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June 6, 2023

MEMORANDUM

TO: Fish and Wildlife Committee

FROM: Kris Homel

SUBJECT: Update on the Inter-Tribal Monitoring Data (ITMD) project of the Columbia River Inter-Tribal Fish Commission

BACKGROUND:

Presenter: Sheryn Olson, ITMD project coordinator, Columbia River Inter-Tribal Fish Commission

Summary: The Fish and Wildlife Committee will hear a presentation on the resources available to the region through the Inter-Tribal Monitoring Data (ITMD) project of the Columbia River Inter-Tribal Fish Commission. The presentation will include information on how ITMD resources relate to the Council's Fish and Wildlife Program and how they are accessed and shared, along with a discussion of emerging tools or innovations.

Relevance: Regional data and information-management projects are critical to supporting the Program's data management, analysis, access, and communication functions. As part of the Mainstem and Program Support Project Review in 2019, the Council formulated a programmatic issue to address the importance of these projects. The programmatic emphasized the need to identify which resources house information derived from Program funded projects and how those resources can be accessed by the public. Over the next several months, the staff will invite all of the data management projects included in the Mainstem and Program Support Review to share similar presentations. The June presentation will be from the Inter-tribal Monitoring Data (ITMD) project, which is administered by the Columbia Basin Inter-Tribal Fish Commission under Project # 2008-507-00.

Background: As part of the Mainstem and Program Support Project Review in 2019, the Council formulated a programmatic issue to address the importance of regional data and information management projects (please see [Programmatic Issue #2](#), pages 8 and 9). These projects are critical to supporting the Program's data management, analysis, access, and communication functions. In an effort to address the Council recommendation and to advance the Council's efforts in the assessment of program performance, there is a need to better understand the information and data sharing resources in the basin, which provide the Council and region with critical Program data and information.

In the last review of data management projects (see above), the ISRP highlighted, and the Council agreed with, the importance of supporting regional and sub-regional data management, storage, and dissemination of information necessary for Program implementation and assessment. In particular, intentional planning for, and dedication of funding is necessary to address 1) information sharing for informing decisions, and 2) keeping pace with new technologies and knowledge through workshops and other learning experiences. This requires balancing investments in data collection with investments for data processing (data management, analysis, data steward expertise/support) and communication of information.

In the decision document from this review, the Council recommended that a subcommittee of the Regional Coordination Forum be convened. The tasks of this subcommittee would be to (1) communicate the role of the regional and sub-regional databases/ repositories in providing public access to information derived from Program funded projects, (2) identify the primary regional databases/ repositories that house information supporting the Program, and (3) address efficient flow of information between regional and subregional databases/repositories, and projects collecting and analyzing data.

Toward this end, the Council is organizing a series of presentations on data and information management projects for this and upcoming Fish and Wildlife Committee meetings. Through these presentations, we hope to highlight the resources that are available from these projects as they relate to the Program both to better understand the accomplishments of the Program, and to inform the region.

More Info: Links to Inter-tribal Monitoring Data project:
[Five-Year Strategic Plan 2022-2026](#)
[2022 Annual Report to BPA draft](#)
Workshop Presentations <https://critfc.org/tribal-data-network-workshop-documents/>

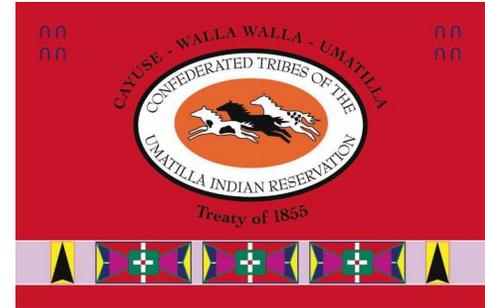
Inter-Tribal Monitoring Data Project

Northwest Power and Conservation Council

June 13, 2023



Confederated Tribes of the Warm Springs
Indian Reservation of Oregon



Sheryn Olson
solson@critfc.org

Inter-Tribal Monitoring Data (ITMD) Project Mission

Support and coordinate the Columbia River Inter-Tribal Fish Commission (CRITFC) four member tribes to efficiently collect, manage and share accurate, authoritative fish and aquatic habitat data among the tribes, and among state and federal co-managers.

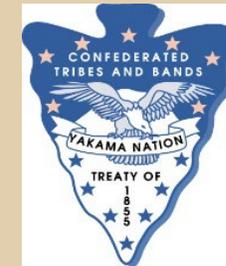
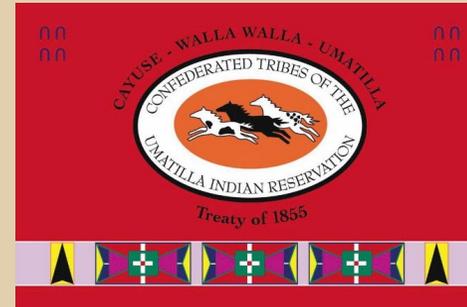
Bonneville Power Administration Project 2008-507-00

Since September 2009



Inter-Tribal Monitoring Data Project is:

- the only entity providing a *forum to facilitate communication and coordination* among tribal data professionals from CRITFC member tribes.
- the partnership that can encourage and guide ways to incorporate Indigenous Traditional Ecological Knowledge (TEK) into western scientific efforts.



“Coordination and collaboration are important to continue discussion amongst the four tribes; we can minimize ‘re-inventing the wheel’ and maximize our time and resources to build and maintain our data systems.”

An ITMD group member



Inter-Tribal Monitoring Data Project

- **Overarching Purpose?**

Support best practices for data production, use, and management for implementing recovery planning under Endangered Species Act (ESA), the Biological Opinions (BiOps), and tribal co-management needs

- **What are “Best Practices”?**

Treat and protect scientific data as long-term assets using **FAIR data principles**, and **CARE principles for Indigenous Data Governance and Management**

- **How?**

- Monthly calls
- Annual meeting
- frequent small-group, task meetings
- liaison for regional partnerships
- Promoting and producing technical educational opportunities
- Allocating pass-through funds to the tribes’ data management efforts.



Inter-Tribal Monitoring Data Project

Promotes CARE principles of Indigenous Data Management

Practice 'CARE' in data collection	Engage 'CARE' in data stewardship	Implement 'CARE' in data community	Use 'FAIR' with 'CARE' in data applications
<p>Define cultural metadata</p> <p>Record provenance in metadata</p>	<p>Use appropriate governance models</p> <p>Make data 'FAIR'</p>	<p>Indigenous ethics inform access</p> <p>Use tools for transparency, integrity and provenance</p>	<p>Fairness, Accountability, Transparency</p> <p>Assess equity</p>

Implementation of the CARE Principles across the data lifecycle.

Source: [Operationalizing the CARE and FAIR Principles for Indigenous data futures](#) (Carroll et al. 2021)

FAIR Principles: Data are **F**indable, **A**ccessible, **I**nteroperable and **R**e-usable (Wilkinson *et al.* 2016)

CARE Principles: **C**ollective **B**enefit, **A**uthority to Control, **R**esponsibility, and **E**thics



Concepts and Definitions - Data Governance

Data Driven Decisions
and Measurable Outcomes

Data Governance ensures secure availability of high quality data to enable integrated data-driven decision making with measurable outcomes

Policies,
Guidelines &
Standards

Data Quality
Framework

Privacy,
Compliance
& Security

Information
Architecture
&
Integrations

Reporting &
Analytics

People, Processes and Technology

Effective governance is an ongoing effort - executed by people, enabled by processes and supported by technology.



Concepts and Definitions - Data Strategy

Data Governance

Policies, Guidelines, Standards
Roles and Responsibilities
Procedures and Workflow
Data Usage Agreements
Intra-Agency Data Context and Awareness
Data Audits
Reporting and Analytics
Privacy, Security and Compliance
Information Architecture
Intra- and Inter-Agency Integration/Awareness
Track Data Systems' Progress with Metrics

Data Management

Data Life Cycle

- creation -> analysis -> visualization
- facilitate analysis/dataset formats
- accessibility and reuse

Data Maintenance

- create, clean, QC data
- update, submit to databases
- maintain databases

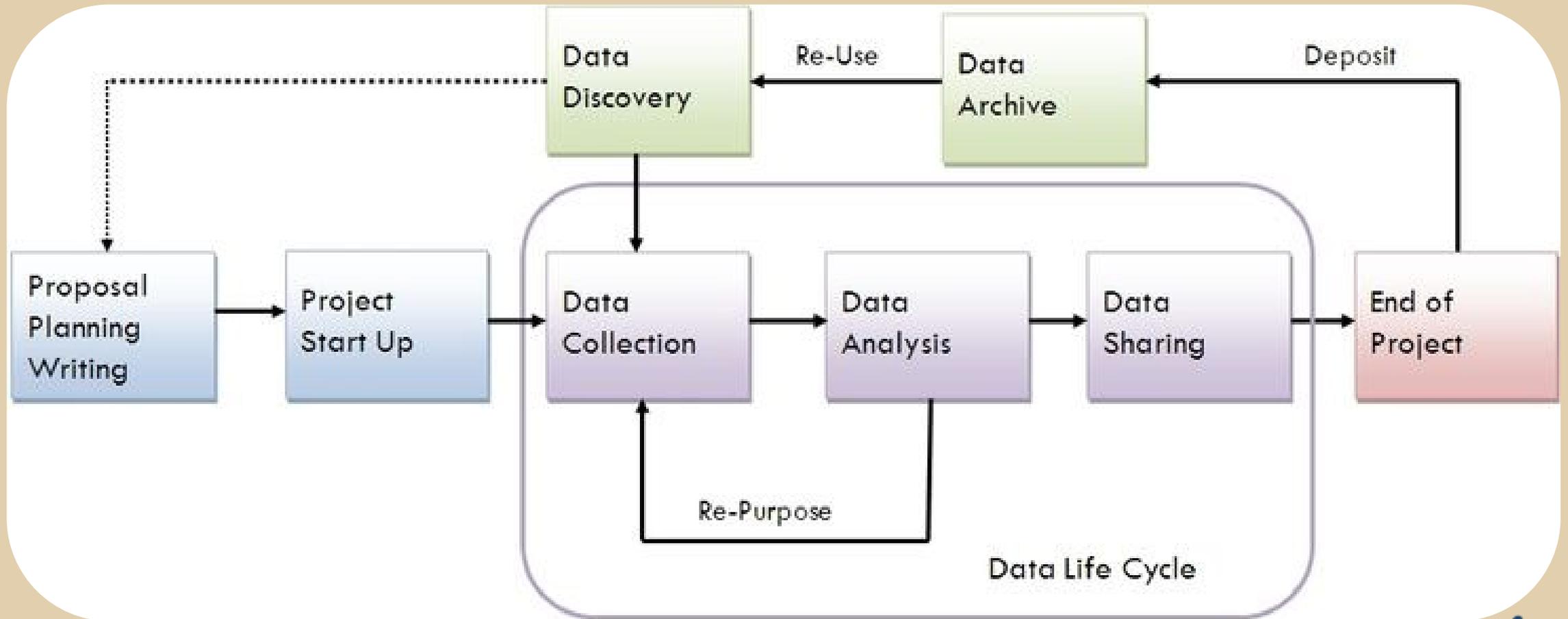
Data Quality

Data Flow

Data Integration



Concepts and Definitions - Data Life Cycle



ITMD history

- 2009-2016 Phil Roger, Fishery Science Dept. Manager
- 2010-2016 Henry Franzoni, Project Manager, Tribal Data Network
- 2016 Denise Kelsey, Acting Project Manager, partial ITMD staff 2009 - 2023
- 2017-2019 Colleen Roe, Project Manager
- 2019-2021 Denise Kelsey, Acting Project Manager
- 2016, 2019-2021 Zach Penney, Fishery Science Dept. Manager & assisting project manager
- 2014-2021 Joe Nowinski & David Graves (partial), ITMD staff
- March 2021 - present Sheryn Olson, Project Manager



ITMD history

2009-2016 Phil Roger, Fishery Science Dept. Manager

2010-2016 Henry Franzoni, Project Manager, Tribal Data Network

Tribal Data Network vision ~2010 - 2012

CRITFC Cloud Secure Tribal Repository (CCSTR)



ITMD 2010 - 2019

- ITMD Project's first 10 years
 - ✓ Needs assessments in 2010, 2013, 2014, 2016
 - ✓ Data Inventory & Management needs task 2016
 - ✓ Pilot projects for automated data collection
 - ✓ Developing hardware infrastructure & software Data Management Systems at CRITFC and its four member tribes



ITMD 2019 - present

- ITMD Project's first 10 years
 - ✓ Needs assessments in 2010, 2013, 2014, 2016
 - ✓ Data Inventory & Management needs task 2016
 - ✓ Pilot projects for automated data collection
 - ✓ Developing hardware infrastructure & software Data Management Systems at CRITFC and its four member tribes
- In late 2019, group members updated the ITMD mission
 - ❑ Tribal Coordination and Collaboration as the major focus
 - ❑ Continue to maintain, upgrade, improve the tribes' Database Management Systems
 - ❑ Continue to develop data governance, refine workflows and develop data flows among repositories, and improve metadata for tribal datasets



Building a centralized data management system (YNF)

Our Need for Our Approach

- 1. No top-down implementation, siloed legacy*
- 2. Need for project-by-project implementation, demonstration of advantages*
- 3. Lacking technical staff*
- 4. Prioritization of our priorities (individualized outputs to serve needs)*
- 5. Need for self-supportable, in-house tools and systems*
- 6. Start in-house, then share regionally*

Building a centralized data management system (YNF)

Areas Not Covered

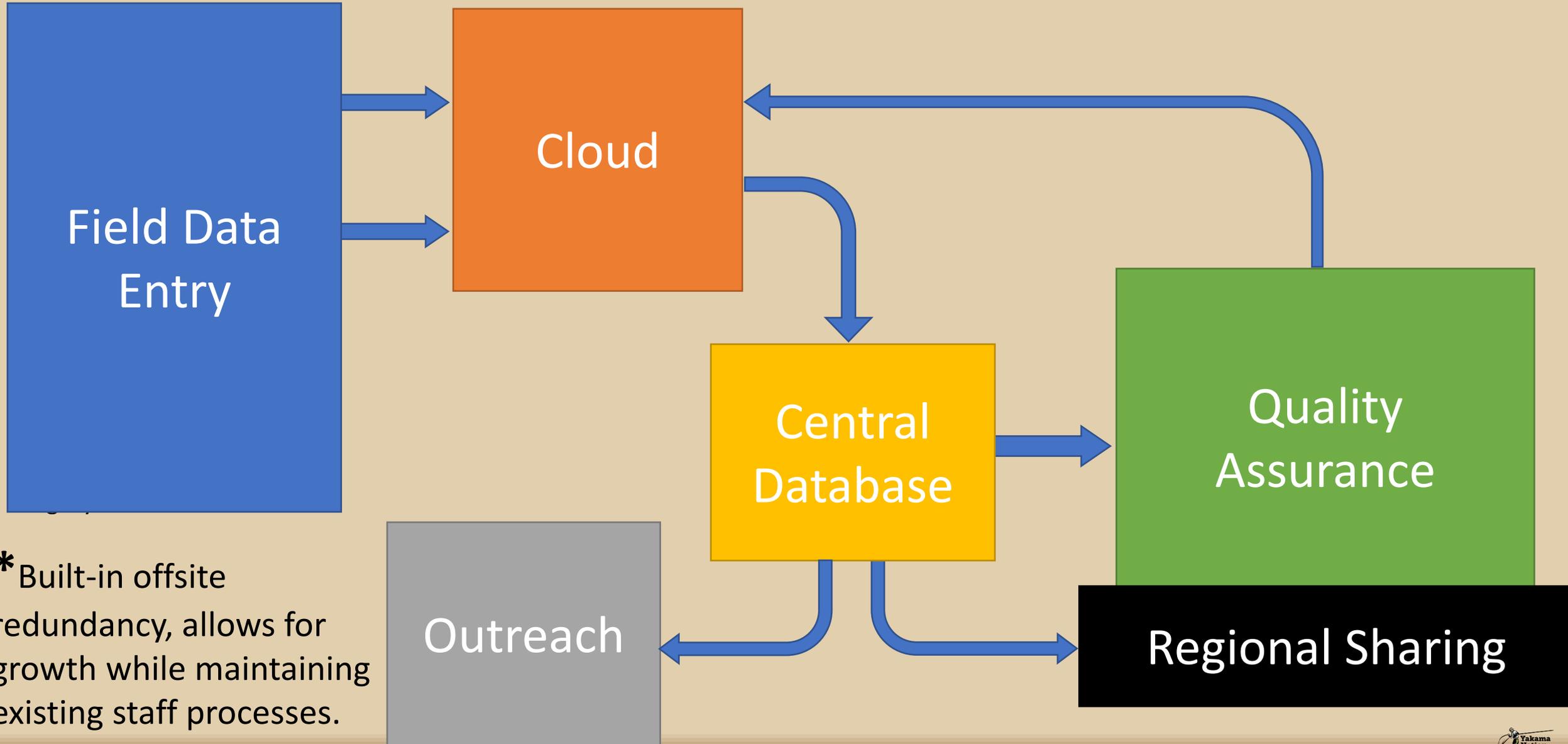
Not a comprehensive data warehouse

Not implemented across all projects

Targeted just for those who need help with a specific process

Field Data Workflow: Information Management System/STAR

End-to-end solution with ESRI tools (Survey 123/ArcGIS online)



Currently - Yakama Nation Fisheries

- Datasets and visual data summaries in <http://dashboard.yakamafish-star.net/DataQuery>
 - Screw Traps (in the Yakima Basin) and
 - Habitat and Snorkel Surveys (in the Upper Columbia)
- Throughout the region where we work, **incorporating digital data entry for:**
 - Video Passage Counts, Facility trap sampling, Hatchery fish processing
 - Lamprey biological and habitat surveys
- **Future** potential to incorporate Wildlife Habitat, Water Quality, harvest monitoring, & more

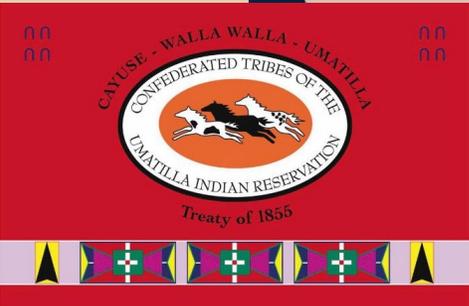
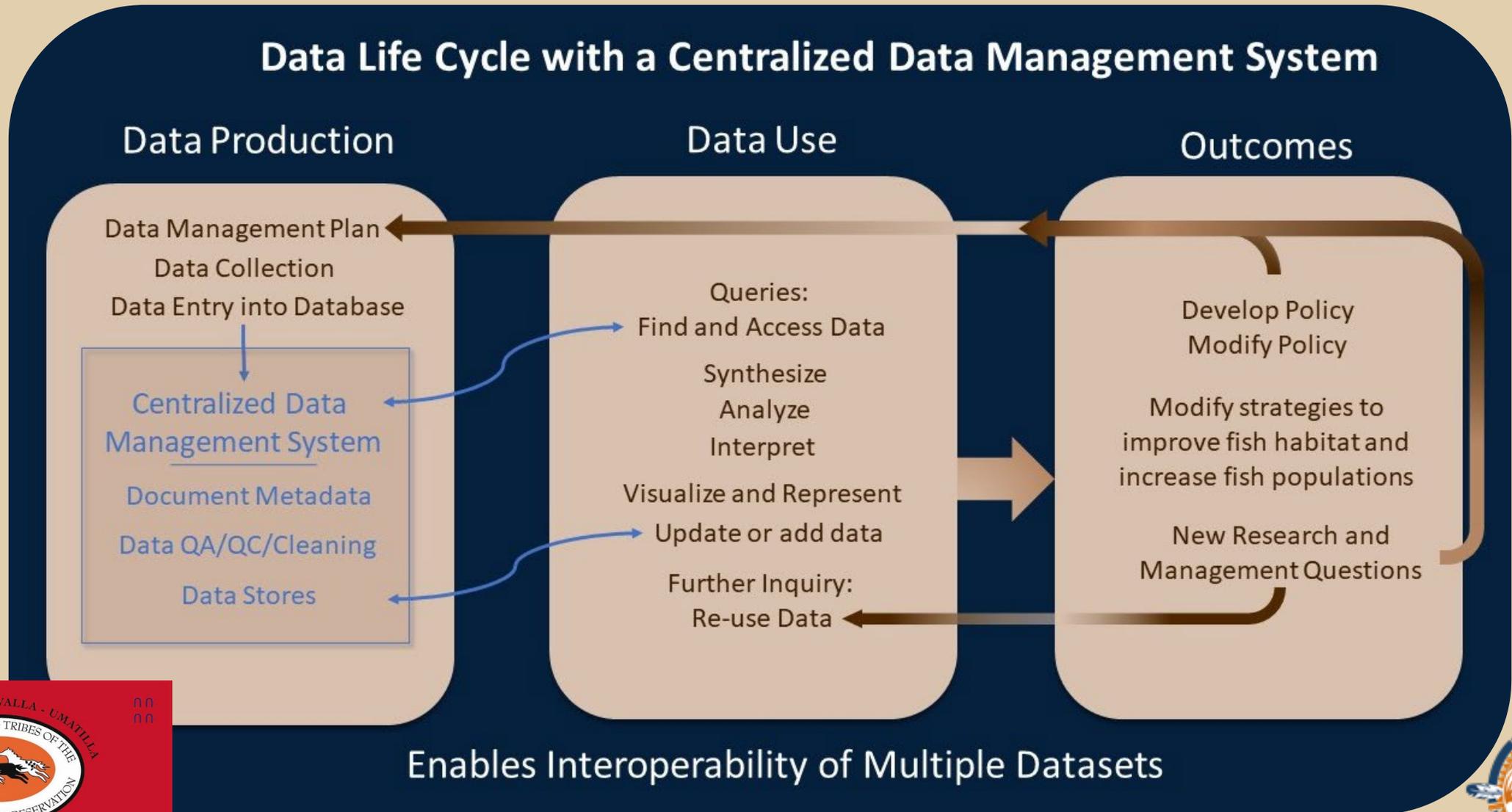
yakamafish-nsn.gov
rmpc.org, ptagis.org
[FPC Homepage](#)

Redd count and much additional data

Coded-Wire tag (CWT) & Passive Integrated Transponder (PIT) tag data

Fish Passage Center Databases: Juvenile release data summaries

Building a centralized data management system



Adapted from ITMD Project member Ken Burcham, CTUIR, 2015

Centralized Data Management System (CDMS)



Tribal CDMS 2.3

Home Projects Datasets Tools Admin

Projects / Dashboard

My Datasets

- Zone 6 Fisheries -- Platform Assumptions
- Zone 6 Fisheries -- Platform Observations

My Projects

- 1986-050-00 Evaluate Sturgeon Populations in the Lower Columbia River
- 2007-401-00 Kelt Reconditioning and Reproductive Success Evaluation
- 2008-518-00 Upstream Migration Timing
- 2008-527-00 Zone 6 Fisheries
- 2009-004-00 Monitoring Recovery Trends



Confederated Tribes of the Umatilla Indian Reservation (CTUIR)

[CTUIR GIS \(Public\) – Geographic Information Systems](#)

[Fish Counts Downloader – CTUIR GIS \(Public\)](#)

[CTUIR Fisheries Habitat Program](#)



Home of the Cayuse,
Umatilla, and Walla Walla
People

"We love our country - it is composed of the bones of
our people and we will not part with it." Cayuse
Delegation Treaty of 1855





CTUIR Fish Habitat Restoration

Implementation metrics show progress towards restoring rivers.

Basin

All Basins

GRANDE RONDE

NF JOHN DAY

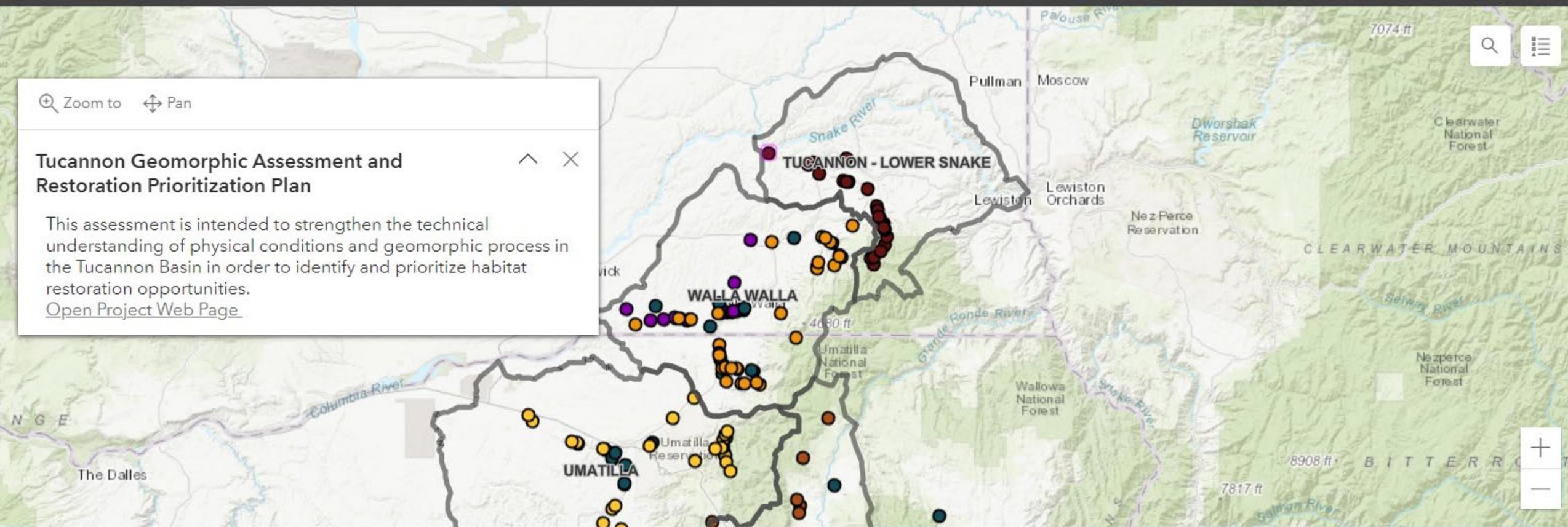
TUCANNON

UMATILLA

WALLA WALLA



Project Locations



Tucannon Geomorphic Assessment and Restoration Prioritization Plan

This assessment is intended to strengthen the technical understanding of physical conditions and geomorphic process in the Tucannon Basin in order to identify and prioritize habitat restoration opportunities.



Anchor QEA characterized channel and floodplain conditions, channel confinement, and the distribution of hydrologic and sediment inputs through the basin were evaluated and characterized throughout the river; potential restoration opportunities and concepts within each reach were

Project Lead: Columbia Conservation District (CCD)

Project Collaborators: Columbia Conservation District, CTUIR, Snake River Salmon Recover

First Foods this project targets

Water	
Salmon	
Deer	
Roots	
Berries	

River Vision Touchstones this project targets

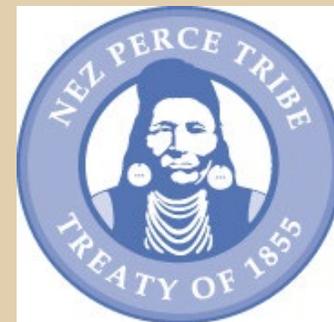
File Library

Title	File	Description
2011 Tucannon River Geomorphic Assessment	TucRivrGeomAssHabRestStudy_CCD-SRSRB_Apr2011.pdf	Uploaded file TucRivrGeomAssHabRestStudy_CCD-SRSRB_Apr2011.pdf
2011 Tucannon River Geomorphic Assessment Appendices	TucRivrGeomAssHabRestStudy_CCD-SRSRB_Apr2011_AppAHydraulicAnalysis.pdf	Uploaded file TucRivrGeomAssHabRestStudy_CCD-SRSRB_Apr2011_AppAHydraulicAnalysis.pdf
2011 Tucannon River Geomorphic Assessment Appendices	TucRivrGeomAssHabRestStudy_CCD-SRSRB_Apr2011_AppBSedTransportMobAnalysis.pdf	Uploaded file TucRivrGeomAssHabRestStudy_CCD-SRSRB_Apr2011_AppBSedTransportMobAnalysis.pdf
2011 Tucannon River Geomorphic Assessment Appendices	TucRivrGeomAssHabRestStudy_CCD-SRSRB_Apr2011_AppCSedBudgetReport.pdf	Uploaded file TucRivrGeomAssHabRestStudy_CCD-SRSRB_Apr2011_AppCSedBudgetReport.pdf
2011 Tucannon River Geomorphic Assessment Appendices	TucRivrGeomAssHabRestStudy_CCD-SRSRB_Apr2011_AppDReachCharFigures.pdf	Uploaded file TucRivrGeomAssHabRestStudy_CCD-SRSRB_Apr2011_AppDReachCharFigures.pdf
2011 Tucannon River Geomorphic Assessment Appendices	TucRivrGeomAssHabRestStudy_CCD-SRSRB_Apr2011Figures.pdf	Uploaded file TucRivrGeomAssHabRestStudy_CCD-SRSRB_Apr2011Figures.pdf
2021 Tucannon Geomorphic Assessment and Restoration Prioritization	Appendix A - Project Areas Overview_Final.pdf	Uploaded file Appendix A - Project Areas Overview_Final.pdf
2021 Tucannon Geomorphic Assessment and Restoration Prioritization	Appendix B - VSP_Final.pdf	Uploaded file Appendix B - VSP_Final.pdf
2021 Tucannon Geomorphic Assessment and Restoration Prioritization	Appendix C - Hydrologic Analysis_Final.pdf	Uploaded file Appendix C - Hydrologic Analysis_Final.pdf
2021 Tucannon Geomorphic Assessment and Restoration Prioritization	Appendix D - Topographic Data Summary_Final.pdf	Uploaded file Appendix D - Topographic Data Summary_Final.pdf
2021 Tucannon Geomorphic Assessment and Restoration Prioritization	Appendix E - Hydraulic Modeling_Final.pdf	Uploaded file Appendix E - Hydraulic Modeling_Final.pdf
2021 Tucannon Geomorphic Assessment and Restoration Prioritization	Appendix F - Connectivity Analysis_Final.pdf	Uploaded file Appendix F - Connectivity Analysis_Final.pdf
2021 Tucannon Geomorphic Assessment and Restoration Prioritization	Appendix G - Complexity Analysis_Final.pdf	Uploaded file Appendix G - Complexity Analysis_Final.pdf

Currently - Nez Perce Tribe – Nimiipuu

- 49 datasets in production in the CDMS, others in development
- Standardizing legacy project data
- Updated workflows for field data → CDMS, and associated analytical methods
- Esri's Survey123 data collection application: electronic field data forms for spawning ground surveys installed on tablets
- Juvenile out-migrants & Natural-Origin Spawner Abundance (NOSA) – being submitted to the StreamNet Coordinated Assessments eXchange (CAX)
- Developed database for users to submit data to PTAGIS
- Databases supporting weir data from FINS, and storing CAX metadata and other information
- Developing a web-based data visualization tool called Cuyem {fish}

[Camas to Condors Storymap](#)



Currently - Confederated Tribes of the Warm Springs Indian Reservation of Oregon

- Developing Esri's Survey123 field data collection electronic forms and protocols for:
 - spawning ground surveys
 - snorkeling surveys
 - temperature logger protocols
 - electrofishing
 - habitat/restoration in John Day and Deschutes watersheds
- Legacy project data being loaded into CDMS datastores, e.g.:
 - Hood River production/Chinook spawning ground surveys
 - Deschutes River Sockeye Development and habitat data
 - John Day Watershed Restoration
 - Warm Springs natural production management and spawning ground monitoring surveys



The Future?



Photo by: Peter Hemming / National Geographic

The Resources from ITMD

- \$3,027,049.** Total of ITMD subawards for all four tribes over 14 years of the project. This includes a \$500,000 3-year supplemental grant from the EPA.
- \$ 216,218.** Average annual tribal subawards for the 4 tribes combined; or
- \$ 54,054.** Average annual subaward per each tribe.

This funds about $\frac{1}{3}$ to $\frac{1}{2}$ of a data professional employee with database or programming expertise or 2 – 3 months of a consultant's time.

The Challenge

- **Data Management systems that span projects need continual planning, maintenance and upgrades.** That requires data professionals with increasingly specialized expertise
- **Commonly programs have a data coordinator, database developer/maintainer, and front-end dashboard and web developer/programmer/maintainer.**
- Programs may also have statisticians, GIS, data entry, & data steward personnel.



ITMD Future ... Thoughts from the Tribes

End Goals – by 2027

1. Coordination and collaboration to continue amongst the four tribes so we minimize “re-inventing the wheel” and maximize use of our time and resources to build and maintain our data systems.
2. Supporting full data management teams including programmers and developers: **3-4 FTE personnel/tribe**
3. Systems in place to manage database system development to avoid reliance on consultants
4. Data systems from front-end field data capture to back-end service of the data via web query and csv download.



ITMD Future ... Thoughts from the Tribes

End Goals - 2027

The goal? Web-based, back-end data repository that project researchers are comfortable using and querying and can know that the data are “the best available” data.

This needs to be internal first (tribes and CRITFC) so that we know project researchers understand and communicate the “nuances” of the data.

However, some data sets, like dam, trap, or weir counts, can be public.

- By 2027, hoping to be >90% of the way there with data sets such as dam/trap count, dam/trap sample, hatchery growth/survival/release, steelhead kelt, and other data sets.
- Seamless interface of these systems with PTAGIS by 2027



Thank You



Columbia River at Cascade Locks

Fiona Morrison 2022

Contact Sheryn Olson: solson@critfc.org

The ITMD Project Group 2010-2023

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