

# Manastash Ridge Trail Management Plan

February 2022



## Acknowledgment

### Manastash Trail Coalition Members

Representing	Name
Central Washington University	Bruce Simpson
Evergreen Mountain Bike Alliance	Jesse Cunningham Kevin Dwight Bradley Gasawski Kathryn Houck Andrea Nesbitt
Equestrian	Holly English
Hiking	Noel Knoke Anne Merrill Steskal Rob Perkins
Washington Trails Association	Alan Carter Mortimer
Washington Department of Natural Resources	Alan Lawson Stephanie Margheim Mike Williams
Washington Department of Fish and Wildlife	-- Nathan Longoria

Cover photo credits: Justin Haug – Wenas Rainbow.

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**Manastash Ridge Trails Coalition members. Photo by Stephanie Margheim.**

## Acronyms

EMBA	Evergreen Mountain Bike Alliance
KRD	Kittitas Reclamation District
MRT	Manastash Ridge Trails
NOVA	Non-highway and Off-road Vehicle Activities
PHS	Priority Habitat and Species
RCO	Recreation Conservation Office
RCW	Revise Code of Washington
SGCN	Species of Greatest Conservation Need
TMO	Trail Management Objectives
USFS	U.S. Forest Service
WAAC	Wildlife Area Advisory Committee
WAC	Washington Administrative Code
WDFW	Washington Department of Fish and Wildlife
WDNR	Washington Department of Natural Resources
WTA	Washington Trails Association

## Introduction

The Manastash Ridge Trails (MRT) system is on public land (Figure 1) within a 2,005-acre planning area located on the north face of Manastash Ridge and within the Wenas Wildlife Area. It is located near the city of Ellensburg (Figure 2), a rapidly growing area of central Washington, and accessed primarily from the county parking area off the south end of Cove Road near its intersection with Manastash Road. The MRT system includes the trails from the valley bottom to a high point on the ridge, known to many users as “The Book”.

The Manastash Ridge Trails (MRT) system is a network of user-built trails on state-managed lands that have been used by residents of Kittitas County for over 60 years. The first recreation trails were adapted from game and livestock trails. Eventually, people expanded these trails from the Kittitas Valley bottom at Cove Road to a viewpoint on Manastash Ridge, also known as “The Book.” Enjoyed year-round, the trails provide a picturesque setting for a variety of activities, including hiking, mountain biking, horseback riding, as well as photography, wildlife viewing, snowshoeing, cross country skiing, and family outings.

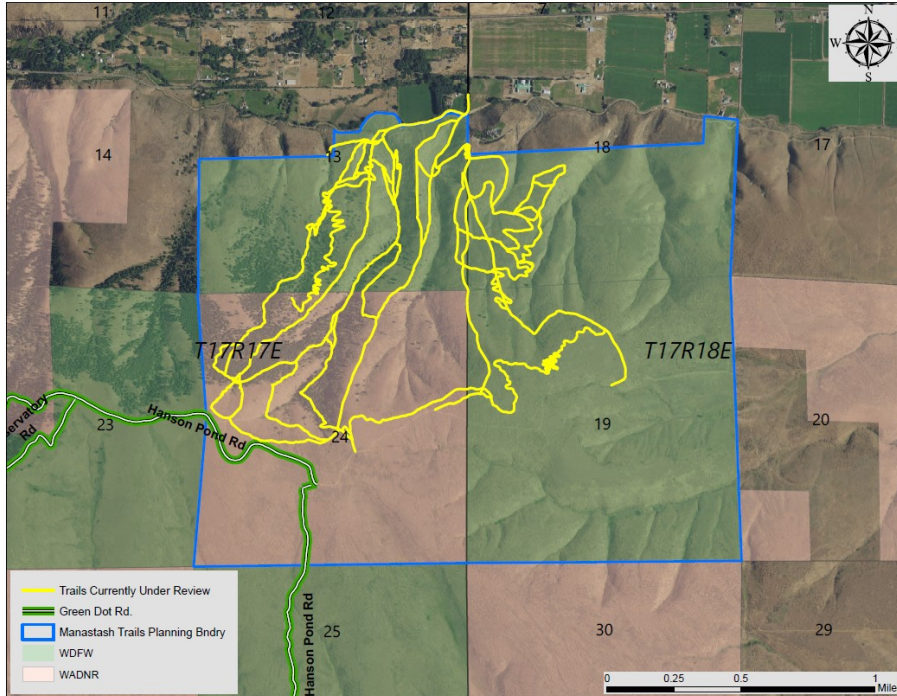
Over time the system has become well established and used extensively. The MRT provides convenient recreation for the Kittitas County community and welcomes visitors from across the Pacific Northwest and beyond. There are reports of visitors traveling from as far away as New Zealand.

Use and expansion of the MRT system by users has intensified in recent years resulting in impacts to local wildlife and habitat. This has demonstrated a need for more deliberate planning and management to protect the local environment and preserve the quality of recreational experience available within the MRT system for future generations.

This plan provides a starting place for guiding the development and facilitating the management of a sustainable trail system.



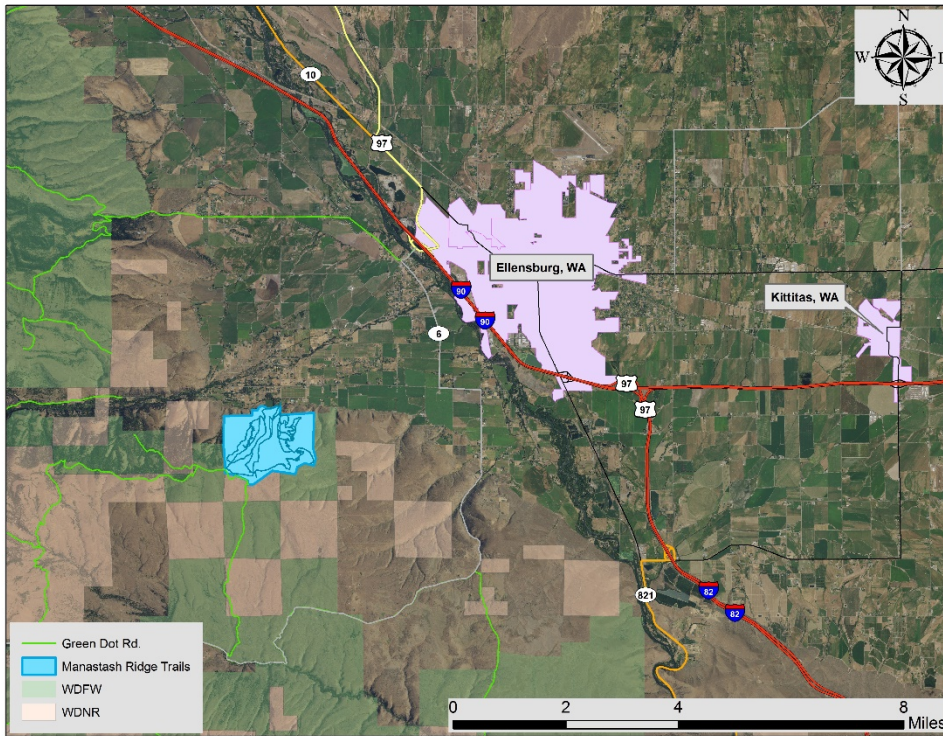
**Figure 1. Manastash Ridge Trails planning area boundary.**



The MRT system is known for some of the most challenging and rugged trails in Kittitas County, including slopes that exceed a 40% grade. One of the most highly used hiking trails, the Westberg Trail, is named for a local teacher who promoted the trail as a physical challenge for athletes. In addition to hiking, mountain biking and horseback rider are popular uses.

## Purpose

The purpose of this plan is to inform near term development and management of a sustainable trail system. Developed in partnership with the Manastash Ridge Trails Coalition (Coalition), this plan proposes to increase sustainability by focusing on well-designed trails and decommissioning 3.75+ miles of trails that were either recently added or redundant with other trails. Google Earth Pro (2018) was used to look at trail expansion over the last eighteen years. Most of the recent trail growth has occurred in the eastern shrubsteppe area during 2014-2017, adding an estimated 5.13 miles or a 26% increase (14.73mi) in linear feet (Figure 3). Future trail development would be managed through a centralized process and illegal trail building/expansion will be discouraged. An essential resource will be consistent volunteer support, organized by the Coalition, to help monitor and address issues as they arise. Additional trails have been added since 2018. Any trails added after 2018 will be closed pending review during a plan update.



**Figure 2.  
Manastash  
Ridge Trails  
location.**



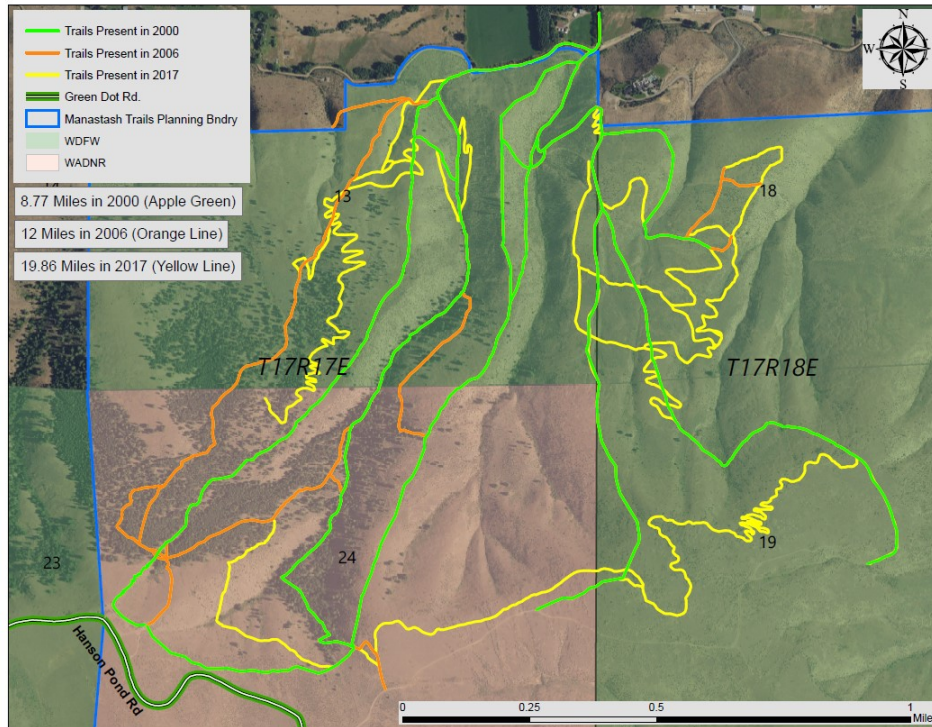
**Unsanctioned trail. Photo by Nathan Longoria.**

The MRT system is within the boundaries of the Wenas Wildlife Area and its trail management plan will be incorporated into the larger Wenas Wildlife Area Management Plan and updated during the next wildlife area plan update. The Wenas Wildlife Area Advisory Committee (WAAC)



and the Coalition will provide WDFW with input to the plan update and ongoing community support to the MRT System.

**Figure 3. Expansion of trails between 2000- 2017.**



## Background

WDFW's mandate is to preserve, protect, perpetuate, and manage fish, wildlife and ecosystems while providing sustainable fish and wildlife recreational and commercial opportunities (RCW 77.04.012). Washington Administrative Code (WAC) 220-500-010 further defines the primary purpose of Wildlife Areas as "the preservation, protection, perpetuation and management of fish and wildlife and their habitats. Public use of department lands may include fishing, hunting, fish and wildlife viewing, and other outdoor recreational opportunities when compatible with healthy and diverse fish and wildlife populations."

The three sections within the planning area managed by WDFW were purchased for the state in 1970 with funding from the National Park Service and the state Recreation Conservation Office (RCO) to "provide and protect critical winter range for deer and elk, as well as perpetuate and improve upland game bird habitat" (WDFW, 2006). The planning area contains one WADNR section that is managed by WDFW under a lease agreement. Lands purchased by state agencies are held in trust for Washington citizens and managed under the mandates established through state law (Revised Code of Washington, RCW).

The planning area is managed as part of the Wenas Wildlife Area, and because it is on state-managed lands, recreation use must be compatible with original grant sources and existing

management plans approved by WDFW and WDNR. WDFW manages 25,207 acres of leased WDNR lands on the Wenas Wildlife Area. The entire planning area is 2,005 acres, of which WDFW owns 1,361 and WDNR owns 644 acres. The planning area includes trails found outside the traditionally identified “Manastash Ridge Trails”. This plan is focused on the high-density trail network located on the north-facing slopes of the planning area.

## Goals and objectives

The goal of the MRT project is to develop a sustainable trail system which will accommodate hikers, mountain bikers, horseback riders, and other users while minimizing impact to the environment. The plan establishes a process for reviewing existing user-built trails for their cultural and environmental impacts, and determines whether to maintain, improve, relocate, or abandon each trail. The plan also evaluates potential new trails, trailheads, and signing locations. Users should not create any new trails or extend existing routes without the explicit written permission of WDFW.

The trails plan will include the following elements:

- Trail design, development, improvement, and decommissioning
- Long-term trail maintenance
- Signage and public education
- Environmental and cultural protection and mitigation
- Community stewardship

## Public Involvement

### **Wenas Wildlife Area Advisory Committee**

The Wenas Wildlife Area Advisory Committee is comprised of public land managers (USFS – Naches Ranger District, U. S. Bureau of Land Management, WDNR, and Bureau of Land Management), adjacent private landowners, the Yakama Nation, motorized recreationists, and representatives from the Back Country Horsemen, Yakima Valley Audubon, Evergreen Mountain Bike Alliance (EMBA), sportsmen's groups, and the Yakima and Kittitas County weed boards. The WAAC provides public and other stakeholders’ perspectives in Wenas Wildlife Area planning and management activities.

### **Manastash Ridge Trail Coalition**

In 2016, the Washington State Recreation and Conservation Office (RCO) awarded a \$75,500 (including a \$15,500 sponsor match) “Non-highway and Off-Road Vehicle Activities” (NOVA) non-motorized planning grant to WDFW and WDNR to develop a plan for long-term management of the trails. The formation of the Coalition was an objective of the RCO grant.

The Manastash Ridge Trails Coalition is an independent citizen advisory group formed in 2016 to support trail development, management, and volunteer maintenance of the MRT system. The Coalition includes representation from nonmotorized trail user groups, including hikers,

mountain bikers, and equestrians. The Coalition operates under the following mission statement: *“Promote a safe and sustainable trail network while protecting wildlife habitat and natural resources through education and user cooperation.”*

Early efforts of the Coalition focused on supporting WDFW planning and long-term management of the trail system. Early issues of concern included developing sustainable trails, mitigating environmental and cultural resource damage, developing an ongoing community engagement process, recruiting volunteer trail stewards, and developing an education program for encouraging proper trail use.

The Coalition formed a sign subcommittee to build two information kiosks at the base of the Manastash Ridge Trail system. The kiosks provide a map of the current trail system, primary trail use designations, information about proper trail etiquette, and information about how to get involved in trail maintenance and stewardship.



**EMBA work crew. Photo by Jettrell Stetner.**

Volunteers, including the Coalition members, supported the planning process by collecting data, conducting four on-site user surveys at the Cove Road trailhead to help estimate the number of visitors and collect detailed information on use type, trail(s) used, and to document whether users had dog(s). The data supplemented information collected by an infrared counter with more specific detail about the recreational users. Volunteers helped map trails, suggested improvements to the trails inventory, and made recommendations about primary use (hiking,

biking, or equestrian) designation for each trail. These designations were intended to reduce user conflict and acknowledge that some activities are incompatible on a specific trail because of geophysical conditions.

The Coalition also supports maintenance of the trails through the support of work parties hosted and run by user groups, including hikers, mountain bikers, and equestrians. In 2019, volunteers donated 726 hours of their time to stewarding the trails, demonstrating their deep commitment and good faith efforts to balance recreational use with the needs for habitat and wildlife conservation and fulfillment of trust mandates by WDNR.



**The view at “The Book” looking northwest. Photo by Stephanie Margheim.**

## Overview of the Wenas Wildlife Area

The Manastash Trails system largely falls under the management of the Wenas Wildlife Area. The wildlife area consists of 103,825 acres located in Yakima and Kittitas counties and within the East Cascades and Columbia Plateau Ecoregions. The Wildlife Area geographic scope includes North Cleman Mountain, South Umtanum Ridge, Roza Creek and Umtanum Creek. Management goals for the wildlife area are to preserve habitat and species diversity for both fish and wildlife resources, maintain healthy populations of game and non-game species, protect and restore native plant communities, and provide diverse opportunities for the public to encounter, utilize, and appreciate wildlife and wild areas.

## Resource Information

### **Geology**

The geology of Manastash Ridge and the surrounding landscape is a blend of active tectonics, past volcanism, earthquakes, glaciation, and catastrophic flooding. The Kittitas Valley is an alluvial syncline valley created during the late Miocene period. The valley has filled with a combination of alluvial and volcanic deposits (Clarke and Bryce, 1997).

The north side of Manastash Ridge is steep with several drainages and the elevation ranges from 1,900 feet at the Cove Road Trailhead to 3,560 feet at the “The Book”.

### **Soils**

The parent bedrock material in the Wenas Wildlife Area consists of basalt rock and includes fractured and folded lava flows. The basalt material has broken down into coarse gravels, cobbles, and boulders, with finer loams, silts, and clays. Some of these are readily, even highly erodible, as are the fine-grained loess and volcanic ash deposits also found on the wildlife area. The folding of the bedrock caused uplift in the topography and over time stream channels cut through the fragile soils to form steep-sided, narrow canyons. Soils in the canyons can be shallow or deep, and formed from weathered basalt and loess.

### **Climate**

The climate is typical of that on the east slope of the Cascade Range, generally hot dry summers, and cold wet winters. Elevation ranges from 1,200 feet to 4,100 feet. Total precipitation in the area varies from 6 to 25 inches per year, with much of it occurring as rain and/or snow during November through March. In winter, the average daily minimum temperatures in Yakima and Ellensburg are 23 and 20 degrees Fahrenheit respectively. The average daily maximum temperature in summer is 83 degrees Fahrenheit. Prevailing winds are from the northwest throughout most of the year.



## Ecological Characteristics

Sagebrush steppe and grassland communities are the dominant vegetation types in the region, particularly at lower elevations. Some of the higher areas on the ridge are forested, with ponderosa pine occupying the drier sites, and mixed conifer stands that include Douglas fir and some grand fir present on north facing slopes and areas with higher moisture retention.

## Ecological Systems

Ecological System*	Acres
<b>Columbia Basin Foothill and Canyon Dry Grassland</b>	974
<b>Columbia Basin Foothill Riparian Woodland and Shrubland</b>	2
<b>Columbia Plateau Low Sagebrush Steppe</b>	28
<b>Columbia Plateau Steppe and Grassland</b>	241
East Cascades Mesic Montane Mixed-Conifer Forest and Woodland	12
Inter-mountain Basins Big-Sagebrush Steppe	712
Inter-mountain Basins Montane Sagebrush Steppe	177
<b>Northern Rocky Mountain Ponderosa Pine Woodland and Savanna</b>	356

\*Determined by Regap Ecol Sys 2000/Natural Heritage March 2015. Bold text signifies ecologically imperiled ecological systems of concern.

## Forests

Forest vegetation types exist at higher elevations. The dominant tree species on south slopes is Ponderosa pine, but north slopes and wetter valleys contain a mix of species such as Douglas fir, grand fir, Ponderosa pine and western larch.

## Shrubsteppe

Shrubsteppe refers to sagebrush and bitterbrush, and steppe, or perennial bunchgrasses (e.g. bluebunch, needle-and-thread, Idaho fescue, and Sandberg's bluegrass) communities. It is a sensitive and rare ecosystem in Washington, with only about 12% of functional shrubsteppe ecosystem remaining and less than 1% protected in an ecological condition similar to the original vegetation (Crawford, 1993)

Sagebrush is a particularly important plant in eastern Washington with mature stands of big sagebrush providing important habitat for species that rely on sagebrush to survive. The loggerhead shrike, sage thrasher, and sage sparrow all require mature shrubs for nesting. Other species of conservation concern in Washington, such as the greater sage grouse, require the leaves of big sagebrush as a food source. Black-tailed jackrabbits also rely heavily on big sagebrush for food, protective cover, and shade.

Cryptobiotic soil crusts in this system play a crucial role in fixing nutrients and retaining soil stability, which in turn influences the ability of different plant species to germinate and become established. Cryptobiotic crusts serve as a protective layer and are composed of lichens, mosses, and algae. Without this protective layer, which is easily disturbed, bare ground is susceptible to rapid erosion by wind and water and provides an ideal site for invasive plants to establish.

Invasive plants, including cheatgrass, are aggressive colonizers. Where established bunchgrass communities exist, they do well in holding off cheatgrass. However, when the ground is disturbed, invasive plants move in with a vengeance. Species like cheatgrass germinate earlier than native grasses, so are able to establish in disturbed areas before native species can. Once established, it is difficult to remove the invaders and re-establish native species.

### Riparian

Riparian habitats are critical to most animal species using shrubsteppe and open forest, including deer, elk, and sage grouse. They are also used as travel corridors for animals moving between habitats. Riparian areas support trees such as cottonwood, alder, a wide variety of shrubs such as mock-orange, willow, and greasewood, and bunchgrasses such as basin wildrye (WNPS website, 2020).

Riparian habitat is also a primary factor influencing the quality and health of fish habitat. Riparian vegetation provides thermal cover, which keeps water temperatures down; creates stream channel features such as pools, which allow sediment to settle out; and maintain stream bank stability, which keeps sediment from entering the water.

The planning area contains riparian habitat in several unnamed drainages that contain sufficient water to support shrub and/or tree cover. Riparian habitat is very limited on the planning area and provides a critical habitat component for many birds and mammals.

### **Species within the project boundary**

WDFW has identified sensitive, threatened, and endangered species, Species of Greatest Conservation Need (SGCN), and Priority Habitats that may occur within the planning area and surrounding landscape (Table 1). For more detailed information on species and habitats see the 2006 Wenas Wildlife Area Management Plan (<https://wdfw.wa.gov/publications/00961>). The species descriptions following the table are species that are most likely to occur within the planning area. In many cases comprehensive wildlife surveys have not been conducted in this area.

Designated Priority Habitats include bighorn sheep summer range, cliff talus, elk winter range, mule deer winter range, riparian, and shrubsteppe.

**Table 1: State and federal conservation status, SGCN inclusion, WDFW Priority Habitat and Species (PHS) criteria and priority areas for species that may occur on the Wenas Wildlife Area.**

Common Name	Scientific Name	Federal/State Status/SGCN/PHS
<b>Mammals</b>		
American badger	<i>Taxidea taxus</i>	SGCN
Black-tailed jackrabbit	<i>Lepus californicus</i>	SC, SGCN, PHS
Bighorn sheep	<i>Ovis canadensis</i>	PHS
Gray wolf	<i>Canis lupus</i>	SE, SGCN,
Rocky Mountain elk	<i>Cervus elaphus nelsoni</i>	PHS
Mule deer	<i>Odocoileus hemionus hemionus</i>	PHS
Roosting concentrations of big-brown bat, myotis, pallid bat	--	PHS
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	PHS
Townsend's ground squirrel	<i>Uroditellus townsendii</i>	SC, SGCN
White-tailed jackrabbit	<i>Lepus townsendii</i>	SC, SGCN, PHS
<b>Birds</b>		
Bald eagle	<i>Haliaeetus leucocephalus</i>	SGCN, PHS
Burrowing owl	<i>Athene cunicularia</i>	SC, SGCN, PHS
Chukar	<i>Alectoris chukar</i>	PHS
Dusky grouse	<i>Dendragapus obscurus</i>	PHS
Ferruginous hawk	<i>Buteo regalis</i>	PHS
Flammulated owl	<i>Otus flammeolus</i>	SC, SGCN, PHS
Golden eagle	<i>Aquila chrysaetos</i>	SC, SGCN, PHS
Greater sage-grouse	<i>Centrocercus urophasianus</i>	SE, SGCN
Horned lark	<i>Eremophila alpestris</i>	SGCN
Lewis's woodpecker	<i>Melanerpes lewis</i>	SGCN
Loggerhead shrike	<i>Lanius ludovicianus</i>	SC, PHS
Northern goshawk	<i>Accipiter gentilis</i>	SC, PHS
Peregrine falcon	<i>Falco peregrinus</i>	SGCN
Pileated woodpecker	<i>Dryocopus pileatus</i>	SC, SGCN
Sagebrush sparrow	<i>Amphispiza nevadensis</i>	SC, PHS
Sage thrasher	<i>Oreoscoptes montanus</i>	SC, SGCN
Sooty grouse	<i>Dendragapus fuliginosus</i>	PHS
Vaux's swift	<i>Chaetura vauxi</i>	SC, PHS
Western bluebird	<i>Sialia mexicana</i>	SGCN
White-headed woodpecker	<i>Picoides albolarvatus</i>	SC, SGCN
<b>Reptiles</b>		
Short-horned lizard	<i>Phrynosoma douglasii</i>	SGCN
Ring neck snake	<i>Diadophis punctatus</i>	SGCN

Abbreviations: State endangered (SE), State threatened (ST), State Candidate for listing (SC); Species of Greatest Conservation Need (SGCN), Priority Habitats and Species (PHS).

## Impacts from Recreation

Impacts from recreation on wildlife can be both acute and long term, with acute impacts affecting foraging, fleeing, and reproductive behavior (Knight and Cole, 1991). In the long term, energetic cost from flight, decreased foraging, or increased stress levels drain energy needed for survival, growth, and reproduction (Geist, 1978). Lastly, humans' presence alone in wildlife habitat may result in animals avoiding parts of their normal range (Hamr, 1988, Gander and Ingold, 1997).

Recreational trails can impact wildlife by degrading habitats that wildlife depend upon. Trails are disturbed corridors that provide ideal conditions for invasive weeds. Weeds disperse by attaching to clothing, equipment, and animals, and can be carried deep into the backcountry areas where they do not yet exist. Taking advantage of the disturbed ground, weeds establish along the margin of trails, and advance to new sections of trail using their highly effective dispersal techniques. Horses can also facilitate distribution of invasive weeds through their manure.

Once established, invasive weeds can modify native communities at population, community, and ecosystem levels (Vitousek et al., 1997; Mack et al., 2000). A dramatic change in the habitat by non-native weed species can impact ground cover, forage potential, and shade potential. This can have long lasting and permanent impacts to native wildlife that utilize these degraded habitats and may result in the loss of effective habitat if large scale changes to the plant community occur.

## Mitigation Strategies for Species of Concern

Various species listed in Table 1 that currently occur within the Manastash Ridge Trail System may benefit from mitigation measures related to trail construction and recreation.

*Mammals* – A suite of mammal species currently use the MRT either seasonally or annually. Ungulates such as elk and mule deer are highly valued for viewing and harvest by the public. Elk use of the MRT during winter is generally low; however, mule deer are frequently observed. Although migratory mule deer leave the area for summer ranges at higher elevations, some resident individuals use the MRT during the summer. Given the small footprint of the current trails and proposed expansion, it is unknown how elk and mule deer will be affected.

American Badgers are known to occur in the planning area and reported occurrences and den locations will be assessed relative to human use of specific trails. Although badgers are generally tolerant of human activity at low levels, if dens of reproductive individuals are located close (< 50 meters; Quinn et al. 2008), sections of trail may be closed to avoid disturbance until young have matured.

*Birds* – More than 100 bird species forage and nest in sagebrush communities in eastern Washington, and several species of concern occur within or in close proximity to the MRT system. For example, sage thrashers are considered obligate sagebrush nesters (Reynolds et al.

1999) and are sensitive to human disturbance (Duchardt et al. 2020). Sagebrush obligates that are actively nesting, such as sage thrashers and sagebrush sparrow, should be documented and considered relative to available habitat prior to trail construction. Alternative areas for constructing sections of trail will be considered and, if not found feasible, mitigation for the estimated impact will be implemented.

The greater sage grouse was documented in the vicinity of the planning area in May 1981; however, due to local population declines, the MRT is currently unoccupied. If greater sage grouse are documented on the planning area in the future, timing of public use and trail densities will be reevaluated.



**View of Stuart Range from Old Double Track Trail. Photo by Nathan Longoria.**



## Recreation Current Use

With significant population growth in Kittitas County, reported to be the tenth-fastest growing county in the U.S. (Daily Record, 2017), use and popularity of the trails have quickly expanded over the last several years.

### **Recreation Use and Opportunities in the Kittitas Valley**

The MRT are situated in Kittitas Valley, 3.7 miles southwest of Ellensburg, near Interstate 90, in proximity to Seattle, Spokane, and Portland. Recreation user studies show trail users will travel up to four hours for weekend recreation. A 2020 study conducted by Earth Economics concluded that outdoor recreation generated \$185 million per year in direct economic activity in Kittitas County, including about \$9.5 million in state and local tax revenues (<https://www.eartheconomics.org/all-publications/2020/outdoor-recreation>).

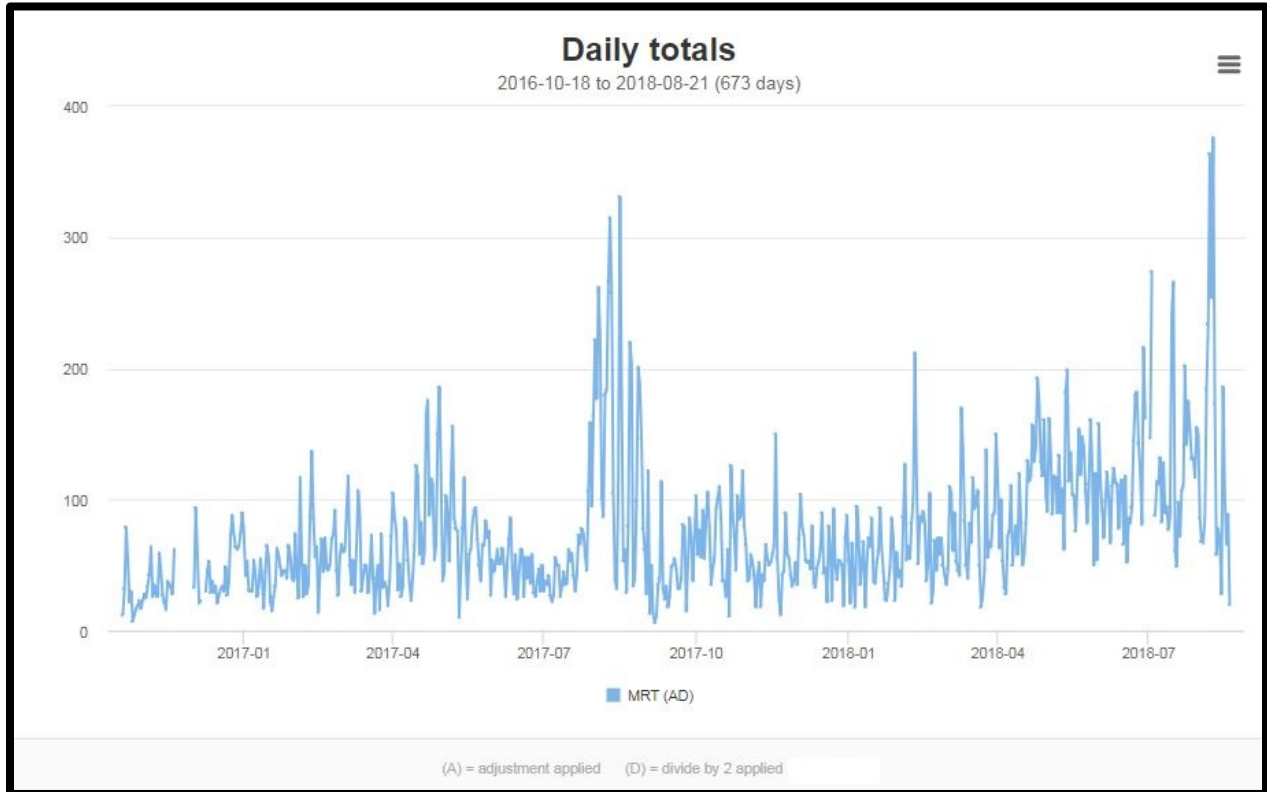
WDNR and WDFW completed two recreation plans in Kittitas County that contain elements similar to the MRT plan, including the [Naneum Ridge to Columbia River Recreation and Access \(2015\)](#), and [Teaway Community Forest Recreation Plan \(2018\)](#). Both efforts brought together recreation users, neighbors, interest groups, citizens, and state agency staff to develop comprehensive plans.

The Naneum Ridge and Teaway Community Forest plans provide the framework for managing these areas into the future, protecting wildlife habitat while still providing public access and use. Recreationalists from diverse users' groups engaged in these planning efforts, addressing issues related to land use, trail management, and conservation. Similarly, this plan provides the framework and direction to guide management of a sustainable trail system for the MRT.

### **Estimates of public use - 2016 to 2018**

Between October 2016 and August 2018, an infrared trail counter was installed to estimate the number of users accessing the trail network from the Cove Road parking area (Figure 4). The main entry point to the MRT system. The captured data provides a good estimate of use of the MRT, although a small percentage of users may be accessing the trails from either the east, west, or from Hanson Pond road to the south. The data collected shows that the MRT may receive 20,000 person-visits per year from hikers, bikers, runners, and horseback riders. The confirmed the year-round nature of the use identified peaks in the spring and mid-late summer.

Figure 4. Daily use documented by IR trail counter.



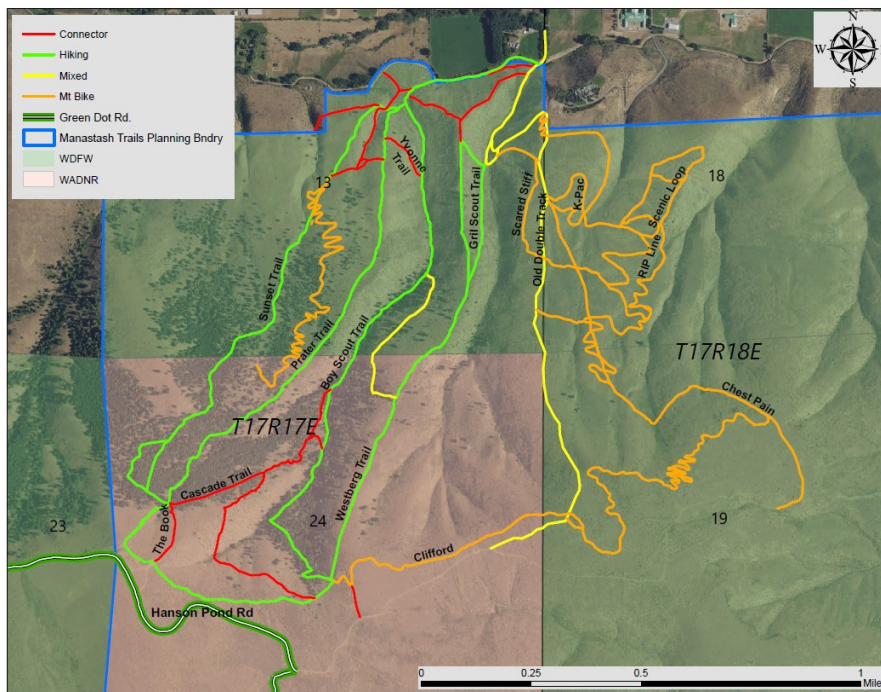
Volunteers also conducted on-site user surveys to ground truth user numbers. The surveys were conducted on four different days, two in the spring from sunup to sundown, and two during the fall from 12-4 pm (determined to be the highest use period). These data were compared to associated trail counter data. A correction factor was applied to the counter data, which resulted in a 60% increase to estimated use from the counter data set. In addition, surveys collected information about which trails were used more frequently, proportional use for each type of trail (hikers, horseback riders, mountain bikers, and runners), and quantity of visitors with dogs.

# Trail Management Plan

## 2017 Trail Inventory

In 2017, WDFW staff and volunteers mapped 19.86 miles of user-created trail in the MRT planning area, identified historic uses and points of interest, and recommended names for the existing trails (Figure 5). Since the 2017 inventory, the trail system has continued to grow as illegal user-built trails get added to the system. For example, in 2017 alone, 1.62 new miles of user-built trails were created.

**Figure 5. Manastash Ridge Trails inventory (2017) by, use type.**



### Trails Adjacent to the MRT Planning area

There are additional user-built mountain bike trails that travel south outside of the planning area are not displayed. These trails are not included in this plan and will be addressed at a future date. The plan focuses on the MRT because the trails are all similar in that they have relatively steep grades, serve thousands of users yearly, occur on the north side of the ridge, and access the top of the ridge at the “The Book” or upper Strande Road (Figure 5).

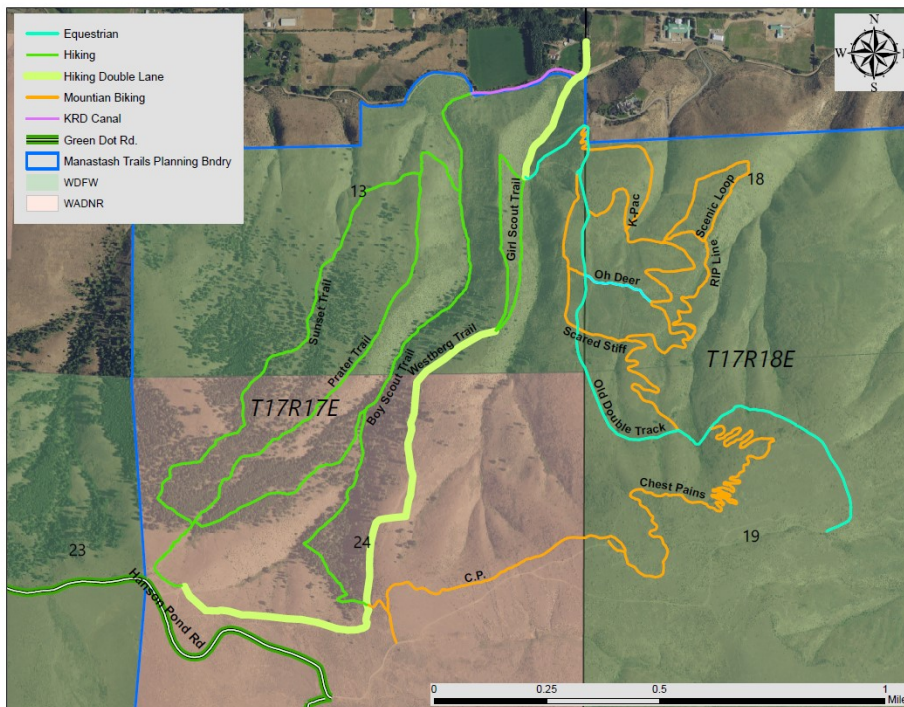
### Trail Management Objectives (TMO) Framework

The United States Forest Service (USFS) Trail Fundamentals and Trail Management Objectives (2016) and the Standard Trail Plans and Specifications (USFS, 2014) were used to develop the recommendations in this document. The Trail Fundamentals and Trail Management Objectives document describes the concepts of trail types, trail class, managed use, designed use and

design parameters. Within this document, the Design Parameters section gives recommendations for the appropriate tread width, grade, cross slope, clearing and turn radiuses for each Designed Use and Trails Class. The Trail Plans and Specifications document provides specifications and construction drawings for all elements of sound trail construction, some of which are relevant for the MRT system, such as full bench construction, [note: the document does provide specs on partial bench construction, but that should NOT be used for these trails, so not worth mentioning], climbing turns, and drainage features.

The Trail Management Objectives (TMO) is the documented and managed use for a given trail, which will identify the Managed Use(s) and the Designed Use (the single Managed Use of a trail that requires the most demanding design, construction, and maintenance parameters and that, in conjunction with the applicable Trail Class, determines which Design Parameters will apply to a trail). For example, if the Managed Uses for a trail are hiking and mountain biking, the trail’s Designed Use would be mountain biking, since the design parameters for mountain biking are more demanding than for hiking, including greater turning radiuses and lines of sight. It is important to note that determining a trail’s Designed Use **does not exclude** other allowed Managed Uses.

**Figure 6. TMO by use type.**



A trail’s Managed Uses will inform which activities are communicated to users as appropriate for a given trail. This information will be displayed on maps, trail identifiers and other printed materials. Clear and consistent communication will be essential for successful plan implementation. Posting information and equipping trail stewards and other volunteers with

consistent and accurate information will ensure the appropriate use of trails. More details will be included in the user education program.

The MRT system will be maintained to the USFS Class 2 designation (Table 3). This designation is for ‘Moderately Developed’ trails, managed in a natural, primitive to semi-primitive state, consisting of narrow, yet continuous trails with native material and limited grading.

The goal for the trail system is to maintain them at the minimum design standard needed to meet the level of trail use. Parts of the Westberg trail, due to the high expected use, have been designated as a ‘Double Lane’ hiking trail and therefore will be managed to a higher design standard.

**Table 3. Trail Management Guidelines by TMO\***

	Equestrian TMO guidelines	Biking TMO guidelines	Hiking Single Lane TMO guidelines	Hiking Double Lane TMO guidelines (Westberg Trail)
I Tread Width	12"- 24"	6"- 24"	6"- 18"	18"- 36"
Outslope Trail	3%	3%	3%	3%
Clearing Width	24"- 36"	18"- 36"	18"- 30"	30"- 48"
Clearing Height	As necessary	84"- 96"	72"- 84"	72"- 84"
Maintain average trail grade of	Maintain average trail grade of 10%	+5% ascending and 10% descending wherever feasible	Variable	Variable

\*Design guidelines are based on USFS Trail Class 2 designations that have been specifically adapted for this plan.

### **SEPA – Regulatory Review**

The State Environmental Policy Act (SEPA) requires state and local governments to identify possible environmental impacts that may result from governmental decisions. The SEPA review process helps the department, applicants, and the public understand how a proposed project will affect the environment. (Chapter 43.21C RCW). WDFW serves as the SEPA lead agency for fish and wildlife management activities and proposed actions on WDFW-owned lands. WDFW will conduct the appropriate level of SEPA review when details of the proposals are available.

### **Cultural Resources Review**

This project is subject to review under Executive Order (EO) 21-02. EO 21-02 directs state agencies to review capital construction projects not undergoing National Historic Preservation Act (NHPA) and consult with the Department of Archeology and Historic Preservation (DAHP) and affected Native American tribes to determine whether the project is likely to impact cultural, archeological, or historic resources.



The RCO facilitates the review of applicable projects for potential impacts to archaeological sites and state cultural resources. The sponsor must assist RCO in compliance with Executive Order 21-02 or the National Historic Preservation Act before initiating ground-disturbing activity. The funding board requires documented compliance with Executive Order 21-02 or Section 106 of the National Historic Preservation Act, whichever is applicable to the project. If a federal agency declines to consult, the sponsor shall comply with the requirements of Executive Order 21-02. In the event that archaeological or historic materials are discovered during project activities, work in the location of discovery and immediate vicinity must stop instantly, the area must be secured, and notification must be provided to the following: concerned Tribes' cultural staff and cultural committees, RCO, and the State Department of Archaeology and Historic Preservation. If human remains are discovered during project activity, work in the location of discovery and immediate vicinity must stop instantly, the area must be secured, and notification provided to the concerned Tribe's cultural staff and cultural committee, RCO, State Department of Archaeology, the coroner and local law enforcement in the most expeditious manner possible according to RCW 68.50.

Natural resource staff from the Yakama Tribe reviewed this plan and recommended that cultural review should be completed prior to any work and notification sent to the tribal cultural program.

### **Education and Outreach**

Engaging users in active stewardship of the MRT system will require communication with multiple and diverse audiences. Goals for education and outreach in the planning area include educating users about appropriate use for specific trails, trail conditions, seasonal use considerations, and how to appropriately interact with the wildlife area.

Education and community outreach will include kiosk and trail signage, as well as social media communication and public meetings. Communication efforts will keep local community members and MRT visitors informed about this project and ongoing trail work, issues, and volunteer activities.

Two kiosks will be used to communicate with users of the MRT who access the trails via the county parking area at Cove road. Signage design and messaging will be approved by WDFW. Both kiosks will act as in-person education and outreach platforms, will allow user interaction, and create a sense of “ownership” among users. One kiosk was built by volunteers in 2018 (materials funded by WDFW), and a second existing user-built kiosk was moved to the site.

Items to be posted at the 2 kiosks:

Regulatory kiosk (managed by WDFW):

- The official map of sanctioned trails in the MRT area with trail descriptions
- Permanent education materials

- Multi-use designations explained and mapped
- Seasonal use expectations
- Yield procedures for area users
- Messages from the land managers
- Land use closures, such as fireworks use or seasonal use closures
- Other as needed

Education kiosk (managed by Coalition):

- General signage about invasive weed species
- Public announcements
- Work party information
- Website or contact information for the Coalition
- Other as needed

### Signage

Well-signed trails and area maps will aid in navigation and discourage informal trail building. By confining people to narrow use corridors, this will contribute toward maintaining both quality habitat and user experience. *NOTE: Signage will conform to an agreed upon standard and must be approved by WDFW prior to installation. WDFW is developing sign design standards and expected completion is 2022.*



**Kiosks at Cove Road Parking area. Photo by Nathan Longoria.**

MRT area signs may include:

- Trail Use and Identity Signage -

- Identify trail starting points
- Trail markers may include trail names and primary use.
- Navigation Signage -
  - Alerts users to appropriate use, speed, hazards, and other considerations
  - Trail markers may include hazard and speed warning signs.
- Education and Interpretive Signage -
  - Informs public about use of the MRT area
  - Informs public about species, habitat, and user impacts
  - Identifies and addresses site specific issues that may arise within the planning area.

An interpretive panel will be placed one of the kiosks at Cove Road. Potential topics include species and habitats information, educational messages about geology (signage at unique vistas), natural resources, stewardship (areas of common neglect or misuse), and good trail behavior. Due to the sensitive nature of the soils, conditions arise seasonally that require special considerations. Posting a “changeable conditions” update on the state kiosk has been proposed to promote care and stewardship of the state lands. The goal of such "self-management" signage is to allow users to decide on trails to use or avoid during times when trails are hazardous, when conditions are muddy and icy, or when damage to habitat and soils could occur.

#### Implementation

The Coalition identified their priorities for implementation (Figure 7 and Table 3) as funding becomes available, and with volunteer labor from the local community and partner organizations such as Washington Trails Association (WTA), EMBA, and Backcountry Horsemen of Washington. Additional grant funding may be pursued as needed. Additional future phases of improvement may be considered following future updates to this plan.



**Old Double Track Trail. Photo by Nathan Longoria.**

**Table 3. Trail Plan Priorities.**

<b>Activity</b>	<b>Rank</b>
Westberg Trail Redesign	1
Initial Trail Maintenance	2
Establish Stream Crossings	3
Initial Trail Decommissioning	4
Install Signs from Sign Plan	5
Upper Prater Redesign	6
Sections of Minor Redesign	7
Equestrian Trail - Old Double Track Redesign	8
Widen Boy Scout Trail	9
Cascade Trail Redesign	10

The Coalition’s first and highest priority is redesigning and improving the Westberg Trail due to its popularity and high use. Other priorities include improvements to reduce the impacts of high use on the landscape, including chronic erosion, and to facilitate the universal adoption of the trail system, by users, land management agencies, and nonprofit and volunteer organizations. With the goal being to encourage users to stay on the agreed trail system. Management and improvement of the trail system and signage would encourage users to utilize the existing trail system. These components include developing the initial drainage, maintenance structures, establishing stream crossings, purchasing and installing signs, and redesigning portions of the upper Prater Trail.

#### Future Phases

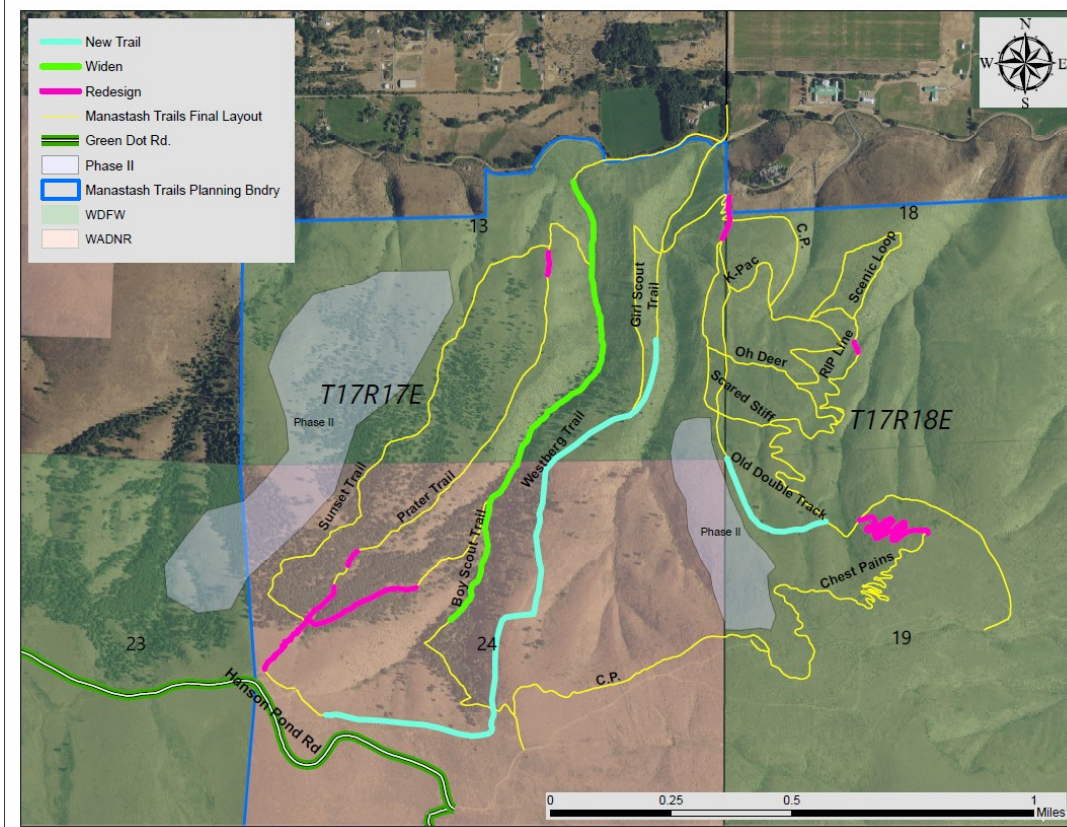
During the planning process the mountain biking community advocated for more trails, which could be addressed in the future. Additional trail development will require additional analysis. Before plan implementation, the Coalition, WDFW and WDNR, agreed to the following interim steps: 1) Monitor the progress made on Phase I activities, 2) Maintain existing trails, and 3) Identify and address any new unauthorized trails. The Coalition will work with locals to eliminate any unauthorized trails that are not a part of the planning process.

The Coalition will review and evaluate the progress of MRT plan implementation during their annual early spring meetings. Once significant progress is made, the Coalition will consider the need/desire for additional trails and bring recommendations to the WDFW and WDNR. Consideration of future phases may be considered with the development of a new Wenas Wildlife Area Management Plan and associated updates to this plan.

## Construction

The construction elements of the plan include trail redesign, as well as widening and relocating sections of existing trail (Figure 7). WDFW will work with a trail designer and/or engineer as needed. It is not expected that minor widening and rebuilding existing trail segments will require engineering oversight. All work must adhere to outlined standards agreed to by all parties and will be discussed for approval by Coalition during annual spring meetings.

**Figure 7. Construction Plan.**



**Table 4. Linear lengths of construction plan elements.**

<u>Based off GIS Map</u>	<u>Feet</u>	<u>Miles</u>
Relocation	14,326	2.71
Redesign	3,457	0.65
Widen	5,530	1.05



**Table 5. Linear length of trail per user group\*.**

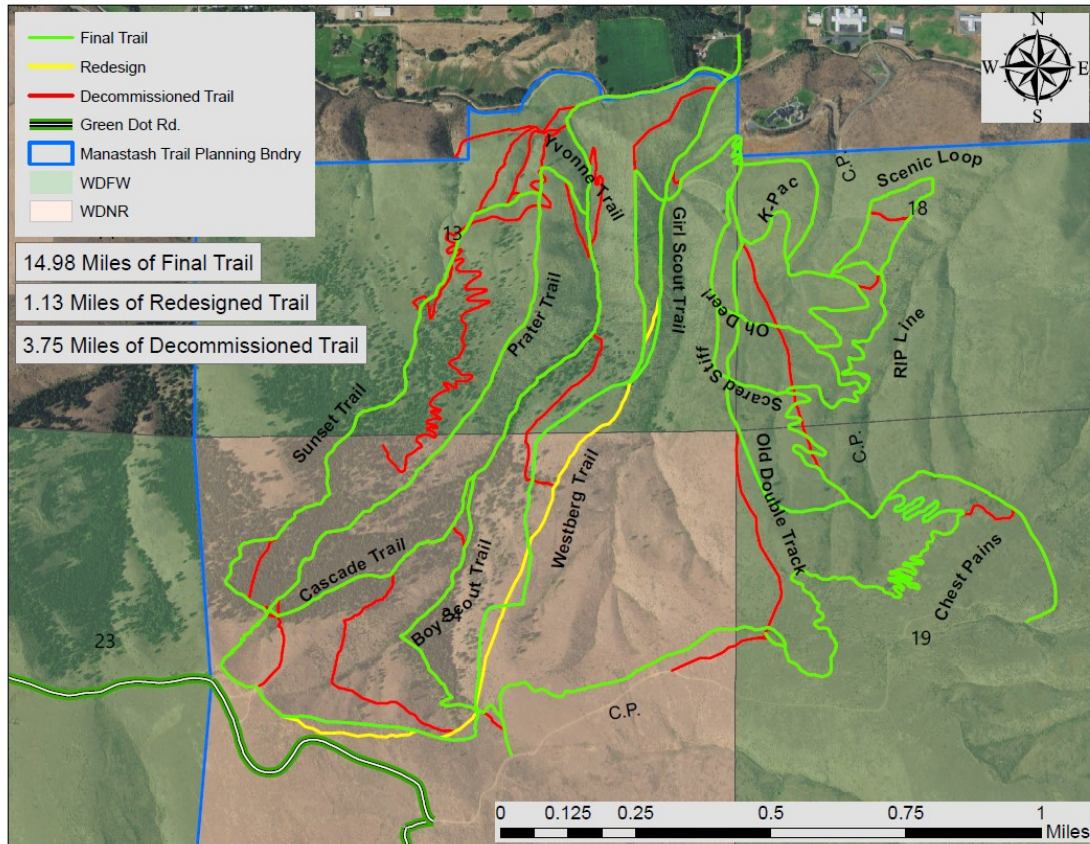
Use Type	Feet	Miles
Hiking	34,117	6.46
Mountain Biking	34,532	6.54
Equestrian	12,023	2.28

\*Total doesn't equal 14.98. Lower Westberg trail was counted under each use.

**Trail Decommissioning**

Most trails in the area were built by users, some are built on steep slopes or ridge lines. Many of the trails are not sustainable in current conditions and contribute to habitat degradation. To improve sustainability, problematic trails should be decommissioned. Criteria used to identify trails for decommissioning include redundancy, unsustainable trail grades, overall trail condition, and whether the trail provides a unique experience. WDFW will develop additional criteria in a forthcoming Trails Policy as directed in the 10-year Recreation Strategy for WDFW-managed lands. The trails highlighted in red in Figure 8 have been identified for decommissioning. When all the identified trails are decommissioned, the trail system will be reduced 24.6% from 19.86 miles to 14.98 miles in length.

**Figure 8. Trails to be decommissioned.**



The decommissioned trails should be returned to natural habitat conditions. This may include seeding with a native mix, and/or ripping compacted soil to increase water infiltration and improve seed-soil contact. In addition, brush and branches will be placed to obscure the decommissioned trail sections and “restoration in progress” signage will discourage trampling. Decommissioned trails will be monitored for rehabilitation progress. As part of the monitoring, adaptive management strategies will be developed if the desired results are not occurring with adaptive measures applied as appropriate.



**Trail to be decommissioned. Photo by Nathan Longoria.**

## Trail Projects

### **Cove Road Access**

Most users access the MRT system from the County’s Cove Road parking area. Between the parking area and the Wenas Wildlife Area boundary, users follow a Kittitas Reclamation District (KRD) road that accesses an open section of the south branch extension irrigation canal. There was a very primitive footbridge that was used to cross the open-topped, ditch-style canal and access the wildlife area. In July of 2020 KRD was able to replace the bridge with a section of culvert provided by WDNR. This addressed one major safety issue. Long-term, KRD desires an alternate route to the Boy Scout Trail to stop hikers from using the canal access road.

### **Westberg Trail Redesign**

The Westberg trail is the most heavily used trail in the MRT system and is chronically degraded in many sections. Much of this comes from the fact that the trail was developed directly on the

ridgeline. The trail could be significantly improved by bringing it down off the ridgeline to one side of the ridge. Given the volume of traffic on the upper section of the Westberg Trail (above its junction with Boy Scout trail), a hiking double lane design should be applied in this location. Most of this trail is on WDNR land. WDNR took the lead to implement these improvements in 2019, based on a redesign developed by Jack Powell, a long-time user of the trail. The relocation of the Westberg trail is encapsulated in Figures 6, 7, and 8.

### Adaptive Management

Adaptive management incorporates research into conservation action. It is the process of hypothesizing how ecosystems work, monitoring results, comparing them with expectations and modifying management decisions to better achieve conservation objectives through improved understanding of ecological processes (Lancia et al. 1996).

Adaptive management is a tool that enables natural resource agencies or organizations to evaluate how they are meeting their short-term and long-term natural resource goals. Better decisions on future directions should result from the evaluations. The evaluation will also allow better communication with the public on the effectiveness of the programs (Franklin 2007).

The MRT plan provides the baseline from which adaptive management processes will be put into effect. The goal of the plan is to engage all parties involved to learn and understand the intent for the MRT system and how to reach the desired outcomes. Adaptive management will be used to address site specific needs and challenges, as well as empower users to advocate for positive future change in the area.

### Maintenance

Regular maintenance will be completed annually or more frequently as needed. See Table 6 for more detail. Strategies such as grade reversals, trail knicks, grade dips, or grade sags will be used to minimize erosion and concentrate of water flow. Sediment plumes and downcutting in the tread are two conditions that visually indicate a section of trail is actively eroding. Adaptive management may be used to achieve the desired results. If users see maintenance issues, they are encouraged to notify the Coalition.

**Table 6. Maintenance Plan Ranked by Potential Habitat Impact Potential.**

Habitat Impact	Maintenance Activity	Schedule	
		Repair	Monitoring
Erosion	Waterbars, grade reversals, trail knicks, grade dips	Bi-annual, or as needed	Annual
Sight lines	Brushing out, hazard removal	5-years, or as needed for safety	Biennial
Tread damage	Tread repair	Annual, or as needed	Annual

Noxious weeds	Removal	Seasonally, or as needed	Annual
Litter	Organized clean-up Individual user pick up	Annual On-going	On-going

## Moving Forward

WDFW and the coalition will work together to develop an implementation and plan update model that allows for continued community involvement.

### Project Proposal Process

Citizens from the local community are encouraged to propose projects to enhance habitat, manage erosion, mitigate impact, and more. A draft application form has been developed for proposals (see Appendix H) to the Coalition. The form may be modified by the Coalition if needed to better facilitate the process. All work on the MRT requires formal WDFW approval and must meet the goals of the existing or future Wenas Wildlife Area management plans.

The Coalition will host regular meetings to identify issues, determine highest needs for the coming year and develop long-term goals. They will develop and follow a clear process for how the group will communicate with WDFW and WDNR about stakeholder needs and proposed work. Regular communication between the Coalition members will help with the identification and monitoring of results and determining success of the elements of the project.

A yearly progress and planning process model will be used on the MRT. The full Coalition will meet annually to discuss accomplishments and plans for the coming year. The Coalition user's group will assist in coordinating citizen proposals of work in the planning area. Proposals will be reviewed by the group, then forwarded to WDFW and WDNR for the final decision. The agency land managers are ultimately responsible for any changes made to the landscape/habitat in the planning area. Therefore, proposals must be approved by the land manager before any work is started.

This proposal and approval process through the Coalition are expected to include, but not be limited to:

- Descriptions of the desired project/work
- Rationale/perceived need for this project
- Potential impact to habitat and species
- Impact to soils including drainage and erosion control
- Group or individual responsible for the work
- Group or individual responsible for long-term maintenance
- Maintenance plan and timeline (five-year minimums are suggested as the starting point for maintenance responsibilities on new construction)
- Other information that could affect the decision or what unique need the project fills

- Possible funding sources

Proposals will need to map the work locations, areas affected, tool staging locations, task delineation, progress indicators, plan for water mitigation, and other necessary components to demonstrate work completion to standards agreed upon with the Coalition. Each project will have required expectations to ensure success.

Full implementation of this plan is contingent on funding. Some low cost or volunteer projects may move ahead in advance of larger costs. Small scale modifications to this plan will be addressed as amendments to this document. Large scale proposed changes will require a new planning process, including joint community and wildlife area management cooperation, to analyze the potential impacts.

### **Future Public Involvement**

This plan has been a collaborative effort of local user groups, WDFW, WDNR, Kittitas County, and Kittitas Reclamation District. Moving forward, participation from local users will be essential. The Coalition user groups assist WDFW and WDNR in monitoring conditions and progress towards goals. Specifically identified in the TMO is annual tread repair, brushing out, and noxious weed monitoring. Condition surveys and drainage clean out will occur annually or as needed to best prevent soil erosion. At the conclusion of each year's maintenance activities, a report of work completed will be submitted to the WDFW and WDNR. Outside of yearly maintenance, projects for individual work parties may be proposed to the Coalition, which will then be submitted for land manager approval. These projects include examples like the removal of a standing derelict barbed wire fence to enhance habitat quality or closure and reclamation of braided trail sections to reduce impact. (NOTE – 90% of this fence removal work has been completed in the planning area.)

### **Trail Plan Updates**

The current Wenas Wildlife Area Management Plan was completed in 2006 and is scheduled for a full update process beginning in 2023. Diverse stakeholders, including members of the Coalition, will be invited to participate in the development of goals and objectives for the next ten years of the wildlife area's management, including the lands within the MRT planning area.

During the update process, WDFW will compile data on all current uses within the boundaries of the 105,461-acre Wenas Wildlife Area and develop management strategies and priorities to advance conservation and recreation goals. A summary of the WDFW wildlife area planning process, as well as the statutory, regulatory, and funding requirements for managing wildlife areas, can be found in the 2021 Wildlife Area Management Area Planning Framework.

With the input of the Coalition and other stakeholders and user groups, the MRT plan will be updated to reflect the management goals and priorities of the updated wildlife area plan. An MRT plan update process will include a review of this plan's implementation status and an analysis of the use, condition, and sustainability of the existing system.



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