



Teanaway Community Forest Aquatic Restoration Project 60% Design Report

Date:

Yakama Nation Fisheries-Yakima Klickitat Fisheries Program

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Natural Log Jam in Middle Fork Teanaway River, circa 1900,
Ponderosa forest on East slope of Cascades, Washington

Source: Russell, I. C. 1909. Rivers of North America. G.P. Putnam's Sons, New York. 327pp.
Figure B, Plate XII, page 239. (Scan by T. Abbe)

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Overview

The *Teanaway Community Forest Aquatic Restoration Plan* submitted for review on 3/11/2016 to the Washington Department of Natural Resources, described the critical need for restorative action with a LiDAR based, watershed scale approach for achieving those actions in select, priority sub watersheds within the TCF. This document is the next step- taking site investigation, staff comments and expertise and synthesizing that information into a single document for regulators, project sponsors, contractors, and the general public. This document details more specific information outlining: ESA listed species timing restrictions, fire restriction measures, equipment access, construction specifications, **project timeline**, permit acquisition, and proposed mitigation measures.

Scope of Work

The goal of the proposed work within the Teanaway Community Forest (TCF), is to restore hydrologic and habitat function for improved production of Yakama Nation treaty reserved fish species, including the Middle Columbia River Steelhead (*Oncorhynchus mykiss*), a species listed as threatened by the National Marine Fisheries Service (NMFS). This goal will be achieved through the following objective: Place woody material in tributaries of the Teanaway River and Swauk Creek and on adjacent floodplain surfaces to provide roughness which will help capture mobile sediment and promote stream aggradation, create channel complexity, attract beavers, recharge shallow groundwater (improve base flows), reduce peak flows, improve stream temperatures, and establish a robust and species rich riparian corridor.

The proposed work will treat 8.9 miles of stream and 141 acres of floodplain in eight sub-watersheds of the TCF (appendix 1). The cumulative effects of this work, in addition to future projects in the Swauk and Teanaway Watersheds directly address the limiting factors faced by treaty reserved Fish Species such as temperature and minimum in stream flows. Restoration materials will be harvested from state owned upland forests, which are densely forested due to a legacy of fire suppression. A silvicultural harvest prescription will be implemented that will remove the least vigorous trees. The dominant trees will be retained, and spacing will promote fire resiliency. The project will harvest fuel, which will reduce the risk of catastrophic wildfire in treated forests. Table 1 summarizes proposed floodplain and channel restoration metrics in addition to material volumes on a site by site basis.

Concept Development

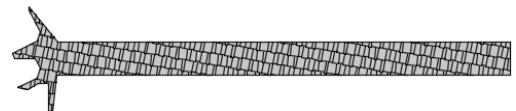
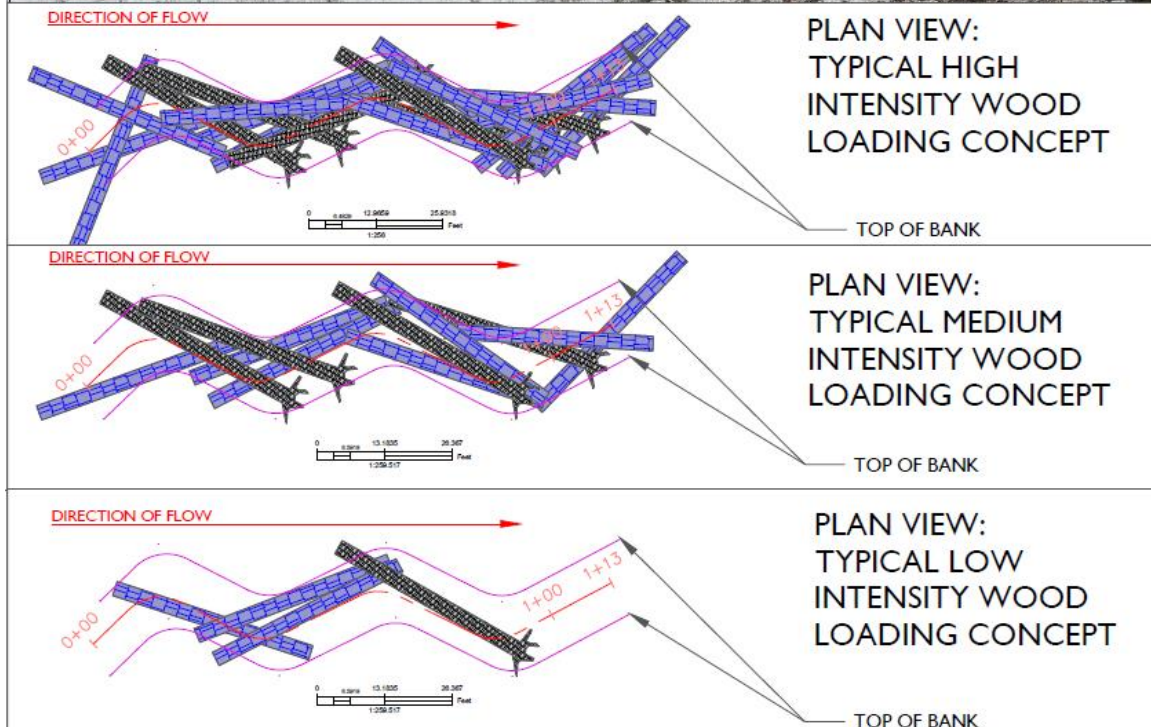
Floodplain Roughness

Light detection and ranging data (LiDAR) provided by WDFW from the summer, 2016 flight to Yakama Nation Fisheries staff was processed to create a topographic surface with 6" or better accuracy within the Teanaway Watershed. Relative elevation maps (REM) were developed for the sub-watersheds described in this document using techniques similar to that used by Jones, 2006. The REM(s) display height above summer base flow water surface. Flood plains for each of the seven sub-watersheds were delineated based on 6-7' above summer base flow water surface, which is a cursory estimate of the floodplain inundation of a "2 year flow" recurrence interval. A better estimate of the floodplain will be verified in the field as conditions allow, by determining the hydraulic radius of the bank full (1.5 - 2year recurrence/channel forming flow) condition, estimated proposed roughness (Manning's N), and longitudinal channel slope.

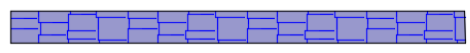
Wood Replenishment Intensity

The gradient of high, medium, and low intensity wood replenishment was developed to conceptualize and scale the project to fit within our timeline and produce the highest benefit to treaty reserved fish and their habitats. The REM maps make a clear delineation of areas that are disconnected from side channels, backwaters, and flood plains, and where active channel incision is occurring. Wood replenishment increases roughness values. Increased roughness initiates a rise in surface water elevations/flood inundation zones. Therefore, channel reaches/habitat units that are disconnected from adjacent surfaces

(side channels, flood plains, etc.) were selected to induce a rise in surface water elevations and depending on the degree of disconnection fell within the high, medium and low gradient designation.



= 40' x > 14" DBH FIR ROOTWAD



= 40' X 14" DBH FIR CUT LOG

- NOTES:
- RACKING AND SLASH MATERIAL WILL BE USED BETWEEN LOG LAYERS AND ON FLOODPLAIN SURFACES WHERE APPROPRIATE
 - WOOD WILL BE PLACED FOLLOWING THE 2012 WDFW STREAM HABITAT RESTORATION GUIDELINES: <http://wdfw.wa.gov/publications/01374/wdfw01374.pdf>

Figure 1

Project Elements

Table 1

Site	Channel Length Treated (mi)	Floodplain Treated (ac)	40'X>14"DBH (ea)	40'X>14"DBH RW (ea)	40'X<14" DBH (ea)
Indian	1.8	39	885	295	2730
Middle	1.1	27	464	155	1890
Dickey	0.6	5	130	43	350
Jungle	1.4	17	758	253	1190
Rye	1.0	11	351	117	770
Lick	1.5	14	722	241	980
Carlson	1.0	12	478	159	840
First	0.5	16	51	17	1120
Total	8.9	141	3838	1279	9870

Indian Creek-2016

Continuing efforts to restore stream and floodplain processes in the Indian Creek Watershed, Yakama Nation Fisheries staff are proposing additional wood replenishment both on the TCF and partially on the trust property in section 16 in the fall of 2016. The proposed work will include the addition of 1,180 logs and logs with root wads to the active channel and head cuts/ditches. In addition, 2,730 logs will be applied to the floodplain. This work will kick start the channel and floodplain restoration process in over 1.8 miles of Indian Creek and provide roughness to 39 acres of adjacent floodplain surfaces. Appendices 2 and 3 outline the site specific project elements and overall scope of work within the Indian Creek Watershed. In addition to the elements included in appendices 2 and 3, ample slash and racking material will be applied to floodplain surfaces and within the channel to ensure channel aggradation potential is maximized and construction-caused sediment delivery off the floodplain to the active channel is minimized.

11 temporary material staging areas were identified adjacent to the proposed site. The Old Indian Creek Road (T-6500A), is designated as decommissioned by the DNR (Statelands_Roads_TCF layer). One staging area requires the use of the road to access a material staging area. No earth moving will be required to utilize the decommissioned road with highway vehicles, however the use of this road *will* require a Forest Practices Act Permit. All additional material staging areas will be accessed by the active road network (Indian Creek Road, T-6500). Material placement within the stream and floodplain will utilize a tracked crane, skidder, excavator, utility tractors,

and hand tools/winch. See “Site Preparation, Closeout, and IFPL” section of this document for specific measures/best management practices.

Site specific seasonal timing restrictions for construction activities:

- A. Northern Goshawks (Upper Indian (figure 3)): **March 15th-July 15th?**
- B. Northern Spotted Owls (Upper Indian (figure 3)): **March 1st- August 31st**
- C. Middle Columbia River Steelhead: **February 1-July 16th**
- D. IFPL

Jungle Creek 2016

As described in appendix 5, this proposed reach/site for wood replenishment has been confined by the Jungle Creek Road. This, in part, has caused the reach to significantly down cut-in some locations down to bedrock (figure 2). Yakama Nation Fisheries staff are proposing wood replenishment in 1.4 miles of Jungle Creek and 17 acres of floodplain (appendix 5). This work is proposed both on the TCF and within USFS managed land. This project was included in the USFS’ recent Unified Program of Work. This work is intended to induce a rise in surface water elevations as the site undergoes a series of flow recurrences and subsequent bedload deposition and retention.

The expected rise in surface water elevation will likely cause subsequent flooding of the Jungle Creek Road, especially at the downstream extent of the reach, during elevated flow events. The Jungle Creek Road is being proposed for realignment, outside of the channel migration zone in 2018. As a temporary protection measure to the road, we propose surfacing a portion of the road with rock to prevent obliteration of the road due to an elevated flow event that could occur between implementation and road realignment. Figure 3 shows mean particle size distribution in Jungle Creek from pebble count surveys in early May, 2016. Using the equation:

*** $dr = 12 * R * s / (\tau * (\gamma_r - 1))$, it was determined that substrate up to 3.6” (91.44 mm) are mobile at a bank full event. This accounts for ~70% of the existing bedload material. Therefore, a 4” minus rock surfacing of the lower portion of Jungle Creek road, adjacent to the project site, is recommended to temporarily protect the road from minor flood events. Appendix 4 displays 1436 feet of Jungle Creek Road that is, and will be particularly vulnerable to damage by flooding due to the elevation and proximity of the road in relation to existing water surface elevations. This particular measure will be vetted by DNR road engineering staff to verify.

Existing site conditions offer the opportunity to place wood directly from the road to the stream and floodplain surface in some locations-using a self-loading log truck to improve efficiency of material installation and minimize impacts. 12 temporary material staging areas were identified along Jungle Creek Road that do not require the improvement of orphaned or decommissioned roads. In addition, a tracked crane, utility tractors and hand tools/winch will be used to position logs in Jungle Creek and the adjacent floodplain where road-based wood replenishment is not an option.

Site specific seasonal timing restrictions for construction activities:

- A. Middle Columbia River Steelhead: **February 1-July 16th**
- B. IFPL

*** dr = diameter of rock, R = hydraulic radius in ft. A/P , where P is the wetted perimeter in ft (1.23)
 s = longitudinal channel slope (2.3%), τ^* = dimensionless shear stress (0.06), γ_r = specific gravity of rock (2.6)



Figure 2. Heavily degraded sub-reach within the Jungle Creek Project Reach. *Note bedrock at streambed surface. Photograph taken May 2016

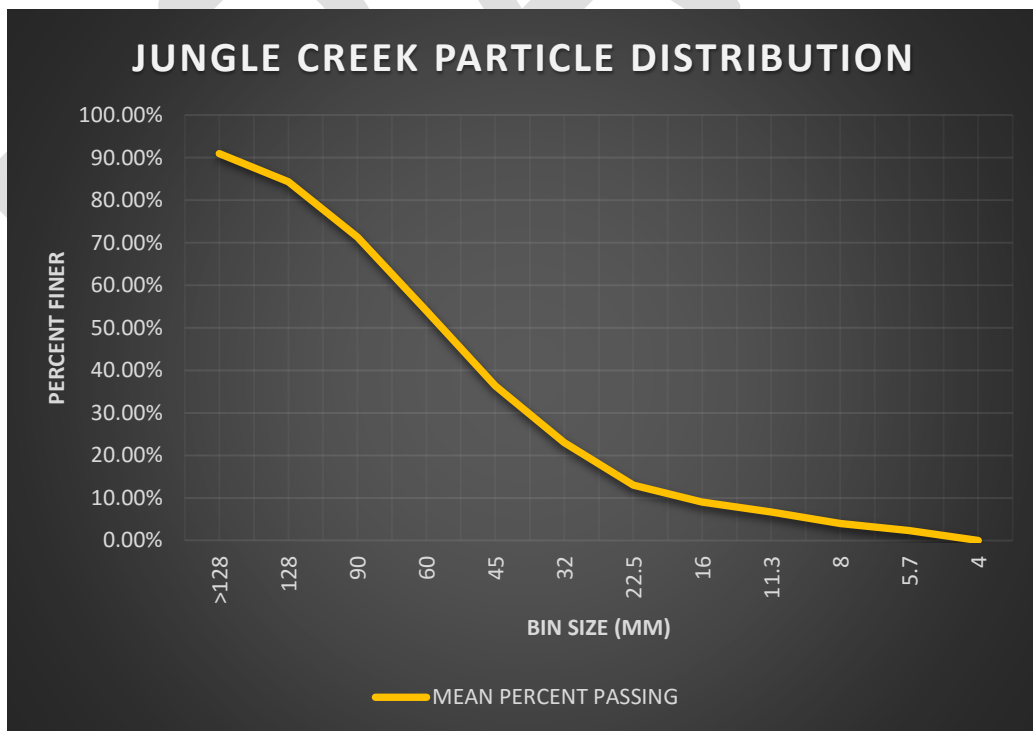


Figure 3. Mean particle size distribution from 3 pebble count sites within the Jungle Creek Project Reach

Middle Creek 2016

Middle Creek, a tributary to the North Fork Teanaway, offers a unique opportunity to capitalize on high bedload volumes. At the Middle Creek site, we are proposing wood replenishment in 1.1 miles of stream channel and 27 acres of floodplain (appendix 6). A comparatively rapid response to wood replenishment in the form of channel bed aggradation is anticipated at this site due to the bedload volumes mobilized each year. Existing topography within the channel migration zone will respond positively to increased water surface elevations produced by wood replenishment and ultimate channel restoration processes. Figure 4 displays a cross section of the valley bottom within the proposed Middle Creek site. The Middle Creek Road Prism is marked within the figure in relation to the channel centerline and approximate, channel migration zone/ordinary high water. Side channels and a braided channel type is anticipated as the channel aggrades in addition to more frequent floodplain inundation. The toe of the road prism will be protected from flood damage with the installation of floodplain wood. This technique was recently employed on Williams Creek, a tributary to Swauk Creek in Kittitas County. Abundant, large woody materials were placed and self-ballasted at the toe of the road to successfully provide protection from hydraulic forces, directly provide cover and forage habitat for fish, and act as a catalyst for future channel forming processes.

In locations where road based wood installations are not feasible, there are ample (23) temporary material staging areas that have been identified longitudinally along the site as shown in appendix 6. The use of a tracked crane, excavator, skidder, utility tractors, hand tools/winch in addition to a self-loading log truck are all tools anticipated for use at the Middle Creek site.

Site specific seasonal timing restrictions for construction activities:

- A. Middle Columbia River Steelhead: **February 1-July 16th**
- B. IFPL

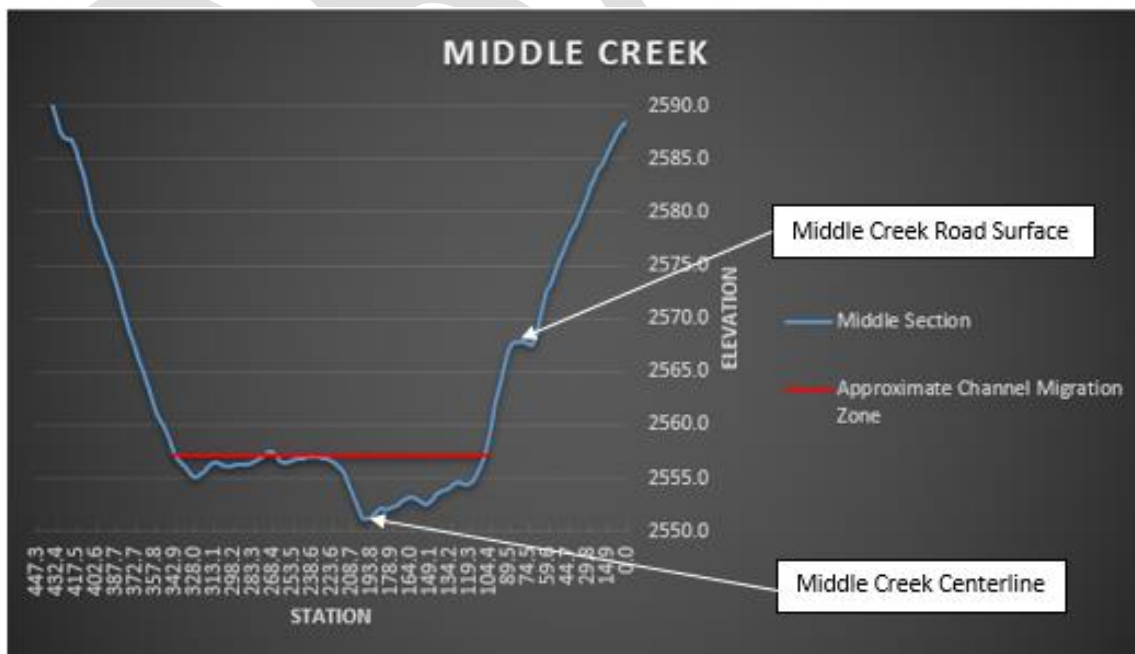


Figure 4 Cross section of Middle Creek valley bottom. Section taken from middle (longitudinally) of Middle Creek Project reach

First Creek 2016

Wood replenishment proposed at the First Creek site consists of ½ mile of channel and 16 acres of floodplain (appendix 7). 6, temporary material staging areas were identified along the active road (First Creek Road). Work at this site is intended to increase channel complexity and diversify channel and floodplain habitat, in addition to increasing the floodplain inundation frequency. This site will utilize equipment such as: a tracked crane, excavator, skidder, utility tractors, and hand tools/winch.

Site specific seasonal timing restrictions for construction activities:

- A. Northern Spotted Owls (Upper Indian (figure 3)): **March 1st- August 31st**
- B. Middle Columbia River Steelhead: **February 1-July 16th**
- C. IFPL

Rye Creek 2017

Proposed work at the Rye Creek site, which is a right bank tributary to the North Fork Teanaway River, includes a mile of channel wood loading and 11 acres of floodplain wood loading. Access to the site via Rye Creek Road will require road improvement and therefore a Forest Practice Act Permit. As shown in appendix 9, 22 water bars need to be repaired to allow the mobilization of equipment and materials to the site. A particular strategy to repair the active road has yet to be determined (fill or regrade) and consultation with DNR road engineering will be conducted to determine the most cost effective and ecologically responsible means to repair the road for travel.

Figure 5 is an image of an unnamed tributary of Rye Creek at the upstream extent of the project site. The culvert in the image was intended to convey surface flows under Rye Creek Road but failed at some point in time. As shown in appendix 10, we have proposed high intensity wood loading in the tributary up to the culvert to reduce fine sediment delivery, and arrest the active head cutting that is occurring as a result of the failed culvert.

Downstream of the site, access to the stream and floodplain is currently impossible due to deteriorated roads. However, the site downstream of the proposed 2017 work presents an excellent opportunity for stream adjacent, upland thinning to promote fire resiliency and to produce materials for a stream and floodplain restoration site that is currently inaccessible to equipment. These materials will be proposed for installation using grip hoists, using a Washington Conservation Labor Crew. These particular stewardship efforts will be pursued in a future phase of work (2018).

As displayed in appendix 10, 6 temporary material staging areas have been identified and proposed for use. Much of the restoration materials can be directly placed-using a self-loading log truck due to the close proximity of the road to the site. In addition to a self-loading log truck, equipment such as a tracked crane, excavator, skidder, utility tractors, and hand tools/winch are proposed for use.

Site specific seasonal timing restrictions for construction activities:

A. Middle Columbia River Steelhead: **February 1-July 16th**

B. IFPL



Figure 5 Head cut tributary to Rye Creek. Photograph taken May 2016

Lick Creek 2017

To install wood in 1.5 miles of Lick Creek and on 14 acres of floodplain while avoiding impacts to riparian and wetland resources, a helicopter based wood replenishment strategy is proposed. Increasing channel and floodplain roughness in this watershed is critical. The predominant substrate in Lick Creek is a highly erodible silt/sand. 4, large temporary material staging areas have been identified and are being proposed for use outside of the floodplain (appendix 11). Similar to Rye Creek in that there is an incised left bank tributary in need of repair, we are proposing high intensity wood loading within the tributary channel, to arrest the downward spiral of channel incision from the confluence to the culvert outlet.

Site specific seasonal timing restrictions for construction activities:

- A. Middle Columbia River Steelhead: **February 1-July 16th**
- B. IFPL

Carlson Creek 2017

1 mile of Carlson Creek and 12 acres of floodplain will be replenished with woody materials (appendix 12). Improving the existing active road or improving orphaned or decommissioned roads for construction activities is not required. However the bridge crossing the West Fork Teanaway River leading up to the site has been deemed unsafe for heavy equipment crossing. The implementation of this project is dependent on the replacement of the West Fork Teanaway Bridge.

Similar to many other sites described under this project, the Carlson Creek construction activities will include a combination of road base material application and skidding from temporary material staging sites. For the Carlson Creek site, we have identified 10 temporary material staging sites along the Carlson Canyon valley bottom. Equipment proposed for use include a tracked crane, self-loading log truck, excavator, skidder, utility tractors, and hand tools/winch.

Site specific seasonal timing restrictions for construction activities:

- C. Middle Columbia River Steelhead: **February 1-July 16th**
- D. IFPL

Dickey Creek 2017

As shown in appendix 12, we aim to replenish 0.6 miles of Dickey Creek and 5 acres of adjacent floodplain. The proximity of the road to the site will allow for road based wood application. Similar to the scenario presented for Middle Creek, the existing toe of Dickey Creek road will be protected by hydraulic energy by the proposed floodplain wood. Equipment proposed for use include a tracked crane, self-loading log truck, excavator, skidder, utility tractors, and hand tools/winch.

Site specific seasonal timing restrictions for construction activities:

- E. Middle Columbia River Steelhead: **February 1-July 16th**
- F. IFPL

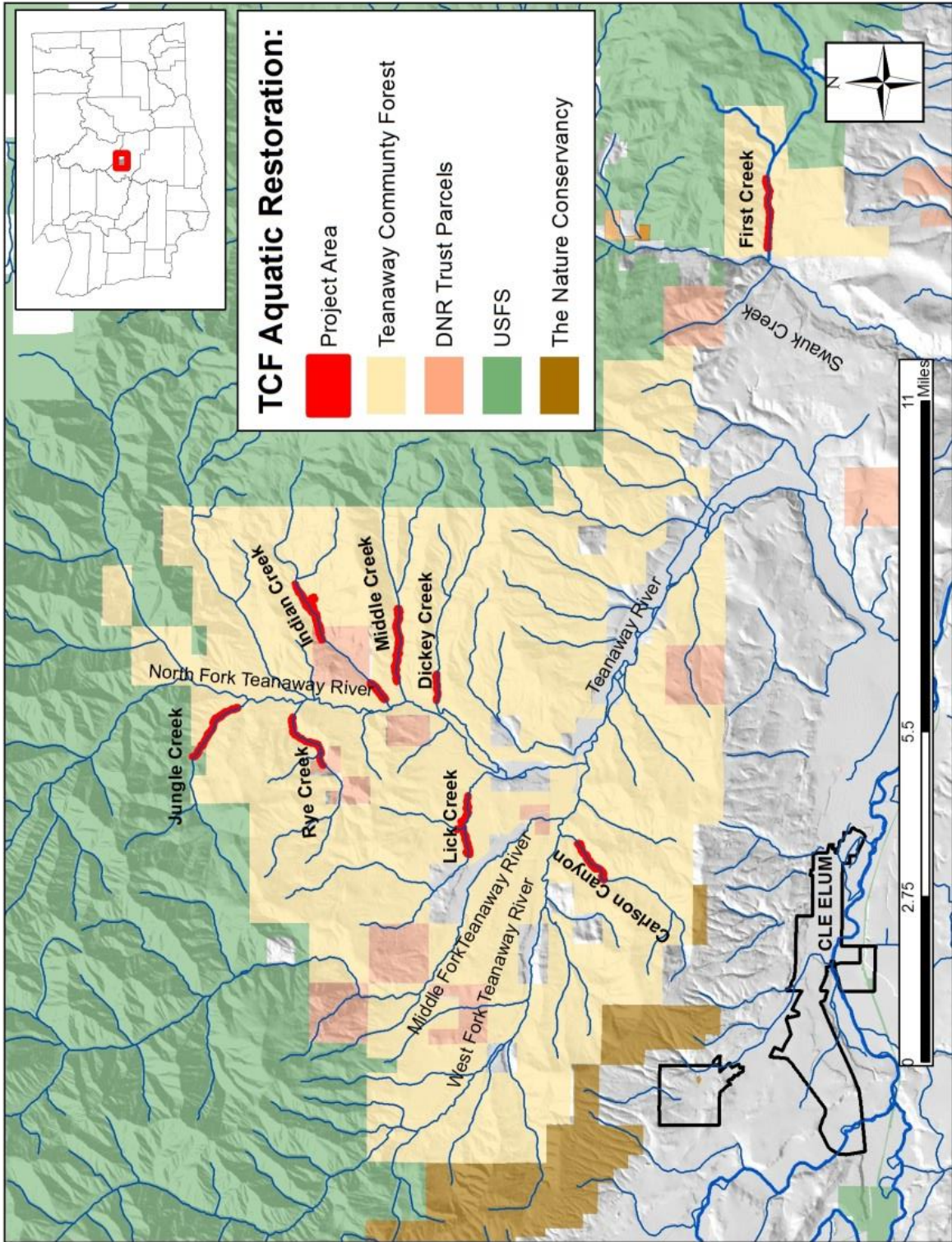
Site Preparation, Closeout, and Industrial Fire Precaution Levels (IFPL)

1. Site layout and flagging: prior to construction, the action area will be clearly flagged to identify the following:
 - a. Sensitive resource areas, such as areas below the ordinary high water, cultural resources, spawning areas, springs, and wetlands;
 - b. Equipment entry and exit points;
 - c. Road and stream crossing alignments;
 - d. Staging, storage, and stockpile areas.
2. Temporary access roads and paths:
 - a. Existing access roads and paths will be preferentially used whenever reasonable, and the number and length of temporary access roads and paths through riparian areas and

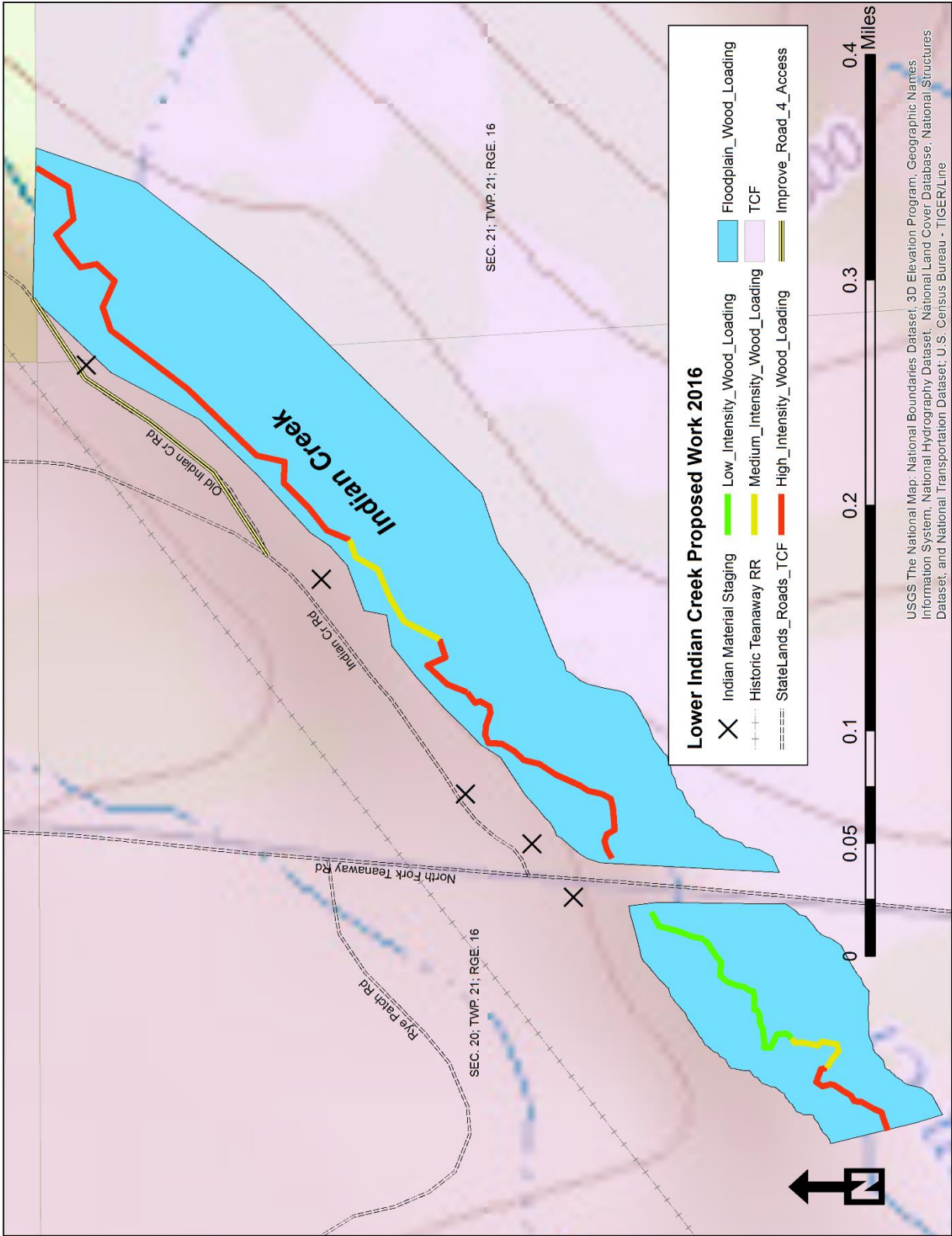
- flood plains will be minimized to lessen soil disturbance and compaction, and impacts to vegetation.
- b. Temporary access roads and paths will not be built on slopes where grade, soil, or other features suggest the likelihood of excessive erosion or failure. If slopes are greater than 30%, then the road will be designed by a civil engineer with experience in steep road design.
 - c. The removal of riparian vegetation during construction of temporary access roads and paths will be minimized. When temporary vegetation removal is required, vegetation will be cut to ground level, not grubbed.
 - d. At project completion, all temporary access roads and paths will be rehabilitated in consultation with WA DNR.
 - e. Temporary roads and paths in wet areas or areas prone to flooding will be obliterated in collaboration with WA DNR by the end of the in-water work window in discussion and cooperation with WA DNR.
 - f. Avoid wet road surfaces with the potential for rutting or tracking.
3. Temporary stream crossings:
- a. Existing stream crossings will be preferentially used whenever reasonable, and the number of temporary stream crossings will be minimized.
 - b. Temporary bridges and culverts will be installed to allow for equipment and vehicle crossing over perennial streams during construction.
 - c. Equipment and vehicles will cross the stream in the wet only where: the streambed is bedrock, or mats or off site logs are placed in the stream and used at the crossing.
 - d. Vehicles and machinery will cross streams at right angles to the stream channel whenever possible
 - e. The location of the temporary stream crossing will avoid areas that may increase the risk of channel re-routing or avulsion
 - f. Potential spawning and pools will be avoided to the maximum extent possible.
 - g. No stream crossing will occur at active spawning sites, when holding adult listed fish are present, or when eggs or alevins are in the gravel.
 - h. After project completion, temporary stream crossings will be obliterated and the stream channel and banks restored.
4. Staging, storage, and stockpile areas:
- a. Staging areas (used for construction equipment storage, vehicle storage, fueling, servicing, and hazardous material storage) will be 150 feet or more away from any natural water body or wetland, or on an adjacent, established road area in a location and manner that will preclude erosion into or contamination of the stream or floodplain.
 - b. Natural materials used for implementation of aquatic restoration, such as wood, gravel and boulders, may be staged within the 100-year floodplain, and within 50 feet of the stream channel.
 - c. Any large wood, topsoil, and native channel material displaced during construction will be stockpiled for use during site restoration at a specifically identified and flagged area.

- d. Any material not used in restoration, and not native to the floodplain, will be removed to a location outside of the 100 year floodplain for disposal.
5. Equipment: Mechanized equipment and vehicles will be selected, operated, and maintained in a manner that minimizes adverse impacts on the environment. All vehicles and other mechanized equipment will be:
 - a. Stored, fueled, and maintained in a vehicle staging area placed 150 feet or more away from any natural water body or wetland or on an adjacent, established road area.
 - b. Refueled in a vehicle staging area placed 150 feet or more from a natural water body or wetland, or in an isolated hard zone, such as a paved parking lot or adjacent, established road (this measure applies only to gas powered equipment with tanks larger than 5 gallons).
 - c. Biodegradable lubricants and fluids should be used, if possible, on equipment operating in and adjacent to the stream channel and live water.
 - d. Inspected daily for fluid leaks before leaving the vehicle staging area for operation within 150 feet of any natural water body or wetland.
 - e. Thoroughly cleaned before operation below the ordinary high water, and as often as necessary during operation, to remain grease free.
6. Industrial Fire Precaution Levels (IFPL)
 - a. A written waiver from DNR must be obtained to conduct activities prohibited under an IFPL.
 - b. The operation must be in compliance with all of Washington's fire protection laws and with general "fire-safe" practices.
 - c. See Appendix 13 for specific industrial precautions and fire prevention measures.

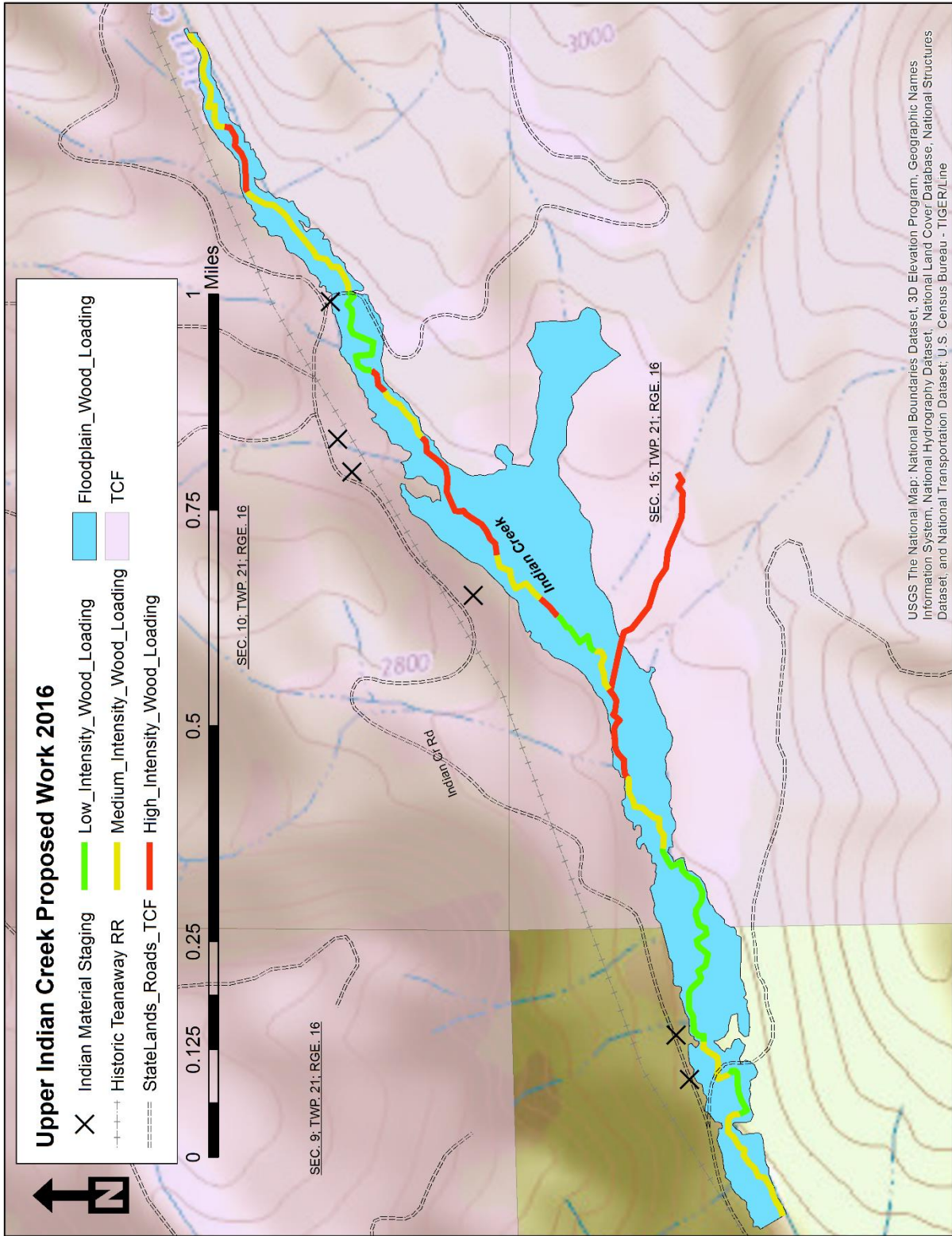
Appendices



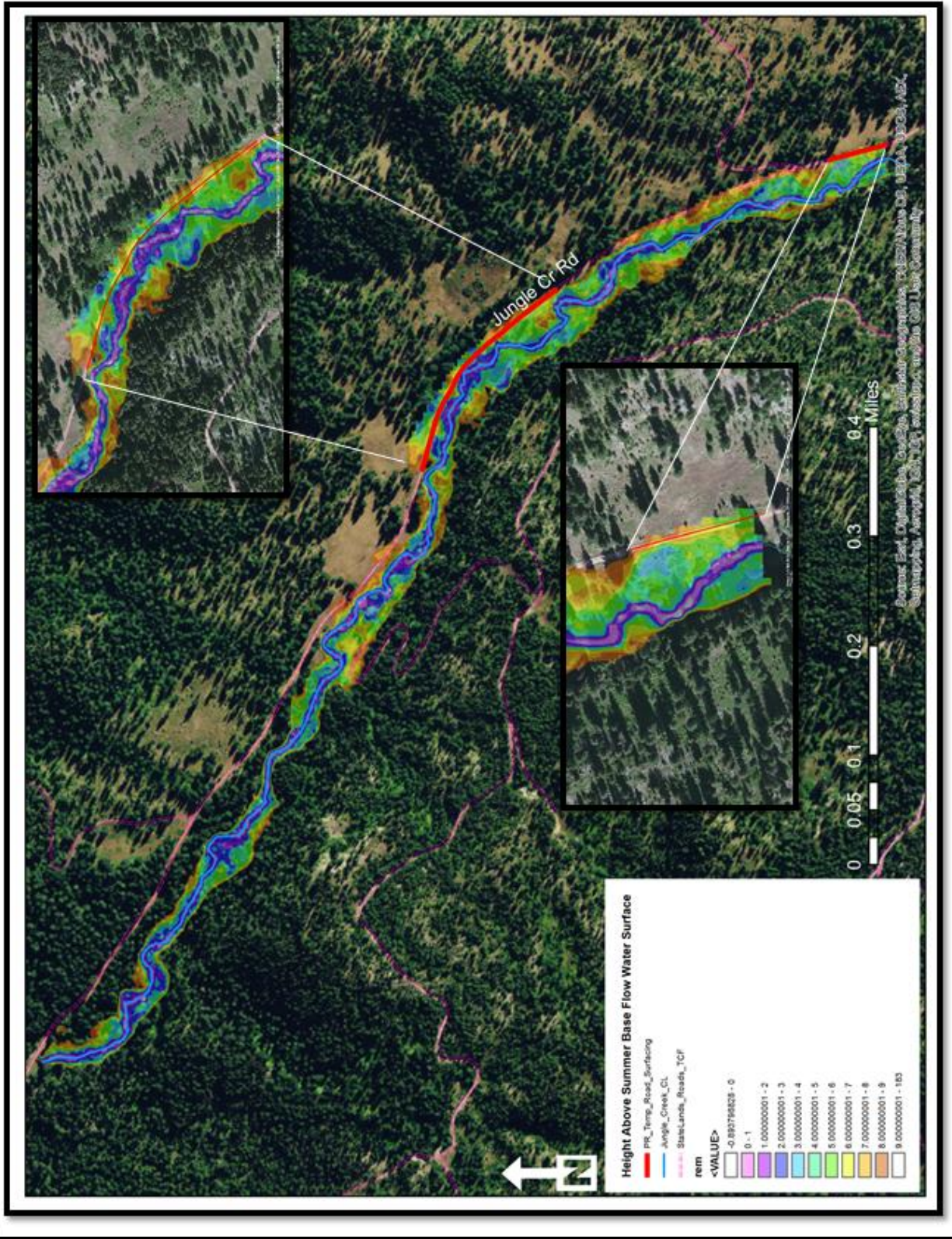
Appendix 1 Project map. Courtesy of WDFW



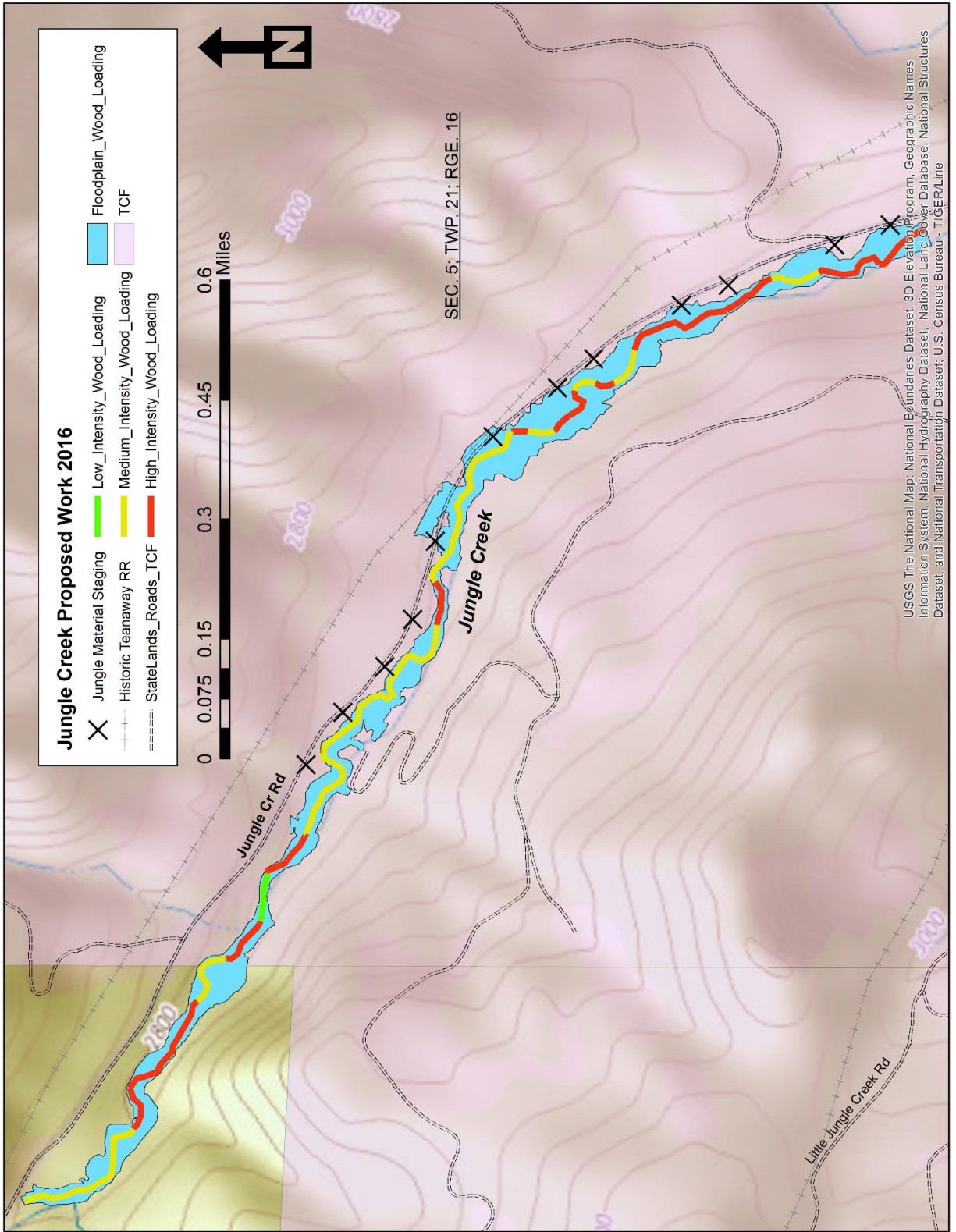
Appendix 2



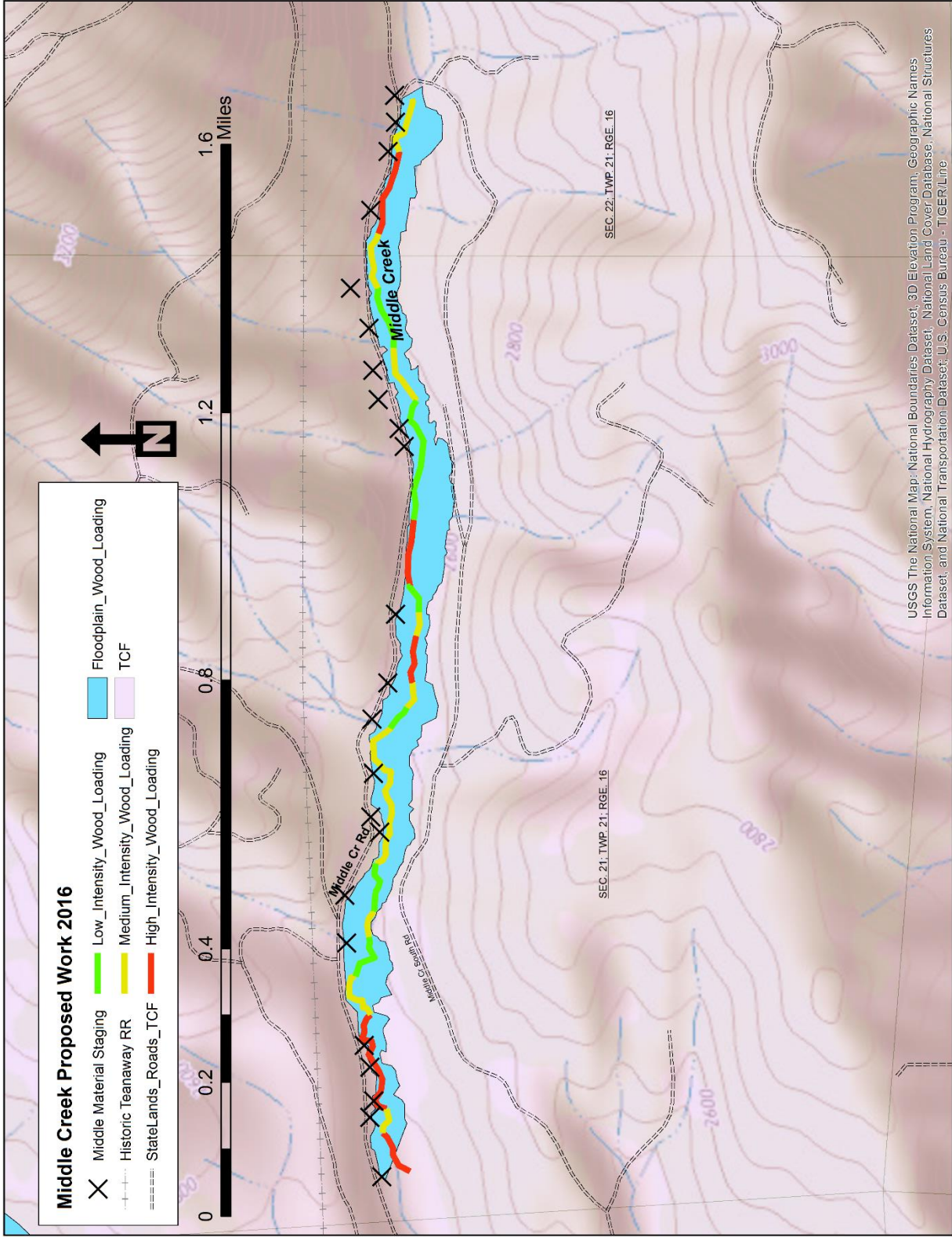
Appendix 3



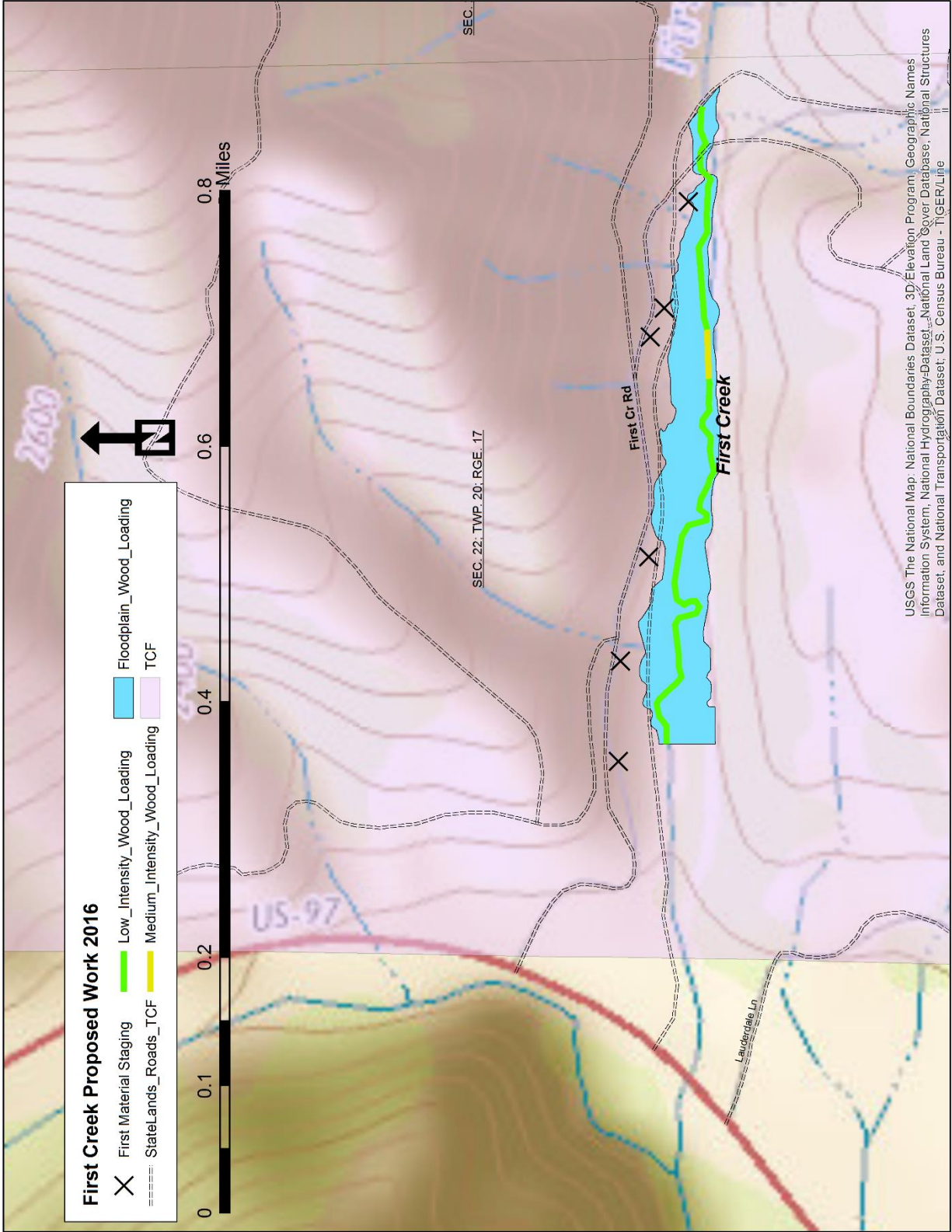
Appendix 4

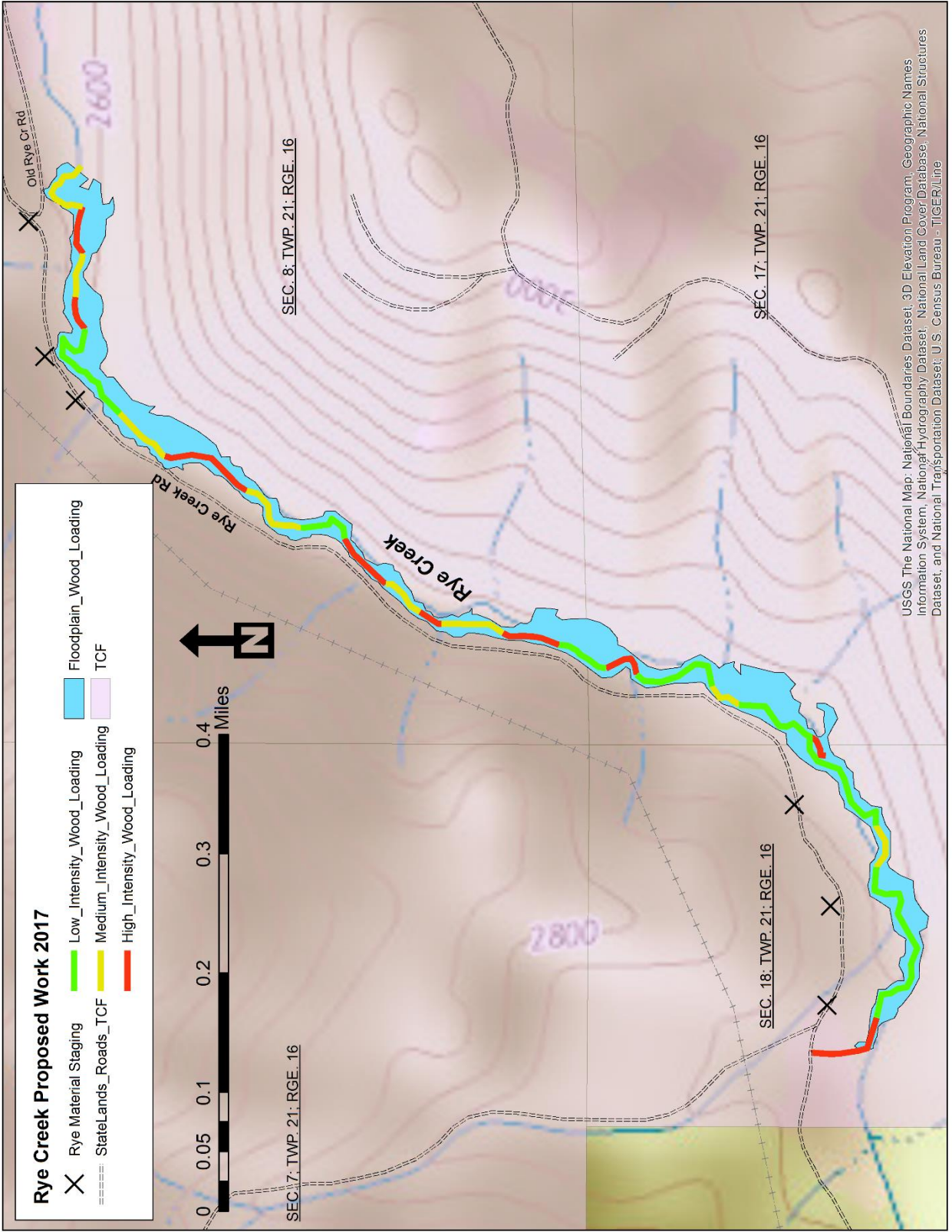


Appendix 5

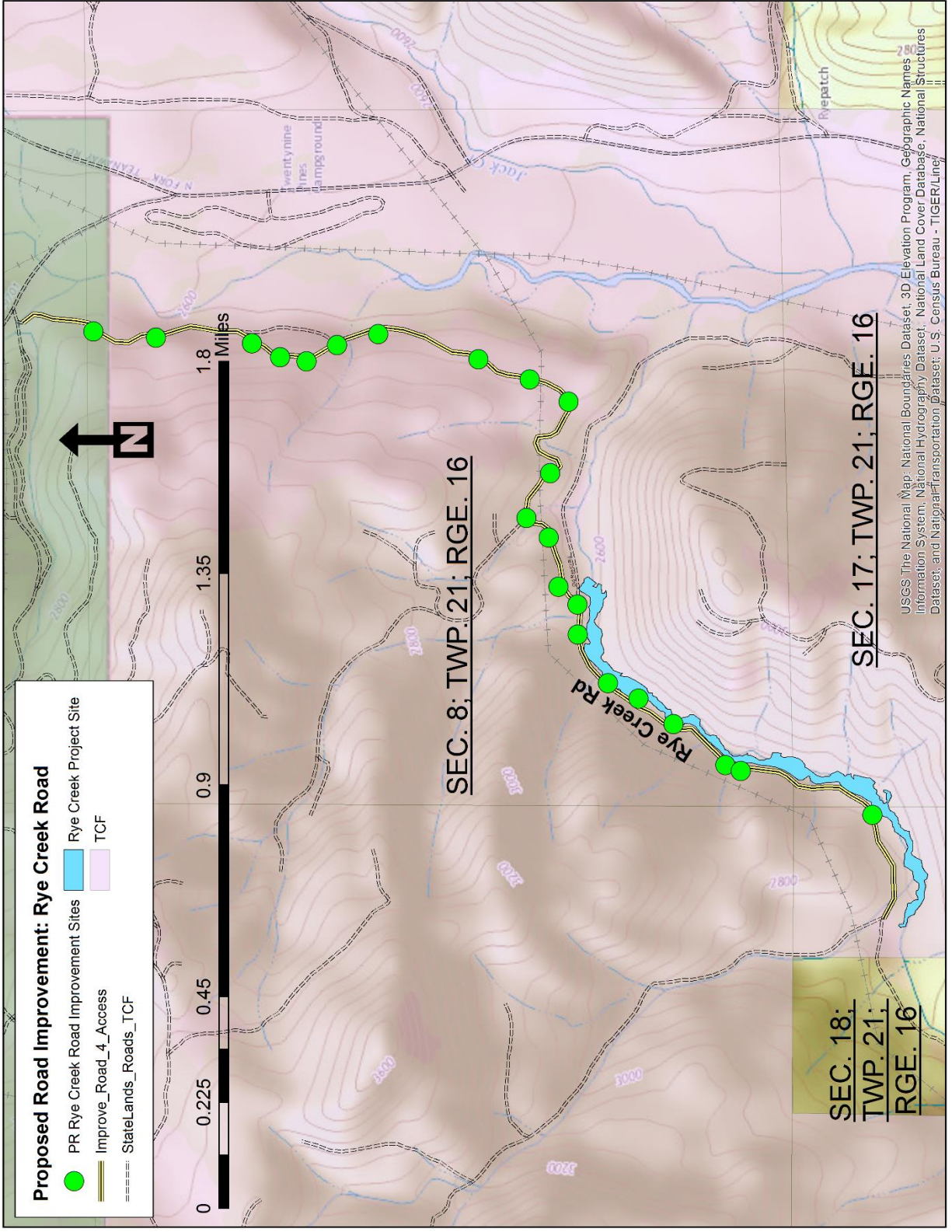


Appendix 6

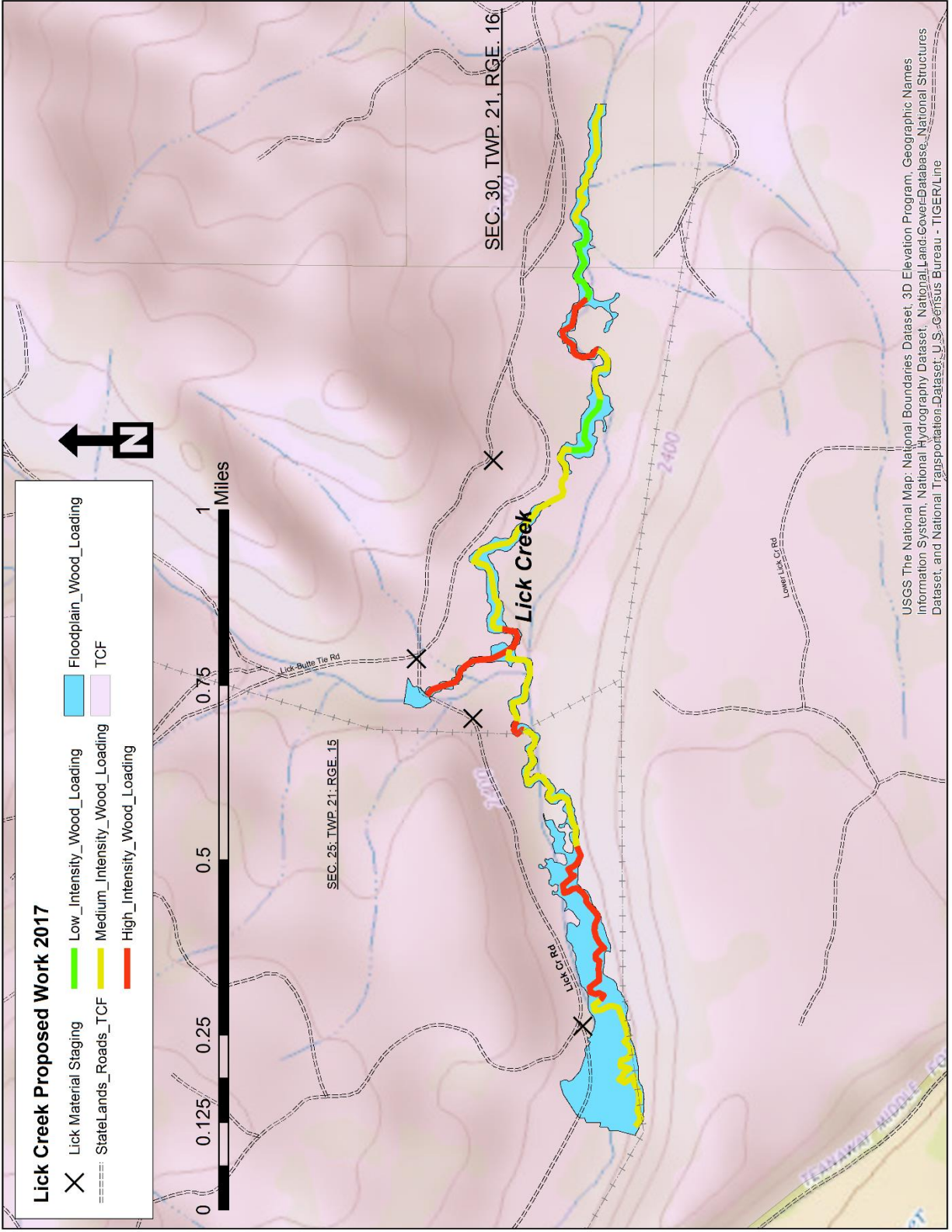


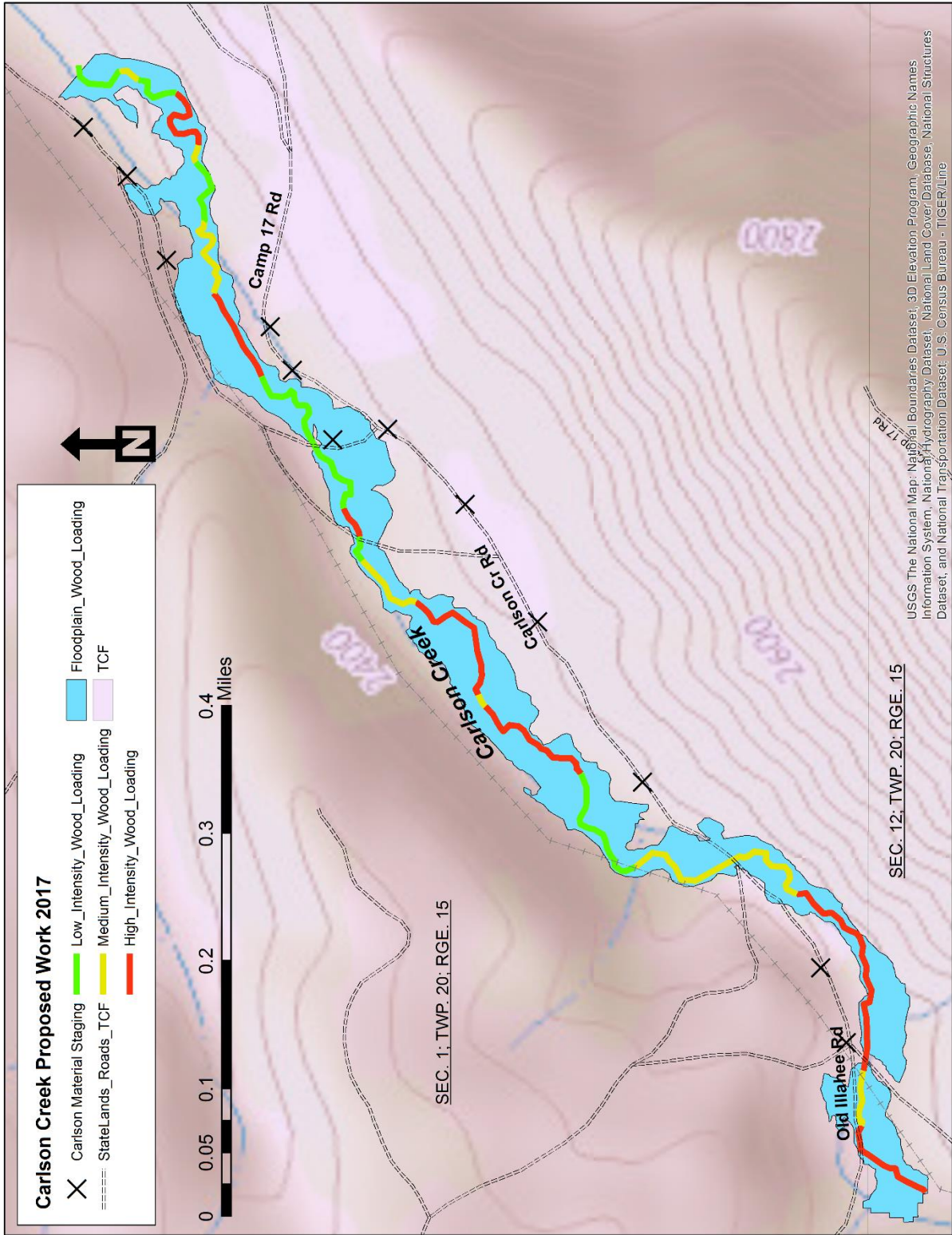


Appendix 8

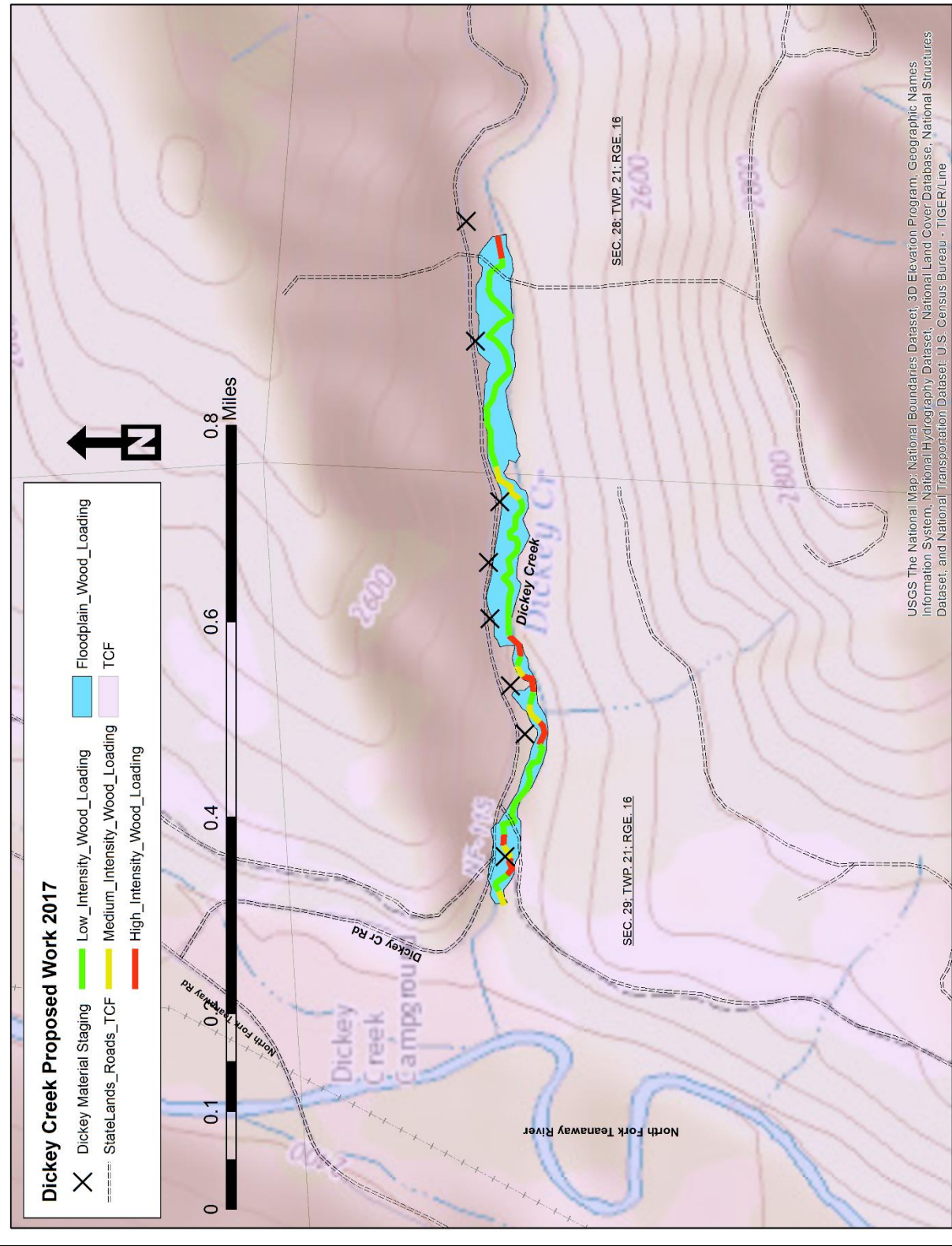


Appendix 9





Appendix 11



Appendix 12

Fire Watch Services

Why is a fire watch required on each operation during fire season? The purpose of the fire watch is to stay after the day's work is over and report any fire starts to the proper authorities. The fire watch is required on duty after the last power-driven equipment used by the operator has been shut down for the day. The fire watch must be on duty a minimum of one hour. During periods of high fire danger, DNR recommends the fire watch be on the operation site longer than the mandated one hour.



- A fire watch must:**
- visually observe all parts of the operation on which industrial activity has been in progress.
 - be physically capable of fighting a fire and have experience in operating fire-fighting equipment.
 - possess on-site communications (CB radio, cellular or radio phone) to summon extra help if a fire breaks out. Transportation is also required if radio or phone communication doesn't work.
 - be able to report a fire to the responsible protection agency within 15 minutes of detection.

Operation: Power saws

Precaution Level	Landing	Tractor/ Skidder	Other Woods Saws
I. Closed Season	Fire Watch	Fire Watch	Fire Watch
II. Partial Hootowl	Fire Watch	Hootowl	Hootowl
III. Partial Shutdown	Hootowl	Hootowl	Prohibited
IV. General Shutdown	Prohibited	Prohibited	Prohibited

Operation: Yarding

Precaution Level	Tractor/ Skidder	Cable* (gravity systems)	Cable (other systems)
I. Closed Season	Fire Watch	Fire Watch	Fire Watch
II. Partial Hootowl	Fire Watch	Hootowl	Hootowl
III. Partial Shutdown	Hootowl	Hootowl	Prohibited
IV. General Shutdown	Prohibited	Prohibited	Prohibited

Other Operations

Precaution Level	Loading	Blasting	Welding
I. Closed Season	Fire Watch	Fire Watch	Fire Watch
II. Partial Hootowl	Fire Watch	Hootowl	Hootowl
III. Partial Shutdown	Hootowl	Hootowl	Hootowl
IV. General Shutdown	Prohibited	Prohibited	Prohibited

People who need this information in an alternate format may call (360) 902-1300 or TTY (360) 902-1125 or TMS 711

What You Need to Know

WHEN USING SPARK-EMITTING EQUIPMENT ON FORESTLAND



MAY 2013

Industrial Fire Precaution Levels (IFPL)

How does it work?

By law, the Washington Department of Natural Resources (DNR) uses two closure systems to reduce wildfire risk on 12.7 million acres of private and state forestland protected by the agency.

Activated when needed during the summer fire season, one closure system applies to woods workers and other industrial forest users. The other set of protections is aimed at the general public, but also includes local residents, landowners, recreationists and forest workers.

Wood workers are required to observe both sets of restrictions as fire danger dictates. Other land users only need to follow the public use restrictions.

Industrial Precautions

- Level I**
Fire equipment and fire watch service is required.
- Level II**
Limits certain activities to between 8 p.m. and 1 p.m.
- Level III**
Prohibits some activities and limits others to between 8 p.m. and 1 p.m.
- Level IV**
All operations are prohibited.
- DNR, U.S. Forest Service, Bureau of Land Management and Bureau of Indian Affairs all use the same four-level industrial regulation system. This system, which helps prevent wildfires by regulating work in the woods, is known as the Industrial Fire Precaution Level (IFPL) system.

Public Use Restrictions

DNR administers Public Use Restrictions, which limit activities on forestland during periods of high fire danger.

Summer Fire Rules: From April 15 to October 15, or later if the fire danger warrants it, the following restrictions are activated:

- Cigarette smoking on forestland is only allowed on roads, cleared landings, gravel pits, or similar cleared areas.
- Fireworks may not be lit on forestland.
- Chain saw use in non-industrial work must follow IFPL requirements.

Burn Bans: During burn bans imposed by DNR, all open fires are prohibited. Burn bans imposed by DNR cover all lands that DNR protects from wildfire, but may include other lands protected by local fire departments or by federal agencies. Before you burn, contact DNR at (800) 323-BURN or your local fire protection agency.



How do I find the IFPL in my area?

To find the Industrial Fire Precaution Level in effect for your area, call the Department of Natural Resources at (800) 323-BURN or visit our website at www.dnr.wa.gov.

Definitions

On Precaution Level III days: tractor, skidder, fallbuckler, fowable, or shovel logging operations may be allowed between 8 p.m. and 1 p.m. if saws, skidders or other equipment with a blade capable of connecting fires are immediately available to quickly reach and effectively attack a fire start.

FIRE WATCH: means at least one competent person be present at the stand for one hour following the operation of spark-emitting equipment. The fire watch shall be capable and positioned to be able to detect any fires within five minutes which may originate at the stand if the equipment operation. The fire watch shall report a fire to the responsible protection agency within 15 minutes of detection.

HOOTOWL: means an operation is allowed ONLY between 8 p.m. and 1 p.m.

OTHER OPERATIONS: means any stumps, internal combustion, electric engines or any other devices which emit sparks on any forest land or any other place where, in the opinion of the department, fire could be communicated to forest land.

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▲ Feller buncher & pickup



▲ Skid steer loader



▲ Spark emitting equipment



▲ Wheelbarrow



Can I continue to work during an IFPL shutdown?

Operators who wish to continue an activity that is prohibited under an industrial fire precaution level must obtain a written waiver from DNR.

The operator must also obtain the landowner's permission to seek a waiver. DNR will not issue a waiver against the wishes of the landowner.

The operation must also be in compliance with all of Washington's fire protection laws and with general "fire-safe" practices.

A fire-safe operation is one where the chance of a fire has been reduced, or where a plan is made for early discovery and suppression, if a fire ignites.

Examples of fire prevention measures include:

- wetting or removing slash fuel in the immediate operating area
- night operations, and
- ceasing activities when the relative humidity is less than 35 percent or during windy conditions

Increased fire detection and suppression measures may include:

- pre-strung hose to the yarding or cutting area
- a fire watch
- a roving patrol during the waiver period, as well as after working hours
- an additional water supply or fire-fighting tools

Each operation is unique and must be evaluated relative to conditions existing at that site. An activity in an alder stand on a north-facing slope would require few preventive or suppression measures to continue to operate during a shutdown. However, the same activity in a conifer stand on a south-facing slope would require more stringent prevention and increased suppression steps.

A primary consideration of a fire-safe operation is fire prevention or reduction of ignition sources. Increased fire detection and suppression capabilities will be secondary, but important concerns. In this case, an ounce of prevention is worth a pound of cure. Waivers are most often granted to continue road maintenance or operations in gravel pits. Waivers are seldom allowed for any purpose when Level IV industrial precautions are in effect.



Fire Safety Checklist for Spark-Emitting Equipment on Forestland

Equipment or location	WAC reference*	Approved exhaust system	5 gallon backpack pump	Fire extinguisher	Shovel	Polaski	Water supply	Clear flammable debris
Landings	WAC 332-24-405(8)		✓ (two)			When required by DNR		
Trucks or vehicles used for hauling	WAC 332-24-405(7)	✓		✓	✓			
Passenger vehicles	WAC 332-24-405(3)	✓		✓				
Power saws	WAC 332-24-405(4)	✓		✓	✓			
Fixed position machines	WAC 332-24-405(1)	✓		✓	✓			✓ (10 feet)
Tractors and mobile machines	WAC 332-24-405(6)	✓		✓	✓			
Tailcorner haulback blocks	WAC 332-24-405(13)		✓		✓	✓		✓ (6 feet)
Cable yarding over 1,200 feet	WAC 332-24-405(9)						✓	
Motorcycles/ATVs	WAC 332-24-405(5)	✓						
Other spark-emitting engines	WAC 332-24-405(5)	✓		✓				

* WAC (Washington Administrative Code)

Site	Waterhed Drainage Area (mi ²)	Average Channel slope (%)	Sinuosity through site (Channel Length/Valley Length)	2-year flow magnitude (cfs) (regression)	River mile	Access	Location
Indian	6.2	5	1.2	65.1	0.1-0.77 2.07-3.21	*Indian Creek Road * Old Indian Creek Road	T.21, R.16, S. 20, 21, 10, 15, 16
Jungle	6.15	2.3	1.18	64.6	0.3-1.7	*Jungle Creek Road	T.21, R.16, S.5 & 6
Middle	5.01	3.1	1.3	55	0.3-1.4	*Middle Creek Road	T.21, R.16, S.21 & 22
First	14.4	3.5	1.09	129	0.2-0.56	*First Creek Road	T.20, R.17, S.22
Rye	4.09	1.9	1.4	46.3	0.5-1.5	*Rye Creek Road	T.21, R.16, S. 8, 17, 18
Lick	6.22	1.2	1.3	65	0.8-2.3	*Lick Creek Road	T.21, R.15, S. 25, T.21, R.16. S.30
Carlson	3.1	1.7	1.2	37	0.5-1.5	*Carlson Creek road	T.20, R.15, S.12 & 1
Dickey	3.6	3	1.2	42	0.1-0.7	*Dickey Creek Road	T.21, R.16, S. 28 & 29

Appendix 14 Access, site characteristics, and location