REVIEW PLAN

Reno Bottoms Habitat Rehabilitation and Enhancement Project
P2# 472235
Design and Implementation

U.S. Army Corps of Engineers
St. Paul District

MSC Approval Date:
Reapproval Required Date:
Last Revision Date:

ENDORSED BY:

[redacted]

AUGUST W. MARTIN, P.E.
Chief, Engineering and Construction Division

DATE

APPROVED BY:

[redacted]

BETH C. FLEMING, PhD, SES
Director, Regional Business

DATE

IMPLEMENTATION REVIEW PLAN

Mississippi River Reno Bottoms Habitat Rehabilitation and Enhancement Project
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1. PURPOSE AND REQUIREMENTS

1.1. **General.** This review plan defines the scope and level of review for implementation documents developed for the Mississippi River Reno Bottoms, Habitat Rehabilitation and Enhancement Project (HREP). Reviews required to be performed for this project are discussed herein. The implementation documents for review under this review plan are the Plans and Specifications (P&S), and the Design Documentation Report (DDR).

1.2. **References**

(1) Engineer Regulation (ER) 1165-2-217, Civil Works Review Policy, 01 May 2021
(2) Engineer Regulation (ER) 415-1-11, Biddability, Constructability, Operability, Environmental, and Sustainability (BCOES) Reviews, 01 Jan 2013
(3) Engineer Regulation (ER) 1105-2-100, Planning Guidance Notebook, 22 Apr 2000
(4) Engineer Regulation (ER) 5-1-11, USACE Business Process, 31 Jul 2018
(5) MSC and/or District Quality Management Plan(s) (https://usace.dps.mil/sites/INTRA-MVP/SitePages/QM.aspx)
(6) Reno Bottoms Habitat Rehabilitation and Enhancement Project Feasibility Report and Integrated Environmental Assessment approved on February 16, 2023.
(7) Project Management Plan – Reno Bottoms Habitat Restoration and Enhancement Project dated 22 November 2022.

2. PROJECT INFORMATION

The 14,000-acre Reno Bottoms site is located at the border of Minnesota and Iowa in a backwater area of Pool 9 of the Mississippi River between Lock and Dams 8 and 9. The main channel of the Mississippi River flows along the eastern side of Reno Bottoms. The land is owned by the Federal government and managed by the US Fish and Wildlife Service's Upper Mississippi River National Wildlife and Fish Refuge (Refuge). The Refuge was established by Congress to provide habitat for many migratory waterfowl, waterbirds, fish, and other wildlife species threatened by commercial and industrial development, as well as to provide educational and recreational opportunities to the public.

The important and unique floodplain forest, marsh wetland, side channel, and backwater lake habitat of the Reno Bottoms project area has experienced significant degradation over the last century and is predicted to further degrade over the coming decades. Several factors including: altered hydrology, historic and current land use, invasive species, disease, and herbivory have reduced the resilience and diversity of the forest community. Degradation of backwater and channel habitats in the Reno Bottoms study area has also occurred because of increased flooding, sediment deposition, and side channel development.

The primary objective of the project is to protect, enhance, restore, or create naturally regenerating, resilient, and diverse bottomland forest habitat, prioritizing connectivity to existing bottomland forest habitats and expanding interior forest conditions. Bottomland forest habitat is vital to wildlife such as birds, mammals, amphibians, insects, and reptiles that rely on the floodplain for food, shelter, rest, or breeding and enhancing forest habitat directly benefits those species. The two secondary objectives are a) protect, enhance, restore, or create backwater habitats, and provide flow conditions and sediment dynamics that will benefit native fish and mussel populations that live in or depend on, those habitats and b) protect, enhance, restore, or create flowing channel habitats to provide flow conditions and sediment dynamics that will benefit native fish and mussels that live in, or depend on, those habitats. Priority was placed on achieving the primary forestry objective while simultaneously considering ways to achieve secondary objectives in a manner that supported and complemented the primary objective.

The Project Delivery Team identified a variety of measures that could be taken to achieve project objectives, including water level management structures, forest management actions, and geomorphic modifications, including elevation of the floodplain forest. The measures were combined in various logical combinations to form 13 alternative project plans.

The results of the National Environmental Policy Act analysis, incremental cost analysis, habitat evaluation, and criteria evaluation (effectiveness, completeness, cost-effectiveness, acceptability, constructability) were all considered in the decision-making process. The “best-buy” Alternative D1 “Keystone Features with Aquatic Diversity” best met the study objectives, is the national ecosystem restoration plan, the max benefits plan across all benefit categories and is supported by the Project Sponsor, the US Fish and Wildlife Service. For those reasons, Alternative D1 was identified as the Recommended Plan.

The Recommended Plan, shown in Figure 1, would increase the quality and extent of floodplain forest habitat and expand fisheries overwintering habitat within the study area. Work would include the following features: forest management (546 acres), two elevation enhancement and forest management areas (56 acres), construction of a rip rap partial closure at Ice Haul Slough inlet, creation of two overwintering habitat areas (over 27 acres), and side and interior channel discharge monitoring. The Recommended Plan addresses project objectives and would be 100% federally funded. Total project first cost is $39 million in FY 23 price levels (total, fully funded project cost estimate of $43.6 million), with 228 average annual habitat unit gain, and a cost of $6,248 per average annual habitat unit. The Recommended Plan was designed to be resilient under future conditions and incorporates highly effective restoration measures to restore high quality and valuable floodplain forest to the Upper Mississippi River.

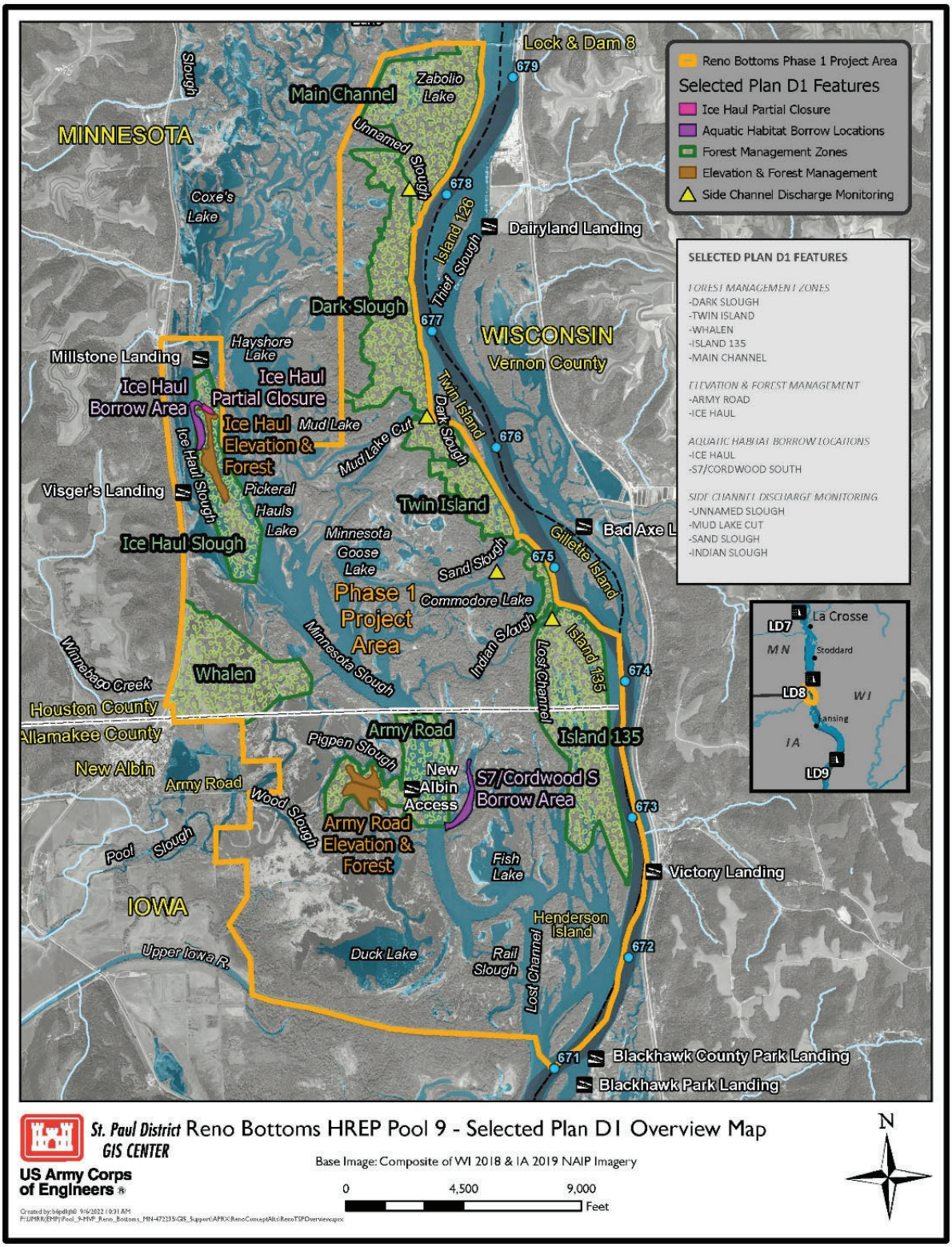

Figure 1. Mississippi River, Reno Bottoms HREP (U.S. Army Corps of Engineers, Jan 2023)

3. REVIEW MANAGEMENT ORGANIZATION (RMO)

The RMO for this project is the Mississippi Valley Division (MVD). The RMO will assure that an Agency Technical Review (ATR) team is assembled in accordance with this review plan. The RMO will review the ATR report and sign the accompanying completion statement at the completion of the ATR.

4. DISTRICT QUALITY ASSURANCE (DQA)

General. The St. Paul District has elected to have an A-E firm complete the design, plans, specifications, and assistance during solicitation.

All documents (including supporting data, analyses, reports, and designs, etc.) shall undergo District Quality Assurance (DQA) in accordance with ER 1165-2-217. The St. Paul District shall perform these minimum required reviews in accordance with the District's Quality Management Plan.

The A-E will conduct Quality Control (QC) on their analyses, data, reports, designs, plans and technical specifications. The A-E's Contractor Quality Control Plan is documented in the Task Order scope of work and will be made available upon request.

The St. Paul District will conduct DQA reviews on the AE's products and QC. The DQA reviews will consist of formal DQA reviews. All reviews will be performed and documented in accordance with ER 1165-2-217, and the district's quality manual. All formal reviews will be documented using DrChecks and certified.

St. Paul District isn't developing the design, plans, specifications, assistance during solicitation. Therefore, it is appropriate for the Technical Lead to also serve as the DQA Lead. For this project, the purpose of the MVP PDT is to perform DQA reviews. The DQA team members and review schedules are shown in **Attachment 1 – DQA Team Members.**

4.1 General.

The DrChecks comments and resolutions to the comments will serve as documentation for the DQA reviews. The A-E's QC comments and their resolutions will be provided to the ATR team so that the ATR team can determine whether an adequate QC was performed by the A-E. The sample certification sheet found in ER 1165-2-217 will be used to certify the A-E QC review effort.

4.2 Contractor Quality Control/Assurance.

The A-E Contractor is responsible for their own internal design quality assurance/quality control processes, including quality check documentation. The A-E Contractor is responsible for submitting the Quality Control Plan(QCP) to the Saint Paul District prior to contract award. The QCP must describe the processes and procedures for quality control reviews and demonstrate how the

contractor will follow the quality control requirements.

5. BIDDABILITY, CONSTRUCTIBILITY, OPERABILITY, ENVIRONMENTAL, AND SUSTAINABILITY (BCOES) REVIEW

BCOES review is not considered part of DQA. BCOES considerations are included in DQC and other reviews. DQA is conducted separately to ensure that quality control measures are effective in producing a work product that meets the desired end quality. BCOES reviewers may also serve as DQA members.

According to ER 415-1-11, the BCOES review will be accomplished as a combined on-board functional review by senior representatives from applicable functional areas or various disciplines.

5.1.General. The BCOES reviews will be performed and documented in accordance with ER 415-1-11.

5.2.Team Members and Schedule. The BCOES reviews will be performed as shown in **Attachment 2 – BCOES Team Members and Schedule**. The BCOES team members are also shown in this attachment. DrChecks comments and resolutions to the comments will serve as documentation for the BCOES review.

6. AGENCY TECHNICAL REVIEW (ATR)

6.1 General. The ATR team is assembled. The ATR team will perform and document the review in accordance with ER 1165-2-217. The ATR Lead is selected from outside MVD, and the team members are selected from outside of the district that's performing the design. Each ATR reviewer will be required to submit at least one comment. If a reviewer has no comment, the reviewer will be required to enter a "no comment" so that it validates the reviewer participated in the plan.

6.2. Review Cost and Schedule. The total anticipated cost of the ATR is approximately $30,000.00. This includes all stages of the required reviews as shown in the review schedule in **Attachment 3 - ATR Team Members and Expertise and Schedule**.

6.3. ATR Report. After each scheduled ATR, the ATR Lead will produce an ATR review report in accordance with ER 1165-2-217. The final report, which will be a compilation of all ATR reports, will be submitted to the RMO for review and signature of the accompanying ATR statement of completion. The district will then complete and sign a certification of ATR. Sample statements of completion and certification of ATR are shown in **Attachment 4 - Completion of Agency Technical Review and Attachment 5 - Certification of Agency Technical Review.**

6.4. Required Disciplines and Expertise of ATR members. The Primary objective of the project is to protect, enhance, restore, or create naturally regenerating, resilient, and diverse bottomland forest habitat, prioritizing connectivity to existing bottomland forest habitats and expanding interior forest conditions. Two secondary objectives are a) protect, enhance restore, or create backwater habitats, and provide flow conditions and sediment dynamics that will benefit native fish and mussel populations that live in or depend on, those habitats and b) protect, enhance, restore, or create flowing channel habitats to provide flow conditions and sediment dynamics that will benefit native fish and mussels that live in, or depend on, those habitats. ATR team members and their expertise that qualified them as ATR team members in their specific discipline are shown in **Attachment 3 - ATR Team Members and Schedule**.

6.4.1. **ATR Lead.** The ATR team lead will be from outside the home MSC and will have extensive experience in conducting ATRs, leading virtual teams through the ATR process, and preparing ATR reports. The ATR lead is also serving as the Environmental reviewer.

6.4.2. **Discipline 1** - General Civil Engineer with a minimum of 15 years of experience in design, review and construction of large river eco-restoration type features including siting and layout, clearing/grubbing, grading, drainage, and quantities.

6.4.3. **Discipline 2** - Hydraulics and Hydrology with a minimum of 15 years of experience of providing hydraulic analysis, design, and managing eco-restoration projects.

6.4.4. **Discipline 3** – Environmental biologist with a minimum of 15 years of experience in environmental compliance, design and construction of habitat type projects on large river systems.

6.4.5. **Discipline 4 -** Geotechnical Engineer with a minimum of 15 years of experience, including design and construction of riverine habitat rehabilitation and enhancements such as artificial islands and rock sills and protection structures in marine environments.

6.4.6.

	Enviro	Geotech Engr	H&H	Lead/Civil
ATR 95% P&S Review	X	X	X	X

7. SAFETY ASSURANCE REVIEW (SAR)

The district's chief of engineering has determined that a SAR is not required for this project. The signed memo justifying the rationale not to conduct a SAR is shown in **Attachment 6 - Rationale not to conduct a SAR.**

8. REVIEW PLAN APPROVAL AND UPDATES

1.1. Approval.

The review plan is approved by the MSC commander or a designated official. It will have the endorsement of the district, the RMO, and MVD engineering and construction division chief prior to being submitted for approval.

1.2. Updates.

The review plan is a living document and will be revised as necessary throughout the design phase. Minor revisions do not require reapproval and are documented using the table in **Attachment 7 – Review Plan Revisions**. If major revisions such as a change in scope of the project or change in the review levels are necessary, the review plan will be submitted for reapproval.

9. REVIEW PLAN POINTS-OF-CONTACT

The following are the points of contact for this review plan:

District POC: Dan Reburn, Project Manager, MVP-PM-B, (651) 262-8649.
MVD DST: Samantha Thompson, District Support Team, MVD, CEMVD-PD-SP, (601) 631-5478.

ATTACHMENT 1 – DQA TEAM MEMBERS AND SCHEDULE

DQA MILESTONE REVIEW SCHEDULE

ITEM	BEGIN DATE – END DATE
65% DQA Team Review for P&S, DDR, etc.	29 Feb 2024 – 29 Mar 2024
95% DQA Team Review for P&S, DDR, etc.	28 Jun 2024 – 26 Jul 2024

DQA PDT MEMBERS AND EXPERTISE

DQA Members/Disciplines	Description of Credentials
Project Manager Dan Reburn	Project Manager with 13 years of experience working on the Upper Mississippi River. Served as a PDT member on Pool 8 Islands, Capoli, Harper's Slough, McGregor Lake, Lower Pool 10 and Pool 4 Big Lake HREP's providing forestry expertise.
Cost & Spec Engineer Sally Swenson, P.E.	Cost, specification, and civil engineer with approximately 20 years of experience in civil, municipal, and stormwater engineering, as well as project management, construction inspection, and environmental remediation and compliance. Licensed professional engineer in the state of Wisconsin.
Civil Engineer Paul Morken	Civil Engineer with extensive experience in design of flood risk management and habitat restoration projects including grading, mass balance, and quantity calculation.
Geotechnical Engineer Luke Schmidt, P.E.	Geotechnical Engineer with 14 years of experience in design of civil works projects, all with USACE. Has worked on wide range of PDT's for eco-restoration along the Upper Mississippi River.
Hydraulic Engineer Charles Boyd, P.E.	Licensed civil engineer (MN) with over 14 years of experience providing hydraulic modeling, levee and dam safety analysis, and design of various hydraulic structures.
Tech Lead and DQA Review Lead Ryan Frykman, P.E.	Licensed environmental engineer in the state of MN. Certified as a Project Management Professional (PMP). Bachelor's and Master's of Science degrees in environmental engineering. Serving as tech lead with St. Paul District since October 2022. Previously served as an active duty USACE officer for nine years with a wide variety of experience in operational and leadership roles.

Environmental/Biologist Megan McGuire	Regional Technical Specialist for Environmental Planning with 13 years of experience with the St. Paul District Corps of Engineers. Habitat restoration experience including McGregor HREP, Reno HREP, and Pigs Eye HREP.
Real Estate Specialist Denita Wesley	Real Estate Specialist with over 19 years of experience acquiring land in accordance with the 49 CFR Part 24, the Uniform Relocation Assistance and Real Property Acquisition for Federal and Federally Assisted Programs.
Toni Wasgatt Contract Specialist	Contract Specialist with over 15 years of experience in Inventory Management, Acquisition, and Contract Administration of Department of Army contracts for supplies, services, and civil works construction. MBA and Level III DAWIA Contracting certification.
Kurt Schroeder Channel Maintenance Coordinator	Acting channel maintenance coordinator and permanent surveyor with channels and harbors for 10 years. M&R surveyor/inspector for construction and maintenance projects.

ATTACHMENT 2 – BCOES TEAM MEMBERS AND SCHEDULE

BCOES REVIEW SCHEDULE

ITEM	BEGIN DATE – END DATE
100% BCOES Review	31 Jul 2024 – 5 Sept 2024

BCOES REVIEW TEAM MEMBERS AND EXPERTISE

BCOES Team Members/Disciplines	Description of Credentials
Biddability Toni Wasgatt	Contract Specialist with over 15 years of experience in Inventory Management, Acquisition, and Contract Administration of Department of Army contracts for supplies, services and civil works construction. MBA and Level III DAWIA Contracting certification.
Constructability John Henderson	Civil engineer currently serving as contracting officer representative (COR) on Harper's Slough Island Repairs and McGregor Lake Habitat Rehabilitation and Enhancement Projects; projected as COR for Upper Pool 4 Section 1122 project. Master's degree in civil engineering with a minor in natural resource conservation.
Operability Kurt Schroeder	Acting channel maintenance coordinator and permanent surveyor with channels and harbors for 10 years. M&R surveyor/inspector for construction and maintenance projects.
Environmental Megan McGuire	Biologist with the USACE, with 5 years of experience in environmental compliance, planning, design and construction of civil works projects. Master's degree of Science - Biology, Aquatic Science Concentration.
Sustainability Representative Jim Sentz	Chief of Design Branch, Professional Engineer (Civil) Engineer with over 35 years' experience in all types of Civil Works Projects.

- **Note –** OC will also participate in the BCOES review.

ATTACHMENT 3 - ATR TEAM MEMBERS AND EXPERTISE AND SCHEDULE

ATR REVIEW SCHEDULE

ITEM	DATE
95% ATR	28 Jun 2024 – 26 Jul 2024

ATR MEMBERS AND EXPERTISE

ATR Team	Description of Credentials
Jason W. Farmer Environmental	Mr. Farmer has over 16 years of experience with Civil Works, Military and Emergency Operations programs and projects within the U.S. Army Corps of Engineers, Kansas City and St. Louis Districts. ATR certified Environmental Compliance Reviewer. ATR certified Ecosystem Restoration Reviewer. Approved as a USACE Water Resources Certified Planner. Served as ATR reviewer on design and construction of habitat type projects on large river systems. Primary roles have included Program and Project Manager, Chief of Environmental Resources Section, Acting Planning Branch Chief for Kansas City District, National Environmental Policy Act Specialist, Biologist, and Environmental Planner. Examples of high profile programs/projects that Jason has led and participated in include the Kansas City Section 408 Program, Mississippi River Navigation and Ecosystem Sustainability Program, Louisiana Coastal Area Ecosystem Program, Missouri River Habitat Assessment and Monitoring Program, Missouri River Recovery Program/Management Plan (EIS, BA, Bi-Op, Am Plan), Missouri River PL 84-99 Program, Ecosystem surveys for Ft Leavenworth and Ft Leonard Wood, NEPA for Ft Leavenworth and Ft Leonard Wood, National Geospatial-Intelligence Agency EIS, NWK Operations Lake Master Plan revision, and FRM PACR support for St Joseph Levees, Kansas City Levees, and St Louis Metropolitan Levee System.
William Otero Hydraulic Engineer	15 years of experience as a civil/hydraulic engineer and currently serves as a Senior Hydraulic Engineer for the Kansas City District in the Hydrology and Hydraulic Section of the Hydrologic Branch. . His expertise includes proficiency in the use of numerical and statistical methods to analyze turbulent behavior in open channel flows. He has designed and technically reviewed shallow habitat restoration, streambank restoration and flood risk management projects. He is a licensed Professional Engineer.
Phillip “Reed” Brown Geotechnical Engineer	Currently the Chief of the Geotechnical Design and Dam Safety Section with 17 years of experience with the Corps. He is a registered Professional Engineer, with geotechnical engineering, risk assessment, and construction experience with the Kansas City District. Have previously served as an ATR reviewer for Mississippi River island projects located at Bass Ponds HREP, Upper Pool 4 Section 1122 and McGregor Lake HREP. A licensed Professional Engineer in the state of Missouri.

Ron Jansen ATR Lead & Civil Engineering	Civil Engineer / Planner / Project Manager. 4 years civil, site, utilities, pumps and piping experience in private sector and 20 years of similar technical / design / tech lead experience with the Corps, culminating as a Regional Technical Specialist. Currently a senior Planner / Project Manager with 7 years total PM / planning experience. Mr. Jansen has worked across all three business lines (Civil, Military, HTRW) and is a licensed Professional Engineer in Kansas. In addition, I have managed several large and complex specifically authorized flood control studies, the Section 205 and Planning Assistance to States programs, and a variety of environmental continuing authority projects. Have served as Lead/Civil on previous HREP projects reviewing design and construction of large river eco-restoration type features including siting and layout, clearing/grubbing, grading, drainage, and quantities.

ATTACHMENT 4 – SAMPLE COMPLETION OF AGENCY TECHNICAL REVIEW

The Agency Technical Review (ATR) has been completed for Mississippi River Lower Pool 10 HREP – Design and Implementation. The ATR was conducted as defined in the project review plan to comply with the requirements of ER 1165-2-217. 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 U.S. Army Corps of Engineers policy. The ATR also assessed the A-E – Contractor Quality Control Plan and the District Quality Assurance (DQA) documentation and made the determination that the A-E QC 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

Ronald Jansen
ATR Team Leader
CENWK-PMP-F

Date

SIGNATURE

Name
Title
A-E Firm

Date

SIGNATURE

Dan Reburn
Project Manager
CEMVP-PM-B

Date

SIGNATURE

Name
Review Management Office Representative
CEMVD-RBT

Date

ATTACHMENT 5 – SAMPLE CERTIFICATION OF AGENCY TECHNICAL REVIEW

CERTIFICATION OF AGENCY TECHNICAL REVIEW

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

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

SIGNATURE

Michael R. Knoff, P.E.
Chief, Engineering and Construction Division
CEMVP- EC

Date

ATTACHMENT 6 – RATIONALE NOT TO CONDUCT A SAFETY ASSURANCE REVIEW

SUBJECT: Rationale Not to Conduct a Safety Assurance Review (SAR) for Reno Bottoms Habitat Rehabilitation and Enhancement Project HREP – Design and Implementation for Stage 1.

1. This memorandum documents the rationale used in determining that the subject project does not benefit from conducting a SAR.

2. Project Background. The Feasibility Report was approved on 16 February 2023 and the Finding of No Significant Impacts document (FONSI) was signed 16 May 2023.

Phase 1 of the Reno Bottoms HREP proposed consists of forest management on 546 acres, elevation enhancement and forest management of 56 acres, construction of a rip rap partial closure at Ice Haul Slough inlet, overwintering habitat creation over 27 acres, and side and interior channel discharge monitoring.

Reno Bottoms HREP is an environmental project that will protect, enhance, restore, or create naturally regenerating, resilient, and diverse bottomland forest habitat, prioritizing connectivity to existing bottomland forest habitats and expanding interior forest conditions.

3. The following factors were evaluated by the Project Delivery Team (PDT) and are discussed below:

a. Significant threat to human life: The failure of this project would not pose a significant threat to human life. The greatest risk to individual features is that there would be island erosion due to extended high water events or significant sediment filling in the overwintering areas.

b. Use of innovative materials or techniques: There are no innovative materials or techniques for construction. Granular and fine material will be sourced from access or habitat dredging in the study area or from nearby main channel cuts, and rock will be transported from approved quarry sites in either Iowa and/or Wisconsin, placed on barges and transported to the features. Native trees and shrubs will be sourced from local nurseries. This habitat restoration/construction is similar to other projects recently completed or under construction such as Section 1103 UMRR (McGregor Lake), Section 204 (Pigs Eye) and Section 1122 (Upper Pool 4).

c. Engineering based on novel methods: None. Most of the methods have become standard after 37 years of building these types of features.

d. Engineering presents complex challenges for interpretations: Challenges include a short construction season. Contractors needs to wait for high water to recede, work around eagle nests (Mar-July) as well as a USFWS closed area time period in the fall followed by winter shutdown.

e. Engineering contains precedent-setting methods or models: Use the standard H&H models for design and no-rise criteria. Methods are documented in the Lessons-Learned appendix in the HREP Design Handbook.

f. Engineering presents conclusions that are likely to change prevailing practices: anticipating climate change in a dynamic large river system has led to looking at island design elevations in a 50-year timeframe. Projecting initial displacement and long-term settlement also play into this projection and final constructed elevations for the artificial islands. These practices along with 37 years of learning led to the creation of the HREP handbook a decade ago which is used quite extensively by the PDT.

4. Based on the factors addressed above by the PDT, I concur that a SAR is not required for this project.

5. POC for this matter is Dan Reburn, PM-B, 651-262-8649.

Michael R. Knoff, P.E.
Chief, Engineering and
Construction Division
CEMVP-EC

ATTACHMENT 7 - REVIEW PLAN REVISIONS

REVIEW PLAN REVISIONS

Revision Date	Description of Change	Page / Section Number