Framework for Integrating Indigenous Traditional Ecological Knowledge (ITEK) into USACE Decision Making

Reference SON: *2024-2106-Framework for Integrating Traditional Ecological Knowledge into Decision Making on USACE AER Studies*

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Research Need

Despite a rich body of resources for creating partnerships between western scientists and Indigenous knowledge holders (e.g., USACE Institute for Water Resources manual, Tribal Nations Technical Center of Expertise (TNTCX) initiatives, and the N-EWN Engineering with Empathy project's relationship-building "roadmap"), a disconnect continues between high-level guidance and the operationalization of such guidance into USACE projects. While the directive to incorporate Indigenous Traditional Ecological Knowledge (ITEK) where applicable is clear, the 'how' remains elusive. It is unclear if this gap is due to project processes and metrics, lack of participatory methods for tribal engagement, or other circumstances that make ITEK incorporation in USACE Ecosystem Restoration projects challenging.

Further, it is reasonable to expect that ITEK would influence decisions under the new Principles, Requirements, and Guidelines (PR&G) notion of "public benefit". Although, not final, the new PR&G includes discrete focus on environmental and social outcomes to promote more holistic project planning and evaluation than its historical emphasis on National Economic Development. Integrating ITEK into USACE practice is an opportunity to improve project outcomes, enhance community buy-in, and implement the new PR&G, as ITEK is inherently place-based and promotes community values.

Inclusion of ITEK will allow USACE Districts to develop sustainable engineering solutions, increase resilience, increase social and economic benefits, and build collaborative relationships within their areas of responsibility. The incorporation of ITEK presents procedural challenges, as each Tribe, each USACE District, and therefore each partnership, will be unique.

Project Purpose & Objectives

This study will develop a framework for building stronger relationships with Tribal partners and integrating Indigenous Knowledge to achieve better ecological outcomes and more sustainable engineering solutions. The work will create a framework that recognizes there is no 'one size fits all' method for integrating ITEK and Western Science (WS) approaches. Current practice includes gleaning concepts from pre-existing, successful collaborations. This project will create a repository of methods and track two case studies to provide USACE Districts with examples of ITEK/WS collaborations, all of which will inform design of a framework to benefit USACE and Tribal communities. Additionally, this work will explore ways in which other cultures assign value to expand the USACE vision of what constitutes "public benefit" and how to measure it. Findings will:

- Empower USACE project teams to operationalize directives by aligning ITEK with leverage points that correlate to project planning processes (e.g., problem/opportunity definition, objective setting, alternative development, evaluation, modeling, decision-making, public dialog) and strengthen partnerships and collaboration with Tribal Partners.
- Empower Tribal partners and increase their sovereignty in USACE projects by integrating Tribal knowledge, perspectives, and sovereignty considerations throughout planning and execution.
- Bring together parallel audiences within the USACE and Tribal communities and facilitate effective dialog on co-led projects by creating a shared lexicon and framework.

Value of Research and Development (Payoff)

This research will emphasize the utility of ITEK and tribal engagement in all USACE restoration projects. Research deliverables will focus on added benefits and reduced risks that occur with proper engagement and integration of local knowledge and sensibility. The framework will ameliorate the current tension between the wisdom of policy directives and uncertainty present on-the-ground at the District level.

Planned Products

White Paper

Suk, H., A.E. Harris, J. Hallemeier, S.M. Slone, B. Zettle, M. Gilfillan, V. Quintana, and J. Vendrzyk. (In Prep) Description of the data collection methods to survey the state of the practice of ITEK and USACE incorporation of ITEK. Internal Report. US Army Engineer Research and Development Center and Tribal Nations Technical Center of Expertise.

Technical Note (TN)

Vendrzyk, J., J. Hallemeier, S.M. Slone, B. Zettle, M. Gilfillan, H. Suk, A.E. Harris, and V. Quintana. (In Prep) Valuation of ITEK outcomes and USACE Mission Areas. US Army Engineer Research and Development Center and Tribal Nations Technical Center of Expertise.

Technical Reports (TRs)

Slone, S.M., A.E. Harris, H. Suk, J. Hallemeier, B. Zettle, M. Gilfillan, and V. Quintana. (In Prep) ITEK Vault: Developing a curated literature review Language Learning Module with Annotated Bibliography. US Army Engineer Research and Development Center and Tribal Nations Technical Center of Expertise.

Hallemeier, J., S.M. Slone, B. Zettle, M. Gilfillan, H. Suk., A.E. Harris, V. Quintana, and J. Vendrzyk. (In Prep) State of the Practice in ITEK: USACE Surveys and Tribal Interviews. US Army Engineer Research and Development Center and Tribal Nations Technical Center of Expertise.

Other Reports/Models/Tools/Datasets

Slone, S.M., A.E. Harris, H. Suk, and V. Quintana. (In Prep) ITEK Vault: Graphical User Interface. US Army Engineer Research and Development Center and Tribal Nations Technical Center of Expertise.

Suk, H., A.E. Harris, J. Hallemeier, S.M. Slone, B. Zettle, M. Gilfillan, V. Quintana, and J. Vendrzyk. (In Planning). Framework for Integrating ITEK into USACE Aquatic Ecosystem Projects.

Conference Presentations/Webinars/Workshops

Suk, H., M. Gilfillan, and S.M. Slone. (2025) Indigenous Ecological Knowledge: State of the Practice. EMRRP Webinar. U.S. Army Engineer Research and Development Center, Vicksburg, Mississippi.

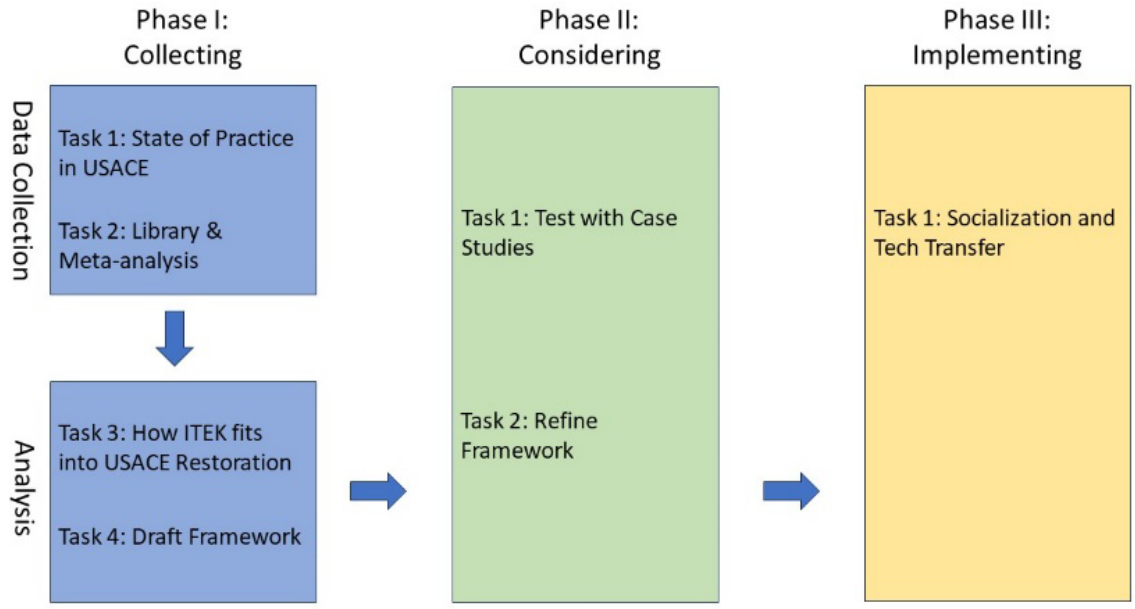
Gilfillan, M. and others. Draft Framework for Integrating ITEK into USACE Aquatic Ecosystem Restoration. American Indian Science and Engineering Society National Conference (2026) and/or Native American Fish and Wildlife Society Conference (Future work --2026)

Harris, A. and others. Framework for Integrating ITEK into Aquatic Ecosystem Restoration. National Conference on Ecosystem Restoration (Future work -- 2027)

Communication (Social Media, Videos, Podcasts, Photos, etc.)

Zettle, B., M. Gilfillan, H. Suk, A.E. Harris, J. Hallemeier, V. Quintana, and J. Vendrzyk. (Future Work). Webinar and Training Materials to Support USACE integrating ITEK into Aquatic Ecosystem Projects.

Images



Picture 1. Conceptual model of the workflow.