Confederated Tribes of the Colville Reservation

WETLANDS PROGRAM PLAN

2024-2029

CONTENTS

I. CONTEXT

Twelve tribes compose the Confederated Tribes of the Colville Reservation:

ščəlámxəxΩ (deep water) or Chelan;

wal'wáma (Wallowa people) or Chief Joseph Band of Nez Perce;

sx̌Ωyʔiłp (sharp pointed trees) or Colville;

šnt̓iyátkΩəxΩ (grass in the water) or Entiat;

snʕáyckst (speckled fish) or Lakes;

mətxΩu (blunt hills around a valley) or Methow;

škwáxčənəxΩ (people living on the bank) or Moses-Columbia;

nspilm (prairie) or Nespelem;

uknaqin (seeing over the top) or Okanogan;

palúšpam (people from Palouse) or Palus;

sənpʕΩilx (grey mist as far as one can see) or San Poil,

and šnp̓əšqΩáẇsəxΩ (people in between) or Wenatchi. (1)

Traditional territories of the twelve Tribes [Figure 1] extend through eastern Washington into portions of British Columbia, Oregon, and Idaho covering approximately 39,000,000 acres. (2)

Figure 1 - Traditional Territories (2)

As described in the Colville Confederated Tribes Comprehensive Plan 2020-2040: “As early Americans made their way across the Rockies in the mid-1850s, the population grew in Washington and Oregon territories. The U.S. Government began to create reservations, forcing Native Peoples to cede vast portions of their aboriginal territory. The reservations were intended to restrict the Tribes’ traditional access to the land and natural resources.” (3)

In April 1872, U.S. President Grant issued an

executive order establishing the Colville Indian Reservation with associated rights and protections, spanning over 2.8 million acres of land for the Methow, Okanogan, San Poil, Lakes, Colville, Kalispell, Spokane, Coeur d'Alene, and others who were not part of any treaty. However, in July of the same year, the boundaries of the Reservation were altered by another executive order that removed the portion of land between the Okanogan River and the Cascade Mountains (Methow Valley) and the portion between the Columbia and Pend Oreille River (Columbia Valley) (3).

In 1873, President Grant set apart some of the Wallowa Valley for the Nez Perce tribe; yet, a mistake in the executive order granted them the land already occupied by settlers – north of the baseline instead of south. The settlers' investments were even assessed for buyout, but after two years of bureaucratic deliberations, during which more settlers moved in, the Nez Perce were forced out of the Wallowa Valley (4). In 1877, Chief Joseph and a band of Nez Perce people who refused relocation to the Nez Perce Reservation were pursued by the U.S. Army for nearly 1,200 miles to the Bear Paw Mountains near the Canadian border (5). After the Bear Paw Battle, the tribal members who were captured were sent to Fort Leavenworth in Kansas for one year, then transported by railway to Baxter Springs and marched to Oklahoma, where they stayed for seven years. They were then taken to Wallula, WA and later to Nespelem, WA (5).

Executive orders issued on two separate occasions in 1879 and 1880 set aside two tracts of land between the Canadian border and the present-day city of Wenatchee, south of the Okanogan River, for the Chief Moses bands, which included the Columbia, Chelan, Entiat, and Wenatchee tribes (3). In 1883, the Moses-Columbia Reservation was reverted into public land, and in 1884, Chief Moses agreed to move to the Colville Reservation (2). In 1885, Chief Moses invited Chief Joseph to settle on the Colville Reservation, where he lived until his death in 1904 (3).

The northern half of the Colville Reservation, divided at approximately 48° 29' N, was taken by the US in an Act of Congress in 1892 (2). With the 1872 creation of the Colville Reservation the sx̌Ωyʔiłp (Colville) territory was cut in half (2). When the north half was returned to public domain in 1892 the sx̌Ωyʔiłp lost another quarter of their land, including Kettle Falls and the snʕáyckst (Lakes) people were forced to relocate to the south or take allotments (2).

In spite of colonial efforts to dispossess people of the land, the people of the Confederated Tribes of the Colville Reservation maintain spiritual, cultural, and management connections in the Traditional Territories of the twelve constituent tribes. It is also crucial to honor the

continuing relationship of the people within the ecology of place on the contemporary Colville Reservation with a robust, holistic, and sovereign Natural Resources program. With lands extending from the Columbia River to the east and south and the Okanogan River to the west, the Reservation measures approximately 70 miles from east to west and 35 miles from north to south. Encompassing 1.4 million acres with diverse ecosystems including areas in the Northern Rockies and Columbia Plateau Ecoregions [Figure 2] the exterior boundary of the Colville Reservation contains 20,441 acres of National Wetland Inventory mapped wetland ecosystem in 5,922 distinct wetlands.

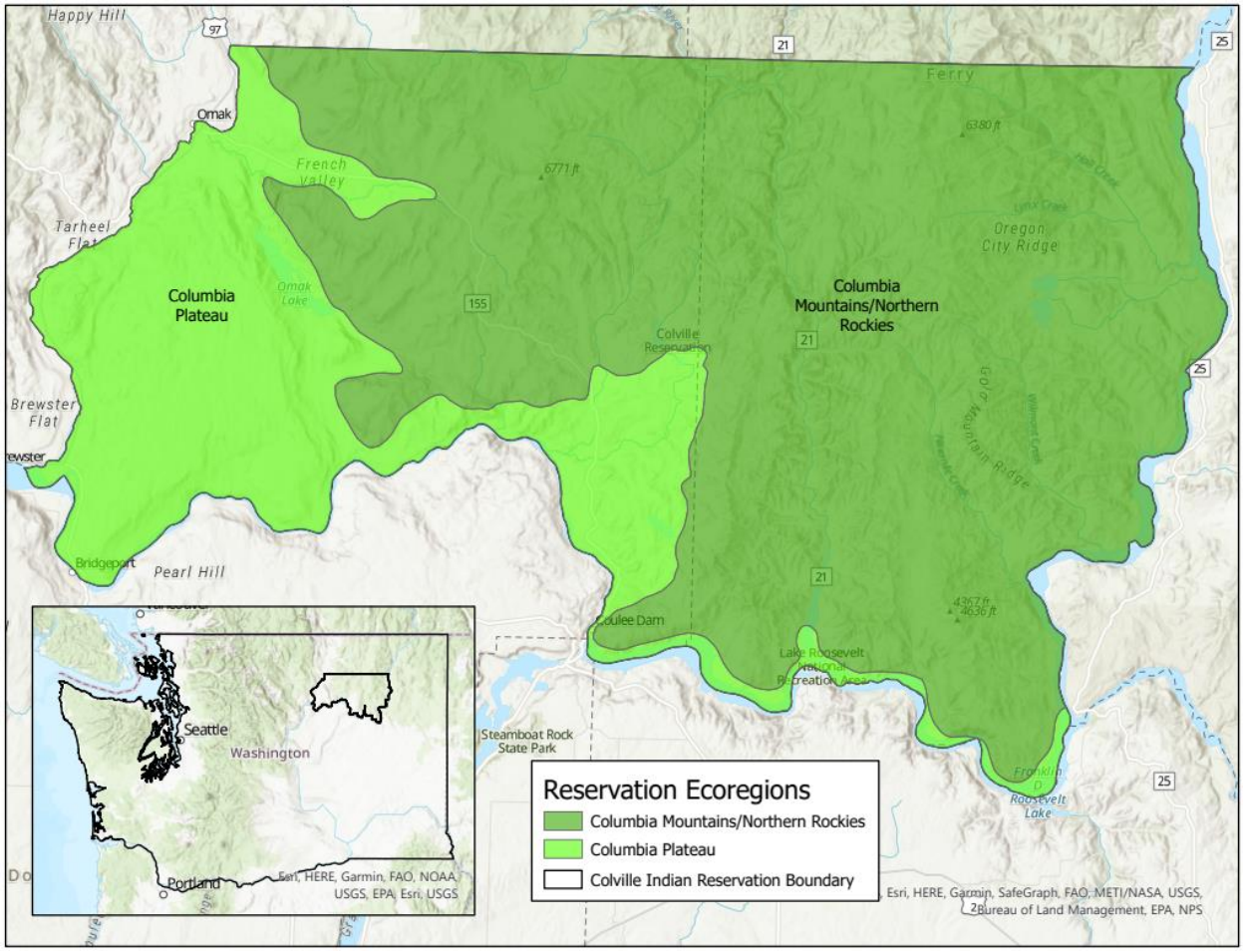


Figure 2 - Map indicating location of the Colville Reservation and Ecoregions within the Reservation Boundary

The Northern Rockies Ecoregion is composed of high elevation mountain ranges with interspersed valleys (6). There is relatively little developed land through this large ecoregion (7). A portion of the Northern Rockies Ecoregion coincides with USDA Major Land Resource Area

(MLRA) 43A – Northern Rocky Mountains, a subsection of Land Resource Region (LRR) E – Rocky Mountain Range and Forest Region (8).

The physiography of the Northern Rockies Ecoregion consists of geologically diverse mountain ranges comprised of igneous, sedimentary, and metamorphic rocks (9). During the Pleistocene period (1,800,000 to 11,400 years ago), the region was extensively glaciated. The glaciers carved mountains and wide, U-shaped valleys with rivers and streams meandering across these valley bottoms (10).

Precipitation in the Northern Rockies Ecoregion results primarily from orographic lifting of air masses over the mountains, forcing moisture to precipitate. The amount of precipitation varies widely across the Northern Rockies Ecoregion, with the western slopes receiving considerably more precipitation than the eastern slopes (8).

Timber harvesting, wildfires, and insects are major drivers of disturbance in the Northern Rockies Ecoregion. Timber harvesting has been a significant economic activity in the region for over a century (6). Multiple ecological and anthropogenic factors control the magnitude of disturbance resulting from timber harvest, including site conditions (slope, aspect, soil type, etc.), harvest prescription, and harvest methodology. Insect-caused mortality, such as that caused by the pine beetle epidemic, is another significant disturbance regime in forested areas of the region (10). Wildfires play a critical role in maintaining the health of forest ecosystems, but have, in many cases, become destructive. The history of fire suppression policies in the Northern Rockies Ecoregion, aimed at protecting human settlements, infrastructure, and timber resources, has led to the accumulation of excessive fuels; making forest stands more prone to larger, higher-severity fires (8). As the climate continues to warm, the incidence of mega fires is expected to increase, threatening ecological integrity and human safety (10).

Water is a critical natural resource in the Northern Rockies Ecoregion, providing for cultural uses, fish and wildlife habitat, drinking water and domestic human uses, and irrigation for farming. Wetlands are also an essential component of the ecoregion, providing important ecosystem functions such as water filtration and flood control (9). Logging in the region can have significant impacts on wetlands by altering landscape hydrology and water quality (6).

Climate change is also expected to have significant impacts on the Northern Rockies Ecoregion. Rising temperatures and changes in precipitation patterns are likely to alter the distribution and abundance of plant and animal species and community structure, leading to

changes in ecosystem function (6). These changes will have cascading effects on ecosystem services, such as carbon storage and water filtration, and on human activities, such as recreation and agriculture (9).

The Columbia Plateau Ecoregion is associated with sagebrush steppe and grassland ecosystems. A portion of the Columbia Plateau Ecoregion coincides with USDA Major Land Resource Area (MLRA) 7 — Columbia Basin, a subsection of Land Resource Region (LRR) B — Northwestern Wheat and Range Region (12). Three major language groups and twelve Tribal tradition lineages are represented in the Colville Confederated Tribes, and many of the people rely on the Columbia Plateau Region's natural resources for cultural foods and Columbia Plateau plants such as balsamroot, yarrow, and bitterroot are used for medicinal purposes (13). The region is also home to numerous species of wildlife including mule deer, bighorn sheep, and sage grouse (14). Access to and protection of these resources is important both on the Reservation and in Traditional Territories.

The physiography of the Columbia Plateau Ecoregion is characterized by rolling hills and flat plains. This region was formed by a combination of Miocene basalt flows and erosion (15). Glacial Lake Missoula, a prehistoric lake that formed during the last ice age, carved out the region's coulees and canyons (16). These geological features have influenced the region's unique landscape and ecological diversity.

Sagebrush steppe, a type of vegetation dominated by sagebrush, is a common plant community found in the Columbia Plateau Ecoregion. This vegetation type is adapted to the region's dry climate and low annual precipitation, which averages around 8-12 inches (17). Water availability is a limiting factor for this ecosystem, and as such, wetlands are essential to the region's hydrology. Wetlands in the Columbia Plateau Ecoregion provide important ecological services such as water filtration, water retention, wildlife habitat, and flood control (18). These wetlands have been greatly impacted by agricultural and livestock activities. Irrigation has resulted in the loss of wetlands due to drainage and land conversion (19). Livestock grazing can also lead to changes in the hydrology and nutrient cycling of wetland ecosystems (20).

Due to notable climatic and landscape differences between the ecoregions of the Reservation, USACE Wetland Delineation regional supplements for the Arid West Region as well as the

Western Mountains, Valleys, and Coasts Region are applicable in different portions of the Reservation.

II. GOAL STATEMENT AND OBJECTIVES

The CTCR Wetland Program Plan serves as a guiding document for a sustainable wetland management program that actively involves the Tribal Membership and ensures continuity beyond individual efforts. Such sustainability will be achieved with long-term strategies toward wetland conservation informed by EPA's Core Elements Framework. Emphasizing the knowledge systems of CTCR Tribal Members and utilizing a science-based approach, regularly assessing the state of wetland ecosystems on the Colville Reservation and in Traditional Territories, practitioners will promote collaborative management and community engagement to maintain and improve the ecological health of wetland ecosystems. This goal will be supported by emphasizing objectives in ecological integrity, climate resilience, environmental justice, and applicability.

HOLISTIC GOAL

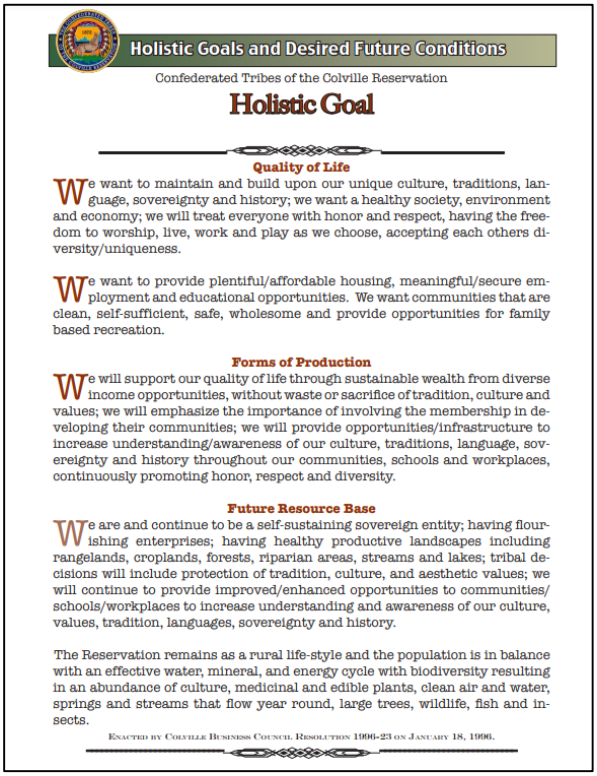
The CTCR Comprehensive Plan 2020-2040 illuminates the challenges of resource management in the face of colonial economic systems:

> "Since the imposition of colonization, the challenges to Community-based Tribal Economies to adjust to the political and cultural constructs of Privatization and Capitalism of the Western Economy have continuously undermined Tribal efforts. At the foundation of Western Economics is private ownership and the landowner's ability to capitalize on the resources available." (3)

In place of individual private land ownership the Bureau of Indian Affairs (BIA) holds a Trust Responsibility obligated to land management in the interest of members of the Colville Confederated Tribes through BIA Forestry and BIA Land Operations (Range). Following the resources-as-capital ethos has played a pivotal role in shaping the landscape of BIA resource management on the Colville Reservation, often to the detriment of holistic objectives and the quality of life on the Reservation. As documented in the CTCR Hydrology Report (21) over the last century forest harvest activities, including loss of large woody debris, loss of canopy cover in riparian areas, and sedimentation of streams have impacted nearly 90% of aquatic resources

and roads, feral horses, and livestock have impacted 75% of aquatic resources on the Reservation (21).

In 1996, the Colville Business Council, the governing body of the Confederated Tribes of the Colville Reservation, adopted by Tribal Resolution, a Holistic Goal [Figure 3] to guide CTCR and BIA natural resource managers in Integrated Resource Management. The CTCR Wetlands Program Plan will hold wetland conservation in the context of these holistic goals, respecting Indigenous values, acknowledging the impact of colonial legacies, and striving to create a sustainable future. Holistic Goal objectives of the CTCR Wetland Program Plan include:



Holistic Goals and Desired Future Conditions

Confederated Tribes of the Colville Reservation

Holistic Goal

Quality of Life

We want to maintain and build upon our unique culture, traditions, language, sovereignty and history; we want a healthy society, environment and economy; we will treat everyone with honor and respect, having the freedom to worship, live, work and play as we choose, accepting each others diversity/uniqueness.

We want to provide plentiful/affordable housing, meaningful/secure employment and educational opportunities. We want communities that are clean, self-sufficient, safe, wholesome and provide opportunities for family based recreation.

Forms of Production

We will support our quality of life through sustainable wealth from diverse income opportunities, without waste or sacrifice of tradition, culture and values; we will emphasize the importance of involving the membership in developing their communities; we will provide opportunities/infrastructure to increase understanding/awareness of our culture, traditions, language, sovereignty and history throughout our communities, schools and workplaces, continuously promoting honor, respect and diversity.

Future Resource Base

We are and continue to be a self-sustaining sovereign entity; having flourishing enterprises; having healthy productive landscapes including rangelands, croplands, forests, riparian areas, streams and lakes; tribal decisions will include protection of tradition, culture, and aesthetic values; we will continue to provide improved/enhanced opportunities to communities/schools/workplaces to increase understanding and awareness of our culture, values, tradition, languages, sovereignty and history.

The Reservation remains as a rural life-style and the population is in balance with an effective water, mineral, and energy cycle with biodiversity resulting in an abundance of culture, medicinal and edible plants, clean air and water, springs and streams that flow year round, large trees, wildlife, fish and insects.

Enacted by Colville Business Council Resolution 1996-23 on January 18, 1996.

Figure 3 - Holistic Goals, Colville Business Council Resolution 1996 (21)

- Quality of Life: Integrate wetland management into broader community goals to enhance overall quality of life informed by cultural wellness, sovereignty, economic vitality, and traditions
- Future Resource Base: Ensure wetlands remain a sustainable place for gathering and ceremony for future generations by providing wetland protection technical support to Tribal enterprises
- Integrated Resource Management: By actively participating in Integrated Resource Management dialogue as outlined in the CTCR Integrated Resource Management Plan (21) and Project Proposal Process ("3P") the Wetlands Specialist will serve to preserve wetland ecosystems while collaborating in innovative economic solutions.

ECOLOGICAL INTEGRITY

Ecological integrity objectives support a sustainable CTCR Wetlands Program by protecting the environmental, cultural, and economic interests of the Tribes. Preserving wetland ecosystems

upholds cultural values by maintaining habitats integral to traditional practices and connections. At the same time wetlands provide resources in support of local livelihoods. Ecological integrity objectives of the CTCR Wetland Program Plan include:

- Hydrological Connectivity: Ensure wetland systems maintain natural hydrological connectivity and flow patterns to support their ecological health and water quality
- Habitat Preservation: Preserve and restore wetland habitats to protect culturally significant species and biodiversity
- Water Quality and Quantity: Monitor and improve water quality and quantity within wetland ecosystems to ensure clean and reliable water sources to support sustained wetland hydrology as well as domestic, agricultural, and drinking water uses
- Functions and Values: Conserve and enhance wetland functions and values, including flood attenuation and nutrient cycling
- No Net Loss: Maintain a “no net loss” policy to prevent wetland degradation or loss

CLIMATE RESILIENCE

Developing a Wetlands Program Plan through a climate resiliency lens is essential for preserving both environmental and human well-being. Wetlands act as natural buffers against the impacts of climate change by absorbing excess rainfall to recharge groundwater systems and reducing risks associated with extreme weather events like flooding. Undisturbed wetlands also contribute to carbon, methane and SO4 sequestration. Climate resiliency objectives of the CTCR Wetland Program Plan include:

- Retaining Water Resources: Promote strategies to retain water resources on the landscape, contributing to both climate resilience and water availability
- Greenhouse Gas Sequestration: Preserve wetlands’ potential to capture and mitigate Co2, methane , and sulfate emissions
- Adaptation Strategies: Preserving wetlands and springs as uniquely adaptable and sustainable ecosystems in the face of climate change

ENVIRONMENTAL JUSTICE

The CTCR Wetlands Program Plan strives to ensure equitable access for program engagement and benefit, leading to more effective and community-centered solutions for wetland conservation. Incorporating Environmental Justice objectives toward a sustainable Wetlands Program goal will encourage a wider range of expertise and perspectives as well as active participation and personal investment in wetland preservation. Environmental justice objectives of the CTCR Wetland Program Plan include:

- Community Engagement: Continue to integrate cultural and traditional connections to wetlands in decision-making and management. When colonial management processes are illuminated, actively work to dissolve disempowering structures and prioritize the leadership of Tribal Members
- Wetland Gathering Sites: Prioritize the preservation, protection, and enhancement, of wetland gathering sites and culturally significant areas on the Colville Reservation and in the Traditional Territories of the twelve constituent Tribes, ensuring access to food, fiber, medicines, and ceremony
- U.S. Federal Justice40 Initiative Alignment: Align the program with Justice40 Initiative Categories and report back to U.S. Federal connections on effective or deficient Justice40 strategies to ensure environmental benefits to Tribal Members

APPLICABILITY

The success of wetland conservation goes beyond technical expertise and regulation. To narrow the divide between knowledge and action in conservation, applicability objectives emphasize the importance of addressing human factors. This involves promoting shifts in attitudes toward ecologically responsible behavior, implementing educational programs, and creating opportunities for policy advocacy among Tribal Members. This approach requires a commitment to applicability by emphasizing communication and relationship-based approaches at every level. By prioritizing the knowledge of place, ecology, and traditions as well as aspirations of CTCR Tribal Members the CTCR Wetlands Program will continue to benefit from deeper understanding and collaboration. Applicability objectives of the CTCR Wetland Program Plan include:

- Address the Knowledge to Action Gap: Bridge the gap between technical knowledge and practical application
- Capacity Building: Develop and support training and workforce development initiatives related to wetland management, restoration, and field science

III. OVERALL PLAN TIMEFRAME

The CTCR Wetlands Program Plan for 2024-2029 outlines a six-year strategy aimed at wetland program development to effectively manage and preserve wetlands. Employing a structured methodology that relies on the strengths and aspirations of the Colville Confederated Tribes Members' wetland relationships and best available science will provide for long-term wetlands conservation practice. The plan will continue to create a solid foundation for sustainable management of wetland ecosystems through 2029 and beyond.

2024 Q1

- Outreach, Education, and Engagement: Partnership and Relationship Building
- Technical support for wetlands comments on permits and natural resources project proposals
- Range Unit Review for 2024-2028 grazing cycle
- Participation in community initiated education and outreach events
- CTCR Wetland Monitoring and Assessment 2023 Year-End Reporting

2024 Q2

- Outreach, Education, and Engagement: Partnership and Relationship Building
- Technical support for wetlands comments on permits and natural resources project proposals
- CTCR Wetland Monitoring and Assessment (GIS Analysis)
- Range Unit Review for 2024-2028 grazing cycle
- Review Wetlands WQ physical data and available literature

2024 Q3

- Outreach, Education, and Engagement: Partnership and Relationship Building
- Technical support for wetlands comments on permits and natural resources project proposals
- CTCR Wetland Monitoring and Assessment (Field)
- SYEP (Summer Youth Employment Program) mentorship
- Participation in community initiated education and outreach events

2024 Q4

- Outreach, Education, and Engagement: Partnership and Relationship Building
- Technical support for wetlands comments on permits and natural resources project proposals
- CTCR Wetland Monitoring and Assessment (Field)
- Year-end reporting to support watershed analysis, community presentation, and serve as a component of CTCR Monitoring and Assessment 2023-2028 End Reporting
- Wetland Program and Funding Strategy Assessment

2025 Q1

- Outreach, Education, and Engagement: Partnership and Relationship Building
- Technical support for wetlands comments on permits and natural resources project proposals
- Participation in community initiated education and outreach events
- CTCR Wetland Monitoring and Assessment 2024 Year-End Reporting

2025 Q2

- Outreach, Education, and Engagement: Partnership and Relationship Building
- Technical support for wetlands comments on permits and natural resources project proposals
- CTCR Wetland Monitoring and Assessment (GIS Analysis)
- Review Wetlands WQ physical data and available literature
- Develop CTCR Wetlands Outreach and Education Plan

2025 Q3

- Outreach, Education, and Engagement: Partnership and Relationship Building
- Technical support for wetlands comments on permits and natural resources project proposals
- CTCR Wetland Monitoring and Assessment (Field)
- SYEP (Summer Youth Employment Program) mentorship
- Participation in community initiated education and outreach events
- Literature review & field testing for potential wetland nutrient & bacteria monitoring protocols

2025 Q4

- Outreach, Education, and Engagement: Partnership and Relationship Building
- Technical support for wetlands comments on permits and natural resources project proposals
- CTCR Wetland Monitoring and Assessment (Field)
- Literature review & field testing for potential wetland nutrient & bacteria monitoring protocols
- Year-end reporting to support watershed analysis, community presentation, and serve as a component of CTCR Monitoring and Assessment 2023-2028 End Reporting
- Wetland Program and Funding Strategy Assessment

2026 Q1

- Outreach, Education, and Engagement: Partnership and Relationship Building
- Technical support for wetlands comments on permits and natural resources project proposals
- Participation in community initiated education and outreach events
- Contribute wetland science, restoration, and protection materials, programming, and event participation for Former Hinman Ranch environmental education planning and activities
- CTCR Wetland Monitoring and Assessment 2025 Year-End Reporting

2026 Q2

- Outreach, Education, and Engagement: Partnership and Relationship Building
- Technical support for wetlands comments on permits and natural resources project proposals
- CTCR Wetland Monitoring and Assessment (GIS Analysis)
- Wetland WQ monitoring (physical parameters + nutrient and bacteria) QAPP

2026 Q3

- Outreach, Education, and Engagement: Partnership and Relationship Building
- technical support for wetlands comments on permits and natural resources project proposals
- CTCR Wetland Monitoring and Assessment (Field)
- SYEP (Summer Youth Employment Program) mentorship
- Participation in community initiated education and outreach events
- Contribute wetland science, restoration, and protection materials, programming, and event participation for Former Hinman Ranch environmental education planning and activities

2026 Q4

- Outreach, Education, and Engagement: Partnership and Relationship Building
- Technical support for wetlands comments on permits and natural resources project proposals
- CTCR Wetland Monitoring and Assessment (Field)
- Contribute wetland science, restoration, and protection materials, programming, and event participation for Former Hinman Ranch environmental education planning and activities
- Begin Rangeland Spring Development Assessment field testing, QAPP, and strategy
- Year-end reporting to support watershed analysis, community presentation, and serve as a component of CTCR Monitoring and Assessment 2023-2028 End Reporting
- Wetland Program and Funding Strategy Assessment

2027 Q1

- Outreach, Education, and Engagement: Partnership and Relationship Building
- Technical support for wetlands comments on permits and natural resources project proposals
- Participation in community initiated education and outreach events
- Contribute wetland science, restoration, and protection materials, programming, and event participation for Former Hinman Ranch environmental education planning and activities
- Enhance education modules: soils, vegetation, hydrology, and wetland land use history curriculum
- CTCR Wetland Monitoring and Assessment 2026 Year-End Reporting

2027 Q2

- Outreach, Education, and Engagement: Partnership and Relationship Building
- Technical support for wetlands comments on permits and natural resources project proposals
- CTCR Wetland Monitoring and Assessment (GIS Analysis)
- Incorporate WQ monitoring into CTCR Wetland Monitoring and Assessment
- Enhance education modules: soils, vegetation, hydrology, and wetland land use history curriculum
- Mapping, landscape level GIS analysis, and enhanced geodatabase for wetlands in Traditional Territories

2027 Q3

- Outreach, Education, and Engagement: Partnership and Relationship Building
- Technical support for wetlands comments on permits and natural resources project proposals
- CTCR Wetland Monitoring and Assessment (Field)
- SYEP (Summer Youth Employment Program) mentorship
- Participation in community initiated education and outreach events
- Contribute wetland science, restoration, and protection materials, programming, and event participation for Former Hinman Ranch environmental education planning and activities
- Incorporate WQ monitoring into CTCR Wetland Monitoring and Assessment

2027 Q4

- Outreach, Education, and Engagement: Partnership and Relationship Building
- Technical support for wetlands comments on permits and natural resources project proposals
- CTCR Wetland Monitoring and Assessment (Field)
- Contribute wetland science, restoration, and protection materials, programming, and event participation for Former Hinman Ranch environmental education planning and activities
- Incorporate WQ monitoring into CTCR Wetland Monitoring and Assessment
- Finalize Rangeland Spring Development Assessment field testing, QAPP & strategy
- Year-end reporting to support watershed analysis, community presentation, and serve as a component of CTCR Monitoring and Assessment 2023-2028 End Reporting
- Wetland Program and Funding Strategy Assessment

2028 Q1

- Outreach, Education, and Engagement: Partnership and Relationship Building
- Technical support for wetlands comments on permits and natural resources project proposals
- Participation in community initiated education and outreach events
- Contribute wetland science, restoration, and protection materials, programming, and event participation for Former Hinman Ranch environmental education planning and activities

- Workforce Development Wetland Restoration Project feasibility inquiry
- Relationship building with tribes, agencies, and NGOs working in wetland projects in Traditional Territories
- CTCR Monitoring and Assessment Year-End Reporting
- Review WPP 2024-2029, develop WPP for 2030-2035

2028 Q2

- Outreach, Education, and Engagement: Partnership and Relationship Building
- Technical support for wetlands comments on permits and natural resources project proposals
- CTCR Wetland Monitoring and Assessment (GIS Analysis)
- Incorporate WQ monitoring into CTCR Wetland Monitoring and Assessment
- Workforce Development Wetland Restoration project feasibility inquiry
- Relationship building with tribes, agencies, and NGOs working in wetland projects in Traditional Territories
- Initiate Wetland Monitoring and Assessment QAPP/Monitoring Strategy 2029-2034
- Review WPP 2024-2029, develop WPP for 2030-2035

2028 Q3

- Outreach, Education, and Engagement: Partnership and Relationship Building
- Technical support for wetlands comments on permits and natural resources project proposals
- CTCR Wetland Monitoring and Assessment (Field)
- SYEP (Summer Youth Employment Program) mentorship
- Participation in community initiated education and outreach events
- Contribute wetland science, restoration, and protection materials, programming, and event participation for Former Hinman Ranch environmental education planning and activities
- Incorporate WQ monitoring into CTCR Wetland Monitoring and Assessment

2028 Q4

- Outreach, Education, and Engagement: Partnership and Relationship Building
- Technical support for wetlands comments on permits and natural resources project proposals
- CTCR Wetland Monitoring and Assessment (Field)
- Contribute wetland science, restoration, and protection materials, programming, and event participation for Former Hinman Ranch environmental education planning and activities
- Incorporate WQ monitoring into CTCR Wetland Monitoring and Assessment
- Initiate Rangeland Spring Development Assessment
- Relationship building with tribes, agencies, and NGOs working in wetland projects in Traditional Territories
- Year-end reporting to support watershed analysis, community presentation, and serve as a component of CTCR Monitoring and Assessment 2023-2028 End Reporting
- Wetland Program and Funding Strategy Assessment

2029 Q1

- Outreach, Education, and Engagement: Partnership and Relationship Building
- Technical support for wetlands comments on permits and natural resources project proposals
- Range Unit Review for 2029-2033 grazing cycle
- Participation in community initiated education and outreach events
- Contribute wetland science, restoration, and protection materials, programming, and event participation for Former Hinman Ranch environmental education planning and activities
- Relationship building with tribes, agencies, and NGOs working in wetland projects in Traditional Territories
- CTCR Wetland Monitoring and Assessment 2023-2028 End Reporting
- Begin Wetland Monitoring and Assessment QAPP/Monitoring Strategy 2029-2034

2029 Q2

- Outreach, Education, and Engagement: Partnership and Relationship Building
- Technical support for wetlands comments on permits and natural resources project proposals
- CTCR Wetland Monitoring and Assessment (GIS Analysis)
- Range Unit Review for 2029-2033 grazing cycle
- Relationship building with tribes, agencies, and NGOs working in wetland projects in Traditional Territories
- CTCR Wetland Monitoring and Assessment 2023-2028 End Reporting
- Finalize Wetland Monitoring and Assessment QAPP/Monitoring Strategy 2029-2034

2029 Q3

- Outreach, Education, and Engagement: Partnership and Relationship Building
- Technical support for wetlands comments on permits and natural resources project proposals
- CTCR Wetland Monitoring and Assessment (Field)
- SYEP (Summer Youth Employment Program) mentorship
- Participation in community initiated education and outreach events
- Contribute wetland science, restoration, and protection materials, programming, and event participation for Former Hinman Ranch environmental education planning and activities
- Initiate Workforce Development Wetland Restoration Project
- Review WPP 2024-2029, develop WPP for 2030-2035

2029 Q4

- Outreach, Education, and Engagement: Partnership and Relationship Building
- Technical support for wetlands comments on permits and natural resources project proposals
- CTCR Wetland Monitoring and Assessment (Field)

- Contribute wetland science, restoration, and protection materials, programming, and event participation for Former Hinman Ranch environmental education planning and activities
- Rangeland Spring Development Assessment
- Workforce Development Wetland Restoration Project
- Relationship building with tribes, agencies, and NGOs working in wetland projects in Traditional Territories
- Finalize WPP for 2030-2035

Table 1. Timeline: Planned Actions by Quarter

	24Q1	24Q2	24Q3	24Q4	25Q1	25Q2	25Q3	25Q4	26Q1	26Q2	26Q3	26Q4	27Q1	27Q2	27Q3	27Q4	28Q1	28Q2	28Q3	28Q4	29Q1	29Q2	29Q3	29Q4
Outreach, Education, and Engagement: Partnership and Relationship Building																								
technical support for wetlands comments on permits and natural resources project proposals																								
CTCR Wetland Monitoring and Assessment																								
Range Unit Review																								
SYEP (Summer Youth Employment Program) mentorship																								
Participation in community initiated education and outreach events																								
Review Wetlands WQ data plus wetland WQ lit review toward establishing thresholds																								
Develop CTCR Wetlands Outreach and Education Plan																								
Lit review & field testing for potential wetland nutrient & bacteria monitoring protocols																								
Hinman Environmental Education Site working group																								
Wetland WQ monitoring (physical parameters + nutrient and bacteria) QAPP																								
Incorporate WQ monitoring into CTCR Wetland Monitoring and Assessment																								
Wetland Program and Funding Strategy Assessment																								
Rangeland Spring Development Assessment																								
Enhance modules: soils, vegetation, hydrology, and wetland land use history curriculum																								
Mapping, landscape level GIS analysis, and enhanced geodatabase for wetlands in Traditional Territories																								
Workforce Development Wetland Restoration Project																								
Relationship building with tribes, agencies, and NGOs working in wetland projects in Traditional Territories																								
CTCR Monitoring and Assessment 2023-2028 End Reporting																								
Wetland Monitoring and Assessment QAPP/Monitoring Strategy 2029-2034																								
Review WPP 2024-2029, develop WPP for 2030-2035																								

Monitoring and Assessment Regulatory Activities Voluntary Restoration and Protection Water Quality Standards Future Program Development

IV. CORE ELEMENTS FRAMEWORK

MONITORING AND ASSESSMENT

Monitoring and assessment activities will follow established protocols: USACE Wetland Determination protocol for the appropriate region (Arid West or Western Mountains, Valleys, and Coast) and Washington State Department of Ecology *Wetland Rating System for Eastern Washington*. Over six field seasons, in years 2023 through 2028, the CTCR Wetlands Program will collect and evaluate data from 120 randomly selected and 24 targeted wetland sites to establish baseline extent and condition information for wetlands across the Reservation to be used in watershed analysis and resource management. Annual review of wetlands monitoring data will provide preliminary results in the identification of water quality patterns and thresholds for water quality parameters in CTCR surface water wetlands, and aid in the identification of potential reference sites for future wetland specific water quality standards establishment. Clear assessment of monitoring data will reinforce recognition of land use factors that impact wetland function and support regulatory updates and compliance monitoring for wetland protection under CCT Law & Order Codes, National Environmental Policy Act (NEPA), the Clean Water Act (CWA), and other state and federal regulations.

REGULATORY ACTIVITIES

Multiple programs within CTCR and Bureau of Indian Affairs manage resources or activities involving valuable wetland ecosystems: the Environmental Trust Department manages reservation aquatic resources, Fish and Wildlife (F&W) manages terrestrial and aquatic habitat, and History and Archeology (H&A) is specifically concerned with cultural resources, including cultural plants and Traditional Cultural Properties (TPCs), many of which occur in and around wetlands. BIA Forestry (Forestry) manages all Tribal Trust forestlands, BIA Land Operations (Range) is responsible for range management (i.e. grazing permitting and soil and water resource use) on all Tribal Trust lands, and BIA Reality & Leasing (Realty) manages range activities on Allotments. Additionally, the Natural Resource Conservation Service (NRCS); Colville Reservation, Okanogan County and Ferry County Conservation Districts; and the Washington State University Extension Office work with Fee (private) landowners, allottees, and Tribal Trust land managers regarding a variety of agricultural activities. Given the numerous programs

involved, and the multiple land ownership statuses, the availability of a dedicated Wetland Specialist is critical to program direction regarding wetlands quantity and quality protections and providing clear guidance to Tribal and BIA programs to reduce management conflicts. Previously initiated Wetlands Program Plan components under the regulatory element will continue including Range Unit Review, inquiry regarding jurisdictional and legal wetland considerations in traditional territories, and technical support for comments on natural resources project proposals and permit applications.

VOLUNTARY RESTORATION AND PROTECTION

The Wetland Specialist has revitalized a CTCR Wetlands Database based on data retrieved from the US Fish & Wildlife National Wetlands Index and provides GIS Feature Class files to CTCR and BIA resource management programs. Availability of the CTCR Wetlands Database and associated GIS Feature Classes aids in responding to potential wetlands impacts and monitoring changes over time. Continued updates based on aerial and on-ground identification of unmapped wetlands or improper mapping of wetland extent is necessary for restoration and protection measures.

The CTCR Wetlands Program includes outreach, education, and community engagement under the voluntary restoration and protection core element for the sake of applicability. Education in wetlands sciences and engagement in restoration initiatives will support collective responsibility, advocacy, and participation in wetland conservation. The Wetland Specialist works closely with the CTCR History and Archeology department, district community centers, local schools and youth development workers, youth leaders, and community members to inform Traditional Knowledge priorities of the Wetlands Program and identify needs to build program capacity for community programming and environmental education. The Wetland Specialist will also reach out to tribes, agencies, and NGOs in Traditional Territories to support wetlands ecology study, protection, and restoration in Traditional Territories.

Beginning in the Monitoring and Assessment field seasons of FY24 the CTCR Wetlands Program will appeal to the Colville Tribes' Summer Youth Employment Program (SYEP) to host two youth apprentices who will gain employment experience in environmental sciences and in-depth understanding of wetlands restoration and protection to share with the community. In FY25 the Wetland Specialist will develop a CTCR Wetlands Education and Outreach Plan

including age and audience adaptable lesson plan modules in wetlands hydrology, soils, vegetation and wetlands land-use history emphasizing the vital ecological role of wetlands. The CTCR Wetlands Outreach, Education, and Engagement Plan will identify timelines for goals and objectives as well as partnerships and potential funding sources for outreach in voluntary restoration and protection efforts.

With initial feasibility inquiry beginning in Q1 of 2028 a Workforce Development Wetland Restoration Project with an "earn and learn" methodology will serve as a comprehensive approach to voluntary wetland protection and restoration. The Workforce Development Wetland Restoration Project will promote holistic goals and environmental justice by providing members of the Colville Confederated Tribes financial opportunity and training as well as participatory investment in wetland ecological integrity.

WETLANDS WATER QUALITY STANDARDS

The Wetland Specialist works cooperatively with the Water Quality Program in CTCR's Environmental Trust Department under Treatment as State (TAS) (authorization received for Section 106 in 1990, for Section 319 in 1991, and for Sections 303 and 401 in 2018). Annual review of wetlands monitoring and assessment data will serve to identify wetland water quality patterns and potential thresholds for water quality parameters of pH, EC (electrical conductivity), DO (dissolved oxygen), and temperature in CTCR surface water. In FY25, the Wetland Specialist will research and test valid field methods for monitoring nutrient loading (nitrogen and phosphorus derivatives) in Reservation wetlands as well as develop capacity for potential off-site lab processing of nutrient and bacterial water quality samples to develop further water quality standards and compliance measures for CTCR wetlands especially related to areas agricultural and forestry production. Review of water quality data will be used in evaluating CTCR water quality standards for wetlands and as baseline data for watershed analysis to assess land-use impacts and change over time.

Assessment of preliminary water quality parameter data recorded in the process of wetland monitoring will serve to identify surface water wetlands exceeding established, general, CTCR Water Quality Standards, and inform future efforts to analyze monitoring data to identify patterns toward the establishment of water quality thresholds specific to wetlands. Phases of integrating WQ testing into monitoring and assessment will have accompanying Quality

Assurance Project Plans: WQ thresholds pH, EC (electrical conductivity), DO (dissolved oxygen), and temperature; and then bacteria and nutrient loading measurements.

V. SPECIFIC ACTIONS TO ADVANCE EACH ELEMENT

MONITORING AND ASSESSMENT

- Wetland Monitoring and Assessment 2023-2028 (Field Assessment and Background Analysis)
- Integration of physical and biological/nutrient water quality monitoring in monitoring and assessment protocol
- Rangeland Spring Development Assessment
- Wetland Monitoring and Assessment 2029-2034 QAPP & Strategy
- Mapping, landscape level GIS analysis, and enhanced geodatabase for wetlands in Traditional Territories

REGULATORY ACTIVITIES

- Range Unit Review
- Technical support for comments on natural resources project proposals and permit applications

VOLUNTARY RESTORATION AND PROTECTION

- SYEP (Summer Youth Employment Program) mentorship
- CTCR Wetlands Outreach, Education, and Engagement Plan including enhanced modules in soils, vegetation, hydrology and wetland land use history curriculum
- Outreach, Education, and Engagement: Partnership and Relationship Building
- Former Hinman Ranch Environmental Education Site
- Workforce Development Wetland Restoration Project

WETLANDS WATER QUALITY STANDARDS

- Literature review and field testing for physical and biological/nutrient wetlands water quality testing
- Analysis of physical and biological/nutrient wetlands water quality criteria toward codifying thresholds

VI. SCHEDULE AND METRICS FOR TRACKING EACH ACTION

MONITORING AND ASSESSMENT

ACTION	SCHEDULE	METRIC
CTCR Wetland Monitoring and Assessment 2023-2028	GIS Analysis (Q2) & Field Assessments (Q3 & Q4) 2024, 2025, 2026, 2027, & 2028	Wetland determination and condition assessment (Eastern WA Wetlands Rating Protocol) for 20 sites per year across the Reservation plus 4 targeted sites in the Upper San Poil RMU
		Annual data and reporting incorporated into CTCR Watershed Analysis
	(Q3 & Q4) 2027 & 2028 Integration of physical and biological/nutrient water quality (WQ) testing in monitoring and assessment protocol	Implement WQ monitoring according to Wetland WQ monitoring (physical parameters + nutrient and bacteria) QAPP established under the Water Quality Standards Core Element (2026)
	(Q1 & Q2) 2029 Monitoring and Assessment 2023-2028 End Reporting	Evaluate monitoring and assessment protocols, obstacles, and lessons learned
		2023-2028 Wetland Monitoring and Assessment Report (and associated data) submitted to CTCR Watershed Analyst, CTCR Environmental Trust Department
Rangeland Spring Development Assessment	(Q4) 2026 & 2027 Rangeland Spring Development Assessment field testing, QAPP, and Strategy	QAPP and monitoring Strategy submitted, reviewed and accepted by EPA
	(Q4) 2028 Field Assessments	Initiate Rangeland Spring Development Assessment protocol
Wetland Monitoring and Assessment 2029-2034 QAPP & Strategy	(Q1 & Q2) 2029 Wetland Monitoring and Assessment 2029-2034 QAPP & Strategy document development	Incorporate lessons learned from 2023-2029 Wetland Monitoring and Assessment report
		Evaluate capacity for [Level 3] intensive monitoring
		QAPP and Monitoring Strategy submitted, reviewed and accepted by EPA
Mapping, landscape level GIS analysis, and enhanced geodatabase for wetlands in Traditional Territories	(Q2) 2027 Geodatabase development, mapping	Maps to Traditional territories Team, CTCR History and Archelogy
		Geodatabase available with ESRI online portal access
	(Q2) 2027 Assess possibilities of 2028 Traditional Territories' wetlands relationships	Contact made to potential resources and collaborators in Traditional territories

REGULATORY ACTIVITIES

ACTION	SCHEDULE	METRIC
Range Unit Review	(Q1 & Q2) 2024 & 2029 Range Unit Review for 5 year grazing cycle permitting renewal	Provide rangeland aquatic resource extent and condition documentation and advisory to Bureau of Indian Affairs Land Operations (Range) and Integrated Resource Management teams
technical support for comments on natural resources project proposals and permit applications	Ongoing, as proposals and/or permit applications are posted	Timely submission of wetland extent and condition comments and advisory (often requiring field assessment/consultation)

VOLUNTARY RESTORATION AND PROTECTION

ACTION	SCHEDULE	METRIC
SYEP (Summer Youth Employment Program) mentorship	(Q3, potentially extended by intern schedules) 2024, 2025, 2026, 2027, & 2028 Two youth interns working with the Wetland Specialist and other Natural Resources leaders in the CTCR Environmental Trust Department	Interns are familiar with basic wetland delineation & condition assessment as well as employment opportunities in Natural Resources
		Feedback from the CTCR Youth Development Program
CTCR Wetlands Outreach, Education, and Engagement Plan	-Ongoing- Outreach, Education, and Engagement: Partnership and Relationship Building	community feedback
	(Q2) 2025 Develop and implement Outreach, Education, and Engagement Plan	Submitted, reviewed, and approved by EPA Technical Advisor
		Distribute to CTCR Departments and Partners
		Initiate actions identified in the Outreach, Education, and Engagement Plan
	(Q1 & Q2) 2027 Enhance modules: soils, vegetation, hydrology, and wetland land use history curriculum	Present modules in various age groups and settings. Make modules available to educators and community leaders.
Former Hinman Ranch Environmental Education Site	(Q1) 2026 and thereafter ongoing Contribute wetland science, restoration, and protection materials, programming, and event participation for Former Hinman Ranch environmental education planning and activities	Demonstrated community accessibility and use
		Partner and community feedback
Workforce Development Wetland Restoration Project	(Q1 & Q2) 2028 Feasibility inquiry and capacity building for a restoration projects to serve as a workforce development project through “earn and learn” models	Contact made with wetland restoration specialists familiar with workforce training restoration models
		Identify potential workforce training wetland restoration sites
		Identify avenues for participation
	(Q3 & Q4) 2029 Workforce Development Wetland Restoration Project	Initiate Workforce Development Wetland Restoration Project
Relationship building and facilitation for consultation with tribes, agencies, and NGOs working in wetland projects in Traditional Territories	(Q1, Q2, & Q4) 2028 & 2009 Relationship building toward wetland protection and restoration in Traditional Territories	Review 2027 Traditional Territories wetland maps and priorities of the CTCR History and Archeology Traditional Territories team
		Contact representatives from tribes, agencies, and NGOs working in wetland preservation and restoration in Traditional Territories

WETLANDS WATER QUALITY STANDARDS

ACTION	SCHEDULE	METRIC
Lit review and field testing for physical and biological/nutrient wetlands water quality testing	(Q2) 2024 & (Q2) 2025 Review Wetlands WQ physical data and available literature and field test available methods	Report to CTCR Watershed Analyst, CTCR Watershed Manager, and CTCR Water Operations Supervisor: established physical wetlands WQ criteria monitoring guidelines and field findings toward establishing wetland specific thresholds
	(Q3 & Q4) 2025 Review Wetlands WQ biological/nutrient data and available literature and field test available methods	Report to CTCR Watershed Analyst, CTCR Watershed Manager, and CTCR Water Operations Supervisor: established biological/nutrient wetlands WQ criteria monitoring guidelines and field findings toward establishing wetland specific thresholds
Analysis of physical and biological/nutrient water quality wetlands water quality toward codifying thresholds	(Q2) 2026 Develop Wetland Physical, Nutrient, and Biological Water Quality (WQ) Monitoring and Assessment QAPP & Monitoring Strategy	QAPP and Monitoring Strategy submitted, reviewed, and accepted by EPA
		Addendum to CTCR Wetland Monitoring and Assessment 2023-2028 to include WQ monitoring and assessment
	(Q2) 2026 Codify CTCR Wetland Physical, Nutrient, and Biological Water Quality (WQ) thresholds	Provide CTCR Wetland Physical, Nutrient, and Biological Water Quality (WQ) thresholds to CTCR Watershed Manager for CCT Code amendment inquiry

ACTION	SCHEDULE	METRIC
Review WPP 2024-2029, develop WPP for 2030-2035	(Q3 & Q4) 2029 Evaluate actions and outcomes for CTCR Wetlands Program Plan 2024-2029	Report WPP 2024-2029 outcomes, obstacles, and lessons learned to CTCR Watershed Analyst
	(Q3 & Q4) 2029 Develop and submit CTCR Wetlands Program Plan 2030-2035	CTCR Wetlands Program Plan 2030-2035submitted, reviewed, and accepted by EPA

VII. RELEVANT PARTNERSHIPS

CTCR Environmental Trust Department and the Wetlands Program work in partnership with multiple CTCR and BIA programs on the Colville Reservation. Partnerships with the BIA and other programs and departments provide additional collaboration that support task achievements and improve the overall capacity of the CTCR to manage, protect and restore wetlands. The Wetland Specialist engages in information exchange and technical expertise as well as integrated resource management planning with BIA Reality & Leasing, Range, and Forestry programs along with CTCR Fish & Wildlife and History & Archeology programs.

The Wetland Specialist attends Washington State Wetland Monitoring and Assessment Work Group meetings and participates in EPA's Region 10 supported Pacific Northwest Tribal Wetlands Working Group (PNW TWIG) as well as the international Indigenous Phenology Network with members from USGS, NASA, NOAA, US National Park Service, and academic and NGO representatives. CTCR Environmental Trust maintains membership in the National Association of Wetlands Managers (formerly Association of State Wetland Managers) and the Wetland Specialist attends webinars and monthly meetings promoting capacity building for the CTCR and collaboration in cultivation of a national wetlands protection ethic. Reservation wetlands were included in the 2021 EPA National Wetland Condition Assessment and NWCA team members have provided plant identification resources to the Wetland Program. Amy Yahnke of the Washington State Department of Ecology provided training and guidance to the Wetland Specialist as well as extended members of the CTCR Environmental Trust Department and CTCR/BIA Integrated Resource Management Program team. In addition to monitoring and assessment expertise, this partnership will serve to provide common experience and language to Reservation resource managers to the benefit of wetland protection. The Wetland Specialist will continue to build relationships with tribes, agencies, and NGOs working in wetland projects in Traditional Territories.

VIII. FUNDING STRATEGY

The CTCR Wetlands Program Plan is committed to the sustainable management and conservation of wetland ecosystems while enhancing opportunities for Tribal Member and community involvement in conservation efforts. The writing of this plan was supported by EPA's Wetland Program Development Grant (EPA-REG10-WPDG-22-01) The CTCR Wetlands Program will continue to rely on WPDG funding for program development while seeking additional resources for targeted initiatives in Education, Outreach, and Engagement, Wetlands Restoration Workforce Development, and Climate Adaptation. The Wetland Specialist will continue to attend National Association of Wetland Managers webinars regarding sustainable funding for wetlands programs to better strategize funding potentials.

Works Cited

1. **Confederated Tribes of the Colville Reservation.** Press Release. Nespelem, WA : s.n., December 7, 2020.

2. **Johnson, Trisha.** Confederated Tribes of the Colville Reservation: A Breif History. [Online] CTCR History and Archaeology Program, June 16, 2021.

3. **Colville Confederated Tribes Planning.** *Comprehensive Plan 2020-2040.* Nespelem, WA : s.n., 2020. Strategic Plan.

4. **Nez Perce Wallowa Homeland.** Nez Perce Wallowa Homeland: Forced Relocation and War & After the War. *Nez Perce Wallowa Homeland.* [Online] https://www.wallowanezperce.org/.

5. **McNeel, Jack.** Wallowa embrace heritage with gathering. *Indian Country Today.* [Online] September 12, 2018. https://ictnews.org/archive/wallowa-embrace-heritage-with-gathering.

6. **Johnson, N. and A. Hansen.** Northern Rockies Ecoregion. *Wildfire and Water Quality: Processes, Impacts and Challenges.* Cambridge : Cambridge University Press, 2009, pp. 77-94.

7. **Taylor, Janis L.** *Northern Rockies Ecoregion; Status and Trends of Land Changes in the United States 1973-2000.* Sleeter, Benjamin M., Tamera S. Wilson, and William Acevedo, editors. s.l. : United States Geological Survey, 2012. pp. 85-93, U.S. Geological Survey Professional Paper 1794-A.

8. *Rangeland Ecosystem Services in the Northern Rocky Mountain Region of the United States.* **Morton, J.M., A.V. Konovalov, D.F.Potts, and R.L. Lawrence.** 5, Rangeland Ecology and Management, Vol. 67, pp. 537-550.

9. **Leopold, L.B., E.E. Wohl, D. Fitzgerald.** Bedrock geology and geomorphology of the Northern Rockies Ecoregion. *Wildlife-Habitat Relationships in Oregon and Washington.* Corvallis, OR : Oregon State University Press, 1999.

10. **McDonald, G.I., T.J. Frest, and J. Lichthardt.** Biodiversity of the Northern Rocky Mountains Ecoregion. *Fire Ecology and Management of the Major Ecosystems of Southern Utah.* Logan, UT : Utah State University Press, 2011, pp. 133-147.

11. **Sleeter, Benjamin M.** *Columbia Plateau; Status and Trends of Land Change in the Western United States - 1973 to 2000.* Sleeter, Benjamin M., Tamera S. Wilson, and William Acevedo. s.l. : United States Geological Survey, 2012. US Geological Survey Professional Paper 1794.

12. **NRCS, Natural Resources Conservation Service.** Land Resource Regions and Major Land Resource Areas by Ecological Region. [Online] 2018. [Cited: April 13, 2023.] https://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/technical/landuse/?cid=nrcs143_023570.

13. *Ethnobotany and agrostology of bitterroot valley Salish.* **Kerns, B.K., Shoviak, M.J, and B.A. Roberts.** 2, 2004, Journal of Ethnobiology, Vol. 24, pp. 231-286.

14. *Endangered and Threatened Wildlife and Plants; Final Rule To List the Gunnison Sage-grouse as Threatened.* **USFWS, US Fish & Wildlife Service.** 2013, Federal Register, Vol. 78(101). 29990-30051.

15. **USDA, Unided States Department of Agriculture.** The Columbia Plateau - Soil and Vegetation. [Online] 2015. [Cited: April 13, 2023.] https://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/or/home/?cid=nrcs143_013696.

16. **Bjornstad, B.N.** *On the Trail of the Ice Age Floods: A Geological Field Guide to the Mid-Columbia Basin.* s.l. : Keokee Books, 2002.

17. *Habitat selection and conservation of the greater sage-grouse: A review and synthesis.* **Litvaitis, J. A. and S.L.** Western North American Naturalist, Vol. 66(2), pp. 157-175.

18. **USACE, US Army Corps of Engineers.** Wetlands. [Online] 2018. [Cited: April 23, 2023.] https://www.nwp.usace.army.mil/environmental/wetlands/.

19. *Sustainability and resilience in river ecosystems: The role of wetlands in adapting to climate change.* **Garabedian, S. P., V. Shandas, & C.L. Kling.** 2010, Ecological Economics, Vol. 69(5), pp. 960-972.

20. *Livestock grazing impacts on wetland physical and biotic characteristics.* **Cox, S. E., J. Osterberg and D.A. Haukos.** 2011, Wetlands, Vol. 31(2), pp. 373-383.