US Army Corps of Engineers®

Louisville District
Great Lakes and Ohio River Division

Vermilion County, Illinois Continuing Authorities Program Section 14, Emergency Streambank Stabilization Project

P2/Project Number: 478575

Review Plan – Engineering and Design Products

PREPARED BY: [redacted]
Plan Formulator / Project Manager
USACE, Louisville District

RECOMMENDED BY: [redacted]
Chief, Planning Section
USACE, Louisville District

ENDORSED BY: [redacted]
Chief, Civil Works
Planning, Programs and Project Management Branch
USACE, Louisville District

APPROVED BY: [redacted]
Colonel, U.S. Army
District Commander

Document	Description & location of Revision	Date Approved
Original RP	Feasibility phase	30 AUG 2022
Revision # 1	Design and Implementation	25 AUG 2023

REVIEW PLAN
DESIGN & IMPLEMENTATION
VERMILLION COUNTY, ILLINOIS CAP SECTION 14
LOUISVILLE DISTRICT

Current Version Date: *August 30, 2022*
Revision Date: *August 25, 2023*

1. PURPOSE AND REFERENCES

1.1 Purpose

The review plan describes necessary quality reviews for engineering and design (E&D) products for the Vermilion County, Illinois Continuing Authorities Program (CAP), Section 14 Emergency Streambank Stabilization Project Design and Implementation Phase.

1.2 References

Continuing Authorities Program (CAP). Section 14 of the Flood Control Act of 1946, as amended.

(1) Engineering Regulation (ER) 415-1-11, Biddability, Constructability, Operability, Environmental and Sustainability (BCOES) Reviews
(2) Engineering Regulation (ER) 1165-2-217, Civil Works Review Policy
(3) Qualtrax 08504 LRD, Supplemental Quality Procedures for Civil Works (CW) Engineering and Design (E&D) Products
(4) Project Management Plan (PMP)

2. REVIEW MANAGEMENT ORGANIZATION (RMO)

The RMO Point of Contact for this project is Matt Schueler, Chief, Civil Works - Planning, Programs, and Project Management Branch, Louisville District.

3. PROJECT SCOPE AND PRODUCTS

3.1 Project Description and Scope of Work

The feasibility study investigated measures that can address streambank erosion protection along the Middle Fork Vermilion River in Vermilion County, Illinois. Specifically, the project is located on the left bank of the Middle Fork Vermilion River approximately 8.3 miles north of Oakwood, IL, upstream from the Highway 21 (a.k.a. North 900 East Road Bridge). The streambank along the Middle Fork Vermilion River is actively eroding and threatening to damage Hwy 21, which is currently only open to one way traffic with assistance from a temporary traffic control signal. The principal cause of the erosion is rapid drawdown and flooding of the Middle Fork Vermilion River, a Wild and Scenic River. Approximately 300 feet of eroding bank is threatening the roadway with erosion continuing upstream an additional 300 feet as the river curves away from the road. The primary impact of the streambank erosion is the adjacent roadway infrastructure and vehicle occupant safety. According to Vermillion County officials, approximately 250 vehicles traversed this segment of Highway 21 daily prior to closure (Illinois Department of Transportation – 2019). The road is an essential route for local farm traffic, school bus routes and emergency responders. Due to limited crossings of the Middle Fork Vermilion River in the

county, vehicles experience increased delays with a 13.5-mile detour to the north and 20.5-mile detour to the south. At the current rate of erosion, Highway 21 is likely to close permanently to traffic by 2024 if no action is taken to stabilize the bank.

The Recommended Plan consists of utilizing vegetated riprap to simultaneously armor and vegetate the degraded streambank. The riprap will include native plantings of riparian vegetation that will consist of willow (*Salix* spp.) live stakes at two-foot spacing up to 622.5 Mean Sea Level (MSL) and herbaceous plugs at six-inch spacing above 622.5 (MSL). The riprap will be sized to protect the bank from erosion. The riprap will be choked off with a thin layer of cobbles, gravel, and soil mix. This mix will act as a growing substrate for additional surficial vegetation establishment to supplement the live staking. This growing substrate will be protected with a coconut coir erosion control mat. The surficial vegetation will be resilient to the flow velocities expected at the outside bend of the river. See Figure 1 for project location.

The risk and consequences associated with the streambank failure to Highway 21 are threefold. The most serious risk is to vehicles and their occupants that are unaware of the failure and its impact to the road. The other two risks are environmental and economic. As the erosion occurs, a large amount of sediment is introduced into the Middle Fork Vermilion River, which in turn has a negative environmental impact on instream habitat and water clarity. Economically, the impact is in relation to travel time delays to reach properties near the project area.

Project Number	478575
Business Line	CAP Section 14
Project Type	Emergency Streambank Stabilization
Geographic Location	Vermilion County, Illinois, Lat/Long 40.23610, -87.77275
Main Project Features	Bank Stabilization
Estimated Construction Cost	$442,000 for Design and $3,541,000 for Construction ($30,000 LERRDS)
E&D Product Delivery Method	In-House Design
Construction Delivery Method	Multiple Award Task Order Contract

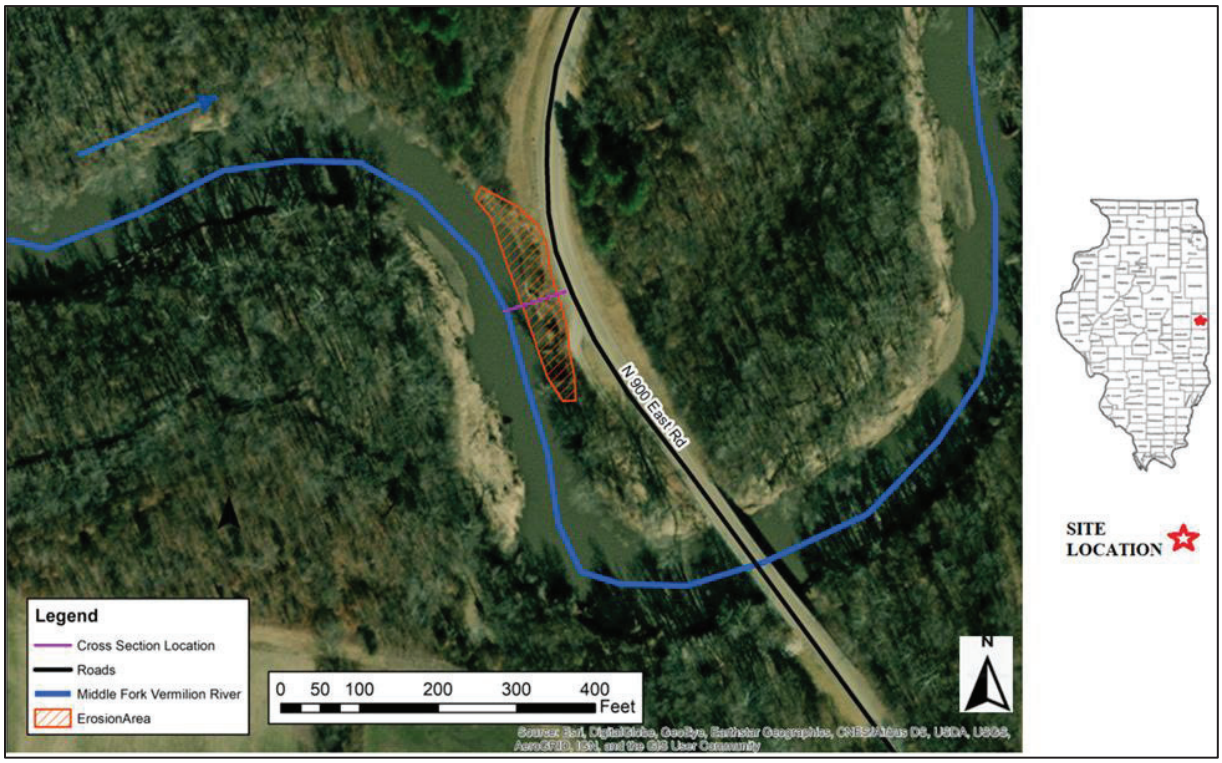

Figure 1: Vermilion County, Illinois Project Location

3.2 Products

The E&D products to be reviewed include the following:

(1) Design Documentation Report (DDR)
(2) Plans and Specifications (P&S)
(3) Engineering Considerations and Instructions for Field Personnel (ECIFP)
(4) E&D Products for Engineering During Construction (EDC)

4. DOCUMENTATION OF RISKS AND ISSUES

4.1 Life Safety Assessment

The District Chief of Engineering has reviewed the project requirements and determined there is not a significant threat to human life if the project were to fail.

4.2 Technical Complexities and Risks

The Project Delivery Team (PDT) performed a thorough risk analysis of the anticipated project design, construction, and operations activities and identified the critical technical complexities and risks listed below. Quality reviews will be planned and performed with the goal to best manage project technical complexities and risks.

(1) Because of the Wild and Scenic River designation, there may be limitations on materials used

to stabilize the shoreline bank.

(2) The federally listed northern riffleshell and clubshell mussels have been translocated to the Middle Fork Vermilion River. State listed fish, amphibians, and reptiles may also be present within the project area. Alternatives involving in-stream work or impacts to terrestrial habitat would need to be evaluated for their potential to adversely impact these species.

(3) The exact elevation and extents of the horizontal bench are not known at this time, as well as the low water mark. This unknown may impact whether mussels are present at the toe. Will need more information in the Design phase, however this may require mitigation to relocate the mussels.

(4) Extreme Weather created significant erosional event. The erosion event would alter the overall profile and requires additional fill materials.

5. REVIEW EXECUTION

5.1 Project Delivery Team (PDT)

PDT members are listed in Attachment 1. PDT members will work collaboratively with review team members to ensure effective performance of the planned quality reviews.

5.2 District Quality Control (DQC)

DQC is required for all products. Follow DQC procedures in Chapter 4 of ER 1165-2-217 and District local work instructions. The Engineering Technical Lead and DQC Lead will collaborate to oversee and ensure effective DQC performance.

5.3 Biddability, Constructability, Operability, Environmental, Sustainability (BCOES)

BCOES reviews are required for all products. Follow BCOES review procedures in ER 415-1-11 and District local work instructions. The Engineering Technical Lead and DQC Lead will collaborate to oversee and ensure effective BCOES execution.

5.4 Internal Technical Review (ITR)

An Agency Technical Review waiver form was signed by the District Engineering Chief on May 5, 2023 to enable this project to have an ITR instead. This waiver form is in the project folder, location identified in the next section. Per ER 1110-3-12, ITR team members will demonstrate senior-level competence in the type of work being reviewed. Junior-level staff cannot be members of ITR teams without appropriate senior-level technical monitoring. For most projects, ITR members should be sought from the following sources: regional technical specialists; appointed subject matter experts (SMEs) from other Districts; senior-level experts from other Districts; Center of Expertise staff; appointed SME or senior-level experts from the responsible District; experts from other USACE commands, contractors, academic, or other technical experts; or a combination of the above. ITR should be performed outside of the responsible command. All ITR teams should strive to include personnel who are registered in their field of expertise, as applicable.

ITR will address the technical complexities and risks described in sub-section 4.b. Assigned ITR team member/members are listed in Attachment 1. ITR members in engineering disciplines are verified as certified in the Corps of Engineers Review and Certification Access Program (CERCAP). PDT and review

team leaders will collaborate to oversee and ensure effective execution.

5.5 Safety Assurance Review (SAR)

The District Chief of Engineering has determined that a Safety Assurance Review (SAR) is not required for this CAP Section 14 Design and Implementation phase. This project does not involve life safety concerns. The SAR determination (Type II Independent External Peer Review) was signed by the District Chief of Engineering on the 8th of February 2022 and is documented in a separate memorandum stored in the project files located here: O:\PM\Public\PMC-PL\PROJECTS\Vermilion_CO_IL_SEC_14\D & I phase

5.6 Review Charge

Reviewers will refer to and perform ITR per Section 5.7 of ER 1165-2-217, Objectives, Scope, and Review Criteria. Reviewers shall check to confirm the project engineering and design addresses the technical complexities and risks described in Section 4.b.

6. REVIEW SCHEDULE AND BUDGETS

The schedule and budgets for reviews are shown in Table 1. BCOES reviews will not be performed concurrently with DQC and ITR review periods.

Table 1. Review Schedule and Budgets

Review Activities	Start Date	Finish Date	Budget ($)
DQC – Final Design	7-Dec-23	24-Jan-24	$6,000
ITR – Final Design	25-Jan-24	19-Mar-24	$19,000
BCOES – Final Design	26-Mar-24	02-Apr-24	$6,000
BCOES - Backcheck	03-Apr-24	15-Apr-24	$6,000

Notes: Review activities may be scaled to project size and scope.
Dates and Costs are estimates and subject to change as project progresses and design is finalized.

7. REVIEW DOCUMENTATION

The ITR leader will prepare an ITR report per Section 5.10 of ER 1165-2-217. The ITR report with certification form will be provided to the approval signatories, including the RMO representative. Review documents will be stored with the official project records.

8. REVIEW PLAN POINTS OF CONTACT

Questions and comments relating to this review plan can be directed to the following points of contact:

a. District Project Leaders
   (1) Project Manager: Tammy Markert, CELRL, Tammy.Markert@usace.army.mil, 502-315-6867
   (2) Engineering Technical Lead: Nathan Fischer, CELRL, Nathan.r.Fischer@usace.army.mil, 502-315-6537

b. Review Management Organization Representative: CELRL, Matt Schueler, Chief, Civil Works - Planning, Programs, and Project Management Branch, 502-315-6890

ATTACHMENT 1: TEAM MEMBERS

PROJECT DELIVERY TEAM		
Function/Discipline	Name	Office
Customer	Adrian Greenwell	Vermilion County Highway Department
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
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[redacted]	[redacted]	[redacted]

BCOES REVIEWERS		
Function/Discipline	Name (Last, First)	Office
Biddability	TBD	
Constructability	TBD	
Operability	TBD	
Environmental	TBD	
Sustainability	TBD	
ITR REVIEWER(S)		
Function/Discipline	Name	Office
Civil Engineer	[redacted]	
Hydraulics & Hydrology		
Geotechnical Engineer		
Cost Engineer		

ATTACHMENT 2: STATEMENT OF DISTRICT QUALITY CONTROL (PLANS & SPECIFICATIONS)

PROJECT NAME
PROJECT AUTHORITY
CERTIFICATION OF DISTRICT QUALITY CONTROL

1. **Statement of Quality Control – Completion of District Quality Control**

District Quality Control (DQC) review has been completed for the Vermilion County, Illinois Continuing Authorities Program (CAP), Section 14 Emergency Streambank Stabilization Project Design and Implementation Phase. DQC was conducted to comply with the requirements of EC 1165-2-217. During the DQC, compliance with established policy, principles and procedures, utilizing justified and valid assumptions, was verified. This included review of assumptions, methods, procedures and material used in analyses, alternatives evaluated, the appropriateness of data used and level obtained, and reasonableness of the results, including whether the product meets the customer's need consistent with law and existing US Army Corps of Engineers policy.

2. **Summary of DQC Review Comments**

3. **Certification**

_____ _____

[redacted]
Chief, Civil Section
CELRL-EDC-C

Date

[redacted]
CELRL-EDC-C

ATTACHMENT 3: BCOES CERTIFICATION

ATTACHMENT 4: INTERNAL TECHNICAL REVIEW CERTIFICATION

ATTACHMENT 5: REVIEW PLAN REVISIONS LOG

Revision Date	Description of Change	Page / Paragraph Number
August 2022	Feasibility Review Plan	
August 2023	Design and Implementation Review Plan	

ATTACHMENT 6: ACRONYMS AND ABBREVIATIONS

Term	Definition	Term	Definition
ASA(CW)	Assistant Secretary of the Army for Civil Works	NER	National Ecosystem Restoration
ITR	Internal Technical Review	NEPA	National Environmental Policy Act
CAP	Continuing Authorities Program	O&M	Operation and Maintenance
CSDR	Coastal Storm Damage Reduction	OMB	Office and Management and Budget
DPR	Detailed Project Report	OMRR&R	Operation, Maintenance, Repair, Replacement and Rehabilitation
DQC	District Quality Control/Quality Assurance	OEO	Outside Eligible Organization
DX	Directory of Expertise	OSE	Other Social Effects
EA	Environmental Assessment	PCX	Planning Center of Expertise
EC	Engineer Circular	PDT	Project Delivery Team
EIS	Environmental Impact Statement	PAC	Post Authorization Change
EO	Executive Order	PMP	Project Management Plan
ER	Ecosystem Restoration	PL	Public Law
FDR	Flood Damage Reduction	QMS	Quality Management System
FEMA	Federal Emergency Management Agency	QA	Quality Assurance
FRM	Flood Risk Management	QC	Quality Control
FSM	Feasibility Scoping Meeting	RED	Regional Economic Development
HQUSACE	Headquarters, U.S. Army Corps of Engineers	RMC	Risk Management Center
IEPR	Independent External Peer Review	RMO	Review Management Organization
LERRDs	Lands, Easements, Rights-of-Way, Relocations, Disposal/borrow areas	RTS	Regional Technical Specialist
MCX	Mandatory Center of Expertise	SAR	Safety Assurance Review
MDM	MSC Decision Meeting	USACE	U.S. Army Corps of Engineers
MSC	Major Subordinate Command	WRDA	Water Resources Development Act