would be consistent with the existing water control plan.

d. Factors Affecting Scope and Level of Review. The consequences of the proposed change to trigger flow values were initially investigated by SRBC using an 'allowed for use' planning model called Operational Analysis and Simulation of Integrated Systems (OASIS), calibrated specifically for the Susquehanna River Basin. Subsequently, CENAB prepared its own assessment, confirming that the proposed adjustment would be feasible, would have no significant impact on Cowanesque Lake, and would support SRBC's low flow protection policies for the Susquehanna River Basin. The findings were coordinated with Federal, state, & local resource agencies and the public. Generally, respondents expressed strong support for the proposed adjustment. A final Environmental Assessment (EA) was published in August 2013 and a Finding of No Significant Impact (FONSI) was released in September 2013. A brief letter report summarizing the investigations, assessments, and reasons for the proposed change was prepared and furnished to CENAD in November 2013. By memorandum dated February 2014, CENAD concurred in the findings and recommendations and granted approval to proceed with revisions to the existing Cowanesque Lake Reservoir Regulation Manual.

With these analyses and documents as background, there are two types of changes anticipated within the revised Cowanesque Lake Reservoir Regulation Manual. The first type of change involves routine updates necessitated by continually evolving conditions. These routine updates will cover items such as: contacts (to revise names, phone numbers and email addresses); document format (to conform to recent guidance); charts/plots/tables (to reflect hydrologic data and trends observed since the last reservoir regulation manual update); and data acquisition/processing/dissemination methods (to reflect recent improvements in data management technology).

The second type of change involves minor adjustments to the existing water control plan to conform to SRBC's new Low Flow Protection Policy. Trigger flows for initiating releases from Cowanesque Lake water supply storage space will be changed from annual Q7-10 values to those triggers patterned after the JASON monthly P95 values . It is important to note that the adjustments to the trigger flow values will: (1) require no additional outlay of Federal or non-federal funds; (2) involve no physical changes or new construction; and (3) maintain the existing storage allocation among flood control, water supply, and government conservation.

Updates and revisions to the Cowanesque Lake Reservoir Regulation Manual are not expected to be challenging or controversial. There are minimal risks associated with these changes. Likewise, there are no increases in threats to human life/safety associated with the changes. The alterations to the trigger flow values for initiating water supply releases represent minor changes only to the timing of water supply releases and do not substantially change the flow rates themselves. The timing,

duration, and depth of water supply drawdowns in Cowanesque Lake may be altered slightly, and there will be slight improvements to the downstream environment with implementation of triggers patterned after the JASON monthly P95 flow values.

e. Cost and Schedule. A cost estimate and preliminary schedule have been prepared for tasks associated with updating and revising the Cowanesque Lake Reservoir Regulation Manual. The estimated cost of the entire effort is $70,000 (including reviews), and the estimated duration is 14 months (assuming a 1 May 2014 start date and a 30 June 2015 completion date). Attachment 1 displays the preliminary schedule, major tasks, and estimated costs.

4. DISTRICT QUALITY CONTROL/QUALITY ASSURANCE.

a. Purpose. The purpose of DQC is to perform an internal review of basic science and engineering work products in the revised Cowanesque Lake Reservoir Regulation Manual, with a focus on fulfilling project quality requirements. Per guidance contained in EC 1165-2-214, all such documents shall undergo DQC.

b. Process. CENAB shall manage the DQC process. The DQC shall be conducted by in-house and SRBC reviewers not directly involved in the revisions to the reservoir regulation manual. DQC activities shall be documented using DrChecks review software to record all DQC comments, responses, and associated resolutions accomplished throughout the review process. The DrChecks report containing the comments, responses, and resolutions will be provided to the ATR team along with a DQC certification.

5. AGENCY TECHNICAL REVIEW.

a. Purpose. The purpose of an ATR is to ensure consistency with established criteria, guidance, procedures, and policy. The ATR assesses whether the analyses are technically correct and comply with published USACE guidance. The ATR also assures that the document explains the analyses and results in a reasonably clear manner for the public and decision makers. A preliminary draft scope of work or "Charge" to the ATR team is included as Attachment 2.

b. Process. The ATR process will be managed within USACE by the designated RMO and will be conducted by a qualified team from outside the home district. The ATR team shall be comprised of senior USACE personnel and may be supplemented by outside experts as appropriate. The ATR team leader will be from outside of CENAD. The ATR shall be conducted according to guidelines set forth in this Review Plan and the Charge (Attachment 2). Certification of the ATR will be required before the CENAB Commander transmits the final Cowanesque Lake Reservoir Regulation Manual to CENAD for approval.

c. ATR Team Expertise. Two or three ATR team members will be required for the review of the Cowanesque Lake Water Control Manual. These team members shall have technical knowledge and expertise in the disciplines listed in the table below. Preferably, the ATR team leader will have extensive experience in water management at USACE reservoirs. The ATR team leader will use the "ATR Lead Checklist" and "ATR Charge Template" developed by the National Planning Centers of Expertise as resources when conducting the review.

ATR Team Members/Disciplines	Expertise Required
ATR Team Leader	The ATR team leader shall be a senior professional, preferably with experience in making water management decisions, in developing water control plans, in preparing reservoir regulation manuals, and in conducting ATR's. The team leader shall also have the skills and experience necessary to lead a virtual team through the ATR process. Typically, the ATR team leader shall also serve as a reviewer for a specific discipline (such as planning, hydraulics/hydrology, water management, economics, environmental resources, etc). The ATR team leader must be from outside CENAD.
Water Management	This reviewer shall be an expert in the field of water management, with a particular emphasis on daily operations at USACE multi-purpose reservoirs. This expertise shall include a thorough understanding of hydrology and hydraulics as it pertains to reservoir systems, especially systems containing contracted water supply storage.
Division Water Management	This reviewer shall be a member of CENAD senior staff so as to involve MSC personnel early in the process. This involvement is important so that final review and approval of the revised Cowanesque Reservoir Regulation Manual can be expedited upon completion of the ATR process.

d. Documentation. DrChecks review software will be used to document all ATR comments, responses and associated resolutions accomplished throughout the review process. 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:

- The review concern – identify the product's information deficiency or incorrect application of policy, guidance, or procedures;

- The basis for the concern – cite the appropriate law, policy, guidance, or procedure that has not been properly followed;
- 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; and
- The probable specific action needed to resolve the concern – identify the action(s) that the reporting officers 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 team coordination (the vertical team includes the CENAB, RMO, MSC, and HQUSACE), and the agreed upon resolution. If an ATR concern cannot be satisfactorily resolved between the ATR team and the PDT, it will be elevated to the vertical team for further resolution in accordance with the policy issue resolution process described in either ER 1110-2-12, Quality Management, or in ER 1105-2-100, Planning Guidance Notebook (Appendix H – Policy Compliance Review and Approval of Decision Documents), as appropriate. Unresolved concerns can be closed in DrChecks with a notation that the concern was elevated to the vertical team for resolution.

After the ATR documentation is completed, the ATR team leader shall prepare a Statement of Technical Review certifying that the issues raised by the ATR team have been either resolved or elevated to the vertical team. A sample Statement of Technical Review is included as Attachment 4. If all issues have been resolved, the CENAB Commander shall submit the final Cowanesque Lake Reservoir Regulation Manual, along with the ATR's Statement of Technical Review, to CENAD for approval. If significant unresolved issues remain, the vertical team shall make every effort to resolve them quickly so that the Cowanesque Reservoir Regulation Manual can be revised if necessary and submitted for CENAD approval in a timely manner.

6. INDEPENDENT EXTERNAL PEER REVIEW.

a. Purpose. The purpose of an IEPR is to conduct an independent review of documents where the proposed action and associated risk are of such magnitude that a critical examination by a qualified team outside the USACE is warranted. For example, the development of a controversial Master Manual for a large river basin where numerous alternatives are considered may fall into this category.

b. Process. A risk-informed decision, as described in EC 1165-2-214, is made as to whether IEPR is appropriate. IEPR panels will normally consist of independent, recognized experts from outside of the USACE in the appropriate disciplines,

representing a balance of areas of expertise suitable for the review being conducted. There are two types of IEPR's.

- Type I IEPR. Type I IEPR reviews are managed outside the USACE and are conducted on project studies. A Type I IEPR panel assesses the adequacy and acceptability of the economic and environmental assumptions and projections, project evaluation data, economic analysis, environmental analyses, engineering analyses, formulation of alternative plans, methods for integrating risk and uncertainty, models used in the evaluation of environmental impacts of proposed projects, and biological opinions of the project study. A Type I IEPR covers the entire decision document or action and will address all underlying engineering, economics, and environmental work, not just one aspect of the study. For decision documents where a Type II IEPR (Safety Assurance Review) is anticipated during project implementation, safety assurance shall also be addressed during the Type I IEPR per EC 1165-2-214.

  Reservoir regulation manuals may require a Type I IEPR if any of the following specific criteria are met:

  - The project involves a significant threat to human life/safety assurance;
  - There is a request by the Governor of an affected state for a peer review by independent experts;
  - The project requires an Environmental Impact Statement (EIS);
  - The project/study is likely to involve significant public dispute as to the size, nature, or effects of the project;
  - The project/study is likely to involve significant public dispute as to the economic or environmental cost or benefit of the project;
  - The information in the decision document or anticipated project design is likely to be based on novel methods, involve the use of innovative materials or techniques, present complex challenges for interpretation, contain precedent-setting methods or models, or present conclusions that are likely to change prevailing practices;
  - The project design is anticipated to require redundancy, resiliency, and/or robustness, unique construction sequencing, or a reduced or overlapping design construction schedule; and
  - There are other circumstances where the Chief of Engineers or Director of Civil Works determines that a Type I IEPR is warranted.

- Type II IEPR. Type II IEPR reviews, or Safety Assurance Reviews (SAR), are managed outside the USACE and are conducted on design and construction activities for hurricane, storm, and flood risk management projects or other projects where existing and potential hazards pose a significant threat to human life. A Type II IEPR panel conducts reviews of the design and construction activities prior to initiation of physical construction and, until construction activities are completed, periodically thereafter on a regular schedule. The reviews shall consider the adequacy, appropriateness, and acceptability of the design and construction activities in assuring public health safety and welfare.

A Type II IEPR is not usually anticipated for reservoir regulation manuals and water control plans unless they are integral to the design and construction phases.

c. Decision on IEPR. After reviewing IEPR criteria, the PDT determined that none of these criteria apply to the revisions being proposed for the Cowanesque Lake Reservoir Regulation Manual. The proposed changes appear to be consistent with the conditions and policies that would grant an exclusion from the requirement for a Type I IEPR. An exclusion from a Type I IEPR will be requested from HQUSACE.

7. POLICY AND LEGAL COMPLIANCE REVIEW.

All documents will be reviewed throughout the study process for their compliance with law and policy. Guidance for policy and legal compliance reviews is addressed in Appendix H, ER 1105-2-100. These reviews culminate in determinations that the recommendations in the reports and the supporting analyses and coordination comply with law and policy, and warrant approval or further recommendation to higher authority by the home MSC Commander. DQC and ATR augment and complement the policy review processes by addressing compliance with pertinent published Army policies, particularly policies on analytical methods and the presentation of findings.

8. MODEL CERTIFICATION AND APPROVAL.

a. Policy. Planning and water management models are defined as any mathematical models or analytical tools that planners and engineers 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. MSC Commanders are responsible for assuring that models used for all planning and water management activities are technically and theoretically sound, compliant with USACE policy, computationally accurate, and based on reasonable assumptions.

As part of the USACE Scientific and Engineering Technology (SET) Initiative, many planning and engineering models (including both USACE developed and commercially developed software packages) have been identified as preferred or acceptable for use on Corps investigations. The use of such certified/approved planning or water management models is highly recommended and should be used whenever appropriate. The selection and application of the appropriate models and the review of input and output data are still the responsibility of the users and are subject to DQC and ATR review.

b. Planning Models. SRBC used the OASIS planning model during its earlier low flow investigations for the Susquehanna River Basin. The OASIS model is an "Allowed for Use" model on the HH&C CoP software list. SRBC used the OASIS model to evaluate both the in-lake and downstream effects of various water supply release scenarios from its contracted water supply storage space in Cowanesque Lake. CENAB reviewed the input, output, and results of the OASIS model, and concurred in its application.

c. Engineering Models. None used.

9. REVIEW SCHEDULES AND COSTS.

a. DQC Cost and Schedule. CENAB will conduct the District Quality Control /Quality Assurance review. The review team will be assembled using in-house and SRBC staff members who are not directly involved in preparing the revisions to the Cowanesque Lake Reservoir Regulation Manual. See Attachment 1 for an overview of tasks, costs, and schedules. The DQC review is currently estimated to cost $10,000. The preliminary schedule indicates that the DQC review will occur in December 2014.

b. ATR Cost and Schedule. CENAD will set up and facilitate the conduct of the Agency Technical Review. CENAB and CENAD will work with the ATR Team Leader to ensure that adequate funding is available and is commensurate with the level of review needed. The ATR Team Leader shall provide organization codes for each team member and a responsible financial point of contact (CEFMS responsible employee) for creation of labor codes. Reviewers shall monitor individual labor code balances and alert the ATR Team Leader to any possible funding shortages. Any funding shortages will be negotiated on a case-by-case basis and in advance of a negative charge occurring.

See Attachment 1 for an overview of tasks, costs, and schedules. The ATR is currently estimated to cost $12,100. The preliminary schedule indicates that ATR activities will occur in February and March 2015.

c. Type I IEPR Cost and Schedule. Not applicable.

d. Model Review Schedule and Cost. Not applicable.

10. PUBLIC COORDINATION.

a. Prior Activities. Federal, state, and local resource agencies as well as the general public were involved the 2010 study entitled "Ecosystem Flow Recommendations for the Susquehanna River Basin". Following this effort, SRBC involved many of the same organizations and individuals in the development of its

"Low Flow Protection Policy" that established JASON monthly P95 flow values as triggers for consumptive use mitigation and then later in its own detailed investigation of potential impacts on its contracted water supply storage at Cowanesque Lake. SRBC also conducted a public workshop as part of its detailed investigation of Cowanesque Lake.

CENAB subsequently prepared an Environmental Assessment and FONSI concerning the in-lake, lake-side, and downstream impacts of changing the water supply release triggers from the annual Q7-10 values to triggers patterned after the JASON monthly P95 values. These documents were coordinated with the resource agencies and general public as well.

b. Current Activities. SRBC will be invited to participate on the PDT for revising the existing water control plan to accommodate the modified triggers for releases from water supply storage. If necessary, agencies with regulatory review responsibilities will be contacted for coordination as required by applicable laws and procedures. Copies of resource agency and public comments on CENAB's Environmental Assessment will be provided to the ATR team. No additional public meetings are anticipated because of the very minor nature of changes to the water control plan (i.e., slight changes to the timing, rate, and duration of water supply releases.

11. REVIEW PLAN - APPROVAL AND UPDATES.

The CENAD Commander is responsible for ensuring that this Review Plan is appropriate for the anticipated revisions to the Cowanesque Lake Reservoir Regulation Manual and also for approving this Review Plan. The Review Plan is a living document and may change as revisions to the Reservoir Regulation Manual progress. CENAB is responsible for keeping the Review Plan up-to-date. Significant changes to the Review Plan (such as changes to the scope and/or level of review) should be re-approved by the CENAD Commander following the process used for initially approving the plan. The latest version of the Review Plan, along with the CENAD Commanders' approval memorandum, will be posted on the CENAB's webpage.

12. REVIEW PLAN - POINTS OF CONTACT.

Questions and/or comments concerning this Review Plan can be directed to the following points of contact:

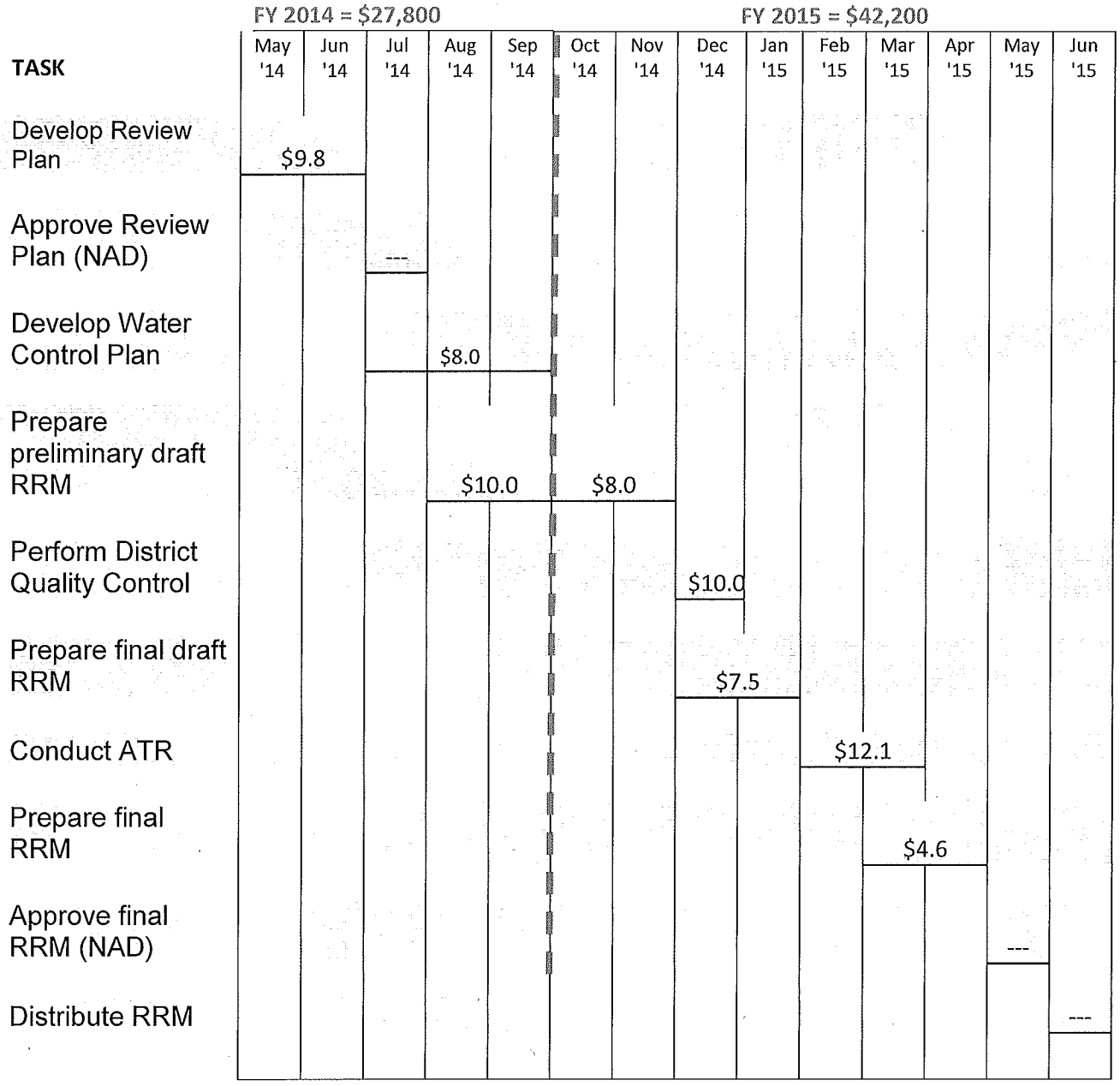
- J. William Haines, Water Manager, Water Resources Section, Civil Works Branch, Engineering Division, CENAB-EN-WW. James.W.Haines@usace.army.mil

- Philip Cwiek, Biologist, Natural Resources Management Specialist, Flood Risk Management Branch, Operations Division, CENAB-OP-FC. Phil.Cwiek@usace.army.mil

ATTACHMENT 1

TASKS, SCHEDULES, AND COSTS

COWANESQUE LAKE
REVISED WATER CONTROL PLAN & UPDATED RESERVOIR REGULATION MANUAL



ATTACHMENT 2

DRAFT

GUIDANCE AND CHARGE TO PANEL MEMBERS
AGENCY TECHNICAL REVIEW

REVISIONS TO RESERVOIR REGULATION MANUAL
COWANESQUE LAKE

BACKGROUND

It is the policy of the U.S. Army Corps of Engineers (USACE) that technical, scientific, and engineering information used to support recommendations contained in decision and implementation documents be thoroughly reviewed to ensure technical quality and practical application. Engineering Circular 1165-2-214, Civil Works Review, establishes an accountable, comprehensive, life-cycle review strategy for Civil Works products. Agency Technical Review (ATR) is an important component of this overall strategy, with such review to be conducted by USACE professionals outside the home District where the work was performed.

OBJECTIVE

The objective of this ATR is to conduct a thorough review of the recently revised Reservoir Regulation Manual for Cowanesque Lake, Tioga County, PA. The original Reservoir Regulation Manual for Cowanesque Lake was prepared in 1981 and subsequently updated in 1983, 1990, and 2005. A recent revision was completed in January 2015 (???), and it is the subject of the current ATR process.
This recent document contains a newly revised water control plan that includes modified criteria for making releases from the reservoir's dedicated water supply storage. The water supply storage is owned by a non-Federal sponsor (Susquehanna River Basin Commission - SRBC). SRBC has recently updated its basin-wide low flow management policy, employing new triggers for activating water supply releases during low flow conditions. The resulting changes to the water supply release triggers are now included in the Cowanesque Lake Reservoir Regulation Manual and are to be the primary focus of this ATR. Other minor changes to the Reservoir Regulation Manual include descriptions of improved data management techniques and communication methods as well as updated charts and graphs reflecting trends since the most recent update in 2005.

GENERAL GUIDANCE

The Project Delivery Team (PDT) for this project is comprised of employees from the Corps of Engineers, Baltimore District (CENAB) and the Susquehanna River Basin Commission (SRBC). The Review Management Organization (RMO) and facilitator for this ATR effort is the Corps of Engineers, North Atlantic Division (CENAD). CENAB/CENAD will provide an initial orientation briefing via webinar for ATR panel members. This briefing will furnish an overview of the need for and scope of revisions to the Cowanesque Lake water control plan and Reservoir Regulation Manual. No site visits are planned. It is anticipated that the review and comment/response process will be handled electronically, primarily through DrChecks review software. Conference calls and/or face-to-face meetings among ATR panel members can be arranged by CENAD, if needed.

The following general guidance concerning the development of water control plans and reservoir regulation manuals is available for consultation by ATR panel members during the review process.

- EC 1165-2-214 (Civil Works Review) - describes general procedures for ensuring the quality and credibility of USACE decision, implementation, and operations and maintenance documents and work products.
- ER 1110-2-240 (Water Control Management) - describes the policies to be followed by USACE in developing and carrying out water control management activities at Federal projects, including the establishment of water control plans that shall be continually reviewed, updated, and adjusted to ensure the best use of available water resources.
- ER 1110-2-8156 (Preparation of Water Control Manuals) – describes the format and procedures to be followed in preparing water control manuals.
- EM 1110-2-3600 (Management of Water Control Systems) – describes the management of the hydrologic/hydraulic aspects of completed projects to include collecting and handling of data, determining project inflow and outflow, scheduling releases for authorized project purposes, and coordinating water management decisions.
- ER 1165-2-119 (Modifications to Completed Projects) – describes methods for determining if/when changes to completed projects can be accomplished under existing authorities to better serve on-going water resource needs.

DOCUMENTS PROVIDED

The following documents and reference materials will be provided to the panel members conducting the ATR. The document presented in bold font is the only document to be reviewed for comment. All other documents are provided as background information or as reference for the convenience of the ATR panel members.

- **CENAB Master Manual for Reservoir Regulation, January 2015, Subject: Cowanesque River, Upper Basin, Susquehanna River Basin; Appendix F – Cowanesque Lake.**
- CENAB Review Plan, June 2014, Subject: Revisions to Reservoir Regulation Manual, Cowanesque Lake.
- CENAB Letter Report, Subject: Proposed Change to Water Control Plan, Cowanesque Lake, PA.
  - CENAB submittal - 14 November 2013.
  - CENAD approval - 11 February 2014
- CENAB Finding of No Significant Impact (FONSI), 4 Sep 2013, Subject: Cowanesque Lake Water Supply Releases to Cowanesque, Tioga, Chemung, and Susquehanna Rivers, PA & NY.
- CENAB Final Environmental Assessment, August 2013 (revised October 2013), Subject: Cowanesque Lake Water Supply Releases to Cowanesque, Tioga, Chemung, and Susquehanna Rivers, PA & NY.
- SRBC Letter, 30 May 2012, Subject: Application for Revised Plan of Operation for Water Supply Storage Owned by SRBC at Cowanesque Lake, PA.
- SRBC Report, May 2012, Subject: Optimizing Use of Commission-Owned Water Storage at Cowanesque Lake, PA.
- SRBC & CENAB Report, April 2012, Subject: Phase I, Section 729 Watershed Assessment, Susquehanna River Basin.
- The Nature Conservancy (TNC) Report, November 2010, Subject: Ecosystem Flow Recommendations for the Susquehanna River Basin.
- CENAB Master Manual for Reservoir Regulation, July 2005, Subject: Cowanesque River, Upper Basin, Susquehanna River Basin; Appendix F – Cowanesque Lake.

CHARGE TO ATR PANEL MEMBERS

ATR panel members shall review the revised Cowanesque Lake Reservoir Regulation Manual to "... ensure that the product is consistent with established criteria, guidance, procedures, and policy" (EC 1165-2-214, Appendix C, Section 3d(1), page C-2). Additionally, the ATR panel members shall examine the Reservoir Regulation Manual: (1) to assess the technical adequacy of the presented methods, assumptions, criteria, decision factors, applications, and explanations, and (2) to assure that information is presented in a reasonably clear manner for ease of understanding by water control managers and dam operators alike. Policy guidance and technical requirements are contained in the USACE references cited above in "General Guidance".

The primary focus of this ATR shall be on project operations to satisfy water supply needs identified by SRBC - the non-Federal cost-sharing sponsor for water supply storage contained within Cowanesque Lake. SRBC has conducted extensive low flow

studies within the Susquehanna River Basin (see Documents Provided above), and has determined that low flow protection would be better served if the current criteria for activating water supply releases were modified. It is important to note that such modifications are merely operational changes; there is no new construction, no reallocation of storage, and no outlay of Federal or non-Federal funds.

Other aspects of Cowanesque Lake operations for flood risk reduction and recreation have not changed substantially since the previous Reservoir Regulation Manual was published in July 2005. ATR panel members may consider these other project purposes and offer comments as appropriate, especially as they might relate to water supply operations.

ATR panel members shall use the DrChecks software to offer review comments and provide for continuity of the review record. Review comments shall follow the normal four-part comment structure.

- Review concern – identify product's information deficiency or incorrect application of policy, guidance, or procedures.
- Basis for the concern – cite appropriate law, policy, guidance, or procedure that has not been properly followed.
- Significance of the concern – indicate importance of concern with regard to project operation, efficiency, effectiveness, safety, Federal interest, or public acceptability.
- Probable specific action needed to resolve the concern – identify actions needed to satisfactorily resolve the concern.

ATR panel members shall back check PDT responses to their comments and may either close the comments or attempt to resolve any remaining issues. Conference calls can be used to address incomplete or unclear information before determining whether further specific concerns may exist. Summaries of these discussions shall be included in the back check documentation included in DrChecks. Identifying a comment as "Critical" in DrChecks indicates a concern that is significant and could affect policy conformance or technical validity of information contained in the Reservoir Regulation Manual. ATR panel members shall advise the ATR Team Leader of any unresolved issues where the PDT and ATR panel members "agree to disagree" as well as flag any "critical" comments.

Grammatical comments shall not be submitted in DrChecks. Grammatical comments shall be submitted to the ATR Team Leader via email as a Word document in track changes format or as a separate Word document that outlines the comments. The ATR Team Leader shall consolidate these grammatical comments and provide them to the PDT outside of DrChecks.

At the conclusion of the ATR, the ATR Team Leader shall prepare a statement of technical review and certification documenting the completion of the process. This statement shall include signatures from the ATR Team Leader, RMO, Project Manager,

and senior level staff (for sample, see EC 1165-2-214, Appendix C, Attachment C-1, page C-10).

ATTACHMENT 3

PRELIMINARY
TEAM ROSTERS

Include contact information for the DQC, PDT, ATR team, and MSC. The credentials and years of experience for the ATR team should be included when it is available.

Product Delivery Team Roster			
Team Member	Expertise	Telephone	Email
J. William Haines	Water Management, Project Management, Planning, Civil Engineering	410-962-6768	James.W.Haines@usace.army.mil
Philip Cwiek	Natural Resources Management, Environmental Stewardship, Recreation, Regulatory Permits	410-962-6010	Phil.Cwiek@usace.army.mil
George Lazorchick	Civil Engineering Hydrology & Hydraulics	717-238-0425	GLazorchick@srbc.net

District Quality Control Team Roster			
Team Member	Expertise	Telephone	Email
Barry Flickinger	Water Management Hydrology & Hydraulics	410-962-6777	Barry.M.Flickinger@usace.army.mil
Joseph Ignatius	Project Operations, Flood Risk Management	410-962-6043	Joseph.C. Ignatius@usace.army.mil
John Balay	River Basin Management	717-238-0425	JBalay@srbc.net

ATR Team Roster – **Review Panel Members**			
Team Member	Expertise	Telephone	Email
Ralph LaMoglia	Water Management	347-370-4599	Ralph.A.Lamoglia@usace.army.mil
Trent Ferguson	ATR Lead	404-562-5128	Trent.L.Ferguson@usace.army.mil

ATTACHMENT 4

STATEMENT OF TECHNICAL REVIEW

COMPLETION OF AGENCY TECHNICAL REVIEW

The Agency Technical Review (ATR) has been completed for the update of the reservoir regulation manual for Cowanesque Lake, PA. . 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[sm].

SIGNATURE — Date
Trent L. Ferguson
ATR Team Leader
CESAD-RBT

SIGNATURE — Date
J. William Haines
Project Manager , Baltimore District
CENAB-EN-WW

SIGNATURE — Date
Ralph LaMoglia, P.E.
North Atlantic Division
CENAD-RBT

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
Ronald J. Maj, P.E.
Chief, Engineering Division
Baltimore District
CENAB-EN

Date

ATTACHMENT 5

REVIEW PLAN REVISIONS

Revision Date	Description of Change	Page / Paragraph Number

ATTACHMENT 6

ABBREVIATIONS

ATR	Agency Technical Review
CENAB	Baltimore District, Corps of Engineers
CENAD	North Atlantic Division, Corps of Engineers
DQC	District Quality Control/Quality Assurance
EA	Environmental Assessment
EC	Engineering Circular
EIS	Environmental Impact Statement
EM	Engineering Manual
ER	Engineering Regulation
FONSI	Finding of No Significant Impact
HH&C CoP	Hydraulics, Hydrology and Coastal Community of Practice
HQUSACE	Headquarters, U.S. Army Corps of Engineers
IEPR	Independent External Peer Review
JASON Months	Months of July, August, September, October, & November
OMRR&R	Operation, Maintenance, Repair, Replacement, and Rehabilitation
MSC	Major Subordinate Command
OASIS	Operational Analysis and Simulation of Integrated Systems (model)
P95	Average flow for a particular month that is exceeded 95% of the time
PDT	Project Delivery Team
Q7-10	Average 7-day low flow occurring once in 10 years
RMO	Review Management Organization
RRM	Reservoir Regulation Manual
SET	Science and Engineering Technology
SAR	Safety Assurance Review
SRBC	Susquehanna River Basin Commission
USACE	U.S. Army Corps of Engineers