REVIEW PLAN

Robe Lake Ecosystem Restoration

Continuing Authorities Program (CAP) Section 206

Feasibility Study

Alaska District

MSC Approval Date: 30 JAN 2023
Last Revision Date: NONE

US Army Corps of Engineers ®

Decision Document Review Plan

January 2023

Overview

Project Name: Robe Lake Ecosystem Restoration, Valdez, Alaska

P2 Number: 478434

Decision Document Type: Feasibility Report

Project Type: Ecosystem Restoration (Section 206, Continuing Authorities Program (CAP))

SMART Planning Status: This CAP study is on an approximately 18-month timeline. No policy waivers are anticipated at this time.

District: Alaska District (POA)
District Contact: Project Manager, 907.753.5628; Planner, 907.753.2693

Major Subordinate Command (MSC): Pacific Ocean Division (POD)
MSC Contact: CAP Manager, 808.835.4621

Review Management Organization (RMO): POD
RMO Contact: Team Leader for Planning and Policy, 808.835.4625

KEY REVIEW PLAN DATES

Date of RMO Endorsement of Review Plan	30 January 2023
Date of MSC Approval of Review Plan	30 January 2023
Date of Last Review Plan Revision	NONE
Date of Review Plan Web Posting	February 2023
Date of Congressional Notifications	N/A

MILESTONE SCHEDULE

	Scheduled	*Actual*	*Complete*
Feasibility Cost Share Agreement	-	10 June 2022	YES
Charette	-	19 August 2022	YES
Tentatively Selected Plan Milestone	29 June 2023	-	NO
Decision Document Concurrent Review	30 August 2023	-	NO
Final Decision Document Submittal	18 December 2023	-	NO
Final Decision Document Approval	20 March 2024	-	NO

Project Fact Sheet

January 2023

Project Name: Robe Lake Ecosystem Restoration

Location: Valdez, Alaska

Authority: Section 206 of the Water Resources Development Act (WRDA) of 1996, as amended.

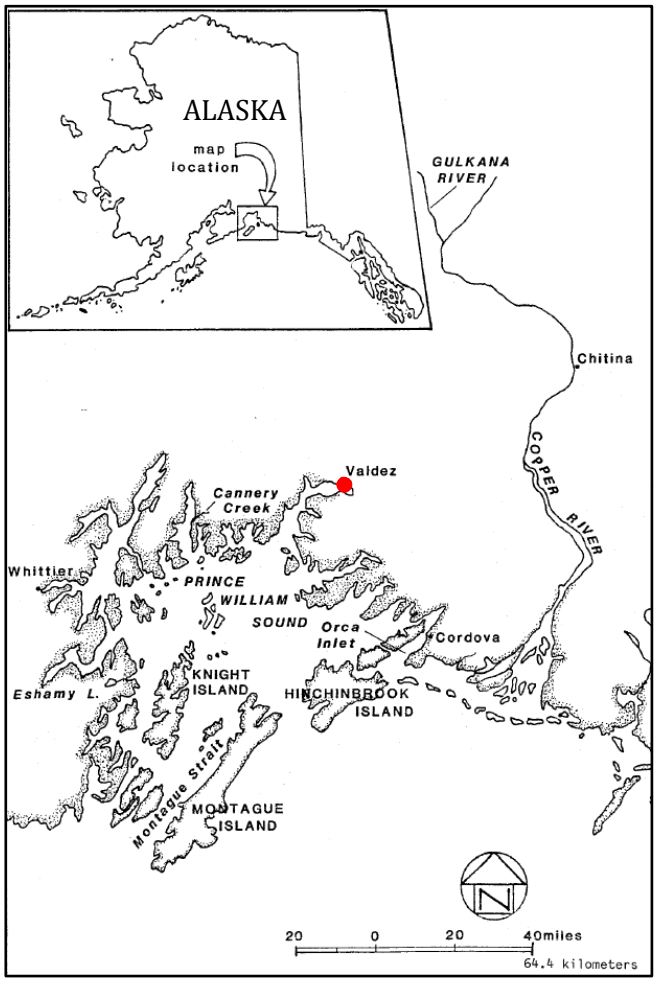
Sponsor: Valdez Fisheries Development Association, City of Valdez, and The Native Village of Tatitlek

Type of Study: Ecosystem Restoration Feasibility Study

Project Area: Robe Lake is located within the northern portion of Prince William Sound in southcentral Alaska and lies within the city limits of Valdez (Figure 1). Robe Lake is the largest freshwater lake in the Valdez area, with three tributary streams: Brownie Creek, Deep Creek, and the relic channel Old Corbin Creek (Figures 1, 2). Robe Lake empties into Robe River, which then flows under the Richardson Highway into the Lowe River (Figures 1, 2).

In the 1950s a gravel berm was constructed on Corbin Creek, which heads at the terminus of Corbin Glacier, to divert flow and prevent flooding and washout of the Richardson Highway (Figures 1, 2). Prior to this diversion of flow, the main channel of Corbin Creek originally flowed into Robe Lake. Currently, Corbin Creek is a tributary of Valdez Glacier Stream and does not flow into Robe Lake. Corbin Creek's historic channel is now known as Old Corbin Creek, a relic channel with minimal flow. Subsequent to the diversion, housing was built on the right bank of the Robe River.

Figure 1. Geographical location of the city Valdez within Alaska (left), and the location of Robe Lake within the city limits of Valdez (right). Illustrations were obtained from the FRED Report: *Assessing the Water Quality of Robe Lake, Alaska, 1981-1982*. Alaska Department of Fish and Game (Koenings et al., 1987).



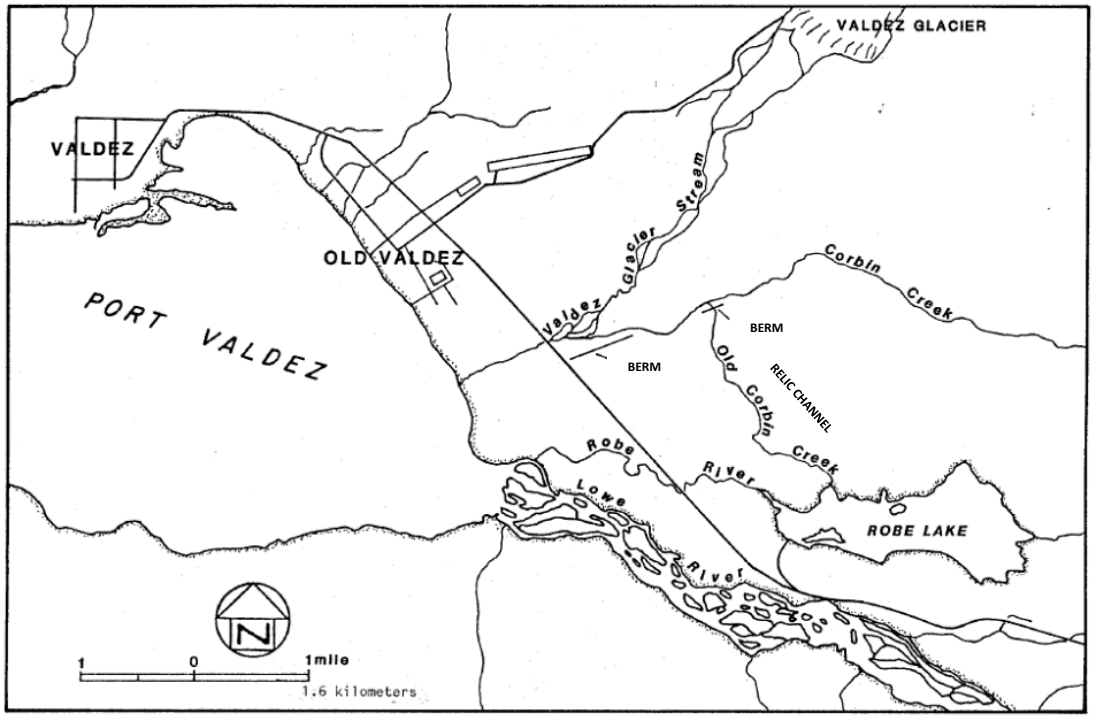
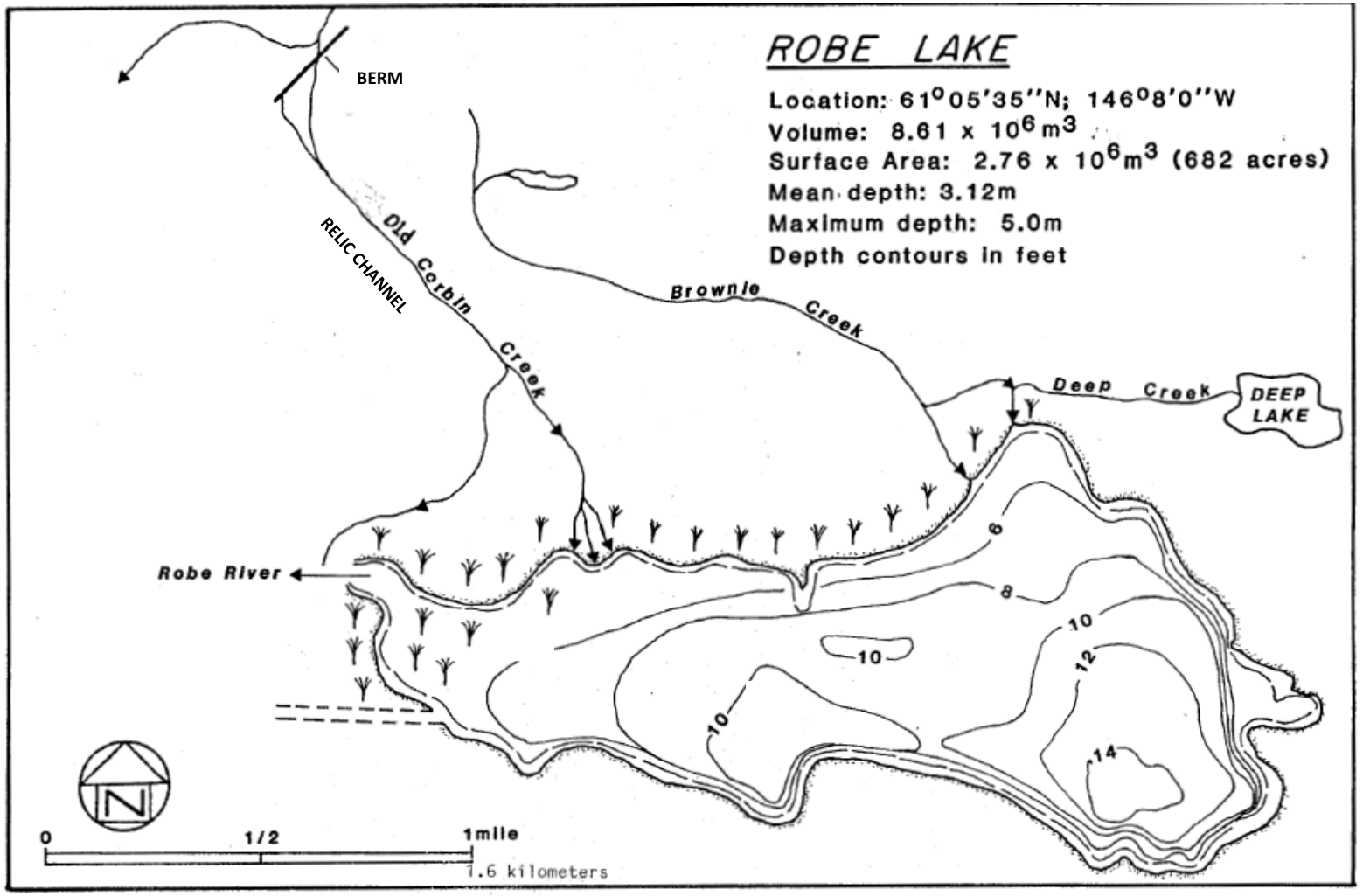


Figure 2. Morphometric map of Robe Lake relative to the three tributary streams: Brownie Creek, Deep Creek, and the relic channel Old Corbin Creek. Illustrations were obtained from the FRED Report: *Assessing the Water Quality of Robe Lake, Alaska, 1981-1982*. Alaska Department of Fish and Game (Koenings et al., 1987).



Problem Statement: At Robe Lake, human induced hydrologic impacts resulting from a diversion of Corbin Creek have resulted in broad scale effects at Robe Lake. The loss of cold, turbid, glacial flow from the Corbin Creek tributary has led to an excessive overgrowth of macrophytes within the lake. The macrophytes have impacted salmonid habitat by reducing available rearing and spawning habitat. Current mitigation requires mechanical harvesting of excess macrophytes. Mechanical harvesting of excess macrophytes has a high operational cost, is time-consuming, and is only partially effective at mitigating the issue.

Future Without Project Condition: If no action is taken, the future without project conditions indicates that salmonid habitat within the Robe Lake watershed would continue to degrade as macrophytes continue to encroach on rearing and spawning habitat. Human intervention and mechanical harvesting of overabundant macrophytes would continue.

Federal Interest: The Federal Interest Determination (FID) was approved by POD on 19 November 2021 and demonstrated federal interest in conducting ecosystem restoration in Valdez, Alaska. The Feasibility Cost Share Agreement (FCSA) was executed on 10 June 2022.

Study Goals & Objectives: The study goal is to formulate an effective and achievable measure or set of measures that will result in selecting an alternative plan that will meet the following objectives: 1) restore the water quality within Robe Lake to a healthy, productive, self-sustaining system with a natural flow regime; 2) increase the quality and/or quantity of salmonid habitat, in addition to improving existing habitat; and 3) decrease the overall maintenance required to control the overgrowth of macrophytes.

Types of Measures/Alternatives Being Considered: The preliminary formulation of alternatives and measures is ongoing throughout the planning process. Alternatives that consider both structural and non-structural measures are being considered for this project. Viable alternatives must meet the planning objectives, make a significant contribution to the solution of identified problems, and achieve some of the opportunities. The following preliminary alternatives have been identified by the PDT:

- *Alternative A – Reroute the flow of Corbin Creek into the relic channel of Old Corbin Creek.* The entire flow of Corbin Creek would be removed. The resulting flow rerouted back into the relic channel of Old Corbin Creek. The reestablished flow into the relic channel of Old Corbin Creek would not be controlled, modified, improved, or enhanced. No additional measures or improvements to existing natural features would be implemented. The relic channel of Old Corbin Creek is natural feature and overtime the system will return to the previous geological and biological state (Implementation Guidance for Section 1184; WRDA, 2016).

- *Alternative B – Reroute and direct the entire flow of Corbin Creek back into the relic channel of Old Corbin Creek.* The entire flow of Corbin Creek would be rerouted back into the relic channel of Old Corbin Creek. To direct flow, a diversion dike would

run parallel to existing Corbin Creek, and perpendicular to Old Corbin Creek. Old Corbin Creek would be enhanced through nature-based features, such as stream bed improvements to mimic the narrow and deep channel geometry seen on other creeks (i.e., Brownie Creek and Deep Creek). These improvements include channelization of Old Corbin Creek to accommodate increased flows, adding pools-riffle complexes, and increasing amount of large woody debris. These nature-based features would be implemented to work in concert with natural processes to mimic natural conditions. The two 12.75 ft. single radius culverts at the Robe River crossing would be replaced with open bottom culverts or a bridge to account for increased flow capacity and improve fish passage.

- *Alternative C – Divert a portion of Corbin Creek flow into the relic channel of Old Corbin Creek with a flow control structure.* A portion of flow from Corbin Creek would be diverted via a control structure (i.e., weir system or stream bed gate) back into the relic channel of Old Corbin Creek to supplement the current levels of flow. Old Corbin Creek would have channelization improvements that deepen the existing channel mimic natural conditions.

- *Alternative D – Divert a portion of Corbin Creek flow into Brownie Creek with a flow control structure.* A portion of flow from Corbin Creek would be diverted into Brownie Creek via a control structure (i.e., weir system or stream bed gate). A channel would be constructed to connect Corbin Creek to Brownie Creek. The complex channel geometry of Brownie Creek currently provides excellent habitat for juvenile salmonids, and this existing habitat should be conserved. Diverted flows into Brownie Creek have the potential to mix with wetlands prior to reaching Robe Lake. Additional channelization improvements may be necessary to offset potential losses in turbidity or increases in water temperature.

- *Alternative E – Only nonstructural measures would be implemented to control the overgrowth of macrophytes within Robe Lake.* Only non-structural measures would be used to improve the Robe Lake watershed ecosystem. A combination of chemical herbicide, artificial aeration, nutrient enhancement, and continuous mechanical harvesting of excess macrophytes would be implemented.

- *Alternative F – No Action.* No action would be taken to restore Robe Lake. Human intervention and mechanical harvesting of overabundant macrophytes would continue.

Risk Identification: None of the risks identified to date appear to represent a significant risk to human health or the environment now or in the future. The primary sources of study risk are summarized below:

- Modification of existing hydrology could have the potential to affect existing infrastructure and homes. In accordance with policy, the existing level of flood risk will be the formulation baseline.

- Construction of a project may have short-term impacts on anadromous fish species. The primary goal of the project is to restore salmonid species habitat. Any potential effects on anadromous fish could be mitigated by standard construction mitigation activities.

- Fieldwork and data collection opportunities will be limited for data collection in 2023 prior to the Tentatively Selected Plan (TSP) and District Quality Control (DQC).

- The system has limited existing data available. Unanticipated data needs may impact study cost or schedule.

DOCUMENTATION OF RISKS & ISSUES

1. FACTORS AFFECTING THE SCOPE AND LEVEL OF REVIEW

Scope of Review. This Review Plan defines the levels and scopes of reviews for the Robe Lake Ecosystem Restoration Feasibility Study. Products expected for review include a project Factsheet (located in the section above) and a Feasibility Report including appendices. Reviews will be managed in accordance with Engineering Regulation (ER) 1165-2-217, Civil Works Review Policy, 01 May 2021. Additional information concerning the CAP can be found in Engineer Pamphlet (EP) 1105-2-58, Planning Continuing Authorities Program, 01 March 2019.

This study will undergo reviews to include District Quality Control (DQC), Agency Technical Review (ATR), Policy and Legal Compliance Review (P&LCR), and Quality Assurance Review (QA) as outlined in the next section, the reviews will be scaled in accordance with the CAP level of complexity. Independent External Peer Review (IEPR) is mandatory when any of three statutory triggers is met. None of the mandatory triggers are expected to be met, and at this time no IEPR is planned. IEPR is discussed further in the next section.

Mandatory IEPR Triggers. A project may require an IEPR if any of the three mandatory conditions in WRDA 2007 Sec 2034, as amended, are triggered:

- Is the estimated total project cost, including mitigation, greater than $200 million? No. This is a CAP Section 206 study, and it is expected that the total cost will be significantly less than the $200 million trigger.

- Has the Governor of an affected state requested a peer review by independent experts? No. There has been no request by the Governor of Alaska for peer-review by independent experts, and such a request is not anticipated at this time.

- Has the Chief of Engineers determined the project study is controversial due to significant public dispute over the size, nature, or effects of the project or the economic or environmental costs or benefits of the project (including but not limited to projects requiring an Environmental Impact Statement)? No. Currently, this CAP Section 206 study has not met any of the controversial triggers (i.e., significance, scope, effects present) that would warrant a determination by the Chief of Engineers.

While none of the three mandatory triggers for IEPR have been met, the MSC Commander retains the discretion to conduct IEPR based on a risk-informed assessment of the expected contribution of IEPR to the project.

Discretionary Decision. IEPR is discretionary when the head of a federal or state agency charged with reviewing the project study determines that the project is likely to have a significant adverse impact on environmental, cultural, or other resources under

the jurisdiction of the agency after implementation of proposed mitigation plans and they request an IEPR. No such request has been made with respect to this study.

Risk-Informed Assessment. The Project Delivery Team (PDT) does not recommend an IEPR based on the Risk-Informed Decision Making (RIDM) considerations outlined in ER 1165-2-217, para. 6.5.2, as an IEPR would not substantially benefit or add value to the project study. The study does not address significant life safety concerns, is not burdened by complex challenges, is not controversial, is not expected to utilize novel or precedent setting methods or models, is unlikely to change prevailing practices, does not have significant interagency interest, and does not have significant economic, environmental, or social effects to the Nation. Each of the management measures considered during the federal interest determination are relatively straightforward in design and construction methods and have been recommended and implemented by the U.S. Army Corps of Engineers (USACE) on other ecosystem restoration projects.

Level and Scope of Review. The study will produce a feasibility report (including appendices) with an integrated National Environmental Policy Act (NEPA) document. The draft report will undergo an initial DQC review, followed by a concurrent review that includes ATR, P&LCR, and public review. After the concurrent review comments are addressed, the final report will be prepared, which will undergo DQC, Targeted ATR, and MSC QA and P&LCR before the final report is approved. The various reviews are detailed in Table 1. Factors affecting the risk informed decisions on the appropriate levels of review are discussed below.

- Is it likely that part(s) of the study will be challenging (ER 1165-2-217, paragraph 3.6.1)? No. The study does not have significant technical, institutional, or social challenges. The Robe Lake study falls under CAP Section 206 as an ecosystem restoration project that does not involve innovative materials or techniques. The study does not present complex challenges or precent-setting methods or models.

- Provide a preliminary assessment of where the project risks are likely to occur and assess the magnitude of those risks (ER 1165-2-217, paragraphs 3.6.1, 3.6.2.2). A preliminary list of risks has been identified by the PDT, as noted in the section above. The magnitude of each identified risk is assumed to be low, but the risk will be managed as the data gaps are filled. Additionally, a risk register is being developed for this study.

- Is the project likely to be justified by life safety, or is the study likely to involve significant life safety issues (ER 1165-2-217, paragraph 3.6.2.2.2)? No. The project is expected to have National Ecosystem Restoration (NER) justification based on the FID. Human life safety is not expected to be impacted. In accordance with policy, for formulation of restoration projects that propose restoring floodplains, the existing level of flood risk will be the formulation baseline. If flood risk is increased as a result of ecosystem restoration, induced damages would be mitigated as part of the restoration project. The POA Chief of Engineering, Construction & Operations has determined that the actions likely to be recommended by the Feasibility Study would not pose a significant threat to human life or public safety.

- Does/will the study/project have significant interagency interest (ER 1165-2-217, paragraph 3.7.2.2)? No. The study does not have significant interagency interest. USACE plans to coordinate with the U.S. Fish and Wildlife Service, the National Marine Fisheries Service, the Environmental Protection Agency, and other various local stakeholders. At this time no cooperating agencies have been identified and no controversial issues are expected to arise.

- Is the information in the decision document or anticipated project design likely to contain influential scientific information or be a highly influential scientific assessment – i.e., be based on novel methods, involve 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 (ER 1165-2-217, paragraphs 6.5.2 and 7.4.1.1)? No. Currently, there are no indications that the design of this project will require or contain innovated scientific assessment, or novel methods and techniques.

- Will the study/project require an environmental impact statement (ER 1165-2-217, paragraph 6.6.1)? The PDT does not anticipate the need for an EIS. An Environmental Assessment (EA) will be prepared and a Finding of No Significant Impact (FONSI) is anticipated. The NEPA document is anticipated to be an integrated EA that describes the project, provides the history, and identifies the alternatives. Currently, there are no substantial adverse impacts on fish and wildlife species and their habitat prior to the implementation of mitigation measures; and adverse impacts on scarce or unique tribal, cultural, or historic resources has not been indicated.

- Is the project expected to have more than negligible adverse impacts on scarce or unique tribal, cultural, or historic resources (ER 1165-2-217, paragraph 6.6.1.2)? No. This project provides an opportunity to restore and preserve a culturally significant resource. Salmon are an important natural resource throughout Alaska. Many indigenous and non-indigenous peoples in Alaska depend on a robust salmon fishery for both commercial operations and traditional subsistence-based practices. The presence of a salmon fishery within the Robe Lake watershed supports local businesses, tourism, and cultural events in the Valdez and Prince William Sound area of Alaska.

- Is the project expected to have substantial adverse impacts on fish and wildlife species and their habitat prior to the implementation of mitigation measures (ER 1165-2-217, paragraph 6.6.1.3)? No. The project is unlikely to have substantial adverse impacts on fish and wildlife species and their habitat prior to the implementation of mitigation measures. The expected outcome of the Robe Lake ecosystem restoration project is to improve the existing salmonid rearing habitat and fisheries within the Valdez area. The long-term effects of the project aim to enhance salmonid habitat, which will increase ecological productivity. Any recommendation made will be environmentally acceptable and ensure compliance with environmental laws and regulations. Potential adverse impacts to non-salmonid species are anticipated to be

negligible, any impacts would be quantified through the Cost-Effectiveness and Incremental Cost Analysis (CE/ICA) process.

- Is the project expected to have, before mitigation measures, more than a negligible adverse impact on an endangered or threatened species or their designated critical habitat (ER 1165-2-217, paragraph 6.6.1.4)? No. There are no endangered species or threatened populations or designated critical habitat within the Robe Lake system. Several species of migratory birds falling under protection of the Migratory Bird Treaty Act, and eagles under the protection of the Bald and Golden Eagle Protection Act, may be present in the proposed project area. Avoidance of adverse environmental impacts will be considered. Any potential adverse effects will be appropriately coordinated with the local and government-based resource agencies to ensure compliance with environmental laws and regulations.

- Does the project study pertain to an activity for which there is ample experience within the USACE and industry to treat the activity as being routine (ER 1165-2-217, paragraph 6.6.2.2)? Yes. The final integrated feasibility report and supporting documentation will contain standard engineering, economic, environmental analysis. The proposed Robe Lake ecosystem restoration falls under the CAP Section 206 and is therefore considered by USACE to be routine.

2. REVIEW EXECUTION PLAN

This section provides a general description of each type and level of review to be conducted. Based on factors discussed in Section 1, this study anticipates the following types of reviews:

DQC. DQC is an internal review process of basic science and engineering work products focused on fulfilling the project quality requirements of the project management plan. All decision documents (including data, analyses, environmental compliance documents, etc.) undergo DQC review. Additionally, DQC of milestone submittals is required.

Legal Sufficiency Review. Legal Sufficiency Review is conducted for the Draft and Final Decision document submittals. These reviews should be conducted by an experienced attorney with expertise reviewing Civil Works decision documents to ensure they are legally sufficient and compliant with existing laws, regulations, and USACE policies.

ATR. ATR is performed to assess whether project analyses are technically correct and comply with USACE guidance and whether documentation explains the analyses and results in a clear manner. Further, the ATR team will ensure that proper and effective DQC has been performed (as assessment of which will be documented in the ATR report) and will ensure that the product is consistent with established criteria, guidance, procedures, and policy. ATR of the draft and final decision documents and supporting

analyses is required (ER 1165-2-217, paragraph 5.3). Targeted reviews may be scheduled as needed.

Cost Engineering Review. The Cost Engineering Mandatory Center of Expertise (MCX) will review and certify project costs and may delegate the final cost certification at its discretion. The Director's Policy Memo dated 3 Sep 2020 delegates the final cost certification and associated documentation for CAP projects to be the cost engineering reviewer assigned to the ATR team. The RMO is responsible for coordinating with the MCX for review assignments and ATR of cost products.

IEPR. IEPR may be required for decision documents under certain circumstances. IEPR is the most independent level of review and is applied in cases that meet criteria where the risk and magnitude of the proposed project are such that a critical examination by a qualified team outside of USACE is warranted. The PDT performs a risk-informed assessment whether IEPR is appropriate and documents that assessment/recommendation in the review plan. The PDT has assessed that an IEPR is not required or recommended (ER 1165-2-217, paragraph 6.5.2).

Model Review and Approval/Certification. EP 1105-2-58 specifies that approval of planning models is not required for CAP projects, but planners should utilize certified models if they are available. The ATR certification package for CAP ATR reviews must include an explicit statement that says that models and analyses are used appropriately and in a manner that is compliant with Corps policy, and they are theoretically sound, computationally accurate, and transparent. ATR certification packages also must address any limitations of applied models or their use.

Policy and Legal Compliance Reviews. All decision documents will be reviewed for compliance with law and policy. ER 1105-2-100 (Appendix H) provides guidance on policy and legal compliance reviews (P&LCR). These reviews culminate in determination whether report recommendations, supporting analyses, and coordination comply with law and policy and whether the decision document warrants approval or further recommendation to higher authority by the POD Commander.

Public Review. The home District will post the Review Plan and approval memo on the district internet site. Public comment on the adequacy of the Review Plans will be accepted and considered. Additional public review will occur when the draft report and environmental compliance document(s) are released for public and agency comment.

Quality Assurance Review. POD, as the RMO, has responsibility for Quality Assurance (QA). QA includes verifying that the overall project quality control activities are effective in producing a work product that meets the desired end quality. QA activities include reviewing work performed by the District (including implementation of the DQC and ATR processes) and the ATR Team.

Table 1. The anticipated schedule for project reviews and estimated costs. The specific expertise required for the teams is identified in later subsections covering each review. These subsections also identify requirements, special reporting provisions, and sources of more information.

Product to Undergo Review	Review Level	Start Date	End Date	Cost	Complete
Planning Model Review	N/A	-	-	-	-
Draft Feasibility Report, EA and Appendices	DQC	14 July 2023	18 August 2023		
	District Legal Review	21 August 2023	29 August 2023	$25,000	NO
Draft Feasibility Report, EA and Appendices Concurrent review	Public Review	30 August 2023	2 October 2023		
	ATR Review Period	30 August 2023	19 September 2023	$55,000	
	MSC QA Review Period	30 August 2023	19 September 2023		NO
Draft Feasibility Report, EA and Appendices Concurrent review	District Response to ATR/MSC/Public (once done)	20 September 2023	31 October 2023		
	Additional NEPA response time if needed	3 October 2023	13 November 2023		NO
Final Feasibility Report, EA and Appendices	ATR Backcheck Final Review (ATR review of final doc)	1 November 2023	14 November 2023		
	Targeted ATR as needed	15 November 2023	28 November 2023	$10,000	
	Final District Legal Review	29 November 2023	7 December 2023		NO
In-Kind Products	N/A	-	-	-	-
Final Report	MSC Policy legal review (QA/P&LCR)	19 December 2023	19 February 2024		
Final Report	MSC Approval process	20 February 2024	20 March 2024		

a. DQC

POA shall manage DQC and appoint a DQC Lead to oversee that review (ER 1165-2-217, Section 8.1.2). The DQC Lead should prepare a DQC Plan and provide it to the RMO prior to starting DQC reviews.

Table 2. Required DQC expertise for the DQC team.

DQC Team Disciplines	Expertise Required
DQC Lead and Plan Formulator	A senior professional with extensive experience preparing Civil Works (CW) decision documents and conducting DQC. The lead may also serve as a reviewer for a specific discipline (such as plan formulation, engineering, environmental resources, etc.).
Environmental and Cultural Resources	Experience with ecosystem restoration planning, lake quality restoration, and limnological habitat evaluations. Should also be experienced with environmental coordination, NEPA requirements, Endangered Species Act (ESA) requirements, National Historic Preservation Act (NHPA), historic properties and the unique needs and lifestyles of small communities.
Economics	Expertise in CE/ICA, ecosystem restoration, and Institute for Water Resources (IWR) Planning Suite.
Hydrology and Hydraulics Engineer	Expert in the field of riverine hydraulics and have a thorough understanding of analyses of cross-sections, hydraulic modeling, and flood risk measures. A registered professional engineer is recommended with Hydrologic Engineering Center – River Analysis System (HEC-RAS) experience. Reviewer will also be responsible for the Climate Preparedness and Resiliency (CPR) review.
Geotechnical Engineer	Experienced in geotechnical investigation practices, including drilling, soil classification, and bank construction measures. A registered, professional engineer is recommended.
Cost Engineering	Familiar with cost estimating using the Microcomputer Aided Cost Engineering System (MCACES) model and preparation of an MII Cost Estimate. The reviewer will be a Certified Cost Technician, Certified Cost Consultant, or Certified Cost Engineer.
Real Estate	Experienced with real estate laws, policy, and guidance. Familiar with development of real estate plans for Civil Works studies regarding property acquisition.

Documentation of DQC. Quality Control should be performed continuously throughout the study. Certification of DQC completion is required prior to ATR. Documentation of DQC should follow the POA Quality Manual and the POD Quality Management Plan.

An example of a DQC Certification statement is provided in ER 1165-2-217 (Appendix D). DrChecks software will be used to document the DQC review (comments, responses, and issue resolution). Documentation of the completed DQC review (i.e., all comments, responses, issue resolution, and DQC certification) will be provided to POD and ATR Team leader prior to initiating an ATR or subsequent reviews. The ATR team will assess the quality of the DQC performed and provide a summary of that assessment in the ATR report. Missing or inadequate DQC documentation can result in the start of subsequent reviews being delayed (ER 1165-2-217, paragraph 5.2.2).

b. ATR

ATR is mandatory for draft and final decision documents and supporting analyses (ER 1165-2-217, paragraph 5.3). POD will manage the ATR. ATR will be performed by a qualified team from outside the POA that is not involved in the day-to-day production of the project/product (Table 3). ATR will be performed by a team whose members are certified or approved by their respective Communities of Practice (CoPs) to perform reviews.

Table 3. Identifies the anticipated disciplines and ATR team expertise required for study efforts.

ATR Team Disciplines	Expertise Required
ATR Lead and Plan Formulator	The ATR lead will be a senior professional with extensive experience preparing CW decision documents and conducting ATR. The lead may serve as a reviewer for plan formulation.
Environmental and Cultural Resources	Expertise in evaluating ecosystem restoration, limnological habitat, and lake water quality. Should also be experienced with environmental coordination, NEPA, and NHPA.
Economics	Expertise in CE/ICA, ecosystem restoration, and IWR Planning Suite.
Hydrology and Hydraulics Engineer	Expert in the field of riverine hydraulics and have a thorough understanding of analyses of cross-sections, hydraulic modeling, and flood risk measures. A registered professional engineer is recommended. Proficient in HEC-RAS. The reviewer will be responsible for CPR review.
Geotechnical Engineer	Experienced in geotechnical investigation practices, including drilling, soil classification, and bank construction measures. A registered professional engineer is recommended.
Cost Engineer	Familiar with cost estimating using the MCACES model and preparing an MII Cost Estimate. The reviewer should be a Certified Cost Technician, Certified Cost Consultant, or Certified Cost Engineer.
Real Estate	Experienced with real estate laws, policy, and guidance. Familiar with development of real estate plans for Civil Works studies regarding property acquisition.

Documentation of ATR. DrChecks will be used to document ATR comments, responses, and issue resolution. Comments should be limited to those needed to ensure product adequacy. All members of the ATR team should use the four-part comment structure (ER 1165-2-217, paragraph 5.8.3). If a concern cannot be resolved

by the ATR team and PDT, it will be elevated to the vertical team for resolution using the issue resolution process identified in ER 1165-2-217. The comment(s) can then be closed in DrChecks by noting the concern has been elevated for resolution. The ATR Lead will prepare a Statement of Technical Review Report (ER 1165-2-217, paragraph 5.11), for both draft and final decision documents. Any unresolved issues will be documented in the ATR report prior to certification.

c. IEPR

As detailed in Section 1 above, the mandatory triggers for IEPR have not been met and no requests for IEPR have been submitted by federal or state agencies. Based on this assessment and the RIDM considerations outlined in ER 1165-2-217, para. 6.5.2, the PDT does not recommend an IEPR. The MSC maintains the discretionary authority to revisit the decision to conduct an IEPR during the study.

d. SAFETY ASSURANCE REVIEW (SAR)

SAR is the most independent level of review for implementation documents or other work products and is applied in cases that meet certain criteria where the risk and magnitude of the proposed project are such that a critical examination by a qualified team of experts outside USACE is warranted. Per provisions in ER 1165-2-217, SAR is completed for implementation documents for PED and construction activities for projects where potential hazards pose a significant threat to human life (public safety). The POA Chief of Engineering, Construction and Operations has assessed that there is not a significant threat to human life associated with aspects of the study or failure of the proposed project, and therefore SAR is not anticipated to be required. Following completion of the Feasibility Study a new Review Plan will be developed for the Design & Implementation (D&I) phase. The D&I Review Plan will confirm the determination whether SAR will be needed in the next phase of the study

e. MODEL REVIEW AND APPROVAL/CERTIFICATION

EP 1105-2-58 specifies that approval of planning models is not required for CAP projects. The planning models in Table 4 may be used to develop the decision document.

Table 4. Planning models that may be used to develop the decision document.

Model Name and Version	Brief Model Description and How It Will Be Used in the Study	Certification/Approval
Institute for Water Resources Planning Suite (IWR, v.2.09)	IWR-Planning Suite is a water-resources investment decision support tool originally built to formulate and evaluate ecosystem restoration alternative plans. It is widely used by all USACE business lines for evaluation of actions involving monetary and non-monetary cost and benefits. This model will be used to conduct CE/ICA if needed.	Certified
Habitat Evaluation Procedures (HEP)	HEP based on Habitat Suitability Index (HSI) and Habitat Quality Indices (HQI).	Certified

EP 1105-2-58 does not address engineering models used in planning. The responsible use of well-known and proven USACE developed and commercial engineering software will continue. The professional practice of documenting the application of the software and modeling results will be followed. The USACE Scientific and Engineering Technology Initiative has identified many engineering models as preferred or acceptable for use in studies. These models should be used when appropriate. The selection and application of the model and the input and output data is the responsibility of the user and is subject to DQC, ATR, and IEPR (if applicable). See Table 5 for a list of engineering models that may be used to develop the decision document.

Table 5. Engineering models that may be used to develop the decision document.

Model Name and Version	Brief Model Description and How It Will Be Used in the Study	Certification/Approval
HEC-RAS, v.5.0.7	The HEC-RAS program performs one-dimensional steady and unsteady flow river hydraulics calculations and two-dimensional unsteady flow river hydraulic calculations. The program will also be used to evaluate the future without/with project conditions.	HH&C CoP preferred model
Hydrologic Engineering Center, Statistical Software Package (HEC-SSP, v.2.2)	The HEC-SSP program performs statistical analyses on stream gage data to determine the appropriate flows to use for each annual exceedance probability within HEC-RAS.	HH&C CoP preferred model
MCACES, v. MII	MCACES is the cost estimating software program tool used by cost engineering to develop and prepare CW and environmental project cost estimates.	CW cost engineering MCX mandatory

***Table 5**, continued.*

Model Name and Version	Brief Model Description and How It Will Be Used in the Study	Certification/Approval
Abbreviated Risk Analysis (ARA) *Cost Schedule Risk Analysis (CSRA)*	Cost risk analysis to estimate the contingency that must be added to a project cost and define the high-risk drivers. The analysis will include a narrative identifying the risks or uncertainties. During the alternative's evaluation, the PDT will assist the cost engineer to define confidence/risk levels associated with the project feature within the abbreviated risk analysis.	CW cost engineering MCX mandatory
Total Project Cost Summary (TPCS)	The TPCS is the required cost estimate document that will be submitted for either division or HQUSACE approval. The Total Project Cost for each CW project includes all Federal and authorized non-Federal costs represented by the CW Work Breakdown Structure features and respective estimates and schedules, including the lands and damages, relocations, project construction costs, construction schedules, construction contingencies, planning, and engineering costs, design contingencies, construction management costs, and management contingencies.	CW cost engineering MCX mandatory

f. POLICY AND LEGAL COMPLIANCE REVIEWS

In accordance with Director's Policy Memorandum (CW 2018-05), policy and legal compliance reviews for draft and final planning decision documents are delegated to POD, which is responsible for the execution of the study.

i. Policy Review

The policy review team is identified by the POD Chief of Planning and Policy for CAP. The team roster is identified in Attachment 1 of this Review Plan. The makeup of the Policy Review team will be drawn from POD, the Planning Centers of Expertise, and other review resources as needed.

- The Policy Review Team will be invited to participate in key meetings during the development of decision documents and the milestone meeting. These engagements may include In-Progress Review or policy team meetings in addition to the milestone meeting.

- The input from the Policy Review Team should be documented in a Memorandum for the Record (MFR) produced for each engagement with the team. The MFR should be distributed to all meeting participants.

- Teams may choose to capture some of the policy review input in a risk register if appropriate. These items should be highlighted at future meetings until the issues are resolved. Any key decisions on how to address risk or other considerations should be documented in an MFR.

ii. Legal Review

Representatives from the Office of Counsel will be assigned to participate in reviews. Members may participate from the district and MSC. The POD Chief of Planning and Policy will coordinate membership and participation with the office chiefs.

- If applicable, legal review input may be captured in the MFR for a particular meeting or milestone. In other cases, a separate legal memorandum may be used to document the input from the Office of Counsel.

- Each participating Office of Counsel will determine how to document legal review input.

Public Posting Information per ER 1165-2-217. As required by ER 1165-2-217, the approved Review Plan will be posted on the POA District public website (https://www.poa.usace.army.mil/Library/Reports-and-Studies/). There is no formal comment period, and there is no set timeframe for the opportunity for public comment. When comments are received, the PDT will consider them and decide if revisions are necessary.

Review Plan Approvals and Updates. The POD Commander has delegated the authority to approve Review Plans for decision documents to the POD Director of Programs. The approval from the POD Director of Programs reflects vertical team input (involving POA and POD) regarding the appropriate scope, level of review, and endorsement by POD. The Review Plan is a living document and should be updated in accordance with ER 1165-2-217. All changes made to the approved Review Plan will be documented. The latest version of the Review Plan, along with the POD Programs Director’s approval memorandum, will be posted on the POA District's webpage and linked to the HQUSACE webpage. The approved Review Plan should be provided to the POD.