DRAFT ENVIRONMENTAL ASSESSMENT

FOR

COLVILLE CONFEDERATED TRIBES NTIA 2.5GHZ WIRELESS, MIDDLE MILE AND FIBER TO THE HOME PROJECT

Prepared on behalf of
The Confederated Tribes of the
Colville Reservation (CTCR)
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1.0 EXECUTIVE SUMMARY

Modern broadband infrastructure is lacking throughout the Colville Reservation, which is located in northeastern Washington State. To address this deficiency, the Confederated Tribes of the Colville Reservation (CTCR), with support from Northwest Open Access Network (NoaNet), applied for a federal grant to fund a large-scale fiber optic cable project. The grant was awarded by the National Telecommunications and Information Administration (NTIA) through the Tribal Broadband Connectivity Program. This report addresses National Environmental Policy Act (NEPA) compliance requirements related to environmental impacts associated with the project.

The project includes 171.8 miles of new fiber cable, one mile of new aerial electrical distribution, 2.5 miles of buried electrical distribution, three new 195-foot monopoles, 3.4 miles of new road development to provide access to the 195-foot pole sites, 50 new poles, temporary connection to an existing cell-on-wheels (COW) site, and a hardware upgrade at an existing 195-foot tower site. The project mostly occurs within the boundaries of the Colville Reservation but extends slightly into unincorporated counties and federally managed lands outside of the reservation. The completed project will extend high-speed broadband internet to 2,515 customers across the CTCR.

Table 1. Proposed Development Summary

Fiber – Aerial Cable	Fiber – Buried Cable	Electric - Aerial Cable	Electric - Buried Cable	New Road	195' Poles	40'/50'/ 100' Poles	Tower Upgrade
98.5 miles	73.3 miles	1 mile	2.5 miles	3.4 mi.	3	50	1

The design process considered numerous alternatives for delivering a network of high-speed internet to tribal customers, including a No Action Alternative, before settling on the preferred action (see Table 1 above). All alternatives considered were deemed infeasible due to the absence of existing infrastructure, or because they would not adequately support future needs. Pursuing the No Action Alternative would have a negative impact on the overall well-being of the tribe and residents.

The proposed deployment includes a mix of aerial cable on existing infrastructure, wireless poles, and buried cable. This plan balances environmental factors, cost, and current/future levels of service, and will offer new opportunities for tribal residents to participate in the economy, including those who are marginalized by our current economic systems.

The preferred action requires temporary and permanent ground disturbance to install buried cable, access roads, and new poles. Temporary noise impacts and risk of injury for workers will occur during construction. Based on field inspection, review of both publicly available and collected information, and in consideration of project design and mitigating factors, the proposed project is unlikely to cause significant environmental impacts.

This project supports tribal sovereignty and self-determination and has no significant negative environmental effects. Once completed, this project will support US trust responsibilities by upholding, maintaining, and improving government-to-government relationships with federally recognized Native American tribes in the Northwest Region.

Table 2. Environmental Effects Summary

Resource Type	Environmental Effects of Preferred Action	No Action Alternative
Noise	Short-term: construction noise impacts; mitigated by worker protection standards Long-term: maintenance and repair; minor impacts Indirect or cumulative: no impacts **Conclusion: No significant negative environmental impacts**	No anticipated impacts
Air Quality & Climate Change	Short-term: construction dust impacts; mitigated by BMPs Long-term: maintenance and repair: minor impact Indirect: reduced vehicle use; positive impact Cumulative: no impacts **Conclusion: No significant negative environmental impacts**	No anticipated impacts
Geology and Soils	Short-term: compaction and sediment release; mitigated by BMPs Long-term: new impervious surfaces; minor impact Indirect or cumulative: no impacts **Conclusion: No significant negative environmental impacts**	No anticipated impacts
Water Resources	Short-term: potential sediment release; mitigated by BMPs Long-term, indirect, or cumulative: no impacts **Conclusion: No significant negative environmental impacts**	No anticipated impacts
Biological Resources	Short-term: potential sediment release; mitigated by BMPs Long-term: terrestrial habitat loss; minor impact Indirect or cumulative: bird strike at monopole sites; minor impact **Conclusion: No significant negative environmental impacts**	No anticipated impacts
Historic and Cultural Resources	Short-term: ground disturbance; mitigated by pedestrian survey and inadvertent discovery plan Long-term, indirect, or cumulative: no impacts **Conclusion: No significant negative environmental impacts**	No anticipated impacts
Aesthetic and Visual Resources	Short-term: visual impacts of construction; minor impact Long-term: new monopoles visible on horizon; minor impact Indirect or cumulative: no impacts. **Conclusion: No significant negative environmental impacts**	No anticipated impacts
Land Use	Short-term or long-term: conversion of forestry/agriculture to telecommunications; minor impact Indirect or cumulative: no impacts **Conclusion: No significant negative environmental impacts**	No anticipated impacts
Infrastructure	Short-term: access disruption during construction; minor impact Long-term: conversion of forestry/ag. to telecom; minor impact Indirect or cumulative: increased internet access and speeds; minor **Conclusion: No significant negative environmental impacts**	No anticipated impacts
Socioeconomic Resources	Short-term: access disruptions during construction; minor impact Long-term: maintenance and repair; minor impact Indirect or cumulative: increased sales, employment (positive impact) **Conclusion: No significant negative environmental impacts**	Negative impact due to lack of access to broadband.
Human Health and Safety	Short-term, indirect, or cumulative: no impacts Long-term: Increased public safety (positive impact) **Conclusion: No significant negative environmental impacts**	Negative impact due to lack of access to broadband

2.0 INTRODUCTION

2.1 PROJECT PURPOSE AND NEED

The purpose of this project is to provide a network of reliable high-speed broadband internet service throughout the Colville Reservation. The project is needed to address the lack of modern broadband infrastructure on tribal land.

2.2 REGULATORY SETTING

(The project will be funded by a Tribal Broadband Connectivity Program Grant that was awarded by NTIA. Due to this funding source, NTIA is the lead agency responsible for ensuring project compliance with National Environmental Policy Act (NEPA) regulations. Due to project occurrence on lands managed by other federal agencies, NTIA has offered cooperating agency status to the Bureau of Reclamation (BOR), Bureau of Indian Affairs (BIA), and the United States Forest Service (USFS). BOR and BIA have accepted cooperating agency status for NEPA review, and USFS has not accepted cooperating agency status.

Wetland Resources, Inc (WRI) has prepared this document in support of the NTIA Environmental Review (ER) process. NTIA is a division of the Department of Commerce (DOC), and therefore this project is subject to NEPA implementing procedures set forth in DOC Administrative Order 216-6. This document has been prepared in accordance with Department Administrative Order 216-6 and underlying regulations.

3.0 PROPOSED ACTION

3.1 INTRODUCTION

Pursuant to Council on Environmental Quality regulations for implementing NEPA, both a Proposed Project Action and a No Action Alternative are presented in this section. The No Action Alternative is intended to provide a benchmark to allow decision makers and the public to compare the levels of environmental effects of the proposed action with an alternative where the project does not occur.

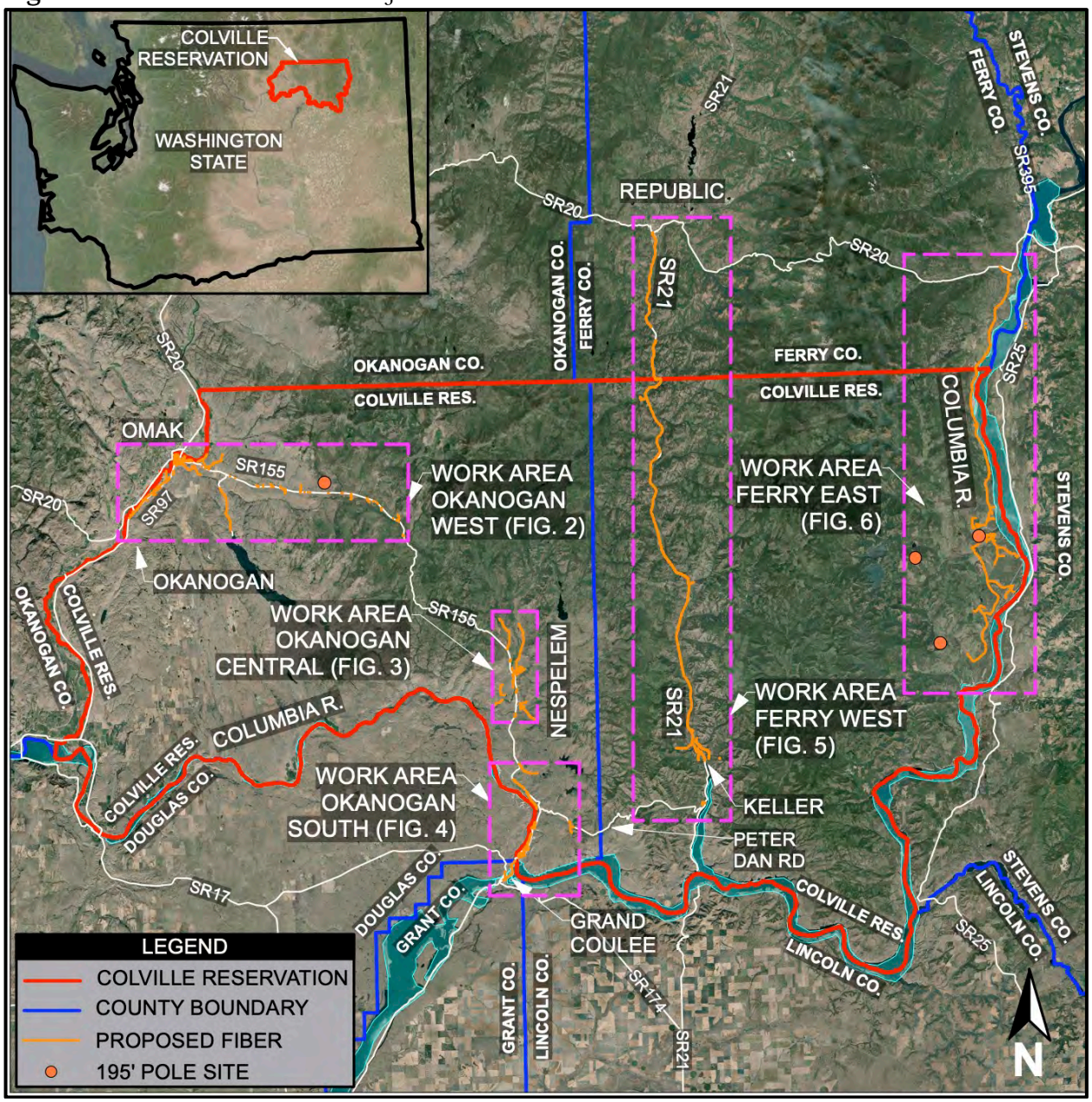
3.2 PROJECT DESCRIPTION

3.2.1 Physical Route - General Description

The project extends backbone, middle mile, and last mile service to businesses, institutions, and residents located on tribal land. The project primarily occurs on the Colville Reservation in northeastern Washington State. The Colville Reservation is governed by the CTCR as a sovereign nation. Two segments of the project extend off-reservation north into Ferry County, and one segment extends south into Grant County. See Figure 1 below.

The proposed fiber extension project consists of 171.8 miles of new fiber network, one mile of new aerial electrical distribution, 2.5 miles of new buried electrical distribution, three new 195-foot monopoles with wireless hardware, four new 100-foot ductile iron poles, fifteen new 50-foot ductile iron poles, 31 new 40-foot ductile iron poles, temporary power/fiber delivery to an existing cell-on-wheels (COW) site, and a hardware upgrade at an existing 195-foot tower site.

Figure 1: Aerial Overview of Project Area



(The project begins along the edge of SR97 near the town of Okanogan. At approximately the city of Omak, the route heads east on SR155 towards Nespelem. Existing cable infrastructure splits approximately 12 miles south of Nespelem, heading south to Grand Coulee on SR155 and east on Peter Dan Road/Manilla Creek Road towards SR21. The COW site connection is near the intersection of Manilla Creek Road and SR21. The route connects the town of Keller and continues north along SR21 to the town of Republic. A separate loop will provide service between Kewa and SR20 along Silver Creek Road and Inchelium-Kettle Falls Road.

New 195-foot monopoles will be installed on Disautel Mountain, Kewa Mountain, and Inchelium Hill. The Disautel Mountain Monopole Site is between Omak and Nespelem and north of SR155.

The Kewa Mountain Monopole Site is in the southeastern portion of the reservation near the intersection of Kewa Meteor Road and Kewa Cemetery Road. The Inchelium Hill Monopole Site is in the eastern portion of the reservation near the intersection of Bridge Creek Road and Silver Creek Road. Pole site locations are depicted in Appendix E, and also in Figures 2 and 6 below.

3.2.2 Physical Route - Detailed Descriptions

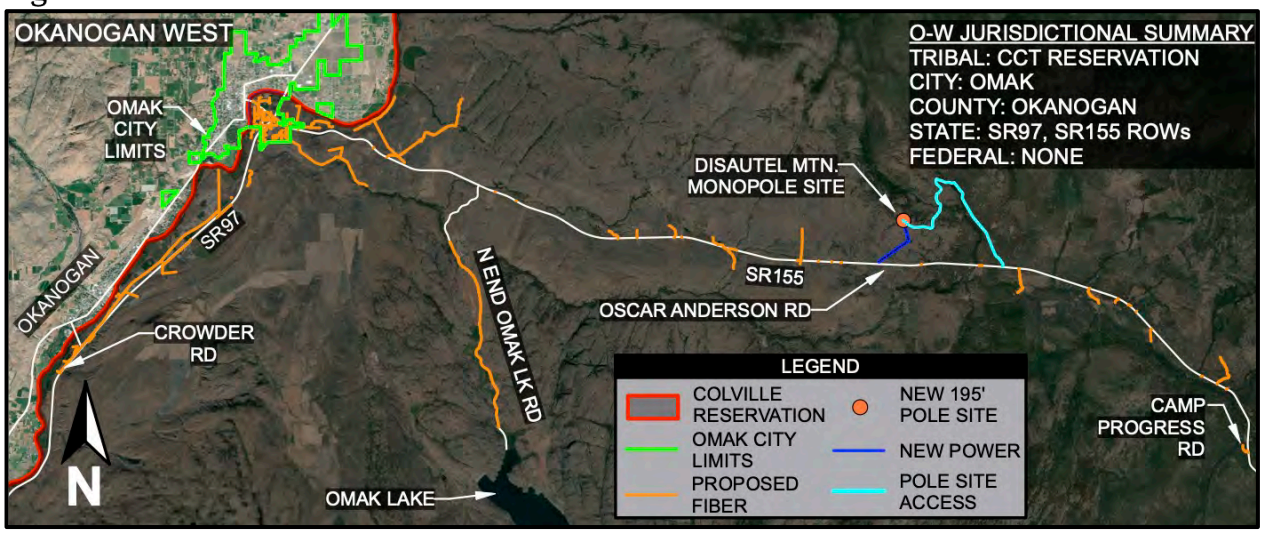
The route has been divided geographically into five sections for clarity. See Route Summary table.

Table 3. Route Summary

Work Area	Counties	Aerial Fiber (miles)	Buried Fiber (miles)	Aerial Electric (miles)	Buried Electric (miles)	New Road (miles)	New 195' Poles	40'/50'/ 100' Poles	Ex. 195' Tower Upgrade
O-W	Okanogan	17.1	11.5	0.95		1	1	31	
O-C	Okanogan	3.5	15						
O-S	Grant, Okanogan	8.4	11.4						
F-W	Ferry	43	11.2	0.05				13	
F-E	Ferry	26.5	24.2		2.5	1.5	2	6	1
All	**All**	**98.5**	**73.3**	**1**	**2.5**	**2.5**	**3**	**50**	**1**

Route Segment Descriptions - Okanogan West (O-W)

Figure 2: Work Area O-W



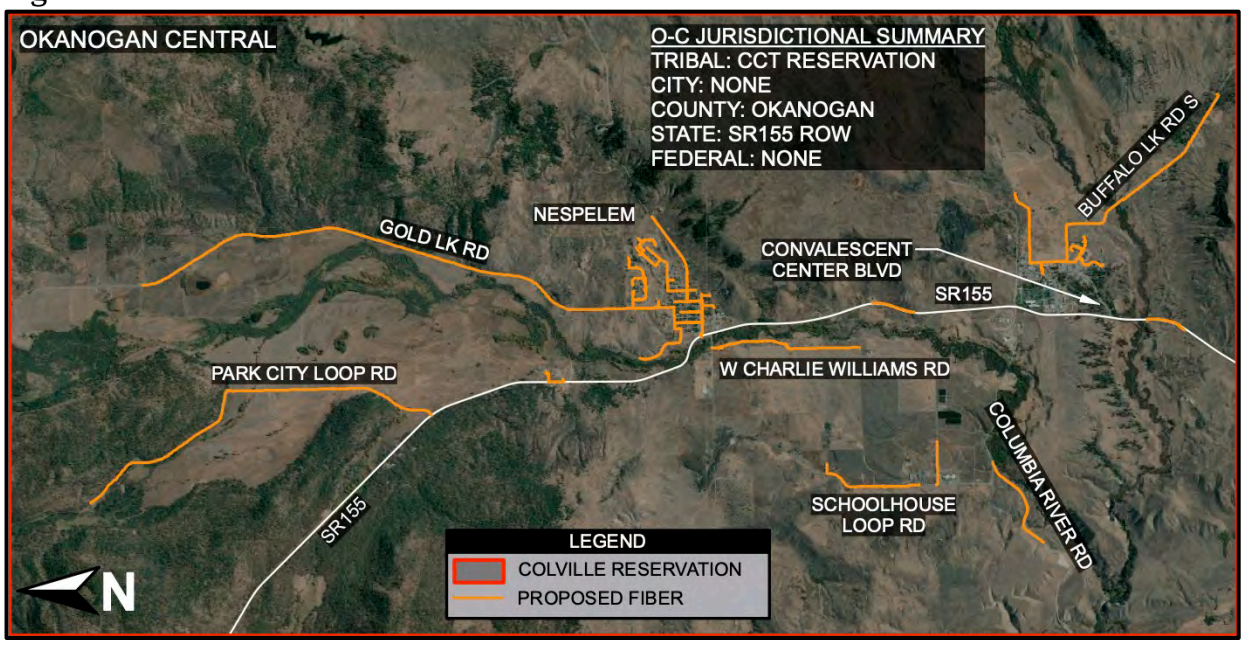
Route Segment O-W includes approximately 28.6 miles of new fiber, 0.95 miles of new electrical service, and one mile of new road development. All development in this Work Area is within CTCR jurisdiction. The segment roughly parallels SR97 and SR155. The route begins on SR97 approximately 0.3 miles southwest of the intersection of Crowder Road and SR97 and the route ends on SR155 at the intersection of Camp Progress Road and SR155. The route also includes one new 195/foot monopole site located approximately 0.8 miles NNE of the intersection of Oscar

Anderson Road and SR155 (Disautel Mountain Monopole Site). New road construction and power feed are needed to provide access and electricity to the pole site.

This segment includes a mix of buried and aerial cable, one new 195-foot wireless monopole, and 31 new 40-foot wireless poles. 30 new poles are needed to provide electricity to the monopole site, and one new pole is needed to provide a microwave connection between existing buried cable infrastructure and the monopole. Access to the pole site will be via existing roads managed by the BIA except where approximately one mile of new road construction is necessary. Most of the work along SR155 is intended to provide last mile connections between tribal residences and existing fiber that is buried on the south side of SR155. Route O-W provides service to residents and businesses along SR97 and SR155, a portion of the city of Omak (east of the Okanogan River), Omak Lake and North Omak. Route O-W will connect 711 customers.

Route Segment Descriptions - Okanogan Central (O-C)

Figure 3: Work Area O-C

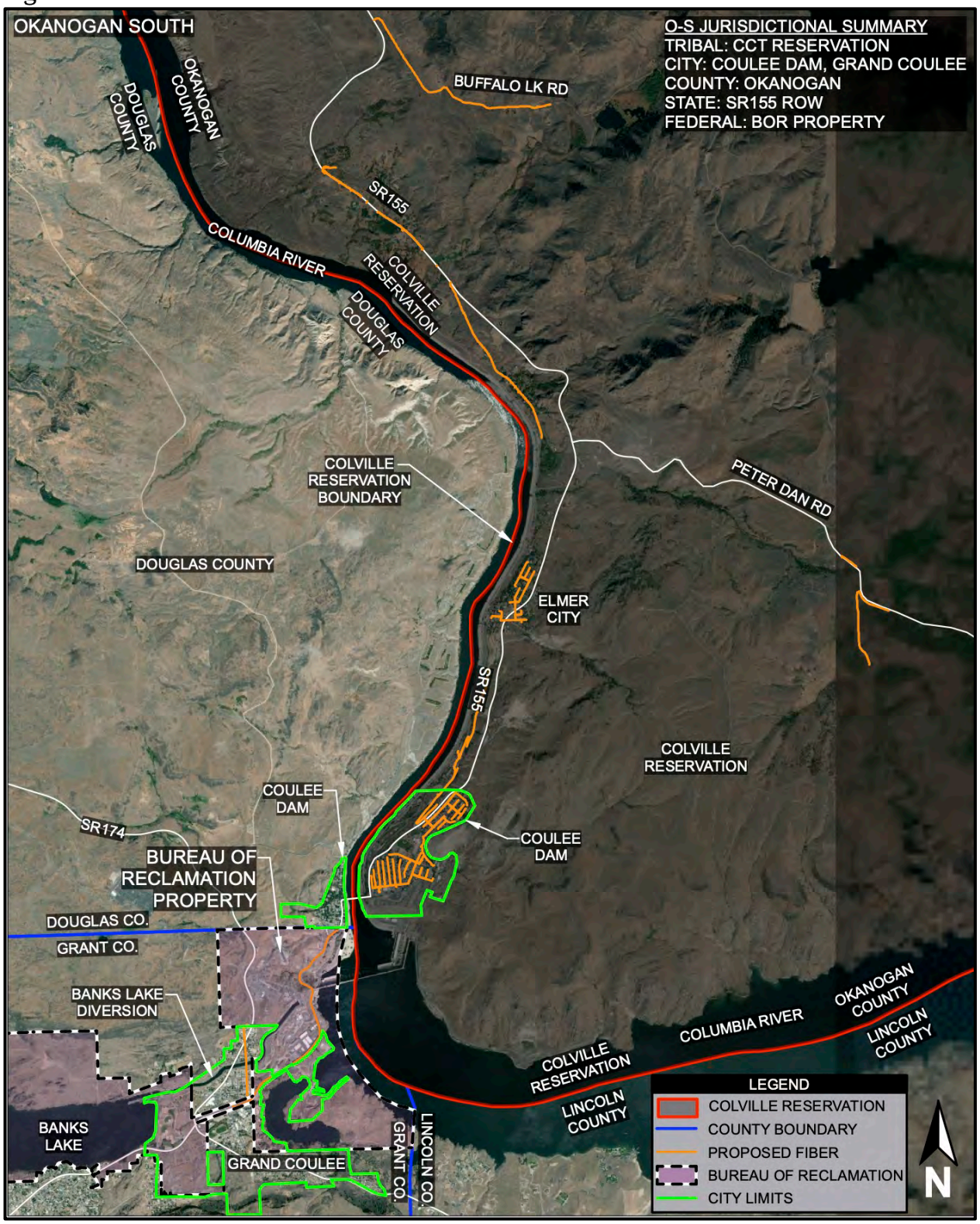


Route segment O-C includes approximately 18.5 miles of new fiber. All development in this Work Area is within CTCR jurisdiction. The route begins at the north end of Park City Loop Rd and ends along SR155 approximately 0.5 miles south of the intersection of Convalescent Center Blvd and SR155.

This segment includes aerial cable in the town of Nespelem and buried cable in all other locations. Service extends from Park City Loop Road and Gold Lake Road in the north, Charlie Williams Road, Schoolhouse Loop Road, and Columbia River Road in the center, and Joe Moses Road and Buffalo Lake Road in the south. Route O-C will provide high-speed internet to 473 customers.

Route Segment Descriptions - Okanogan Central (O-S)

Figure 4: Work Area O-S



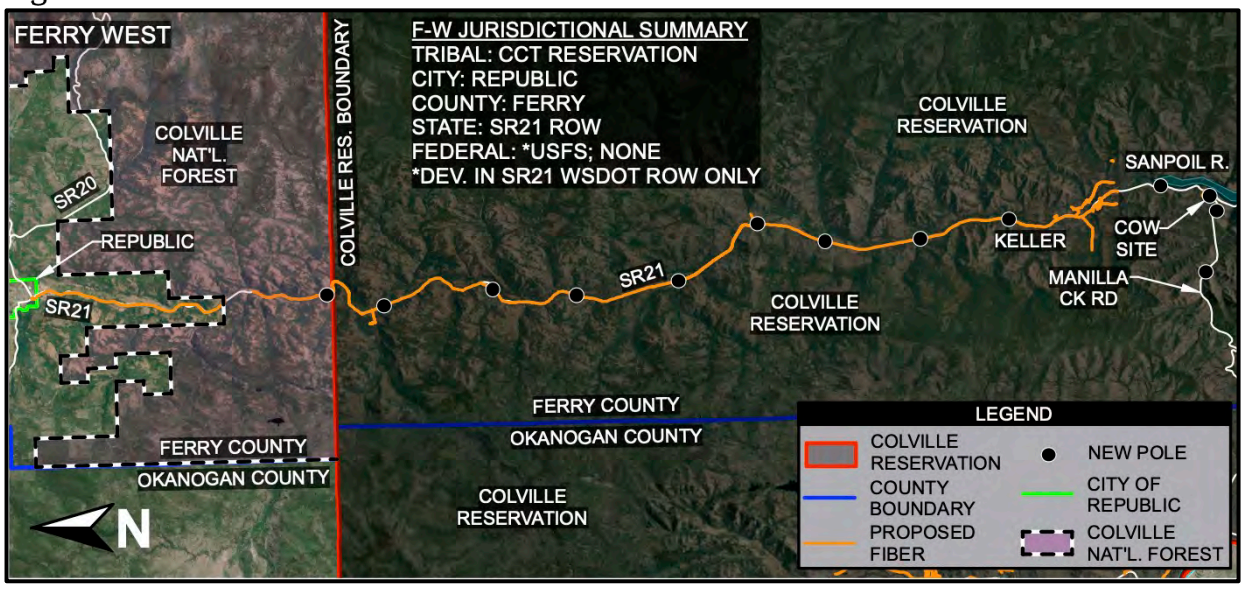
Route segment O-S includes approximately 19.8 miles of new fiber. All development east of the Columbia River is within CTCR jurisdiction. The route begins at the intersection of Buffalo Lake Road and SR155 and ends in the city of Grand Coulee at the intersection of Main Street and SR155. The route provides service to the towns of Belvedere, Koontzville, and Elmer City, and to the cities of Coulee Dam and Grand Coulee. A portion of the work occurs east of Elmer City near Peter Dan Road.

The majority of Work Area O-S will occur on the Colville Reservation in Okanogan County. Proposed development that extends into Grant County in the southern portion includes approximately two miles of buried cable and approximately 0.66 miles of aerial cable. All proposed buried cable in Grant County is within land managed by the BOR. All aerial cable in Grant County is within Grand Coulee city limits. See Figure 8 below.

Service extends along Buffalo Lake Road, Elmer City Access Road, Riverview Drive, and SR155. This segment includes aerial cable in Elmer City, Coulee Dam, and Grand Coulee, and buried cable in all other locations. One aerial crossing of the Banks Lake Diversion is proposed in the city of Grand Coulee; cable will be affixed to existing poles at an existing overhead electrical crossing. A short segment of buried cable extends from Peter Dan Road along BIA 1035. Route O-S will provide high-speed internet to 714 customers.

Route Segment Descriptions - Ferry West (F-W)

Figure 5: Work Area F-W



Route segment F-W includes approximately 54.2 miles of new fiber, and 0.05 miles of new aerial electrical cable. All development in this Work Area is within CTCR jurisdiction. The route begins 2.8 miles west of SR21 on Manilla Creek Road and ends at the intersection of SR21 and SR20 in

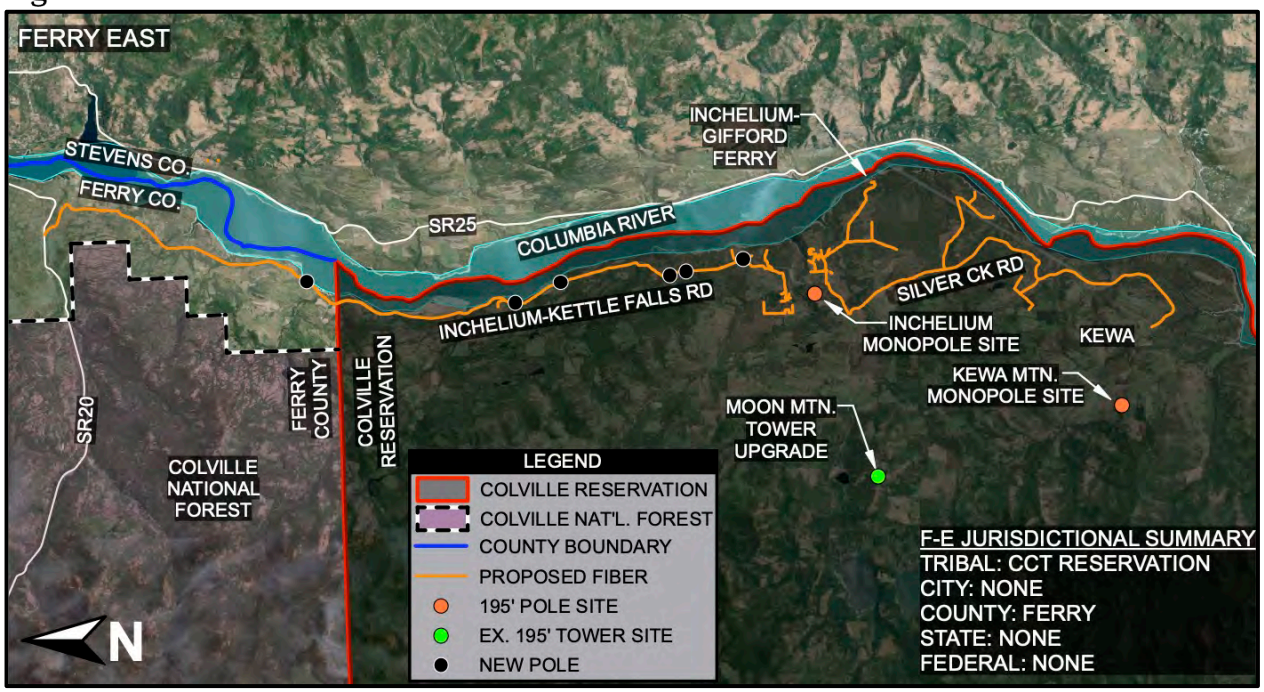
Republic. This route segment includes three new 100-foot ductile iron poles with wireless hardware along SR21, nine new 50-foot ductile iron wireless poles along SR21 and Manilla Creek Rd, and fiber connection/power feed/one new 100' ductile iron pole at a previously cleared COW site. The COW site is planned as a temporary installation and is located approximately 0.25 miles NNE of the intersection of Manilla Creek Rd and SR21. New ground-disturbing activities in Work Area F-W are limited to burying new conduit/cable in the road surface at the SR21 COW Site, and for setting new poles in the ROW of SR21/ one new pole at the COW site.

The majority of Work Area F-W will occur on the Colville Reservation. Proposed development that extends into unincorporated Ferry County and the Town of Republic in the northern portion includes approximately 8.75 miles of aerial cable (0.25 miles in Republic) and 3.25 miles of buried cable (all in unincorporated Ferry County). The project passes through land managed by the USFS, but all work in the Colville National Forest occurs in the Washington Dept. of Transportation (WSDOT) ROW associated with SR21.

This segment includes two aerial crossings of the Sanpoil River, connection to an existing COW site, new poles along the SR21 ROW, and a mix of aerial and buried cable along SR21 and in the town of Keller. Route F-W will provide high-speed internet to 219 customers.

Route Segment Descriptions - Ferry East (F-E)

Figure 6: Work Area F-E



Route segment F-E includes approximately 50.7 miles of new fiber, 1.5 miles of new road, and 2.5 miles of new buried electric cable. All development in this Work Area is within CTCR jurisdiction. The route begins at the intersection of Silver Creek Road and Kewa Road and ends at the intersection of Inchelium-Kettle Falls Road and SR20. The route includes two new 195-foot monopole sites (Kewa Mountain and Inchelium Hill), six new 50-foot ductile iron wireless poles along Inchelium-Kettle Falls Road, and a hardware upgrade for an existing 195-foot tower site on Moon Mountain. Route F-E will connect 398 customers.

One new 195-foot wireless monopole will be installed at the Kewa Mountain Monopole Site, 0.93 miles WNW of the intersection of Kewa-Meteor Road and Kewa Cemetery Road. Access to the Kewa Mountain Monopole Site will be via Star Road, except where approximately 0.75 miles of new road construction will connect the monopole site with Star Road. Electricity to the monopole site will be buried along the east side of Star Road and the proposed new road.

One new 195-foot wireless monopole will be installed at the Inchelium Hill Monopole Site, 0.57 miles NW of the intersection of Bridge Creek Road and Black Bird Drive. Access to the Inchelium Hill Monopole Site will be via existing roads except where approximately 0.75 miles of new road construction is necessary to connect the monopole site with an existing private road. Electricity will be buried along the east side of the proposed road. The hardware upgrade will be installed at the existing Moon Mountain Tower Site, which is accessed via Moon Mountain Road. No road improvements are needed to upgrade or maintain the Moon Mountain Tower Site.

3.2.3 Property Ownership and Governance

Table 4. Project Summary by County and Jurisdiction

Development in CTCR Jurisdiction		
County	Level of Government	Jurisdiction Where Work is Proposed
Okanogan County	City	Coulee Dam
		Omak
	Unincorporated Areas	Okanogan Co.
	State:	WSDOT; SR97/ SR155 ROW
	Federal:	No Proposed Development
Ferry County	Cities	No Proposed Development
	Unincorporated Areas	Ferry Co.
	State	WSDOT; SR21 ROW
	Federal	No Proposed Development
Grant County	N/A; no Portion of the Colville Reservation is in Grant County	

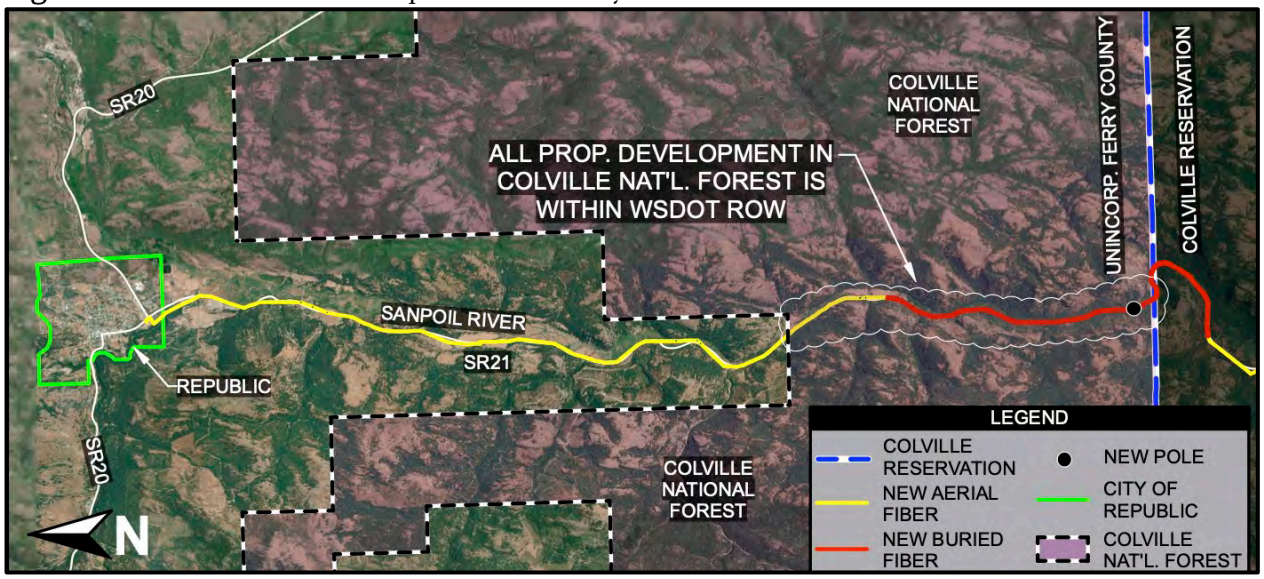
Development Outside CTCR Jurisdiction		
County	Level of Government	Jurisdiction Where Work is Proposed
Okanogan County	City	No Proposed Dev.
	Unincorp. Areas	Okanogan Co.
	State	No Proposed Dev.
	Federal	No Proposed Dev.
Ferry County	Cities	Republic
	Unincorp. Areas	Ferry Co.
	State	WSDOT; SR21 ROW
	Federal	USFS
Grant County	Cities	Grand Coulee
	Unincorp. Areas	No Proposed Dev.
	State	No Proposed Dev.
	Federal	BOR

Proposed development primarily occurs within the Colville Reservation. Within the Colville Reservation, all development will be overseen by the CTCR, except where additional WSDOT oversight is required in the ROW of SR97, SR155, and SR21. Proposed development extends off the Colville Reservation into Ferry County along SR21 and Inchelium-Kettle Falls Road, and into Grant County along SR155.

Off-Reservation Development - SR21 to Republic

Proposed development extends off the Colville Reservation in Ferry County along SR21 up to the intersection with SR20. SR21 passes through the Colville National Forest between the Colville Reservation and Republic. Approximately 3.25 miles of buried cable and approximately 1.2 miles of aerial fiber are proposed within the Colville National Forest boundary. This 4.45-mile section is entirely within the WSDOT-owned ROW of SR21. Proposed development located between the Colville National Forest and the city of Republic occurs in the SR21 ROW and within several private properties in unincorporated Ferry County. See Figure 7 below.

Figure 7: SR21 North Development Summary



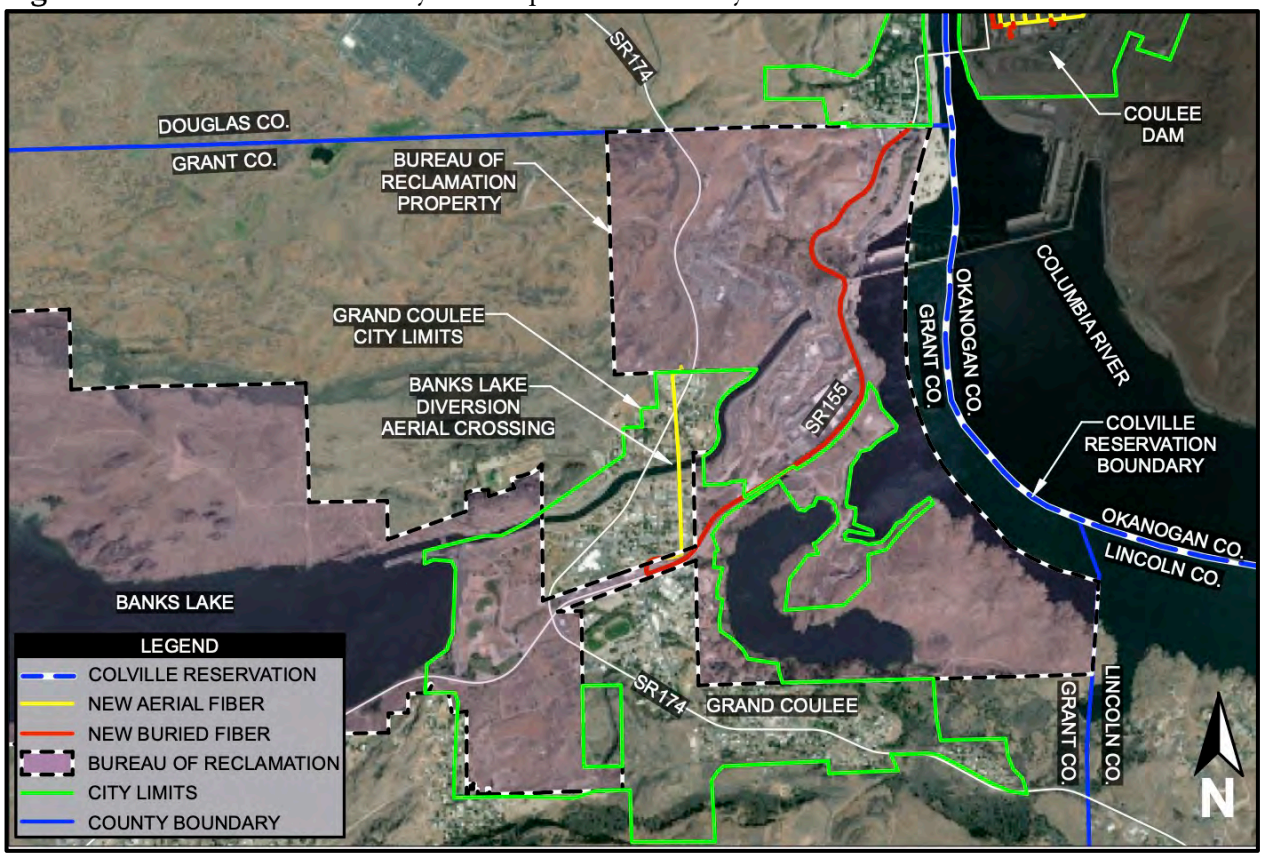
Off-Reservation Development - Inchelium-Kettle Falls Rd to SR20

Proposed development extends off the Colville Reservation in Ferry County along Inchelium-Kettle Falls Road up to the intersection with SR20. Proposed development located between the Colville Reservation and SR20 occurs in county ROW and within several private properties in unincorporated Ferry County. No work occurs in the Colville National Forest, on BIA land, or on BOR land in these Work Areas. See Figures 6 and 7 above.

Off-Reservation Development - SR155 to Grand Coulee

Proposed development extends off the Colville Reservation into Grant County along SR155. Development in Grant County occurs within the city limits of Grand Coulee or within BOR land associated with the Grand Coulee Dam. Proposed development in Grand Coulee includes approximately 0.7 miles of aerial cable and an aerial crossing over the Banks Lake diversion structure. Proposed development on BOR land includes approximately 2.1 miles of new buried fiber. See Figure 8 below.

Figure 8: SR155 Grant County Development Summary



3.2.4 Construction Techniques

Broadly, the project involves aerial fiber deployment using existing electrical distribution poles, new underground fiber (i.e. plow, trench, directional bore, girdling), construction of wireless facilities (i.e. poles, access roads, electricity, and land clearing), and setting new poles. To limit environmental impacts, new structures will be placed in previously disturbed rights-of-way (ROW) to the extent possible, directional bores will be used to avoid impacts to streams, and aerial cable installation on existing infrastructure is the generally preferred method of construction where available.

Aerial Fiber

The project requires 98.5 miles of new aerial fiber. Aerial installation will utilize existing electrical distribution poles primarily at the edge of the ROW of public roads. Individual pole replacement, if necessary, will be the responsibility of the electric utilities that own the infrastructure; no federal funds will be used to replace existing electrical distribution poles. Aerial fiber will be installed using a boom truck where vehicle access is within ~40 feet. Where vehicular access is greater than 40 feet from the pole, a lineman will climb the pole to perform the installation by hand. In either case, cable will be secured to the framing hardware and properly sagged.

Cable installation is accomplished with a moving work zone and can be placed in up to three-mile lengths without a splice point. Worker safety includes signs, traffic control structures, and high-visibility clothing. Equipment used for aerial installation includes:

- Boom lift truck,
- Line truck,
- Support truck,
- Trailer, and
- Reel loader truck

Buried Fiber

The project requires 73.3 miles of buried fiber. Underground installation will occur in previously disturbed ground near the paved roadway shoulder to the extent possible. The nominal depth of buried cable is 24 inches below the surface and is contained in polyethylene conduit. In general, all conduit will be located less than 48 inches below the ground surface, except where boring under private driveways, culverts, and other obstructions necessitates greater cable depth. Cable burial depth will be based on state and local standards where boring is necessary.

Cable will be installed using a combination of techniques: plow, trench, or directional bore. Plowing is the preferred method where existing aerial infrastructure is absent because it is the least invasive construction technique. Trenching will be implemented where soil and terrain conditions do not support plowing. Directional bores will only be used as necessary: to avoid disturbing concrete/asphalt at private driveway crossings, and to avoid future conflicts at culvert crossings that may eventually require maintenance or repair.

A plow excavates an approximately three-inch width using a shear that leads a reel of conduit. The shear starts at a splice point. 350 splice points are proposed. The shear opens a trench, conduit follows, and the trench is backfilled with spoils from the shear path (no imported backfill is needed). Hand-hole vaults are installed at splice points. 80 large vaults (30"x48" with 36" depth) and 270 medium vaults (17"x30" with 24" depth) are proposed. Once vault installation is complete, fiber cable is pulled through the conduit.

Trenching involves similar equipment to plowing, but the excavation is wider (four to 24 inches). Trenching physically removes the soil from the trench slot and requires imported backfill depending on soil conditions. A conduit is buried in the trench and then backfilled. Cable is pulled after cabinet and vault installation is complete.

Directional boring uses a directional drill to avoid concrete/asphalt (e.g. driveways and road surfaces) or to avoid interference with buried obstacles (e.g. culverts). Thirty bore pits are proposed, totaling approximately one mile of total boring. Disturbance is limited to an entrance pit and exit pit that each require an approximately two-foot by four-foot impact area. The drill penetrates at the entrance pit and arcs to maximum depth needed to clear the obstacle before arcing back up to the surface at the exit pit. The first pass creates a pilot hole, which is widened using a reamer, then conduit is pulled from the exit pit back to the entrance pit. Boring to span a private driveway may only require a maximum depth of 48 inches, whereas spanning beneath a stream/culvert may require a ten-foot vertical drop.

Where buried fiber must cross an existing bridge or bottomless culvert, conduit will be girdled to the side of the structure. The trench and buried conduit path will terminate at a vault located approximately 10 feet from the bridge approach on either side. Between the two vaults, conduit

rated for exterior application will be routed along the side of the bridge (below the railing). The conduit will be affixed to the bridge using masonry anchors and pipe clamp brackets. Overwater construction will be completed from the bridge deck; no in-water work will be necessary.

Equipment used for buried installation includes:

- Tracked plow cat,
- Tracked pull cat,
- Tracked clean up cat,
- Backhoe,
- Directional boring machine,
- Trencher,
- Cable reel truck and trailer,
- Vibratory plow,
- Tractor trailer transport semi,
- 3/4 & 1 ton trucks,
- Water truck,
- Dump truck,
- Rock saw,
- Air compressor

Wireless Facilities

Three 195-foot monopoles are proposed for installation at Disautel Mountain, Inchelium Hill, and Kewa Mountain. Each pole structure consists of two separate wood laminated sections. The structures will be installed using direct embedment, which means that no foundation is needed. A track hoe will excavate a hole that is 8 feet by 8 feet, and twelve feet deep. The first section of pole will be set in the hole, backfilled, and tamped in place. The second section will be attached by a crane and secured in the middle utilizing an engineered steel collar. Radio equipment and ladder access is installed after connecting the two sections.

Ground disturbance is necessary to improve existing access or create new access, for a proposed 100-foot by 100-foot development footprint surrounding the monopole, and to provide electricity and/or fiber connections. Land clearing supporting long-term site maintenance will occur only within the 100-foot by 100-foot development footprint and along the access roads.

Vehicular access to the Disautel Mountain Monopole Site requires widening a 1/3 mile section of existing road from approximately eight feet to 12 feet (7,040 square feet new road surface), and creation of one mile of new road at 12 feet width (63,360 square feet of new road surface). Road construction includes grading native soil to a crown, then capping the surface with eight inches of three-inch-minus crushed rock.

Vehicular access to the Kewa Mountain Monopole Site requires creation of 0.75 miles of new road. The crushed gravel driving surface will be 12 feet in width (47,520 square feet of new road surface).

Vehicular access to the Inchelium Hill Monopole Site requires widening a 0.4 mile section of existing road from approximately eight feet to 12 feet (8,448 square feet new road surface), and

creation of 0.75 miles of new road. The crushed gravel driving surface will be 12 feet in width (47,520 square feet of new road surface).

Electrical distribution service to the Disautel Mountain Monopole Site will be aerial on 30 new 40-foot ductile iron poles set between SR155 and the monopole site. These poles will be set and wired using tracked vehicles. Electrical distribution service to the Kewa Mountain Monopole Site and Inchelium Hill Monopole Site will be buried along the edge of the widened/new road sections.

Wireless broadband transmitters will be affixed to the monopoles. Fiber will be directly routed to the Kewa Mountain Monopole Site and Inchelium Hill Monopole Site. The Disautel Mtn Monopole Site will relay internet from a microwave connection set on one new 40-foot pole on the north side of SR155.

Three 100-foot ductile iron poles are proposed along the edge of SR21. One new 100-foot ductile iron pole is proposed at the existing COW site. These poles will provide wireless internet connection to area residents. The poles along SR21 will be installed near the back edge of the ROW using a pole truck. Poles will be staged at a laydown yard until needed. Fiber and electricity will be directly routed to the poles along SR21. Fiber will be buried at the edge of the existing access road to the COW site, and electricity will be aerial from an existing distribution pole located 278 feet east of the proposed pole.

Fifteen 50-foot ductile iron poles will be installed along the edge of SR21 and Inchelium-Kettle Falls Road. These poles will provide wireless internet connection to area residents. The poles will be set near the edge of the right-of-way using a pole truck. Electricity will be directly routed to the poles from nearby infrastructure.

Equipment used for wireless facilities installation includes:

- Crane,
- 3/4 & 1 ton trucks,
- Mini excavator,
- Pole truck,
- Concrete truck,

Ground Disturbance

Project impacts are possible in proximity to ground disturbing activities.
Temporary ground disturbance will occur as follows:

- Plowing/trenching for buried fiber cable;
- Construction access to existing poles, proposed poles, and monopole sites that are not located in the improved/disturbed ROW;
- Directional bore entrance and exit pits; and
- Trenching from bore pits to pole risers.

Permanent ground disturbance will occur as follows:

- Installation of hand-hole vaults and cabinets;
- Installation of new poles;

- Constructing new access roads to new 195-foot monopoles; and
- Permanent clearing surrounding the monopole (100 feet by 100 feet).

All other work occurs overhead using existing infrastructure along the edge of disturbed/improved rights-of-way or on private property. Access to aerial infrastructure is via existing improved or previously utilized primitive surfaces at the edge of the right-of-way. No ground disturbance or vegetation clearing is expected to occur in these areas, and therefore no impacts to the natural or built environment are anticipated.

Project Timeline

Engineering, design, and permitting are scheduled to be completed from July 2023 to July 2024. Materials acquisition will begin in July 2024 and construction request for proposals (RFP) will open in August 2024. Construction, service installation, and service activation are scheduled to start in October 2025, and the project will close in May 2026.

Long-Term Operation and Maintenance Activities

Long-term operation includes periodic vegetation maintenance along the aerial route and surrounding the monopole sites to prevent interference with overhead lines and access. Vegetation maintenance along the aerial section is an existing standard operating procedure undertaken by the local utilities that own the poles. New long-term operation or maintenance activities will occur in the vicinity of the monopole sites only. Ongoing activities include minimal vegetation clearing and road surface maintenance.

3.3 NO ACTION ALTERNATIVE

Under the No Action Alternative, the project would not be constructed. This alternative would leave residents, businesses, and government with limited access to the internet. This alternative would forgo the social, economic, and health benefits of providing a more complete network and faster speeds of cable internet to the CTCR and would hinder future economic development in the area. The No Action Alternative would not result in any ground-disturbing work, including development of new monopole sites.

3.4 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM FURTHER DISCUSSION

The initial planning phase of the project sought to economically provide a complete network of broadband service to CTCR businesses, institutions, and residents. Three methods of broadband internet deployment are available: fiber cable hanging on aerial infrastructure, shallow burial of fiber cable, and wireless. Each method has efficiencies and limitations.

Cable on aerial infrastructure is typically the most cost-efficient delivery method. Aerial cable becomes cost-prohibitive to install when pole replacement, reinforcement, rearrangement, and new structures are also required. Buried cable is preferred at the point where aerial cable is more expensive. Buried cable is limited by the existence of significant or sensitive buried utilities and by naturally occurring obstacles. Open trenching and directional boring can overcome these obstacles in some instances, but boring quickly becomes cost prohibitive. Where aerial and buried cable installation are too costly, potentially damaging, and time consuming to install, wireless options are considered. Steel lattice towers were the preferred material selection for the larger wireless installations. However, based on cost, constructability, and impact area, wood laminated

monopoles are the preferred structure material. Wireless delivery results in the lower end of services from a bandwidth and throughput perspective, requires line-of-sight to potential users, proximity to existing power and backhaul, and has a shorter functional life cycle due to ever-increasing bandwidth demands. No opportunities for co-location were identified due to the limitations of wireless delivery and the location of existing infrastructure.

The planning phase took into consideration the obstacles present along the route and made numerous decisions about the appropriate delivery method for each obstacle encountered; many combinations of deployment methods were considered as alternatives. Constructability and cost were the driving factors, and no other mix of aerial/buried/wireless delivery would reasonably meet project goals.

As previously discussed, aerial cable is the preferred method of delivery where existing infrastructure is present due to cost. The first alternative that was considered included full utilization of existing aerial infrastructure and buried installation where aerial infrastructure is not present. This alternative was eliminated because of the cost and complexity of connecting customers along the more rural sections of SR155, SR21, and the Inchelium-Kettle Falls Road. The full aerial/buried alternative would require an additional aerial crossing over the Sanpoil River and high construction costs due to terrain, ground conditions, and proximity to necessary utilities. For these reasons, wireless infrastructure is proposed to meet customer needs along SR155, SR21, and Inchelium-Kettle Falls Road.

4.0 DESCRIPTION OF THE AFFECTED ENVIRONMENT

For the purpose of this EA, the affected environment is defined as 300 feet from all proposed development activities, unless otherwise explicitly stated. This area is herein referred to as the Project Area (PA).

4.1 NOISE

The project occurs primarily along the rights-of-way of state highways and the edge of rural roads. Large monopole construction involves work occurring on undeveloped property that is between several hundred feet and one mile from roads that are frequently used. Noise levels adjacent to state highways and rural roads are driven by the volume of traffic using the corridor, the speed limit, and noise path reduction factors (topography, vegetation, atmospheric factors). Noise levels surrounding the monopole sites are consistent with natural forest/shrub habitat that is absent of human intrusion, except where a network of infrequently used dirt roads may be subject to occasional off-road vehicle use (e.g. hunting or recreation).

Based on cursory review of the WA Dept. of Transportation (WSDOT) Biological Assessment Preparation for Transportation Projects noise assessment guidance (WSDOT, 2013), A-weighted decibel volume for traffic along state highways in the PA is between 65-70, and approximately 60 for rural roads. Decibel levels at the monopole sites would be approximately 40-50 due to wind noise or rain in an undeveloped setting. A-weighting is applied to instrument-measured sound levels to account for the relative loudness perceived by the human ear.

4.2 AIR QUALITY AND CLIMATE CHANGE

4.2.1 Air Pollutants

The Clean Air Act (CAA) regulates six air pollutants: carbon monoxide, ground-level ozone, lead, nitrogen dioxide, particulate matter, and sulfur dioxide. The Environmental Protection Agency (EPA) is tasked with setting National Ambient Air Quality Standards for these six criteria pollutants based on 40 CFR 50. Pollutant levels that are beneath established thresholds are considered to be in "attainment," while higher levels are in "non-attainment."

Based on review of the WA Dept. of Ecology (Ecology) Air Quality Program (AQP), Eastern Washington meets attainment standards for all criteria pollutants. Omak is noted by the AQP as an area of concern for particulate matter concentrations (<2.5 micrometers), but no Air Quality Management Districts have been established and no State Implementation Plans (SIPs) are in effect.

4.2.2 Climate Change

Climate change broadly refers to the effects of increasing greenhouse gas (GHG) concentrations in the earth's lower atmosphere. GHGs include carbon dioxide, methane, nitrous oxide, and fluorinated gases. Although many GHGs occur naturally, climate change refers to the rapid increase in concentrations associated with human activities since the Industrial Revolution. In accordance with Executive Order 13990, this EA takes into consideration the potential for release of greenhouse gases (GHG) associated with the project.

Climate change is influenced by global patterns of human activity. In the United States, carbon dioxide accounts for approximately 80 percent of all GHG emissions (EPA 2024a). Carbon dioxide is generated by transportation, electricity, industry, and residential/commercial uses. Methane emissions represent 11 percent of total US emissions; coal, natural gas, and oil production/transport are the primary sources (EPA 2024b). Nitrous oxide emissions represent six percent of total US emissions; agricultural and industrial activities such as fossil fuel and solid waste combustion are the primary sources (EPA 2024b).

Based on research funded by the Intergovernmental Panel on Climate Change (Collins et al. 2013), unabated GHG concentrations will cause ecologically significant changes to global earth surface temperatures (e.g. increasing, regionally non-uniform), atmospheric circulation (e.g. reduced sea level pressure in high latitudes and increased pressure in mid latitudes), the water cycle (e.g. increased global precipitation), the cryosphere (e.g. shrinking and thinning Arctic and Antarctic sea ice), and the ocean (e.g. warming).

4.3 GEOLOGY AND SOILS

4.3.1 Geology

The project is located along the boundary of the Okanogan highlands and the Columbia Plateau physiographic regions (Pater 1998). The Okanogan region lies between the Cascade Range and Selkirk Mountains and extends from the northern extent of the Columbia River Plateau into southern British Columbia. The region was formed by plate tectonics, volcanic eruptions, and periods of glaciation. The Columbia Plateau was formed by a lava flood that deposited basalt up to two miles thick across ~62,000 square miles of Oregon, Idaho, and Washington (Baker 1991). More recently, the Columbia Plateau area was modified by flooding from glacial Lake Missoula as the Purcell lobe of the Cordilleran Ice Sheet (CIS) was undermined by the lake approximately

15,000 years ago (Booth 2003). The Okanogan Highlands and a sliver of the northern Columbia Plateau were subjected to the advance and retreat of the Okanogan Lobe of the CIS, which compacted the land surface as it advanced, created glacial lakes in valleys as it receded, and then scoured the land surface as ice dams released large volumes of glacial lake water in pulses to the Columbia River (Lenfesty 1980).

Historic soil formation in the Columbia Plateau is a function of the combined effects of the Missoula Floods, and the advance/retreat of the Okanogan Lobe of the CIS. The floods scoured the land surface and deposited coarse materials along the flow path. The advancing glacier partially blocked the flood path, compacting the earth surface and imprinting a mixture of sand, gravel, and stones. The retreat of the Okanogan Lobe formed glacial lakes that deposited fine materials along valleys, then scoured that material as glacial outwash flowed south to the Columbia River.

The project occurs in a mix of glacial outwash, glacial till, glacial drift, glaciolacustrine drift and deposits, alluvium, outburst flood deposits, and volcanic rock.

4.3.2 Soils

Since the retreat of the CIS, soils surrounding the PA have formed as a function of parent material, climate, and living organisms. Parent materials include volcanic ash, glacial till, glacial lacustrine deposits, glacial outwash, weathered bedrock, and recent alluvium. Climatic factors include temperature, precipitation totals, and seasonal distribution of precipitation. The PA is arid in the southern portion and semi-arid in the north. Due to elevation change, temperatures are higher in the southern portion (lower elevation) and lower in the northern portion (higher elevation). Living organisms broadly include plants, worms, and micro-organisms (Lenfesty 1980). Their distribution and abundance are also driven by climatic differences.

Soils in the PA range from fine silt loam to sand and include rock outcroppings. The Natural Resource Conservation Service (NRCS) maps 205 soil units within the PA. 44 of these soil types are classified as Farmland of Statewide Importance, 20 are classified as Prime Farmland, and 21 are classified as Prime Farmland if irrigated or drained. A list of all mapped soil types in the PA, including Farm Class and Drainage Class, is provided in Appendix C below.

4.4 WATER RESOURCES

4.4.1 Surface Water

The project occurs within four major sub-basins as defined by the United States Geological Survey (USGS). USGS assigns a hierarchical two-digit to 12-digit number, which delineates watershed boundaries for the continental United States. "Sub-basins" are defined as the eight-digit Hydrologic Unit Code (HUC). The project occurs within the sub-basins listed in Table 5 below. See also Figure 9 below.

Within these four major sub-basins, proposed development occurs in close proximity to lakes and streams, including Navigable Waters of the United States (e.g. Columbia River, Okanogan River). Aerial and buried cable will cross intermittent and perennial streams, including known fish-bearing streams. There are no proposed crossings (aerial or buried) of Navigable Waters of the United States, and therefore water quality impacts are not anticipated.

Figure 9: Watershed Boundary Map

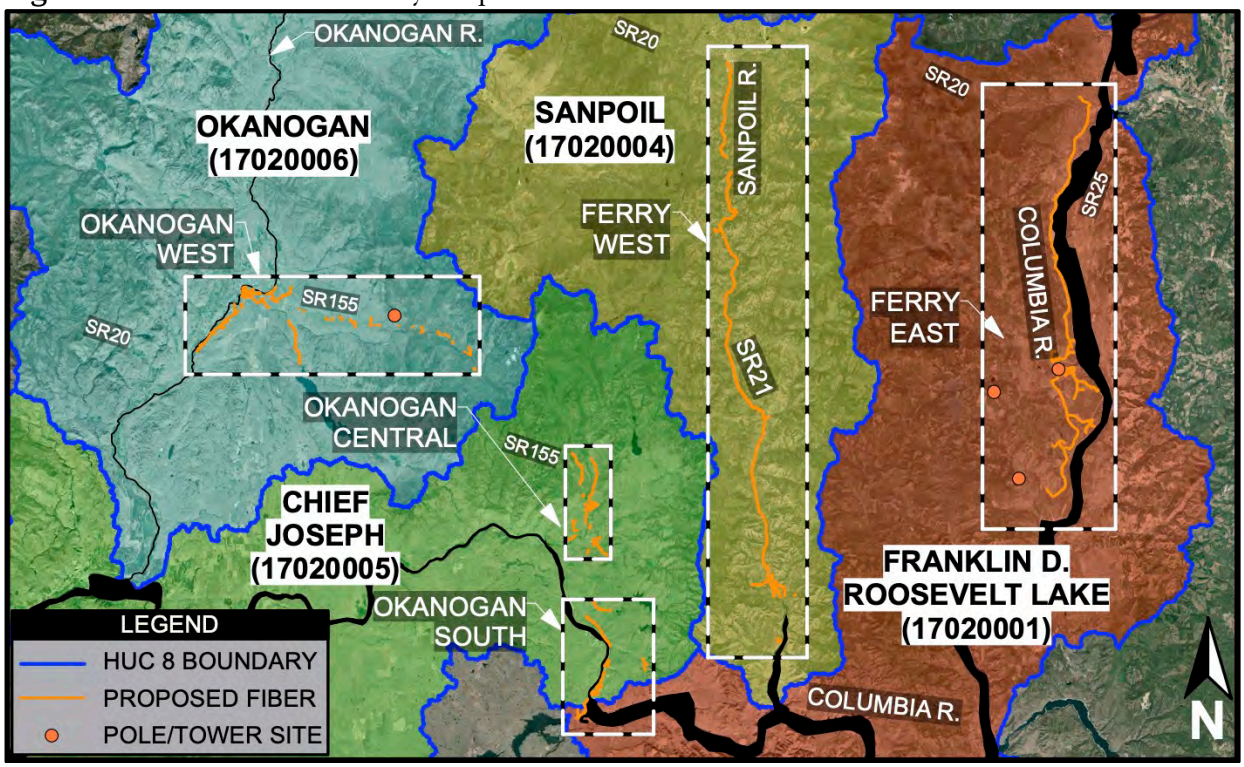


Table 5. Major Drainage Sub-Basins

Watershed Name	Hydrologic Unit Code	Route Segment
Franklin D. Roosevelt Lake	1702001	F-E, O-S
Sanpoil	1702004	F-W
Chief Joseph	1702005	O-C, O-S
Okanogan	1702006	O-W

4.4.2 Groundwater

Water enters CTCR land as rain, snowmelt, or from streams that inflow from the north. Most water collects in minor tributary streams and flows to the Okanogan, Sanpoil, and Columbia rivers, though some streams feed lakes and wetlands that have no surface outlet. Groundwater develops on CTCR land as a result of precipitation, stream seepage, and irrigation-water infiltration (Harkness 1974).

The principal aquifers surrounding the PA formed in glacial and alluvial deposits along the Sanpoil River, Omak Creek, and Okanogan River valleys (Ebbert 1984). Based on review of the CTCR document titled *Application for Treatment in a Manner Similar to a State for Water Quality Standards and Certification Programs*, shallow depth to bedrock, low soil percolation rates, steep slopes, and silt and clay prevalence are limiting factors for groundwater recharge on CTCR land.

Groundwater provides domestic and public water supply for tribal and non-tribal land, and also groundwater outflow to the Okanogan and Columbia rivers. No significant groundwater impairments were noted in a 1984 groundwater quality investigation (Ebbert 1984). The CTCR Environmental Trust monitors groundwater annually at 20 well sites throughout the reservation.

Based on a 2017 reservation-wide water quality assessment report (Wright 2017), pH is the only water quality parameter of concern that is linked to groundwater; ph readings exceeded tribal standards at only four locations during the data collection period (1993-2016). No other groundwater impairments were noted in the report.

Based on comparison with the EPA Sole Source Aquifer map, no sole source aquifers (SSA) are present in the PA. The nearest mapped SSA is the Spokane Valley-Rathdrum Prairie Aquifer Source Area, which is no closer than 53 miles from the nearest work area.

4.4.3 Coastal Zone, Estuary, and Inter-Tidal Areas

The project is located within an inland portion of Washington state. No coastal zones, estuaries, or inter-tidal areas occur on or near the PA.

4.4.4 Floodplains

WRI reviewed Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs) to determine the extent of the regulatory floodplain along the project route. The project crosses the floodplains associated with Okanogan River, Omak Creek, Little Nespelem River, Banks Lake Diversion at the Grand Coulee Dam, Sanpoil River, West Fork Sanpoil River, Scatter Creek, Granite Creek, and Stranger Creek. Appendix D depicts the regulatory floodplain in the PA. Proposed development in the floodplain is summarized in Table 6 below.

Table 6. Proposed Floodplain Development

Route Segment	Development Type	Floodplain Impact Area
O-W	Buried Cable	914 Lineal Feet
	Aerial Cable	880 Lineal Feet
	Monopole Site	No Monopole Site Crossings
O-C	Buried Cable	1,738 Lineal Feet
	Aerial Cable	No Aerial Crossings
O-S	Buried Cable	24 Lineal Feet
	Aerial Cable	158 Lineal Feet
F-W	Buried Cable	22,551 Lineal Feet
	Aerial Cable	51,710 Lineal Feet
F-E	Buried Cable	No Buried Crossings
	Aerial Cable	21,229 Lineal Feet
	Monopole Site	No Monopole Site Crossings
All Work Areas	**Buried Cable**	**25,228 Lineal Feet**
	Aerial Cable	**73,977 Lineal Feet**
	Monopole Site	**0 Lineal Feet**

4.4.5 Wetlands

Wetlands are defined by the CWA as "areas that are inundated or saturated by surface or ground water at a frequency and duration to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions." Wetlands are valuable to society for their ability to provide wildlife habitat, improve water quality, and attenuate peak flows entering surface channels.

Wetlands located in the continental United States are mapped by the US Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI). All NWI-mapped wetlands are depicted in Appendix D of this report. It is worth noting that NWI-mapped features are depicted based on landscape-scale computer modeling only; ground truthing has not been employed to improve the accuracy of boundaries, and for this reason they are not typically suitable for determining impacts at the site scale.

Based on review of NWI maps, many wetlands occur within the PA. Most wetlands are mapped as Palustrine Scrub-Shrub or Palustrine Emergent and are located within riparian corridors associated with intermittent or perennial streams. Four large wetland complexes are mapped in close proximity to the proposed project:
1) Between Omak Lake and SR155 (associated with No Name Creek);
2) Between SR155, Park City Loop Road, and Gold Lake Road (associated with Nespelem River);
3) North of the intersection of SR155 and Bridge Creek Road (associated with Sanpoil River); and
4) Along SR155 at the Tribal/Ferry County boundary (associated with Sanpoil River)

The proposed fiber alignment intersects with several NWI-mapped wetlands, primarily where existing roads were built in close proximity to large riparian wetland corridors. Appendix D – Sheets 10/12 – 12/12 shows all fiber-NWI intersects. Ground truthing occurred as part of the site investigation. The investigators determined that the proposed fiber route does not occur within wetland areas; all fiber shown within NWI-mapped features are map errors. The project will not impact wetlands.

4.4.6 Wild and Scenic Rivers

Based on comparison with the National Park Service Wild & Scenic Rivers map viewer, no designated Wild and Scenic Rivers are located on or near the PA.

4.5 BIOLOGICAL RESOURCES

4.5.1 Ecoregions

The EPA has divided the continental United States into ecoregions by type, quality, and quantity of environmental resources that are similar. The project occurs along the boundary of two Level I ecoregions as defined by the EPA. See Table 7 below. Level I ecoregions are further subdivided into Levels II, III, and IV based on geology, landforms, soils, vegetation, climate, land use, wildlife use, and hydrology. Figure 10 shows the geographic extent of Level IV ecoregions in and surrounding the PA. Physical descriptions of the Level IV ecoregions are provided below based on research conducted by Chad McGrath and others (McGrath 2002), and Sharon Clarke and others (Clarke 1997).

Figure 10: EPA Ecoregions in Project Area

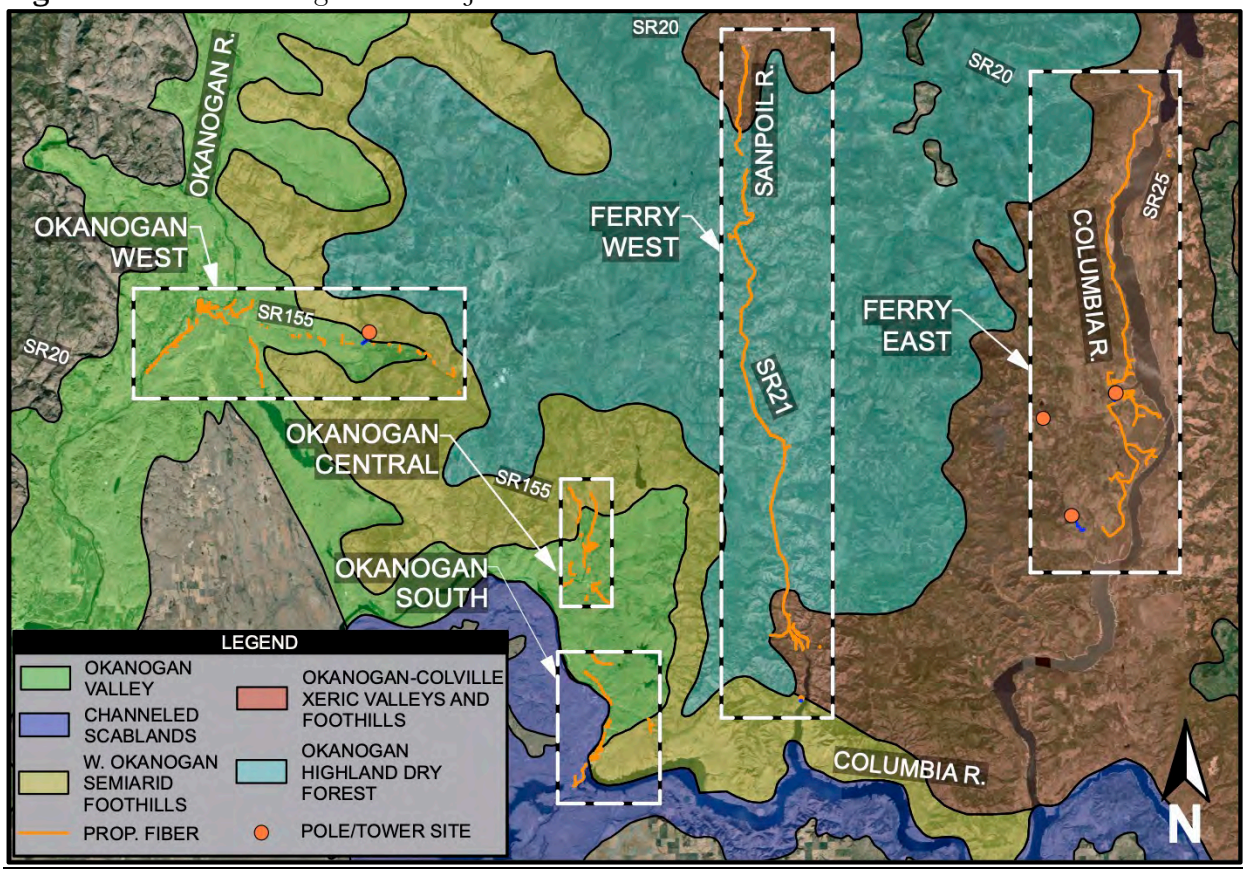


Table 7. Biological Site Description – EPA Ecoregions

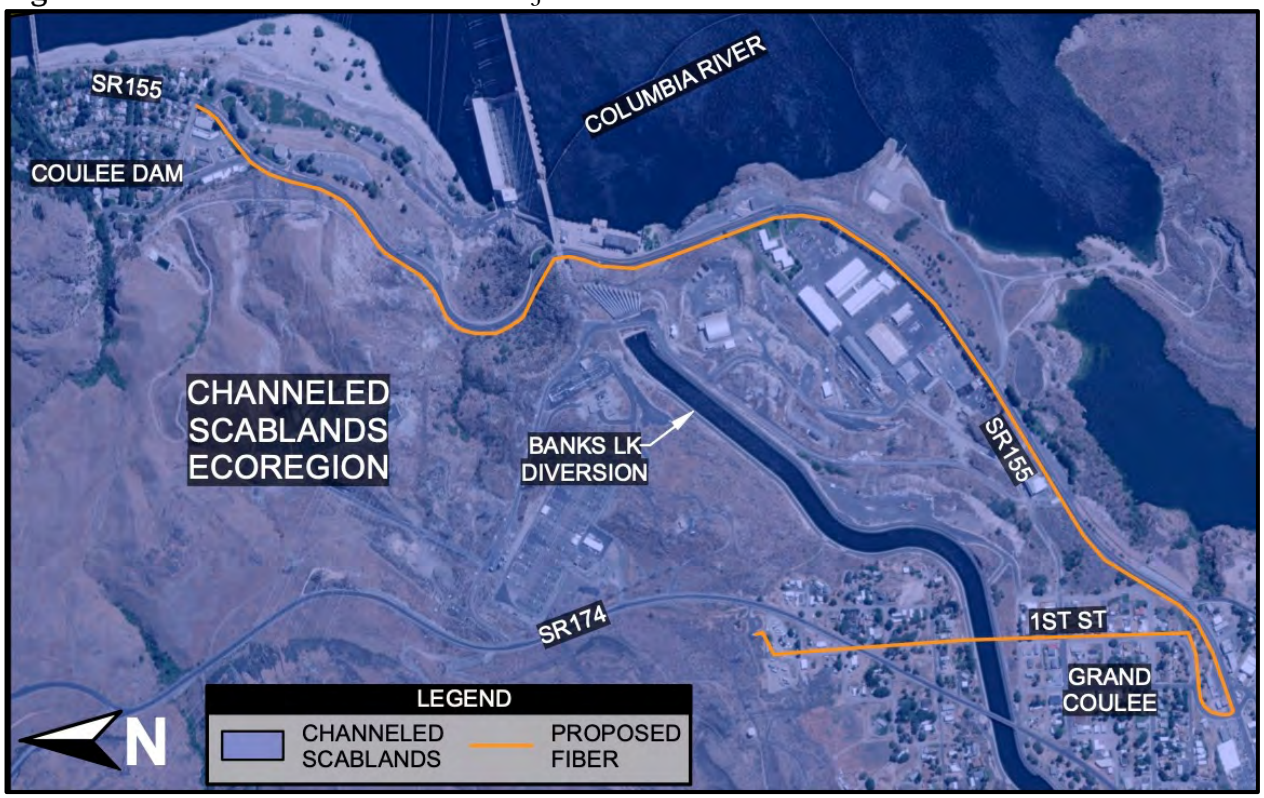
EPA Ecoregions			
Level I	**Level II**	**Level III**	**Level IV**
North American Deserts	Cold Deserts	Columbia Plateau	-Channeled Scablands, -Okanogan Valley
Northwestern Forested Mountains	Western Cordillera	Northern Rockies	-Western Okanogan Semiarid Foothills, -Okanogan-Colville Xeric Valleys and Foothills, -Okanogan Highland Dry Forest

Channeled Scablands

The Channeled Scablands ecoregion formed as the outflow from glacial Lake Missoula scoured out thick soils (loess) over basalt and re-deposited the loess along the edge of the main flood channels. The Channeled Scablands are generally too arid to support tree growth and are instead dominated by stiff sage and Sandberg's bluegrass.

Work occurring in the Channeled Scablands is limited to the southernmost portion of Work Area O-S between Coulee Dam and Grand Coulee. All work in the Channeled Scablands ecoregion occurs along the edge of disturbed/regularly maintained areas. See Figure 11 below.

Figure 11: Channeled Scablands in Project Area



Okanogan Valley

The Okanogan Valley ecoregion is a glacial trough located between the North Cascades and the Okanogan Highlands. Landforms include terraces, hillslopes, and alluvial flats associated with the Okanogan and Methow Rivers. Annual precipitation totals support primarily sagebrush and grass assemblages; tree line demarcates the transition to the adjacent Western Okanogan Semiarid Foothills ecoregion.

A portion of Work Areas O-W, O-C, and O-S are within the Okanogan Valley ecoregion.

Western Okanogan Semiarid Foothills

The Western Okanogan Semiarid Foothills form the boundary between two Level I ecoregions (North American Desert and Northwestern Forested Mountains). The transition is marked by precipitation totals that result in varied communities including grasses, shrub-steppe, and Douglas fir/ponderosa pine forest.

A portion of Work Areas O-W, O-C, O-S, and F-W are within the Western Okanogan Semiarid Foothills ecoregion.

Okanogan-Colville Xeric Valleys and Foothills

The Okanogan-Colville Xeric Valleys and Foothills ecoregion includes major river valleys and the lower slopes of the Okanogan Highlands. The boundary is along the distribution of glacial drift and till and therefore soils are mostly gravelly and stony. This ecoregion supports forest-density ponderosa pine, larch, and Douglas fir, but also includes more sparsely populated woodlands in

areas with high fire frequency. Understory vegetation includes ninebark, oceanspray, and snowberry.

A portion of Work Areas F-W and F-E are within the Okanogan-Colville Xeric Valleys and Foothills ecoregion.

Okanogan Highland Dry Forest

The Okanogan Highland Dry Forest ecoregion covers the mid-elevation Okanogan Highlands between the Okanogan River Valley and the Columbia River Valley. Mountains and hills at this elevation are broad and round due to scouring by continental ice flows during the Pleistocene epoch. Bedrock is commonly near the surface, with widespread loess and volcanic ash deposits. Due to its landscape position in the rain shadow of the North Cascades, dry conditions limit forest species diversity to Douglas fir and subalpine fir species.

A portion of Work Area F-E is within the Okanogan Highland Dry Forest ecoregion.

4.5.2 Wildlife and Vegetation

The proposed project covers a large and varied landscape including terraces, hillslopes, alluvial flats, grasslands, semiarid forests, dry forests, and river floodplains. Land use is also variable; the PA includes suburban and rural residential uses, industrial uses, farmlands, timberlands, and existing roadways and highways. Wildlife use is dependent on the habitat type and the intensity of human use. Discussion of wildlife and vegetation is provided in the context of proposed development activities.

Aerial and Buried Cable

Aerial and buried cable are proposed mostly along the shoulder of existing roadways. Roadway shoulders predominately consist of gravel or dirt, with various species of weedy herbaceous vegetation and sporadic native shrubs. A list of wildlife species that could potentially use the broader PA is provided below in Tables 9, 10, and 11. In the vicinity of proposed aerial and buried cable, no significant wildlife use is expected due to the disturbed/developed condition and the high intensity of human land use.

Aerial and buried fiber will cross over 350 minor tributaries that drain to the major waterways in the area (e.g. Okanogan River, Columbia River). Riparian shrub and herbaceous vegetation are present at many of the larger bridge crossings. Weedy herbaceous vegetation is present at the smaller culvert crossings. Fish species potentially present at all stream crossings include the following.

Table 8. Potential Fish Species in Project Area

Common Name	Latin Name
largemouth bass	*Micropterus salmoides*
summer run steelhead	*Oncorhynchus mykiss*
rainbow trout	*Oncorhynchus mykiss*
sockeye	*Oncorhynchus nerka*
Kokanee	*Oncorhynchus nerka*
Chinook (Upper Columbia spring run - ESU-XN)	*Oncorhynchus tshawytscha*
bull trout	*Salvelinus confluentus*
eastern brook trout	*Salvelinus fontinalis*

Disautel Mountain Monopole Site

The Disautel Mountain Monopole Site is north of SR155 in Work Area O-W. Access to the monopole is approximately 2.33 miles from SR155 along BIA-71 and an existing unnamed dirt road. The final approach to the monopole site is approximately one mile from the existing unnamed dirt road.

Vegetation along the new section of road (one mile) to the monopole site is sparsely vegetated and include numerous rock outcroppings. Observed vegetation in these areas includes Ponderosa pine (*Pinus ponderosa*), Japanese brome (*Bromus japonicus*), tall fescue (*Schedonorus arundinaceus)*, yarrow (*Achillea millefolium)*, and parsnip-flowered buckwheat (*Eriogonum heracleoides*).

Observed wildlife sign along the access path and at the monopole site includes Rocky mountain elk (*Cervus elaphus nelsoni*), yellow-bellied marmot (*Marmota flaviventris*), black bear (*Ursus americanus*), coyote (*Canis latrans*), deer (*Odocoileus sp.*), and Nuttall's cottontail (*Sylvilagus nuttallii*). Directly observed wildlife includes yellow-pine chipmunk (*Tamias amoenus*), American Pipit (*Anthus rubescens),* White-breasted Nuthatch (*Sitta carolinensis),* Northern Flicker (*Colaptes auratus),* Black-capped Chickadee (*Poecile atricapillus*), and Stellar's Jay (*Cyanocitta stelleri)*. A list of potential species occurrence is provided below in Tables 9, 10, and 11.

Inchelium Hill Monopole Site

Access to the Inchelium Hill Monopole Site is from Bridge Creek Road. The route follows a rough, unnamed dirt road for 0.4 miles. The monopole site is another 0.75 miles from the end of the dirt road and mostly follows the edge of a closed canopy forested area. The monopole site location is sparsely vegetated. Observed vegetation includes the following species: Ponderosa pine (*Pinus ponderosa*), quaking aspen (*Populus tremuloides*), snowberry (*Symphoricarpos albus*), serviceberry (*Amelanchier alnifolia*), Japanese brome (*Bromus japonicus*), tall fescue (*Schedonorus arundinaceus)*, and yarrow (*Achillea millefolium)*.

Observed wildlife sign near the monopole site includes Rocky mountain elk (*Cervus elaphus nelsoni*), black bear (*Ursus americanus*), and wild turkey (*Meleagris gallopavo).* Directly observed wildlife includes Dark-eyed Junco (*Junco hyemalis*), Black-capped Chickadee (*Poecile atricapillus*), Turkey Vulture (*Cathartes aura),* and Yellow-rumped Warbler (*Setophaga coronate*). A list of potential species occurrence is provided below in Tables 9, 10, and 11.

Kewa Mountain Monopole Site

Access to the Kewa Mountain Monopole Site is from Star Road (BIA 53). The route follows a rough gravel road for 1.25 miles. The monopole site is another 0.75 miles from the end of Star Road. The proposed new road section and the new monopole site are located in a burn that occurred in August 2016 (NWCC 2016). The area consists of sparse burnt snags and herbaceous vegetation typical of early successional development. Observed vegetation species include rosy spiraea (*Spiraea splendens*), Japanese brome (*Bromus japonicus*), tall fescue (*Schedonorus arundinaceus)*, and yarrow (*Achillea millefolium)*.

Snowshoe hare (*Lepus americanus*) is the only observed wildlife sign near the monopole site. Directly observed wildlife includes Dusky Grouse (*Dendragapus obscurus)*, Black-backed Woodpecker (*Picoides arcticus),* and Western Tanager (*Piranga ludoviciana*). A list of potential species occurrence is provided in Tables 9, 10, and 11.

Potential Species Occurrence within the Project Area

Wildlife predicted to occur in the PA includes the following species.

Table 9. Predicted Wildlife in Project Area– Mammals

Common Name	Latin Name
northern flying squirrel	*Glaucomys sabrinus*
bobcat	*Lynx rufus*
striped skunk	*Mephitis mephitis*
Columbian ground squirrel	*Spermophilus columbianus*
Cascade golden-mantled ground squirrel	*Spermophilus saturatus*

Table 10. Predicted Wildlife in Project Area– Reptiles

Common Name	Latin Name	Common Name	Latin Name
northern rubber boa	*Charina bottae*	Pacific gopher snake	*Pituophis catenifer*
western racer	*Coluber constrictor*	western skink	*Plestiodon skiltonianus*
northern Pacific rattlesnake	*Crotalus oreganus*	common sagebrush lizard	*Sceloporus graciosus*
northern alligator lizard	*Elgaria coerulea*	western fence lizard	*Sceloporus occidentalis*
desert nightsnake	*Hypsiglena chlorophaea*	terrestrial gartersnake	*Thamnophis elegans*
pygmy short-horned lizard	*Phrynosoma douglassii*	common gartersnake	*Thamnophis sirtalis*

Table 11. Predicted Wildlife in Project Area– Birds

Common Name	Latin Name	Common Name	Latin Name
Cedar Waxwing	*Bombycilla cedrorum*	Brown-headed Cowbird	*Molothrus ater*
Ruffed Grouse	*Bonasa umbellus*	Lazuli Bunting	*Passerina amoena*
Red-tailed Hawk	*Buteo jamaicensis*	Cliff Swallow	*Petrochelidon pyrrhonota*
California Quail	*Callipepla californica*	Black-headed Grosbeak	*Pheucticus melanocephalus*
Canyon Wren	*Catherpes mexicanus*	Spotted Towhee	*Pipilo maculatus*
Veery	*Catharus fuscescens*	Black-capped Chickadee	*Poecile atricapillus*
Vaux's Swift	*Chaetura vauxi*	Mountain Chickadee	*Poecile gambeli*
Evening Grosbeak	*Coccothraustes vespertinus*	Calliope Hummingbird	*Selasphorus calliope*
Olive-sided Flycatcher	*Contopus cooperi*	Yellow warbler	*Setophaga petechia*
Western Wood-pewee	*Contopus sordidulus*	American Redstart	*Setophaga ruticilla*
Ruby-crowned Kinglet	*Corthylio calendula*	Red-breasted Nuthatch	*Sitta canadensis*
American Crow	*Corvus brachyrhyncos*	Red-naped Sapsucker	*Sphyrapicus nuchalis*
Common Raven	*Corvus corax*	Pine Siskin	*Spinus pinus*
Downy Woodpecker	*Dryobates pubescens*	American Goldfinch	*Spinus tristis*
Gray Catbird	*Dumetella carolinensis*	Northern Rough-winged Swallow	*Stelgidopteryx serripennis*
Hairy Woodpecker	*Dryobates villosus*	Tree Swallow	*Tachycineta bicolor*
Pacific-slope Flycatcher	*Emipidonax difficilis*	Violet-green Swallow	*Tachycineta thalassina*
Dusky Flycatcher	*Empidonax oberholseri*	Bewick's Wren	*Thryomanes bewickii*
Willow Flycatcher	*Empidonax traillii*	House Wren	*Troglodytes aedon*
MacGillivray's Warbler	*Geothlypis tolmiei*	American Robin	*Turdus migratorius*
Common Yellowthroat	*Geothlypis trichas*	Eastern Kingbird	*Tyrannus tyrannus*
Yellow-breasted Chat	*Icteria virens*	Cassin's Vireo	*Vireo cassinii*
Orange-crowned Warbler	*Leiothlypis celata*	Warbling Vireo	*Vireo gilvus*
Nashville Warbler	*Leiothlypis ruficapilla*	Red-eyed Vireo	*Vireo olivaceus*
Lincoln's Sparrow	*Melospiza lincolnii*	Mourning Dove	*Zenaida macroura*
Song Sparrow	*Melospiza melodia*	White-crowned Sparrow	*Zonotrichia leucophrys*

4.5.3 Fish Use

Due to the absence of a federal inventory, fish-passable streams in the PA were identified using a database managed by the Washington State Dept. of Natural Resources (DNR). Stream classifications depicted by the WA DNR are based on water typing rules found in Washington Administrative Code (WAC) section 222-016-030 and -031. The WAC presumes fish use where adequate channel width and unrestrictive channel gradient are met, in consideration of natural fish passage barriers only (e.g. waterfalls). The WAC does not consider human-made barriers (e.g. impassable culverts) as fish passage barriers that would merit a classification change to non-fish.

Field investigation included physical inspection of all WAC fish-passable streams where buried cable crossings are proposed. Table 12 provides a conditions summary of all proposed stream crossings. All fish-passable stream crossings are depicted in Appendix E and Appendix F.

Table 12. Fish-Passable Stream Crossing Summary

Route Segment	Flow Type	Fish Passable Crossings	Non-Fish Crossings
Underground Installation			
O-W	Intermittent	3	26
	Perennial	4	0
O-C	Intermittent	2	31
	Perennial	5	0
O-S	Intermittent	2	29
	Perennial	0	0
F-W	Intermittent	6	22
	Perennial	4	0
F-E	Intermittent	2	31
	Perennial	3	0
Aerial Installation			
O-W	Unknown	3	22
O-C	Unknown	0	8
O-S	Unknown	1	2
F-W	Unknown	28	86
F-E	Unknown	9	25
195' Monopole Sites/COW Site			
O-W	Intermittent	1	0
All Proposed Development			
All Segments	All Flow Types	73	282

4.5.4 Threatened and Endangered Species

WRI reviewed the following databases to determine the likelihood that species protected under the Endangered Species Act (ESA) are present within the PA.

- USFWS Information, Planning and Conservation System (IPaC) (Appendix A)
- National Oceanic and Atmospheric Administration (NOAA) Protected Resources App
- WA Natural Heritage Program (WNHP) Rare Plant and Ecosystem Locations Mapper
- WA Department of Fish and Wildlife (WDFW) Threatened and Endangered Species List
- WDFW Priority Habitats and Species (PHS) on the Web map tool
- WDFW SalmonScape map tool

Species that are potentially present within the PA are listed below in Table 13. Brief life history requirements and likelihood of species occurrence within the PA are discussed below for each species. A Biological Evaluation (BE) has been prepared for this project that provides significantly more detail regarding species presence and effect determinations. The Effect Determinations summarized below are under review by the United States Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) as of the date of this report.

Table 13. Potential ESA-Listed Species in Project Area

Common Name	Latin Name	Federal Status	Critical Habitat in Project Area	BE Effect Determinations
Mammals				
Canada Lynx	*Lynx canadensis*	Threatened	None	No Effect
North American Wolverine	*Gulo gulo luscus*	Proposed (Threatened)	N/A; No CH Designated	No Effect
Gray Wolf**	*Canis lupus*	Delisted in PA	None	No Effect
Birds				
Yellow-billed Cuckoo	*Coccyzus americanus*	Threatened	None	No Effect
Fish				
Bull Trout	*Salvelinus confluentus*	Threatened	None	May Affect, Not Likely to Adversely Affect
Steelhead Trout	*Oncorhynchus mykiss*	Threatened	Yes	May Affect, Not Likely to Adversely Affect
Chinook Salmon (Upper Columbia R. spring-run ESU-XN*	*Oncorhynchus tshawytscha*	Threatened (Experimental)	N/A; No CH Designated	Will Not Jeopardize Continued Existence
Flowering Plants				
Spalding's Catchfly	*Silene spaldingii*	Threatened	None	No Effect
Conifers				
Whitebark Pine	*Pinus albicaulis*	Threatened	None	No Effect
Insects				
Monarch Butterfly	*Danaus plexippus*	Candidate	N/A; No CH Designated	No Effect

*Upper Columbia River Chinook is a nonessential experimental population (NEP) within the Okanogan River and its tributaries. Under Section 10(j) of the ESA, this NEP is treated as a species that is "proposed to be listed." Since the NEP is located outside a National Wildlife Park or National Park, only sections 7(a)(1) and 7(a)(4) of the ESA apply (Federal Register 2014).
** Gray wolf is listed as an endangered species west of SR97/SR17/SR395 and is federally delisted in the PA because it is east of the dividing line (WDFW 2023b).

Canada Lynx (*Lynx canadensis*)
Canada lynx inhabits boreal forests consisting of spruce (*Picea* spp.) and fir (*Abies* spp.) and subalpine forests in the western United States. Lynx habitat is strongly associated with snowshoe hare (*Lepus americanus*) presence, which is the predominant prey species (Federal Register 2008). Optimum habitat for snowshoe hares is 15-year to 40-year old second-growth stands containing a dense, brushy understory and a high density of saplings (Uley 2007).

The PA lacks suitable Canada lynx habitat due to the absence of boreal and subalpine forests. Canada lynx is not likely to occur within the PA.

North American Wolverine (*Gulo gulo luscus*)
North American wolverine inhabit a variety of alpine, boreal, and arctic habitats, including boreal forests, tundra, and western mountains throughout Alaska and Canada. The southern extent of the species' range extends into high-elevation alpine portions of Washington State (Federal Register. 2013). Wolverine is restricted to higher elevations in their southern range due to habitat requirements, i.e., adequate winter snowfall to reliably maintain deep persistent snowpack late into the warm season (USFWS 2023f).

The PA lacks suitable North American wolverine habitat due to the absence of alpine, boreal, or arctic habitats. North American wolverine is not likely to occur within the PA.

Gray Wolf (*Canis lupus*)
Gray wolf was delisted by final rule (85 FR 69778) on November 3, 2020. The delisting rule was vacated by the US District Court for the Northern District of California on February 10, 2022 everywhere except the Northern Rocky Mountain Region. In Washington State, the western boundary of delisting is SR97 from British Columbia to Monse, and SR17 between Monse and Mesa. The PA is within the delisted zone. For this reason, no additional discussion is provided.

Yellow-billed Cuckoo (*Coccyzus americanus*)
The yellow-billed cuckoo winters in Central and South America and migrates to North America for breeding. The yellow-billed cuckoo strongly prefers continuous riparian habitat comprised of cottonwoods and willows for nesting (Hughes 1999).

Although the project occurs in the historic range of the yellow-billed cuckoo, the species no longer breeds in Washington (Federal Register 2014) and is considered functionally extirpated (Wiles et. al. 2017). Yellow-billed cuckoo is not present in the PA.

Bull Trout (*Salvelinus confluentus*)
Bull trout are a geographically widespread char native to North America. They are piscivorous and can spawn multiple times (Reiss, 2012). Bull trout spawn in the fall in cold, high elevation headwater streams. Juveniles spend two to four years rearing in their natal streams and then migrate to a mainstem river (fluvial), a large lake/reservoir (adfluvial), or remain in their natal stream as a resident population (Dunham, 2003). Bull trout require cold, clean, complex, and connected streams and rivers (Federal Register 2010).

Bull trout are found throughout the Columbia River basin. Bull trout are likely to occur within the PA.

Steelhead Trout (*Oncorhynchus mykiss*) – Upper Columbia River DPS
Steelhead are the same species as rainbow trout but are anadromous. Steelhead spawn in gravel-bottomed, fast-flowing, well-oxygenated rivers and streams (NOAA 2023c).

Steelhead trout are likely to occur within the portion of the PA that drains to the Okanogan River.

Chinook Salmon (*Oncorhynchus tshawytscha*) – Upper Columbia River spring-run ESU-XN
Chinook spawn in large rivers but will also use smaller streams with sufficient flow (WDFW 2023a). Juveniles will migrate to saltwater to feed, grow and mature (NOAA 2023a).

Upper Columbia ESU-XN Chinook salmon are likely to occur within the portion of the PA that drains to the Okanogan River, including Omak Creek.

Spalding's Catchfly (*Silene spaldingii*)
Spalding's catchfly are found predominantly in the Pacific Northwest bunchgrass grasslands and sagebrush-steppe, and occasionally in open-canopy pine stands (USFWS 2023g). Currently 85 small populations are known, one of which is in the Channeled Scablands in eastern Washington (Federal Register 2006).

Proposed development in the Channeled Scablands ecoregion is limited to disturbed areas along the edge of SR155, or in residential areas along 1st Street in the city of Coulee Dam. Shrub-steppe habitat is absent from the PA. See Figure 11 above.

The PA lacks suitable Spalding's catchfly habitat because the edge of a state highway or residential street is an unsuitable for Spalding's catchfly. Spalding's catchfly is not likely to occur within the PA.

Whitebark Pine (*Pinus albicaulis*)
Whitebark pine occurs in subalpine and upper montane forests in the western portion of North America (WDNR 2021).

The PA lacks suitable climatic conditions for whitebark pine due to the absence of subalpine and upper montane forests. Whitebark pine is unlikely to occur in the PA.

Monarch Butterfly (*Danaus plexippus*)
Monarch butterfly habitat includes fields, roadsides, open areas, wet areas, and urban gardens. The Monarch Butterfly requires milkweed (Asclepias spp.) for breeding, and nectar-producing flowering plants for food. (USFWS 2023e).

The PA consists of regularly maintained areas along highways and roads. At the monopole sites and their access roads, milkweed was not observed. Milkweed is very unlikely to occur in the PA. Therefore, the PA lacks suitable monarch butterfly habitat. Monarch butterfly is not likely to occur within the PA.

4.5.5 Critical Habitat and Threatened/Endangered Species Habitat
Steelhead trout is the only listed species with designated critical habitat in the PA. Steelhead critical habitat within the PA includes the Okanogan River and Omak Creek. Critical habitat outside the PA includes the Columbia River west of Chief Joseph Dam.

Bull trout has designated critical habitat outside the PA in the Columbia River up to the Chief Joseph Dam. Canada lynx has critical habitat outside the PA in the North Cascades. Yellow-billed cuckoo and gray wolf do not have designated critical habitat in Washington State. Wolverine is a

proposed species, and monarch butterfly is a candidate species. Critical habitat designations are only made for listed species.

4.6 HISTORIC AND CULTURAL RESOURCES

4.6.1 Introduction

In accordance with NEPA and National Historic Preservation Act (NHPA) requirements, WestLand Resources has evaluated the proposed fiber installation for potential effects on historic, archeological, or cultural sites, including Native American Traditional Cultural Properties, listed or eligible for listing on the National Register of Historic Places, or land identified by archeologists as having high potential to contain archeological resources. Their work is focused on all areas within 100 feet of the PA, and areas within 0.5 miles of the wireless monopole sites. The PA and areas within 0.5 miles of the monopoles are collectively referred to as the Area of Potential Effect (APE).

The WestLand Resources Cultural Resources Review for this project is provided as Appendix B of this EA. The following analysis is either paraphrased or taken directly from this report.

4.6.2 Cultural Resources Summary Findings

Based on review of previous cultural resource investigations, the Washington Heritage Register (WHR), National Register of Historic Places (NRHP), Washington State Dept. of Archaeology and Historic Preservation (DAHP) Predictive Modeling, and historic Government Land Office (GLO) map research, WestLand anticipates that there is a high probability of intact archaeological deposits in the APE.

4.6.3 Previous Cultural Resources Investigations

WestLand review of the Washington Information System for Architectural and Archaeological Records Data (WISAARD) database indicates that 34 investigations have occurred within the APE, and an additional seven have occurred within 100 feet of the APE. Cultural Resources were recorded in nine of these studies.

4.6.4 Previously Recorded Archaeological Resources

WestLand review of the WHR indicates 45 previously recorded archaeological resources in the APE, and an additional 10 resources located within 100 feet of the APE. Two of these resources located in the APE are listed in the WHR, and two resources are eligible for listing in the NRHP. Many of the resources are potentially eligible for NRHP listing. Most of the resources are reflective of homesteading or mining, with some timber harvesting, railroads, or irrigation.

4.6.5 Cemeteries

Five cemeteries are documented within the APE, and an additional four have been documented within 100 feet of the APE. Cemeteries vary widely in terms of size, maintenance frequency, and eligibility status. Most cemeteries are small, not regularly maintained, and have few headstones. The Keller cemetery is eligible for listing in the NRHP due to the presence of Sanpoil Chiefs and because of its association with the creation of the Lake Roosevelt Reservoir.

4.6.6 DAHP Predictive Model

DAHP has developed a model that is used to predict the likelihood of encountering precontact and Historic period cultural resources. The data is from ethnographic studies, archaeological investigations, and considering environmental factors. The DAHP uses five categories: Low Risk, Moderately Low Risk, Moderate Risk, High Risk, and Very High Risk.

Based on the predictive model, DAHP predicts a Very High Risk for encountering archaeological features within more than 99 percent of the APE. Monopole locations vary from Low Risk to Moderate Risk.

4.6.7 Historic Map Research

WestLand review of GLO survey plats indicates that 35 survey plats depict features within the APE and within 100 feet of the APE. Most features are trails, wagon roads, cabins, other buildings, fields, or mining claims. Many of the recorded structures are no longer present.

4.7 AESTHETIC AND VISUAL RESOURCES

4.7.1 Population and Demographics

The lands of the CTCR are 1.4 million acres in total area, with a population of approximately 7,800 residents based on the 2020 Decennial Census. Population centers include Omak, Nespelem, Coulee Dam, Keller, and Inchelium. The project occurs primarily in rural areas along state highways. Land use is residential or commercial near population centers, and rural pasture, agriculture, or undeveloped land outside of population centers.

4.7.2 Natural Features

CTCR land is bound by the Okanogan River to the west, and by the Columbia River to the south and east. It is comprised of plateaus, mountains, valleys, rangeland, timberland, freshwater lakes, and streams. Low-elevation forests consist of Ponderosa pine, lodgepole pine, Douglas fir, and western larch is present at higher elevations.

4.7.3 Recreation

Recreational opportunities are focused on water-dependent activities, trail and off-road vehicle use, and camping. Nine authorized boat launches provide access to the Columbia, Okanogan, Sanpoil, Omak Lake, Buffalo Lake, and other smaller rivers and lakes. Off-road vehicle use is limited to tribal members and their immediate family members. The CTCR maintains 16 non-member campgrounds and 37 member campgrounds.

There are no national parks or state parks present on or near the PA. The nearest state or national park is located 3.5 miles southwest of the southern extent of the project (Steamboat Rock State Park).

4.8 LAND USE

4.8.1 Tribal Jurisdiction

Within CTCR land, zoning and land use decisions are controlled by the tribal government and regulated under Chapter 4-3 of the Colville Tribal Law and Order Code, except where work occurs within the ROW of SR21 and SR155. The project occurs within and adjacent to Residential, Commercial, Rural/Agricultural, Forest, and Wilderness zoning designations. Permits

for work occurring within the reservation will be issued by the tribal Land Use and Development department.

4.8.2 State Jurisdiction

A portion of the proposed fiber route is within the WSDOT ROW along SR97, SR21, and SR155. For this reason, the project requires a franchise agreement between WSDOT and the applicant. State approval includes internal environmental review, which will be processed by WSDOT as a Categorical Exclusion for this project.

4.8.3 Federal Jurisdiction

A portion of the proposed fiber and monopole/pole sites occur on land that is managed by the BOR, BIA, or USFS. See Section 3.2.3 above and Section 6.0 below. The project creates a federal nexus with the BOR due to proposed development on BOR land in and near the city of Grand Coulee; BOR has asserted cooperating agency status for NEPA review and will issue use authorizations for all work on BOR-managed land. The project creates a federal nexus with the BIA where development occurs in the ROW of BIA roads and at allotment crossings throughout the project area; BIA has asserted cooperating agency status for NEPA review and will issue use authorizations for all work on BIA-managed land. The project creates a federal nexus with the USFS where the project passes through the Colville National Forest along SR21; USFS will meet NEPA compliance with an internally drafted Categorical Exclusion, and will issue a special use permit for work within the Colville National Forest.

4.8.4 Existing Land Uses in Project Area

The project serves residential, commercial, and governmental land uses in Okanogan, Omak, Nespelem, Elmer City, Coulee Dam, Keller, and Inchelium. The project serves rural residential uses and some commercial uses outside of population centers. The project occurs primarily in the right-of-way of state highways, public roads, and residential properties.

4.9 INFRASTRUCTURE

4.9.1 Utilities

The lands of the CTCR are served with electricity and telephone from a network of utility providers. Curbside solid waste services are provided by CTCR Public Works, and broadband internet is available in some areas. Municipal water is available to residents of Malott, Omak, Lone Pine, Eagle Nest, Agency Campus, Keller, and Twin Lakes. Municipal sewer is available in Nespelem and Colville Indian Agency. Rural properties are served by individual wells and septic drainfields.

4.9.2 Telecommunications

Existing telecommunications facilities on CTCR land provide AM/FM radio, television stations, cellular service, and wireless broadband internet. Numerous large towers that support collocated cellular and wireless hardware are present throughout CTCR land.

4.9.3 Transportation Accessibility

The lands of the CTCR are connected by state highways and tribal roads. WSDOT is responsible for managing SR21 and SR155, and the CTCR Dept. of Transportation maintains the tribal road

network outside of the WSDOT ROW. The entire PA is accessible by state or tribal roads, except the three 195-foot monopole sites and one COW site. Access to the monopole/COW sites is located on private property.

Based on review of the WSDOT Geospatial Open Data Portal, traffic volume is highest on SR155 between Grand Coulee and Nespelem. Approximately 2,600 vehicles were observed in a 2022 annual average daily traffic (AADT) count. AADT is determined by dividing the total number of vehicles observed in one year by 365. Traffic volume is approximately 1,600 AADT between Nespelem and Omak along SR155. Traffic volume along SR21 is variable but much lower than on SR155 (200-710 AADT). No traffic volume information is available for tribal roads, but based on their rural character, traffic volumes are expected to be similar or lower than the SR21 counts.

4.10 SOCIOECONOMIC RESOURCES

Executive Order 12898 (Federal Register 1994) requires federal agencies to consider race, national origin, and income to determine whether programs, policies, and activities have disproportionately high human health or environmental effects. For this reason, this section provides a description of socioeconomic patterns in Washington state, Ferry County, Okanogan County, and on CTCR land. The lands of the CTCR are located entirely within Ferry County and Okanogan County. State and county data are included in this assessment to provide context.

All statistics reported for Ferry County, Okanogan County, and the CTCR are based on the 2010 or 2020 American Community Survey (ACS) Five-Year Estimates; Data Profile Three – Selected Economic Characteristics (DP3), and DP5 – Demographic and Housing Estimates.

Statewide population statistics are presented based on the 2010 and 2020 resident populations sections of the decennial census due to the absence of a statewide ACS Five-Year Estimate dataset. All other statewide statistics are based on the ACS DP3 and DP5 datasets. Some extrapolations/rounding decisions were made by WRI staff to ensure consistency. All base information is available at the UCSB website (data.census.gov).

4.10.1 Population Statistics

The lands of the CTCR are located entirely within Okanogan County and Ferry County. Okanogan County includes rural and urban places. Populations centers include Winthrop, Twisp, Pateros, Brewster, Conconully, Tonasket, Riverside, Omak, Nespelem, Elmer City, Coulee Dam, and Okanogan. Ferry County includes mostly rural places; Republic is the only population center in Ferry County. Rural centers include Keller, Inchelium, Pollard, Curlew, Toroda, and Danville.

CTCR land covers approximately one-half the land area of Ferry County, and approximately one-fifth the land area of Okanogan County. The portion of the CTCR land located in Ferry County is much more rural than the portion that is located in Okanogan County. Based on UCSB data, state population growth between 2010 and 2020 far exceeds county and reservation population growth.

Table 14. Population Summary for State and Project Area

Population Statistic	Washington State	Okanogan County	Ferry County	CTCR
2010 (Total Population)	6,724,540	41,120	7,551	6,244
2020 (Total Population)	7,705,247	42,080	7,643	5,691
Population, % Change	+13.6	+4.6%	+1.9%	-8.9%
Population per Sq. Mi. (2020)	116	8.0	3.4	2.6

Data Sources: Washington state - 2010 Census, 2020 Census
Counties/CTCR - 2010 ACS 5-Year Estimates, 2020 ACS 5-Year Estimates

4.10.2 Racial Characteristics

Race characteristics are shown in Table 15 below. The percentage of the population that identifies as "White" in 2020 is the majority in the state, Okanogan County, and Ferry County. "American Indian and Alaska Native" is the majority population on the CTCR.

Table 15. Racial Characteristics Summary for State and Project Area

Race	Washington State	Okanogan County	Ferry County	CTCR Reservation
	Total (Percent)	Total (Percent)	Total (Percent)	Total (Percent)
White	4,838,916 (62.8%)	27,622 (65.6%)	5,624 (73.6%)	1,592 (28%)
Black or African American	354,443 (4.6%)	67 (0.2%)	15 (0.2%)	0 (0%)
American Indian and AK Native	154,106 (2.0%)	3,863 (9.2%)	1,007 (13.2%)	3,103 (54.5%)
Asian	809,055 (10.5%)	229 (0.5%)	34 (0.4%)	87 (1.5%)
Native Hawaiian/ Pacific Islander	61,642 (0.8%)	39 (0.1%)	15 (0.2%)	12 (0.2%)
Two or More Races	408,380 (5.3%)	2,373 (5.6%)	592 (7.7%)	349 (6.1%)
Hispanic or Latino	1,078,739 (14%)	7,887 (18.7%)	356 (4.7%)	548 (9.6%)
Total	7,705,281 (100%)	42,080 (100%)	7,643 (100%)	5,691 (100%)

Data Source: 2020 ACS 5-Year Estimates

4.10.3 Employment

Table 16 below provides a summary of relevant employment data for Washington state, Okanogan County, Ferry County, and the CTCR. The summary provides context about the civilian labor force, number of employed/unemployed civilians, and the rate of unemployment. CTCR land has a higher rate of unemployment than both the state and surrounding counties.

Table 16. Employment Summary for State and Project Area

Employment Statistic	Washington State	Okanogan County	Ferry County	CTCR
Population (16 and over)	6,038,812	33,401	6,568	4,460
Civilian Labor Force	3,848,596	18,100	2,774	2,483
Employed	3,660,034	17,107	2,571	2,289
Unemployed	188,562	993	203	194
Unemployment Rate	4.9%	5.5%	7.3%	7.8%

Data Source: 2020 ACS 5-Year Estimates

Based on comparison with the Council on Environmental Quality Climate and Economic Justice Screening Tool (CEQ 2024), the Colville Reservation ranks in the 91st percentile for unemployment.

4.10.4 Income

Table 17 below provides a summary of relevant income statistics for Washington state, Okanogan County, Ferry County, and the CTCR. This data shows that the CTCR has a higher percentage of people living below poverty level, and that median household income lags behind the state but not the surrounding counties.

Table 17. Income Summary for State and Project Area

Income Statistic	Washington State	Okanogan County	Ferry County	CTCR
Median Household Income	$77,006.00	$48,528.00	$41,685.00	$48,024.00
Below Poverty Level in Past 12 Months (All People)	10.2%	20.6%	17.1%	26.3%

Data Source: 2020 ACS 5-Year Estimates

Based on comparison with the Council on Environmental Quality Climate and Economic Justice Screening Tool (CEQ 2024), the Colville Reservation ranks in the 91st percentile for low median income relative to median incomes in the area, and the 87th percentile for low income (i.e. households where income is less than or equal to twice the federal poverty level, not including students enrolled in higher education).

4.11 HUMAN HEALTH AND SAFETY

4.11.1 Hazardous Waste

This assessment is based on review of Washington State Department of Ecology and EPA databases that track hazardous waste. Ecology research included the What's in My Neighborhood map tool and the Cleanup and Tank Search tool. EPA research included the Underground Storage Tank Finder map tool and the Cleanups in My Community map tool. The following table summarizes all known hazardous waste sites in the PA where cleanup status is listed as 'not complete.' For the purpose of this assessment, hazardous waste sites include: leaking underground storage tanks with open status (i.e. active releases only), brownfields properties, Superfund sites, and WA Dept. of Ecology toxic substance cleanup sites (i.e. petroleum, heavy metals, chemicals, pesticides, and persistent organic pollutants).

Table 18. Known Hazardous Waste Sites in Project Area

Site Name/ID	Waste Type	Media	Proximity To Dev.	Data Source
Hinman Ranch/ ACRES 169301 (Brownfields)	Asbestos, Lead, PAHs, Pesticides, Petroleum, SVOCs	Building Materials, Groundwater, Soil	~300 feet to buried cable	CIMC
Mobile Home #2/ ACRES 212121 (Brownfields)	Asbestos	Building Materials	~80 feet to aerial cable	CIMC
Belvedere Mobile Home/ ACRES 173401 (Brownfields)	Asbestos	Building Materials	~40 feet to buried cable	CIMC
Lot A-4/ACRES 215261 (Brownfields)	Asbestos	Building Materials	~30 feet to buried cable	CIMC
BPA Maintenance Facility/LUST ID WA11017	Petroleum – Leaking UST	Soil	~1,000 feet to buried cable	USTF
Flying J Grand Coulee/LUST ID WA8848	Petroleum – Leaking UST	Soil	~1,000 feet to buried cable	USTF
Rickard Logging Camp/ ACRES 125522 (Brownfields)	Asbestos, Lead, Metals, PCBs, Petroleum	Soil	~200 feet to aerial cable	CIMC
Sawmill Westfork/ACRES 228568 (Brownfields)	PECs, PAHs	Soil	~150 feet to buried cable	CIMC
Ice Mine Quarry/ ACRES 235444 (Brownfields)	Lead, Arsenic	Soil	~1,000 feet to buried cable	CIMC
Boise Hotel (Brownfields)	Asbestos, Lead	Building Materials	~30 feet to aerial cable	CIMC
Inchelium Gas and Diesel/ ACRES 235459 (Brownfields)	Petroleum	Soil	~80 feet to buried cable	CIMC

Data Sources: EPA Cleanups in My Community Map (CIMC), EPA Underground Storage Tank Finder Map (USTF)

4.11.2 Public Safety Facilities

For the purpose of this assessment, public safety refers to police, fire, and EMS services. Police services are provided by the Colville Tribal Police. Fire and EMS services are provided by BIA Fire, Okanogan County Fire Districts #2, 3, 5, and 8, CTCR Fire and Rescue, Coulee Dam FD, Omak FD, Elmer City FD, WA Dept. of Natural Resources, Grand Coulee FD, and the National Interagency Fire Center.

5.0 ANALYSIS OF ENVIRONMENTAL IMPACTS

This project consists of three distinct types of work, listed in order of impact intensity: 1) new monopole installation, including access road improvements, fiber connection, and electrical feed, 2) buried fiber cable, and 3) aerial cable affixed to existing infrastructure.

The depth of analysis provided in this section depends on the potential significance of the project's environmental impacts. Significance is a function of context, duration, and intensity. Context considers effects to society as a whole, the region where impacts occur, and local/stakeholder interests. Duration considers whether impacts are temporary or permanent. Intensity considers the severity of the impact, including the balance of beneficial and adverse impacts.

This analysis is primarily focused on the effects of new monopole installation and buried cable because hanging aerial cable on existing poles in the ROW is unlikely to create any significant direct, indirect, or cumulative environmental consequences.

5.1 NOISE

5.1.1 Noise Impacts - Proposed Action

Direct Impacts - Short-Term

Based on review of heavy equipment needed to construct the project, temporary construction noise impacts could reach up to 100 decibels at 50 feet (WSDOT 2013). Therefore, short-term noise impacts associated with construction equipment will exceed ambient or background noise levels within the PA (see Section 4.1 above). The delta will be most pronounced at monopole sites due to equipment needed and low background noise levels. Along the right-of-way of state highways, including the corridor between Coulee Dam and Grand Coulee noise impacts will not significantly exceed ambient levels. Impacts to businesses, residents, and tourists are minimal due to the short duration of a moving work zone, and the existing noise disturbance regime (state highway).

For example, the exhaust from a semi-truck's straight-stack muffler would likely exceed maximum construction noise (Reinhart 1997). Along the edge of rural roads, construction noise impacts will exceed ambient levels based on the intensity of surrounding residential/agricultural land use and low traffic volume. Some rural roads in the PA carry more traffic or are surrounded by more noise-generating human land uses.

Construction noise has the potential to damage human hearing for equipment operators and installers. Short-term impacts at the monopole installation sites may temporarily alter animal behavior in response to percussive construction noise. Based on review of WSDOT noise assessment guidance, the intensity of construction noise is unlikely to reach the injury threshold for

any species likely to occur near the monopole site. It is unlikely that construction noise along state highways and rural roads will alter animal behavior due to existing noise levels associated with vehicle traffic, and because animals located near the road are habituated to road noise. More detailed discussion of effects to species is provided in the section below titled *Biological Resources*.

Direct Impacts - Long-Term
Maintenance and repair operations could result in minor long-term noise impacts. These impacts would occur infrequently for short periods of time and are therefore not expected to cause significant impacts.

Indirect Impacts
No indirect impacts are likely to result from the proposed project.

Cumulative Impacts
No cumulative impacts are likely to result from the proposed project.

5.1.2 Noise Impacts – No Action Alternative
No short-term alteration of noise levels would result from the No Action Alternative. The No Action Alternative would not cause any significant direct, indirect, short-term, long-term, or cumulative noise impacts.

5.1.3 Noise Impact Assessment – Conclusions
Noise impacts related to construction are temporary and minor. Short-term construction noise impacts will be mitigated by ensuring that workers follow Occupational Safety and Health Administration (OSHA) standards for hearing protection, limiting hours of construction to normal business hours, and avoiding work on the weekends. Noise impacts will be further mitigated by contractor utilization of machinery that is equipped with modern muffler technology. Long-term noise impacts are limited to minor maintenance and repair activities only. No indirect or cumulative impacts are anticipated.

The Proposed Action will not result in significant noise impacts to ecological, built, or social/cultural environments.

5.2 AIR QUALITY AND CLIMATE CHANGE

5.2.1 Air Quality and Climate Change Impacts - Proposed Action
Direct Impacts - Short-Term
Air Quality:
Construction activities will generate some particulate matter where soil is disturbed. Soil disturbance will occur where road building/improvement provides access to monopole sites, at the pole excavation location, and where trenching, plowing, and boring supports buried cable installation. Construction vehicle emissions will generate negligible impacts to air quality due to limited operational duration and associated emissions.

Climate Change:
Materials extraction, processing, and transportation, and construction vehicle operation will result in small releases of carbon dioxide and methane to the atmosphere. Relative to total GHG emissions, increased concentrations resulting from this project are insignificant.

Direct short-term impacts are not expected to cause any significant reduction in air quality or exacerbate climate change.

Direct Impacts - Long-Term
Air Quality:
Maintenance and repair along the cable route and at the tower sites could result in some fugitive dust and vehicle emissions. These emissions are not expected to significantly impact air quality.

Climate Change:
No direct long-term impacts to climate change are anticipated to occur.

Direct long-term impacts resulting from maintenance and repair are not expected to cause any significant reduction in air quality or exacerbate climate change.

Indirect Impacts
Air Quality:
Increased access to broadband internet may reduce the number of vehicle trips due to the ability to complete daily tasks without physically leaving a home or business. The anticipated reduction in vehicle trips will insignificantly reduce air pollution.

Climate Change:
An estimated four billion people actively use the internet (CIP 2021). Significant carbon dioxide emissions result from manufacturing and shipping the hardware that keeps the internet functioning, and from electricity generation for powering devices, networks, and data centers. This project will indirectly result in additional demand for electricity that contributes to increased GHG concentrations and climate change. This project will provide internet to 2,515 users. Increased GHG concentrations resulting from new internet users is negligible.

Increased access to fast, reliable broadband internet will allow the use of smart technologies that will reduce residential and commercial energy consumption. Reduced vehicle trips would also reduce GHG emissions.

The project will cause increases in GHG concentrations related to new internet users, but will reduce GHG concentrations where efficiency is gained in commercial and residential settings, and where vehicle trips are reduced. Overall, this project is expected to cause insignificant impacts to GHG concentrations and the climate.

Cumulative Impacts
Air Quality:
No cumulative impacts to air quality are likely to result from the proposed project.

Climate Change:
The cumulative impact of increased access to broadband internet for people located in rural areas will result from increased demand for electricity. This will exacerbate climate change where fossil fuel combustion is the primary method of power generation. This project and all other similar project will negatively impact climate change.

5.2.2 Air Quality and Climate Change Impacts – No Action Alternative

The No Action Alternative would not result in any significant direct, indirect, short-term, long-term, or cumulative air quality or climate change impacts.

5.2.3 Air Quality and Climate Change Impacts – Conclusions

Air quality:
Air quality impacts resulting from construction are temporary and minor. Long-term air quality impacts are limited to future maintenance and repair activities only. No indirect impacts are anticipated. Short-term construction impacts will be mitigated by following best management practices established in the Stormwater Pollution Prevention Plan (SWPPP), including dust suppression and minimizing equipment idling.

Climate Change:
Climate impacts resulting from new active internet users, materials, and equipment are insignificant.

The proposed project will not result in significant air quality or climate change impacts.

5.3 GEOLOGY AND SOILS

5.3.1 Geology and Soils Impacts - Proposed Action

Direct Impacts - Short-Term
Construction activities will temporarily disturb shallow soils where buried cable is proposed along the edge of the ROW of rural roads and state highways. Similar impacts are anticipated between Coulee and Grand Coulee. Temporary disturbance is also expected where clearing and grading occurs at the monopole sites. Impacts could also include native soil compaction resulting from heavy equipment use. Compaction could slightly alter drainage patterns and reduce infiltration.

Direct Impacts - Long-Term
Long-term impacts include three 100-foot by 100-foot monopole sites, and new sections of road that provide physical access to the monopole sites. The pole and roads will compact some native loam and sandy soils, or bedrock outcroppings. The small physical area where soil compaction will occur, in a broadly unmodified landscape, is not expected to impact geology or soils (through erosion) in a way that would create significant long-term impacts.

Indirect Impacts
No indirect impacts to geology or soils are likely to result from the proposed project.

Cumulative Impacts
No cumulative impacts are likely to result from the proposed project.

5.3.2 Geology and Soils Impacts – No Action Alternative

The No Action Alternative would not result in any change to geologic or soil conditions. No significant direct, indirect, short-term, long-term, or cumulative impacts to geology or soils are anticipated.

5.3.3 Geology and Soils Impacts – Conclusions

The project will result in temporary ground disturbance primarily within 24-48 inches of the soil surface, with some deeper bore holes. All temporarily disturbed areas, including the areas between Coulee Dam and Grand Coulee, will be immediately restored, except where new road development and the monopole footprint are proposed. New road development and monopole construction will permanently alter a small physical area within a large patch of undisturbed land.

The Proposed Action will not result in significant impacts to geology or soils.

5.4 WATER RESOURCES

5.4.1 Water Resources Impacts - Proposed Action

Surface Waters:

The project will cross streams with aerial and buried cable and requires one road crossing to provide access to the Disautel Mountain Monopole Site. Aerial crossings include lashing fiber to existing infrastructure primarily along the edge of improved rights-of-way. Surface water crossings along the buried cable route will either be girdled to the side of existing bridges or bored beneath culverts.

Access to the Disautel Mountain Monopole Site requires vehicular access over an existing ford crossing at an intermittent tributary to Stapaloop Creek (Unnamed Tributary to Stapaloop Creek). Stapaloop Creek drains directly to Omak Creek and the Okanogan River. This crossing is depicted in Appendix E and Appendix G. Construction timing restrictions will ensure that vehicle access will occur over a dry channel. No direct impacts to surface waters are proposed.

Groundwater:

This project will not divert or otherwise alter existing groundwater resources. Aerial cable installation will have no effect on groundwater function. Buried cable installation and new impervious surfaces at the three proposed monopole sites will not significantly alter the volume, timing, or flow path of incoming waters, and therefore will not have any effect on groundwater recharge rates. This project will not create short-term, long-term, indirect, or cumulative impacts to groundwater. No additional impact analysis is provided.

Floodplains:

The project requires aerial and buried cable installation in the floodplain. Aerial crossings include lashing cable to existing infrastructure; no new poles are proposed to be set in the floodplain. Buried cable crossings in the floodplain will be girdled to the side of existing bridges, bored under culverts, or plowed/trenched. Where plowing/trenching ground occurs in the floodplain, the impacted area will be immediately restored to pre-disturbance contours. No change in floodplain elevations or flood storage volume will occur.

Coastal Zone, Estuary, and Inter-Tidal Zones:
The project will not impact coastal zones, estuaries, or inter-tidal zones due to their absence from the PA. No additional impact analysis is provided.

Wetlands:
The project requires aerial and buried cable installation in close proximity to observed wetlands, and within the boundaries of several NWI-mapped wetlands. See Appendix D – Sheets 10/12 – 12/12 for all proposed fiber-NWI intersects. NWI wetlands are mapped at the continental scale using computer modeling. Field inspection relies on the presence of vegetation, soil, and hydrology indicators in a process defined by the US Army Corps of Engineers. Field observations made in accordance with Army Corps of Engineers delineation methodology supersede NWI findings.

Based on physical investigation, all buried cable installation can be completed without directly impacting wetlands due to their absence from the proposed work areas, i.e., at the edge of the ROW. All mapped NWI-fiber intersects are map errors based on field inspection.

Aerial cable installation is proposed in mapped and observed wetlands associated with the Sanpoil River north of the Colville Reservation. Sheet 9/12 in Appendix D provides the location of aerial installation relative to mapped wetlands. Aerial hanging where existing poles are greater than ~40 feet from the edge of the road surface (horizontal limit for boom truck arm) will be completed by hand to avoid impacts to wetlands. No significant temporary impacts to wetlands are anticipated.

No wetlands were observed in proximity to the proposed monopole sites or along their access roads.

Wild and Scenic Rivers:
The project will not impact Wild and Scenic Rivers due to their absence from the PA. No additional impact analysis is provided.

<u>Direct Impacts - Short-Term</u>
Surface waters:
Buried cable and directional boring may cause short-term direct impacts to surface waters where plowing, trenching, and entrance/exit pits mobilize small amounts of sediment to surface waters. Any sediment transport would affect the composition of bed material in the stream, which could negatively affect habitat function for aquatic organisms. Sediment transport will be minimized by following erosion control BMPs, as determined appropriate by the Certified Erosion and Sediment Control (CESC) that will be on site during construction.

Vehicular crossing at an existing rock ford over the Unnamed Tributary to Stapaloop Creek (to provide access to the Disautel Mountain Monopole Site) will not cause short-term impacts because construction will occur during the dry season.

Aerial cable installation and girdling conduit to the edge of existing bridge structures are not expected to cause short-term direct impacts to surface waters.

Floodplains:
Buried cable and directional bore pits will be restored to pre-disturbance contours immediately after conduit burial. Aerial cable does not require installation of new poles in the floodplain. All

disturbance associated with the three monopole sites is outside of the floodplain. The project will not alter the timing or movement of floodwaters or cause a loss of floodplain storage volume. No short-term direct impacts to floodplains are anticipated.

Wetlands:
Buried cable and directional bore pits will be excavated in close proximity to wetland boundaries in multiple locations. Mobilization of small amounts of sediment during construction would cause negligible impacts to wetland function (e.g. water quality improvement, hydrologic control, wildlife habitat). Impacts would be further minimized by incorporating erosion control BMPs during construction.

Manual aerial cable installation where vehicle access is not possible will not create short-term impacts to wetland areas. See Sheet 9/12 in Appendix D for manual wiring locations located in or near wetlands.

Direct Impacts - Long-Term
No direct long-term impacts to surface waters, floodplains, or wetlands are likely to result from the proposed project.

Indirect Impacts
No indirect impacts to surface waters, floodplains, or wetlands are likely to result from the proposed project.

Cumulative Impacts
No cumulative impacts to surface waters, floodplains, or wetlands are likely to result from the proposed project.

5.4.2 Surface Water Impacts – No Action Alternative

The No Action Alternative would not result in any change to surface waters, groundwater, floodplains, or wetlands. No significant direct, indirect, short-term, long-term, or cumulative impacts to water resources would be anticipated.

5.4.3 Water Resources Impacts – Conclusions

Table 19. Water Resources Impact Summary

Water Resource Type	Short-Term Direct Impact	Long-Term Direct Impact	Indirect Impacts	Cumulative Impacts
Surface Water	None	None	None	None
Groundwater	None	None	None	None
Floodplains	None	None	None	None
Coastal/Estuary/Intertidal	Not Present in Project Area			
Wetlands	None	None	None	None
Wild and Scenic Rivers	Not Present in Project Area			

The project will result in temporary ground disturbance within 24-48 inches of the soil surface, with some deeper bore holes. All temporarily disturbed areas in or near water resources will be

immediately restored. Minor impacts from mobilized sediment during construction will be minimized by implementation of appropriate erosion control BMPs.

The Proposed Action will not result in significant impacts to water resources including surface waters, groundwater, floodplains, coastal zones, estuaries, inter-tidal zones, wetlands, or Wild and Scenic Rivers.

5.5 BIOLOGICAL RESOURCES

5.5.1 Biological Resources Impacts - Proposed Action

Direct Impacts - Short-Term

Wildlife and Vegetation:

Short-term direct impacts include temporary construction noise, which may affect wildlife behavior. This effect is discountable where cable installation occurs along existing roadways due to wildlife being habituated to roadway noise. Construction noise at the wireless monopole sites will be much higher than background noise levels due to their remote location.

Construction noise at the monopole sites may affect use patterns for terrestrial and avian species listed in Section 4.5.2 above. The most likely action for wildlife experiencing construction noise would be to move farther from the source. Noise is not expected to reach levels that would injure, kill, or increase risk of predation. Impacts to wildlife from construction noise will be discountable and temporary.

Buried cable and directional boring will affect vegetation that predominantly consists of weedy herbaceous species in the disturbed right-of-way. Dense riparian shrub and herbaceous vegetation is common at bridge crossings. Construction at bridge crossings will temporarily remove some riparian vegetation to provide safe access for girdling conduit/cable to the sides of bridges.

Threatened/Endangered Species:

Based on the Official Species List provided by USFWS (IPaC report number 2023-0133416, see Appendix A), three listed Threatened or Endangered species are likely to occur in Work Area O-W: bull trout, steelhead, and Chinook salmon. One Threatened or Endangered species is likely to occur in Work Areas O-C, O-S, F-W, or F-E: bull trout. No other species are likely to occur in or near the PA.

Overland noise from construction activities is not expected to impact any aquatic environment because the water surface is assumed to deflect noise sourcing from the terrestrial environment. Following guidance and communications with WSDOT, potential noise disturbance to the aquatic environment is considered discountable.

Aerial and buried cable will be installed near minor tributaries and major waterways. Short-term increases in turbidity resulting from construction could negatively impact threatened fish species but are not likely to occur. Construction timing restrictions will ensure that vehicular use of the existing crossing over the Unnamed Tributary to Stapaloop Creek will only occur while the channel is dry. If BMPs measures fail and some sediment reaches receiving waterbodies, the duration and volume of material transport will be negligible.

A BE was submitted to the NMFS and the USFWS that documents the presence and absence of federally protected species in greater detail than what is provided in this report. The BE also provides Effect Determinations for all listed species that are potentially present. The BE supports "May Affect, Not Likely to Adversely Affect" determinations for the three fish species (above) that are likely to occur in the project area. "No Effect" determinations are supported for all other species. A summary of the ESA consultation process for this project is included in Section 7 below. The BE is still under review by the USFWS and NMFS at the time of this report.

Critical Habitat:
Critical Habitat for steelhead trout is designated within the Okanogan River, Omak Creek, and a portion of the Columbia River west of Chief Joseph Dam. All ground-disturbing work occurring in Work Area O-W is within the Okanogan River basin, and much of the work is in the Omak Creek basin. Although short-term releases of sediment from construction could theoretically end up in Omak Creek and the Okanogan River, they represent a negligible volume of material. No direct short-term impacts to critical habitats will occur. Furthermore, dry season work and implementation of erosion control BMPs during construction will ensure no impacts to critical habitat will occur.

Direct Impacts - Long-Term
Wildlife and Vegetation:
The Disautel Mountain Monopole Site requires clearing totaling 10,000 square feet. Access to the Disautel Mountain Monopole Site requires one mile of new road construction for access (63,360 square feet), and several feet of widening along approximately 1/3 mile of an existing road (7,040 square feet). The access road and monopole site will permanently remove sparse grass vegetation. Direct long-term impacts total 70,400 square feet.

The Kewa Mountain Monopole Site requires clearing totaling 10,000 square feet. Access to the Kewa Mountain Monopole Site requires 0.75 miles of new road construction (47,520 square feet). The access road and monopole site will permanently remove some burnt snags and primary successional grass/shrubs. Direct long-term impacts total 57,520 square feet.

The Inchelium Hill Monopole Site requires clearing totaling 10,000 square feet. Access to the Inchelium Hill Monopole Site requires 0.75 miles of new road construction for access (47,520 square feet), and several feet of widening along 0.4 miles of an existing road (8,448 square feet). Access and clearing at the monopole site will remove Ponderosa pine, quaking aspen, snowberry, serviceberry, and numerous unidentified grasses. Direct long-term impacts total 65,968 square feet.

Total direct long-term impacts associated with the monopole sites equals 203,888 square feet (4.68 acres). Special habitat features or high-quality wildlife habitat are absent from the direct impact area. The conversion of existing vegetation and ground surface to road and monopole pad within a larger patch of native undisturbed habitat is not expected to cause long-term negative impacts to wildlife.

Threatened/Endangered Species:
Conversion of undisturbed forest to create three monopole pads and access improvements in a vast undisturbed landscape is not expected to create significant long-term impacts to ESA-listed species in or near the PA. Construction during the dry season at the Disautel Mountain Monopole Site

will ensure that federally protected species utilizing Okanogan River tributary streams are not impacted by vehicle access at the existing ford crossing over the Unnamed Tributary to Stapaloop Creek. Installation of buried cable and aerial cable along state highways and rural roads will not create long-term impacts. No long-term direct impacts to ESA-listed species are expected to result from the proposed project.

Critical Habitat:
Steelhead Critical Habitat is the only designated Critical Habitat in the PA (Work Area O-W only). No in-water structures are proposed within designated Critical Habitat in the PA (Omak Creek, Okanogan River). Direct long-term impacts to Critical Habitat are not likely to occur.

Indirect Impacts
Wildlife and Vegetation:
Installation of three 195-foot wireless monopoles could indirectly impact migratory birds if collisions were to occur. Federal Aviation Association (FAA) regulations (FAA 2017) require flashing lights, which will reduce the number of migratory bird collisions. No significant indirect impacts to wildlife or vegetation are anticipated.

Threatened/Endangered Species:
No indirect impacts to ESA-listed species in or near the PA are likely to occur.

Critical Habitat:
A portion of Work Area O-W is located near designated Steelhead Critical Habitat. No indirect impacts are anticipated to result from the proposed project.

Cumulative Impacts
No cumulative impacts to wildlife, vegetation, ESA-listed species, or Critical Habitat are anticipated to result from the proposed project.

5.5.2 Biological Resources Impacts – No Action Alternative

The No Action Alternative would not result in any changes to wildlife, vegetation, threatened/endangered species, or their designated Critical Habitat. No significant direct, indirect, short-term, long-term, or cumulative impacts are anticipated.

5.5.3 Biological Resources Impacts - Conclusions

Wildlife and Vegetation:
The project will result in minor temporary and permanent vegetation removal. Temporarily disturbed areas will be immediately restored. Proposed access road development and monopole pad construction will permanently alter a small physical area within a large patch of undisturbed, sparsely vegetated land. No special habitat features or high-quality habitats will be impacted. Construction noise that may affect birds and terrestrial wildlife is discountable.

Threatened/Endangered Species:
Three Threatened or Endangered species of fish are potentially present in the PA: bull trout, Chinook, and steelhead. These species will not be impacted by aerial fiber installation because this work will not alter streams. These species will not be impacted by buried fiber installation because fiber will be girdled to the side of existing bridges or bored beneath existing culverts. These species will not be impacted by monopole construction because vehicular access at an existing quarry spall ford crossing will only occur while the channel is dry.

Due to the proximity between proposed development and streams where Threatened and Endangered species could be present, this project may affect Threatened and Endangered species. Due to construction timing restrictions and construction techniques, including erosion control BMPs, it is unlikely that this project will adversely affect bull trout, steelhead trout, or Chinook salmon.

The assumptions regarding effect determinations made in this report are predicated on concurrence by USFWS and NMFS with the BE submitted for this project. As previously stated, federal review is ongoing as of the date of this report. See Section 7 below regarding the ESA Consultation process for this project.

Critical Habitat:
Critical Habitat for steelhead trout is present in Omak Creek. The project will not modify designated Critical Habitat. See Section 7 below.

The Proposed Action will not result in significant impacts to Biological Resources.

5.6 HISTORIC AND CULTURAL RESOURCES

5.6.1 Historic and Cultural Resources Impacts - Proposed Action

In coordination with NoaNet, the NTIA, and the CTCR, the Area of Potential Effect (APE) for this project was defined as a 100-foot buffer around planned path of the project (aerial and buried), as well as a 0.5-mile buffer for visual effects around the monopoles and COW site.

The APE encompasses the areas that will be impacted by proposed ground-disturbing activities (the area of direct effects) and those within which visual effects will occur (the area of indirect effects) from the monopoles and COW site. No new anchor institutions are included in the proposed installation – all are existing locations. No other built environment impacts could be assessed at this time, as the structures have yet to be identified (based on which residences opt-in to the fiber services after construction).

The APE for on-reservation portions was discussed with the CTCR THPO in April of 2023 and verbal concurrence was provided. The formal APE letter for the project was sent to the NTIA and DAHP on July 28, 2023 (Appendix B1 and B2, respectively). DAHP concurred on August 1, 2023 (Appendix B3). Th APE for the on-reservation portion of the project was formally provided to the CTCR in the Cultural Resources Management Plan Project Proposal Form (PPF) on 8/16/23. The CTCR approved the PPF (Appendix B4).

The NTIA and CTCR were the reviewing agencies for all on-reservation work. DAHP was also consulted for the small portions of off-reservation work. For on-reservation work, no other tribes were consulted. For off-reservation work, the NTIA notified DAHP and the following Tribes via the Tower Construction Notification System (TCNS) on 2/2/24 (Appendix B5):

- Blackfeet Nation
- Eastern Shoshone Tribe
- Upper Skagit Indian Tribe
- Confederated Tribes and Bands of the Yakama Nation
- Confederated Tribes of the Colville Nation

The automatic responses from the Eastern Shoshone Tribe requested additional information which was then provided by the NTIA on 2/2/24 (Appendix B6). The Blackfeet Nation responded on 2/16/24 that they have no interest in the project (Appendix B7). No other responses have been received to date.

The assessment of historic and cultural resources for the project was conducted in two phases. The first was a comprehensive desktop study of the entire APE (Appendix B8). This study identified previously recorded sites and historical properties within the APE and examined historical maps, predictive modeling data, and precontact and historical records. The goal was to identify high probability areas which would require field visits. The desktop study and fieldwork permit application (including proposed field methodology) were submitted to the CTCR on October 2, 2023. The permit to conduct fieldwork was issued by the CTCR THPO on October 10, 2023 (Appendix B9). The CTCR also provided a memo with internal information pertaining to known cultural resources which they requested be included in the fieldwork planning and resulting report.

The second phase was field survey of the high probability areas (HPAs) identified during the desktop study. This was the survey area provided to the CTCR in the permit application. All HPA's were surveyed on foot, and shovel tests were placed in accessible areas where buried fiber was planned. The results of the fieldwork, including site form updates, were provided to the NTIA on April 10, 2024 (Appendix B10).

<u>Direct Impacts - Short-Term</u>
Ground disturbing activities including plowed conduit, open trenching, bore pits, and pole construction, and access roads all have the potential to disturb archaeological and cultural resources, if present.

During the desktop study and fieldwork, three locations were identified where archaeological resources may be potentially impacted by planned fiber installation. These are locations in/near sites 45OK1430, 45OK831, and 45OK1285 (McWilliams, Dampf, and Hushour). In each location, it was recommended that the route be revised to avoid impacts to these resources. If the three resources are avoided, no impacts are anticipated to result from construction. If they are not avoided, project ground disturbance could permanently alter or destroy these resources.

Archaeological monitoring was recommended at another five locations (in locations near a recorded archaeological site) (McWilliams, Dampf, and Hushour). Monitoring is recommended to ensure that these sites are not impacted.

Direct Impacts - Long-Term
If the three resources referenced above are avoided, no long-term direct impacts are anticipated to result from future maintenance operations. If they are not avoided, project ground disturbance associated with future maintenance operations could continue to impact these resources.

Indirect Impacts
The CTCR were consulted as to TCPs that may be impacted by new monopole construction. They responded that no TCPs were identified in or within the area of indirect impacts of any of the monopole locations. The project will not indirectly impact any known historic districts or properties. No indirect impacts to TCPs or the built environment are anticipated to occur.

Cumulative Impacts
If the route is constructed and maintained in its current alignment and if the IDP is in place during construction and maintenance, no cumulative impacts to historic and cultural resources are anticipated.

5.6.2 Historic and Cultural Resources Impacts – No Action Alternative
The No Action Alternative would not result in any significant direct, indirect, short-term, long-term, or cumulative archaeological or cultural resources impacts.

5.6.3 Historic and Cultural Resources – Conclusions
The majority of the build route is along the edge of the existing right-of-way in areas that were initially disturbed by road construction. No historic standing structures or TCPs were identified which will be indirectly impacted by the project. An inadvertent discovery plan has been drafted and will be on-site during all project-related ground disturbance.

No impacts to historic and cultural resources are anticipated.

5.7 AESTHETIC AND VISUAL RESOURCES
5.7.1 Aesthetic and Visual Resources Impacts - Proposed Action
Direct Impacts - Short-Term
Construction crews will create traffic congestion during project construction. Congested areas will contain construction equipment, staging materials, and road safety equipment, which represent an aesthetic/visual impact to motorists and residents.

Direct Impacts - Long-Term
Scenic beauty is one of the defining visual features in the vicinity of the project. The installation of new 100-foot and 195-foot monopoles will modify the skyline and impact the natural appearance of the landscape as viewed from several locations.

Lashing cable to existing electrical distribution infrastructure, burying cable along the edge of the road, and installing conduit on existing bridges will create no long-term aesthetic or visual resource impacts.

Indirect Impacts
No indirect impacts to aesthetic or visual resources are likely to result from the proposed project.

Cumulative Impacts
No cumulative impacts to aesthetic or visual resources are likely to result from the proposed project.

5.7.2 Aesthetic and Visual Resources Impacts – No Action Alternative
The No Action Alternative would not result in any change to aesthetic/visual conditions. No significant direct, indirect, short-term, long-term, or cumulative impacts to aesthetic or visual resources would be anticipated.

5.7.3 Aesthetic and Visual Resources – Conclusions
The project will temporarily impact aesthetic and visual resources during construction. The project will add three 195-foot monopoles to the skyline, three 100-foot poles along SR21, one 100-foot pole near Manilla Creek Road and SR21 (COW site), and 15 50-foot poles along SR21 and Inchelium-Kettle Falls Road. Temporary impacts are insignificant. Long-term impacts are mitigated by the presence of several existing towers on the skyline.

The Proposed Action will not result in significant impacts to aesthetic or visual resources.

5.8 LAND USE
5.8.1 Land Use Impacts - Proposed Action
Direct Impacts
Direct impacts to land use include conversion of monopole sites and their access path from forestry or agricultural uses, and use of the ROW for buried, fiber, aerial fiber, and new wireless poles. Conversion of forestry/agricultural land would result in loss of future use for landowners in these three small areas. The Disautel Mountain Monopole Site appears to be used for cattle grazing, which could continue outside of the access road and monopole pad; total loss of grazing area is approximately 1.5 acres. The Inchelium Hill Monopole Site appears to be a fallow pasture, which could continue in the future outside of the access road and monopole pad; total loss of potential pasture area is approximately 0.75 acres. The Kewa Mountain Monopole Site appears to be used for forestry, which could continue outside of the access road and monopole pad locations; total loss of forestry area is approximately 0.75 acres.

Use of the ROW for new fiber and poles, whether managed by BIA, WSDOT, BOR, or USFS, will have no direct impacts to land use because work occurs in the right-of-way using existing infrastructure or is buried and restored immediately. This includes the section between Coulee Dam and Grand Coulee.

Indirect Impacts
Indirect impacts to land use are limited to the long-term loss of grazing and timber potential where monopoles and their access roads are proposed. These impacts are spread throughout a large undisturbed landscape and therefore represent a minor impact.

Cumulative Impacts

Extending broadband internet service to the broader region will change land use in similar ways as this project; small conversion of forestry/agricultural land, new aerial fiber on existing distribution poles, new buried cable in the ROW, and new wireless poles near the edge of the ROW. The cumulative effect of these like actions will not negatively impact the economy, natural, or built environment due to their occurrence along transportation corridors or across a vast landscape. No significant cumulative impacts to land use are anticipated to occur from this project and other like actions in the region.

5.8.2 Land Use Impacts – No Action Alternative

The No Action Alternative would not result in any significant direct, indirect, short-term, long-term, or cumulative land use impacts.

5.8.3 Land Use Impacts – Conclusions

This project will replace timberland or rangeland with three 100'x100' pads, and approximately one mile of new access roads. The Proposed Action will not result in significant land use impacts.

5.9 INFRASTRUCTURE

5.9.1 Infrastructure Impacts - Proposed Action

Direct Impacts - Short-Term

Construction may create temporary access disruptions as the work zone crosses residences and businesses. Temporary lane width reductions may also increase traffic congestion during construction.

Direct Impacts - Long-Term

The proposed project will create new infrastructure on CTCR land. The long-term impact is increased broadband internet speed for CTCR residents and businesses. No long-term impacts to transportation, electrical distribution, water supply, sewer, solid waste disposal, or other telecommunication forms are anticipated.

Indirect Impacts

No indirect impacts to infrastructure are likely to result from the proposed project.

Cumulative Impacts

No cumulative impacts to infrastructure are likely to result from the proposed project.

5.9.2 Infrastructure – No Action Alternative

The No Action Alternative would not result in any significant direct short-term, long-term, or cumulative infrastructure impacts. Indirect negative impacts to infrastructure and the community it supports would result from continued lack of access to reliable high-speed broadband internet access.

5.9.3 Infrastructure – Conclusions

This project will improve infrastructure on CTCR land by providing a more complete network of high-speed internet without negatively impacting existing infrastructure.

5.10 SOCIOECONOMIC RESOURCES

5.10.1 Socioeconomic Resources Impacts - Proposed Action

Direct Impacts - Short-Term

Businesses may be negatively impacted by construction if it causes service or access disruptions that affect normal business operations. A small portion of the project is in commercial areas, and therefore the project is unlikely to cause significant disruptions that could affect businesses. Positive direct impacts include increased activity at businesses located near construction.

No other direct short-term impacts to socioeconomic resources are anticipated.

Direct Impacts - Long-Term

The project will require some maintenance over time. Access/service disruptions that may occur during maintenance are considered negligible. Positive direct long-term impacts include No direct long-term impacts are anticipated.

Indirect Impacts

Based on research prepared by the Council on Environmental Quality (CEQ 2024), the Colville Reservation is a socioeconomically disadvantaged community based on environmental factors (e.g. building and population loss due to natural hazards), energy cost (e.g. 90th percentile for annual energy cost divided by household income), health outcomes (above the 90th percentile for asthma, diabetes, and heart disease), and workforce development (e.g. above the 90th percentile for low median income and unemployment, and above ten percent for high school education completion).

This project will significantly increase access to fast, reliable broadband internet speeds throughout the Colville Reservation; survey responses from the Ferry County Broadband Action Team indicate that average speeds in 2019 were ~10Mbps download/~2Mbps upload, which is far short of the FCC 25/3 benchmark (Magellan 2020). Although increased access to reliable high-speed internet will not address environmental factors or energy costs discussed above, it will improve health outcomes and create a pathway to increased income opportunities.

Telemedicine improves health outcomes primarily by increasing access to care. Research conducted by the Center for Disease Control (CDC) National Center for Health Statistics (Lucas 2022) found that 37 percent of adults and 41 percent of American Indian adults used telemedicine in 2020. The goal of this project (increased access to reliable high-speed internet) is consistent with improving health outcomes, which are a limiting factor for socioeconomic development on the Colville Reservation.

Workforce development limits economic development on the Colville Reservation due to high unemployment, and low education achievement and income. These factors can be improved by increasing educational and economic opportunities locally. Exam preparation for a General Education Development (GED) diploma requires a reliable internet connection. Many business ventures require high-speed broadband connections (e.g. web/applications hosting, e-commerce, streaming video, cloud computing), and cannot operate using existing broadband infrastructure on the Colville Reservation. Remote work also requires a reliable and fast internet connection. The goal of this project is consistent with improving socioeconomic outcomes.

Food service and retail businesses could be positively impacted if the presence of construction crews leads to increased sales, or if local residents are hired to complete the work. These indirect impacts are expected to be minor due to the relatively small number of workers and the short duration of the project.

This project will indirectly promote residential population growth in the region because many people would not consider re-locating to a community that does not have internet connectivity (Magellan 2020). Other benefits include better access to telehealth, remote work opportunities, and education. These indirect effects will positively impact socioeconomic resources broadly throughout the CTCR reservation.

Cumulative Impacts

Providing broadband access will contribute to economic growth that favors minority and low-income populations. The benefits of this growth are discussed as indirect impacts. No specific cumulative impacts are known or anticipated.

5.10.2 Socioeconomic Resources Impacts – No Action Alternative

The No Action Alternative would maintain socioeconomic conditions on CTCR land; the absence of reliable broadband internet would continue. No action would prevent the community from realizing the positive aspects described above.

5.10.3 Socioeconomic Resources Impacts – Conclusions

Demand for broadband internet in the project is unmet due primarily to economic factors. This unmet demand disproportionately impacts minority populations and low-income individuals. The project will provide service that will promote education goals, workforce development, and health outcomes, and will have no negative impacts to socioeconomic resources. These positive socioeconomic impacts in the project area are consistent with the environmental justice considerations of EO 12898.

The Proposed Action will not result in significant negative impacts to socioeconomic resources or environmental justice goals.

5.11 HUMAN HEALTH AND SAFETY

5.11.1 Human Health and Safety Impacts - Proposed Action

Direct Impacts - Short-Term

Hazardous Sites:

Numerous hazardous waste issues were identified on properties adjacent to proposed development; buried cable is no closer than 80 feet from known soil contaminants. If contaminants leached to areas where buried fiber is proposed, human contact is unlikely because workers will be isolated within the cab of heavy equipment. Exposing contaminated soils during construction would be a risk to human health and safety, but the low probability of occurrence suggests that no short-term direct impacts are likely. BMPs that could protect workers from contaminant exposure include personal protective equipment including masks, respirators, gloves, and hand washing stations.

Public Safety Facilities:
No short-term direct impacts to public safety facilities are anticipated.

Direct Impacts - Long-Term
Hazardous Sites:
No direct long-term impacts are anticipated.

Public Safety Facilities:
Increased broadband connectivity will improve communications and data sharing between public safety agencies. Completion of the COW site will improve public safety communications during emergencies. No negative direct long-term impacts are anticipated. This project provides a positive long-term direct impact to public safety facilities.

Indirect Impacts
No indirect impacts are anticipated for hazardous sites or public safety facilities.

Cumulative Impacts
No cumulative impacts are anticipated for hazardous sites or public safety facilities.

5.11.2 Human Health and Safety Impacts – No Action Alternative
The No Action Alternative represents a negative impact to human health and safety on CTCR land due to a lack of telehealth options and reduced emergency response.

5.11.3 Human Health and Safety Impacts – Conclusions
The Proposed Action will increase public safety through increased communication and will not create any significant negative impacts to human health and safety.

6.0 ENVIRONMENTAL PERMITS AND REGULATORY REQUIREMENTS

Table 20 below provides a summary of environmental permits required and/or possible coordination for the proposed project. The applicant intends to apply for any additional local permits that are identified and will not commence construction until receiving approval from all agencies with authority.

Table 20. Environmental Permits and Regulatory Requirements Summary

Regulatory Agency	Authority to Regulate	Regulated Activity
Federal		
United States Forest Service	Ownership/Special Use Permit	Development along SR21 within the Colville National Forest
Bureau of Indian Affairs	Ownership/ROW Use Authorization	All development in the ROW of BIA roads and within allotments
Bureau of Reclamation	Ownership/ROW Use Authorization	All development on BOR land near Grand Coulee
Dept. of Archaeology and Historic Preservation	Section 106 of the National Historic Preservation Act	All development activities receiving federal funds
US Army Corps of Engineers	Section 404 of the Clean Water Act	*Discharge of Dredge and fill into Waters of the United States (no impacts proposed)
	Section 10 of the Rivers and Harbors Act	**All development activities in Navigable Waters (no impacts proposed)
National Marine Fisheries Service	Section 7 of the Endangered Species Act	All development activities receiving federal funds
US Fish and Wildlife Service	Section 7 of the Endangered Species Act	All development activities receiving federal funds
	Migratory Bird Treaty Act	***All development activities that affect migratory birds (no impacts proposed)
	Bald and Golden Eagle Protection Act	***All development activities that affect bald and golden eagles (no impacts proposed)
State		
WA State Dept. of Transportation	Ownership/Right-of-Way Use, Franchise Agreement	All construction in WSDOT right-of-way
Tribal		
Confederated Tribes of the Colville Reservation	Colville Tribal Law & Order Code (CTLOC)/Building Permit	Development on CTCR land
	CTLOC/Shoreline Development Permit	Development on Waters of the Reservation
	CTLOC/Shoreline Variance Permit	Telecommunications on Waters of the Reservation
	CTLOC/Floodplain Development Permit	Development in the regulatory floodplain
	CTLOC/Special Use Permit	Development of Wireless Telecomm. facilities

* No discharge of dredge or fill into Waters of the United States is proposed
** No modifications to Navigable Waters are proposed
*** No impacts to protected migratory birds/raptors are anticipated

7.0 CONSULTATIONS

Table 21 below provides a summary of consultation related to cultural resources and threatened/endangered species for this project. Agency documentation supporting the Consultation Status described in Table 21 below is provided as Appendix H.

Table 21. Consultation Summary

Regulatory Agency	Consultation/ Effect Determination	Name and Title of Reviewer	Consultation Status
Federal			
National Marine Fisheries Service	Section 7 ESA/ Not Likely to Adversely Affect	Robin Henderson, Natural Resource Specialist, Columbia Basin Branch, Interior Columbia Basin Area Office, West Coast Region	Concurrence with NTLAA Effect Determination. Complete as of 5/31/24.
US Fish and Wildlife Service	Section 7 ESA/ Not Likely to Adversely Affect	Rebekah Zimmerer, Fish and Wildlife Biologist, Inland Columbia Basin Team	Ongoing. Complete: TBD
State*			
WA Dept. of Archaeology and Historic Preservation	Section 106 NHPA/ No Adverse Effect	Dr. Allyson Brooks, State Historic Preservation Officer/Director	Concurrence with No Adverse Effect Finding. Complete as of 4/23/24.
Tribal			
Confederated Tribes of the Colville Reservation	Fish and Wildlife Division/ No Projected Impacts	Elizabeth Odell, Wildlife Biologist	Complete as of 6/15/23.
	Section 106 NHPA No Adverse Effect	Guy Moura, Tribal Historic Preservation Officer	Ongoing. Complete as of TBD.

*Washington State does not have authority to regulate CTCR land outside of the WSDOT ROW

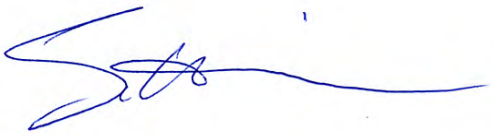
8.0 LIMITATIONS

This Environmental Assessment summarizes the research, evaluation, and consultation needed to evaluate the effects of broadband fiber deployment on specific resources (e.g., natural, historic, cultural resources). WRI prepared this EA using project information (e.g., KML files, site plans, written descriptions, etc.) provided by the applicant or an authorized representative. If the design or location of the installation changes, please contact WRI as additional review and/or consultation may be required.

WRI is an independent contractor and is not an employee of either the property owner(s) or the project proponent. Compensation is not based on the findings or recommendations made in the EA.

9.0 SIGNATORIES

The following WRI staff contributed to the research, consultation, and/or preparation of one or more component of this EA.



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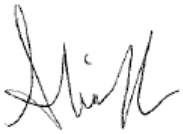

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Appendix A

US Fish and Wildlife Service
IPaC Official Species List

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Washington Fish And Wildlife Office
510 Desmond Drive Se, Suite 102
Lacey, WA 98503-1263
Phone: (360) 753-9440 Fax: (360) 753-9405

In Reply Refer To:
Project Code: 2023-0133416
Project Name: 23093 NoaNet

September 26, 2023

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological

evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

https://www.fws.gov/sites/default/files/documents/endangered-species-consultation-handbook.pdf

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts, see https://www.fws.gov/program/migratory-bird-permit/what-we-do.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures, see https://www.fws.gov/library/collections/threats-birds.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/partner/council-conservation-migratory-birds.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Washington Fish And Wildlife Office
510 Desmond Drive Se, Suite 102
Lacey, WA 98503-1263
(360) 753-9440

PROJECT SUMMARY

Project Code: 2023-0133416
Project Name: 23093 NoaNet
Project Type: Communication Tower New Construction
Project Description: The project will extend broadband internet service in underserved areas on Confederated Tribes of the Colville Reservation. Work includes installation of a network of aerial and buried cable, and three new wireless towers.

Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@48.14954335,-118.70895916324835,14z

Counties: Washington

ENDANGERED SPECIES ACT SPECIES

There is a total of 8 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

NAME	STATUS
Canada Lynx *Lynx canadensis* Population: Wherever Found in Contiguous U.S. There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3652	Threatened
Gray Wolf *Canis lupus* Population: U.S.A.: All of AL, AR, CA, CO, CT, DE, FL, GA, IA, IN, IL, KS, KY, LA, MA, MD, ME, MI, MO, MS, NC, ND, NE, NH, NJ, NV, NY, OH, OK, PA, RI, SC, SD, TN, TX, VA, VT, WI, and WV; and portions of AZ, NM, OR, UT, and WA. Mexico. There is **final** critical habitat for this species. Species profile: https://ecos.fws.gov/ecp/species/4488	Endangered
North American Wolverine *Gulo gulo luscus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5123	Proposed Threatened

BIRDS

NAME	STATUS
Yellow-billed Cuckoo *Coccyzus americanus* Population: Western U.S. DPS There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

FISHES

NAME	STATUS
Bull Trout *Salvelinus confluentus*	Threatened

Population: U.S.A., conterminous, lower 48 states
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
Species profile: https://ecos.fws.gov/ecp/species/8212

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus*	Candidate

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/9743

FLOWERING PLANTS

NAME	STATUS
Spalding's Catchfly *Silene spaldingii*	Threatened

There is **proposed** critical habitat for this species.
Species profile: https://ecos.fws.gov/ecp/species/3681

CONIFERS AND CYCADS

NAME	STATUS
Whitebark Pine *Pinus albicaulis*	Threatened

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/1748

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

IPAC USER CONTACT INFORMATION

Agency: Private Entity
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Address: 9505 19th Ave. SE, Suite 106
City: Everett
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LEAD AGENCY CONTACT INFORMATION

Lead Agency: Bureau of Indian Affairs

Appendix B

Cultural Resources Review

CULTURAL RESOURCES REPORT COVER SHEET

DAHP Project Number: 2023-05-03450

Author: Steven Dampf

Title of Report: Cultural Resources Review for the Colville Confederated Tribes NTIA 2.5 GHz Wireless, Middle Mile and Fiber to the Home Project, Ferry, Okanogan, Douglas, and Grant Counties, Washington

Date of Report: September 21, 2023

Counties: Ferry, Okanogan, Douglas, Grant

Section(s): 1, 2, 11, 12	Township: 28N	Range: 30E
Section(s): 3, 4, 9, 10	Township: 28N	Range: 33E
Section(s): 1, 36	Township: 29N	Range: 30E
Section(s): 6–8, 15, 17, 19, 20, 22, 23, 27, 30, 31	Township: 29N	Range: 31E
Section(s): 11, 13, 14	Township: 29N	Range: 32E
Section(s): 3, 4, 8–10, 16, 17, 20, 21, 28, 32, 33	Township: 29N	Range: 33E
Section(s): 1, 2, 12, 25, 36	Township: 30N	Range: 30E
Section(s): 6–8, 30–32	Township: 30N	Range: 31E
Section(s): 5–8, 17–22, 27–30, 33, 34	Township: 30N	Range: 33E
Section(s): 1, 2, 12, 13, 23–26, 35, 36	Township: 31N	Range: 30E
Section(s): 6, 7, 18, 19, 30, 31	Township: 31N	Range: 31E
Section(s): 1, 24	Township: 31N	Range: 32E
Section(s): 6, 7, 18, 19, 30–32	Township: 31N	Range: 33E
Section(s): 1, 2, 5–9, 12, 13, 15–17, 20–24, 26	Township: 31N	Range: 36E
Section(s): 6	Township: 31N	Range: 37E
Section(s): 35	Township: 32N	Range: 30E
Section(s): 1, 2, 12, 13, 36	Township: 32N	Range: 32E
Section(s): 18–20, 29–32	Township: 32N	Range: 33E
Section(s): 1, 2, 11–14, 24, 25, 35, 36	Township: 32N	Range: 36E
Section(s): 6–8, 16–19, 29–32	Township: 32N	Range: 37E
Section(s): 1–3, 9–11, 16, 17, 20	Township: 33N	Range: 26E
Section(s): 3–6, 8, 9, 11, 12, 16, 21, 28	Township: 33N	Range: 27E
Section(s): 2, 3, 7–9, 10, 11, 13–15, 16, 18	Township: 33N	Range: 28E
Section(s): 17, 18, 21, 22, 27, 28, 34	Township: 33N	Range: 29E
Section(s): 2, 11, 14, 23, 26, 35	Township: 33N	Range: 32E
Section(s): 1, 12, 13, 24–26, 35, 36	Township: 33N	Range: 36E
Section(s): 1, 12, 13, 24–26, 30, 31, 35, 36	Township: 33N	Range: 37E
Section(s): 26, 35, 36	Township: 34N	Range: 26E

Section(s): 28, 29, 31–33	Township: 34N	Range: 27E
Section(s): 1, 2, 10, 11, 14, 15, 23–26, 35, 36	Township: 34N	Range: 32E
Section(s): 1, 2, 11, 14, 23, 25, 26, 35, 36	Township: 34N	Range: 36E
Section(s): 1, 12, 13, 24, 25, 36	Township: 35N	Range: 32E
Section(s): 18, 19, 30, 31	Township: 35N	Range: 33E
Section(s): 4, 8, 9, 17, 20, 29–31	Township: 35N	Range: 37E
Section(s): 24, 25, 36	Township: 36N	Range: 32E
Section(s): 7, 18, 19	Township: 36N	Range: 33E
Section(s): 27, 28, 33	Township: 36N	Range: 37E

Quad(s): Omak, Okanogan, The Pothole, Omak Lake, Omak Mountain, Camp Seven, Disautel, Armstrong Creek, Nespelem, Belvedere, Grand Coulee Dam, Electric City, Republic, Bear Mountain, Swan Lake, Thirteenmile Creek, Bald Knob, Central Peak, Cody Butte, Louie Creek, Keller, Keller Ferry, Bangs Mountain, Rice, Inchelium, Cedonia, Kewa, Washington, 7.5-minute Acres: 8528

PDF of Report uploaded to WISAARD report module (REQUIRED) ☒ Yes

Historic Property Inventory Forms to be Approved Online? ☐ Yes ☒ No

Archaeological Site(s)/Isolate(s) found or amended? ☐ Yes ☒ No

TCP(s) found? ☐ Yes ☒ No

Replace a draft? ☐ Yes ☒ No

Satisfy a DAHP Archaeological Excavation Permit requirement? ☐ Yes # ☒ No

Were Human Remains Found? ☐ Yes DAHP Case # ☒ No

DAHP Archaeological Site #:

_____

_____

_____

- Submission of PDFs into WISAARD's report module is required.
- Please be sure that any PDF submitted to WISAARD has its cover sheet, figures, graphics, appendices, attachments, correspondence, etc., compiled into a single PDF file.
- Please check that the PDF displays correctly when opened.

Cultural Resources Review for the Colville Confederated Tribes NTIA 2.5 GHz Wireless, Middle Mile and Fiber to the Home Project, Ferry, Okanogan, Douglas, and Grant Counties, Washington

Prepared for:

NOANET and

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Prepared by:
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Cultural Resources Report No. 2023-211
WestLand Project No. 10766

September 21, 2023

View to the northwest, from near the northeast corner of the APE

WestLand 100% EMPLOYEE OWNED Engineering & Environmental Services, Inc.

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Appendices

INTRODUCTION AND PROJECT DESCRIPTION

The National Telecommunications and Information Administration (NTIA) is funding the proposed Colville Confederated Tribes 2.5GHz Wireless, Middle Mile and Fiber to the Home Project (the project). The project proposes the construction of three 200-foot towers, three 100-foot towers, fifteen 50-foot poles, and one 40-foot pole, as well as access roads, and the installation of associated vaults, power (i.e., underground transmission lines), fiber, and one Cell on Wheels (COW) site on the Colville Reservation and in three additional areas north and south of the reservation boundary **(Figure 1)**. The proposed fiber route consists of approximately 98.5 miles of aerial installation and 73.3 miles of buried installation. Proposed access roads and power lines measure a total of 3.4 miles. Approximately 23.3 miles of the total 171.8-mile fiber route is located outside of the reservation boundary.

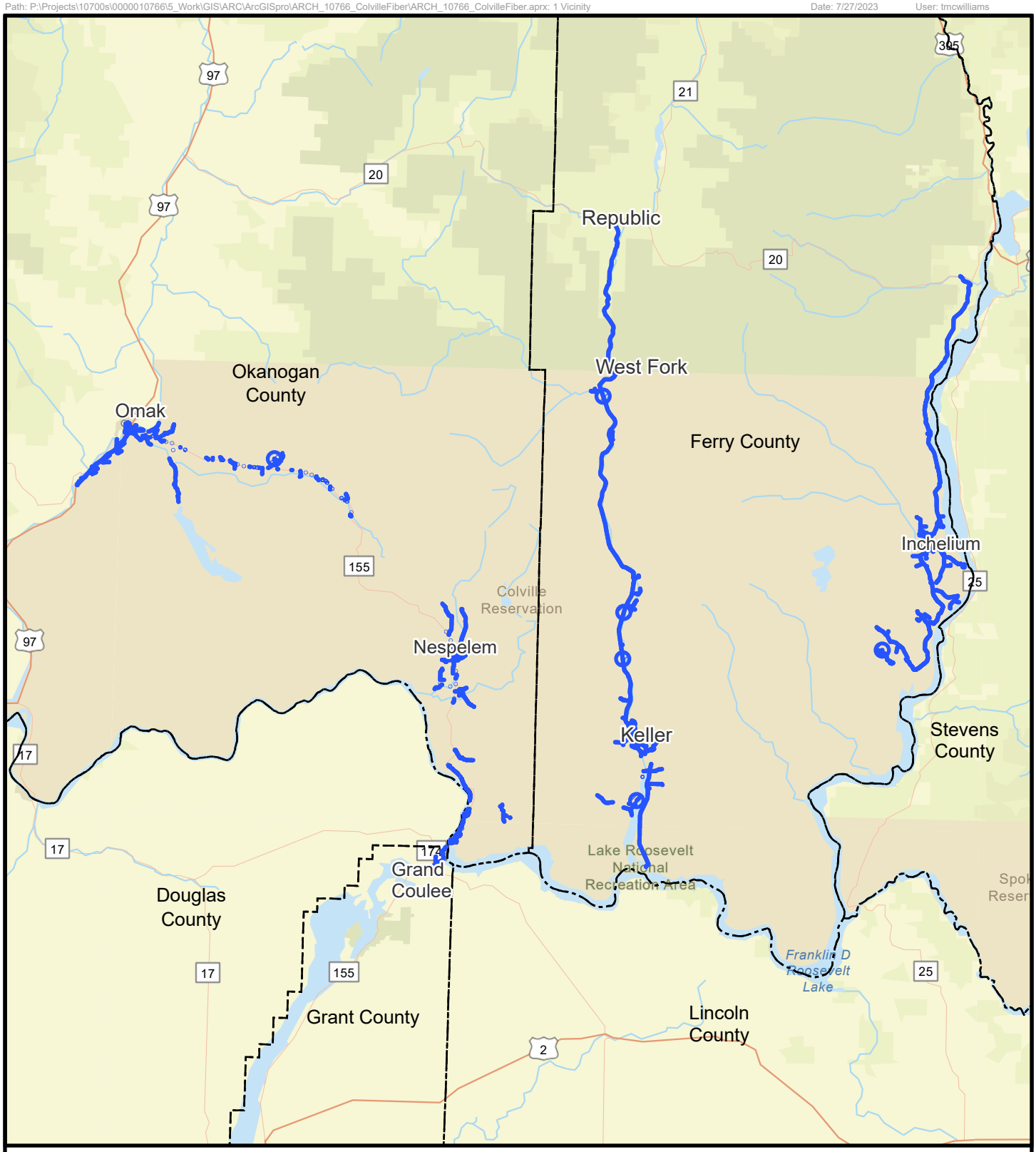
A combination of techniques will be used for the buried installation and will be determined by the contractor based on ground conditions at the time of construction. Most of the buried fiber installation will be placed via plow insertion measuring a maximum of 18 inches in width for the rip seam. Directional boring will be utilized at driveways and similar locations where the impacts from direct disturbance are prohibitive, and a small amount of open trenching measuring a maximum of 24 inches in width will occur when necessary. Ground disturbance depth for buried fiber will typically measure 24 inches below ground surface (bgs) but may be deeper depending on the depth of adjacent impediments (not to exceed 48 inches bgs). Maximum depth of ground disturbance for vaults will also be 48 inches bgs. Maximum depth of ground disturbance for poles will be 13 feet bgs and 48 inches bgs for associated electrical service. The tower footings will measure 40 feet by 40 feet, with ground disturbance reaching as deep as 12 feet bgs.

Regulatory Context and Area of Potential Effects

Because the project is federally funded, it is subject to compliance with Section 106 of the National Historic Preservation Act. In coordination with the NTIA and Colville Confederated Tribes (CCT), Northwest Open Access Network (NoaNet) contracted with WestLand Engineering & Environmental Services (WestLand) to complete the required cultural resources compliance services for the project.

In coordination with NoaNet, the NTIA, and the CCT, WestLand has defined the project's area of potential effects (APE) as a 100-foot buffer around the design elements described above, as well as a 0.5-mile buffer for visual effects around the towers and COW site **(see Appendix A)**. This APE encompasses the areas that will be potentially affected subsurface by proposed ground-disturbing

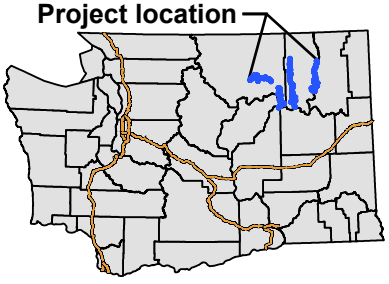
Path: P:\Projects\10700s\0000010766\5_Work\GIS\ARC\ArcGISpro\ARCH_10766_ColvilleFiber\ARCH_10766_ColvilleFiber.aprx: 1 Vicinity Date: 7/27/2023 User: tmcwilliams



Townships 28-36 North, Ranges 26-37 East
Douglas, Ferry, Grant, and Okanogan Counties, Washington,
Data Source: ArcGIS Online, World Street Map
Projection: NAD 1983 UTM Zone 11N

APE

Project location



N

0 5 10 Miles

0 8 16 Kilometers

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Figure 1. Vicinity map

activities (together the Area of Direct Effects) and those within which visual effects will occur (together the Area of Indirect Effects) from the towers and COW site.

The purpose of this review is to determine the presence or likelihood of cultural resources within or near the APE in order to develop future avoidance, assessment, or mitigation measures. It includes a review of environmental and historical information, previously recorded archaeological sites, and ethnographic information, which, in concert with analysis of the proposed project impacts, are used to develop a context in which to make recommendations regarding cultural resources.

ENVIRONMENTAL CONTEXT

This environmental section describes the depositional conditions that influence the likelihood of intact archaeological deposits being present in the APE and discusses features of the natural environment that would have encouraged or discouraged settlement of the APE by human populations in the past. Information regarding the physical environment of the project vicinity is provided, including a discussion of the changes in topography, geology, climate, vegetation, and the availability of floral and faunal resources that are relevant to assessing a location's sensitivity for containing cultural resources. Literature reviewed for this project includes environmental data from the Washington State Department of Natural Resources, the U.S. Department of Agriculture Natural Resources Conservation Service online soil survey, and resources in WestLand's library related to the geology and land-forming processes and the natural resources available in and around the APE.

Topography and Geology

The APE is located in northeast Washington, mostly within the Okanogan Highlands physiographic province of the greater Columbia Plateau. The remainder, which includes the Okanogan Plateau, in the southwestern part of the APE, lies in the Columbia Basin physiographic province. The Okanogan Highlands are essentially an intermountain trough extending into Canada, situated between the Casdade Range to the west and the Selkirk Mountains to the east. The portion of the Okanogan Highlands in the APE is composed of two major north-south mountain ranges: the Kettle River Range and the Nespelem Range. Parts of these ranges were glaciated during the last major glacial advance. The varied topography creates a great diversity of local weather patterns and vegetation (Bohm and Holstine 1983:1; Chatters 1998:12:29–32; Franklin and Dyrness 1988; Kennedy and Bouchard 1998:12:239) and is characterized by a series of smooth, rounded mountain summits with exposed bedrock, gently sloping glacier-carved river valleys, and plateaus of moderate elevation (Campbell and Aho 2002:26; Chatters 1998:32).

As with all of northeastern Washington, the granitic Okanogan Highlands and portions of the Columbia Basin were buried under glacial ice throughout the Pleistocene. During the last glacial advance, about 75 percent of the present-day Colville Reservation was covered by the Cordilleran Ice Sheet (Richmond et al. 1965). Glacial advances within the last ice age, prior to roughly 15,000 years ago, created lake terraces, kame deltas, and lateral moraines, while also depositing lenses of outwash sands and gravels over the bedrock (Kiver and Stradling 1995). There is evidence of earlier, glacially induced flood episodes, but the most recent and well-recorded geological events to drastically affect the sediment profile of the APE were catastrophic floods caused by the breach of the ice dam at glacial Lake Missoula, which formed when a lobe from the Cordilleran ice sheet blocked the Clark Fork Valley at what is now Pend Oreille Lake in northern Idaho. The lake's volume matched that of present-day Lake Michigan and was 610 m (2,000 feet) deep at the dam. Beginning approximately 15,300 years ago and continuing over the following 2,000 years, the ice dam repeatedly gave way and released the waters that created the landscape of the region. At peak outflow, it is estimated that as

much as 21 million cubic meters of water per second (or roughly 18 cubic miles of water per hour) poured from the lake basin, a rate 10 times the combined flow of all the rivers of the world. During the floods, the surface of the land was greatly modified, and channels were cut through the loess blanket and into basalt, resulting in a jumbled topography (Breckenridge 1989).

The Kettle River Range, in the eastern part of the APE, forms the divide between the Columbia River to the east and south and the Sanpoil River to the west. Prominent peaks (with elevations above 4,700 feet above mean sea level [amsl]) include Grizzly Mountain (highest peak with an elevation of 6,397 feet amsl), Lynx Mountain, South Seventeen Mile Mountain, Cody Butte, and Whitestone Ridge. The Nespelem Range, in the central part of the APE, forms the divide between the Sanpoil River to the east and the Columbia and Okanogan rivers to the south and west, respectively. The highest point in this range is Moses Mountain, with an elevation of 6,774 feet amsl. Other prominent peaks include Little Moses Mountain, Strawberry Mountain, Omak Mountain, Keller Butte, and Central Peak (Campbell and Aho 2002:26; Chatters 1998:32).

The Okanogan Plateau, in the southwestern part of the APE, represents the northernmost extension of the Columbia Basin. With elevations between 2,000 to 2,900 feet amsl, the Okanogan Plateau is nearly level to gently sloping and contains numerous small lakes and ponds that resulted from the glaciation. Floodplains and terraces of recent alluvium and higher terraces of glacial outwash and glacial lake sediment flank the rivers and most of the major creeks throughout the APE (Campbell and Aho 2002:26; Chatters 1998:32).

As a result of the last glacial advance, deposits of glacial till, outwash, and lake sediment cover much of the APE. Many soils in the vicinity also have a surface mantle of volcanic ash as a result of the volcanic eruptions of Glacier Peak (12,000 years B.P.) and Mount Mazama (7,500 years B.P.), as well as a component of loess (Campbell and Aho 2002:26; Fryxell 1965). The soils mapped in the APE fall under several classifications, but the predominant sediments (comprising a total of approximately 254.2 acres, or 5.1 percent of the direct effects portion of the APE) are classified as Garrison ashy loam, 0–5 percent slopes. Usually found on outwash terraces at elevations of 488 to 854 m (1,600 to 2,800 feet) amsl, this somewhat excessively drained soil formed from glacial outwash mixed with a component of loess and volcanic ash in the upper part. The typical soil profile consists of a surface layer of dark grayish brown loam to 30 cm below surface (cmbs), overlying an upper subsoil layer of brown gravelly loam to 46 cmbs, overlying a lower subsoil layer of yellowish brown very gravelly sandy loam to 71 cmbs, overlying an upper substratum of pale brown very gravelly coarse sand to 104 cmbs, overlying a lower substratum of multicolored extremely gravelly coarse sand to a depth of at least 152 cmbs (Campbell and Aho 2002:172; Natural Resources Conservation Service 2023).

Ecological Setting

The APE is situated along the transition between two vegetation communities defined for the majority of northeast Washington (Chatters 1998:35–36). The shrub steppe *Artemisia tripartite/Festuca idahoensis*

(three-tip sagebrush/Idaho fescue) vegetation community characterizes the westernmost and southernmost portions of the APE (i.e., near the Okanogan River and Columbia River below the Spokane River confluence). Deep, loamy soils on canyon floors, in basins, and on slopes dominated by grasses and big sagebrush support many edible plants, the most abundant of which are grasses but which include blue-eyed grass (*Brodiaea* sp.), sunflowers (*Helianthus annuus*), Mariposa lily (*Calochortus* sp.), and balsam root (*Balsamorhiza sagittata*). Lithosols and other shallow loam soils on ridgetops and south-facing slopes are characterized by sparse stiff sagebrush (*Artemisia rigida*), Sandberg bluegrass (*Poa sandbergii*), and bitterbrush (*Purshia tridentate*) but also supply abundant spring root resources such as wild onion and garlic (*Allium* spp.), bitterroot (*Lewisia rediviva*), biscuitroot and desert parsley (*Lomatium* spp.), and yellow bells (*Fritilleria* spp.). Moist soils near the edges of talus slopes and adjacent to subsurface springs and seeps support several edible plants including fruit-producing species such as wild rose (*Rosa* spp.), serviceberry (*Amelanchier* sp.), hawthorn (*Crataegus* sp.), chokecherry (*Prunus virginiana*), and currants (*Ribes aureum* and *Ribes cereum*), that are available in late summer and autumn. Willow (*Salix* spp.), black cottonwood (*Populus balsamifera*), and economically important plants that can include Indian hemp (*Apocynum cannbinum*), cattail (*Typha latifolia*), and tule (*Scirpus acutus*) flourish in moist soil along stream channels and marshes. The CCT maintains a list of over 400 different culturally important plant species that are considered to be of specific importance to the tribes for various cultural and traditional uses (Confederated Tribes of the Colville Reservation 2015).

Vegetation within the north-central and eastern portions of the APE is consistent with the xeric montane forest defined for the region (Chatters 1998:36). Coniferous forests found in mountainous areas on the Colville Reservation with lower amounts of precipitation and light snow packs are dominated by ponderosa pine (*Pinus ponderosa*). Other species include Douglas-fir (*Pseudotsuga menziesii* var. *glauca*) and lodgepole pine (*Pinus contorta*) in drier areas and western larch (*Larix occidenentalis*) and white fir (*Abies concolor*) in moister areas. Deciduous trees include quaking aspen (*Populus tremuloides*), western birch (*Betula occidentalis*), paper birch (*B. papyrifera*), and rocky mountain maple (*Acer glabrum*). A dense, diverse understory is dominated by Oregon boxwood (*Pachystima myrsinites*), devil's club (*Oplopanax horridus*), black huckleberry (*Gaylussacia baccata*), snowberry (*Symphoricarpos albus*), lady fern (*Athyrium filix-femina*), wild rose, Oregon grape (*Mahonia aquifolium*), and queen-cup beadlily (*Clintonia uniflora*) (Chatters 1998). Commonly occurring root plants include camas (*Camassia quamash*), biscuitroot, and balsam root (Chatters and Pokotylo 1998:74).

The APE vicinity supports a variety of faunal life, including white-tailed and mule deer, moose, elk, skunks, rabbits, bear, coyote, small rodents, reptiles (including several snake species, such as rattlesnakes and bull snakes), and numerous bird species (both waterfowl and upland birds). Anadromous salmon began to appear in the Pacific Northwest after the glacial period, and they are thought to have first reached the middle Columbia River by 9,100 years B.P. (Chatters and Pokotylo 1998:73). The salmon runs generally began in mid-June and continued into the early fall (Bohm and Holstine 1983:2).

CULTURE HISTORY

Archaeological studies, ethnographic accounts, and historical records provide a framework in which to identify and evaluate cultural resources within the APE. Archaeological studies documenting successive occupation episodes in the region provide general information about settlement patterns, resource use, and subsistence economies. Ethnographic and historical sources contain accounts of Native American occupation and land use after Euroamerican settlement. Historical documents, maps, and aerial photographs contain information about settlement, transportation, and agricultural activities.

Precontact Period

Archaeological chronology east of the Cascades mountains was largely developed during the era of the Smithsonian-led interagency Columbia River Basin (CRB) Surveys from 1945 to 1969 (Banks and Czaplicki 2014). Those projects resulted in more than a dozen competing regional chronological sequences for the greater Columbia Plateau region. Among the earliest of these is a Snake River chronology (Fryxell and Daugherty 1963), which proposed three broad periods of prehistory in addition to an ethnographic period. This basic scheme continues to be considered fundamentally sound, and some type of Early, Middle, and Late periods appear in subsequent more synthetic works (e.g., Chatters 1986; Miss and Hudson 1987; Schalk and Cleveland 1983), albeit by different names and as a prelude to breaking these large periods into more nuanced units of time (Ames 2000; Andrefsky 2004; Chatters 1995).

Tables 1 and 2 present a synthesis of these CRB archaeological chronologies in relation to the temporal categories defined in **Table 2** (specifically, Lower Snake River [Leonhardy and Rice 1970]), Lower Middle Columbia [Dumond and Minor 1983], Mid-Columbia [Galm et al. 1981], Chief Joseph Dam [Campbell 1985], Wells Reservoir [Chatters 1986], Kettle Falls [Chance and Chance 1982; Pouley 2010], Upper Columbia [Goodale et al. 2004], and Lower Salmon River [Davis 2001; Davis et al. 2019]). These can be understood in reference to several co-occurring developments in cultural evolution and political economy, often described in the traditions of Binford (1980) and Feinman and Nicholas (2004) as shifts in strategies of settlement, subsistence, and social hierarchy.

Early inhabitants of the region surrounding the project APE were present by at least ca. 16,000 (and possibly 23,000) years B.P. in the Paleo-Indian period (Bennett et al. 2021; Davis et al. 2019). These peoples were highly mobile, migrating throughout the year. Paleo-Indian period sites are typified by stone and bone tools and manufacturing debris and do not typically have evidence of structures. Archaeological evidence in this region suggests that soon after the land emerged from the last glacial retreat, native populations moved into the tundra-like environment in pursuit of now-extinct megafauna, while also opportunistically hunting small game and gathering plant resources (Waters et al. 2011).

Table 1. Comparative chronological sequences for Eastern Washington (after Schultze 2015)

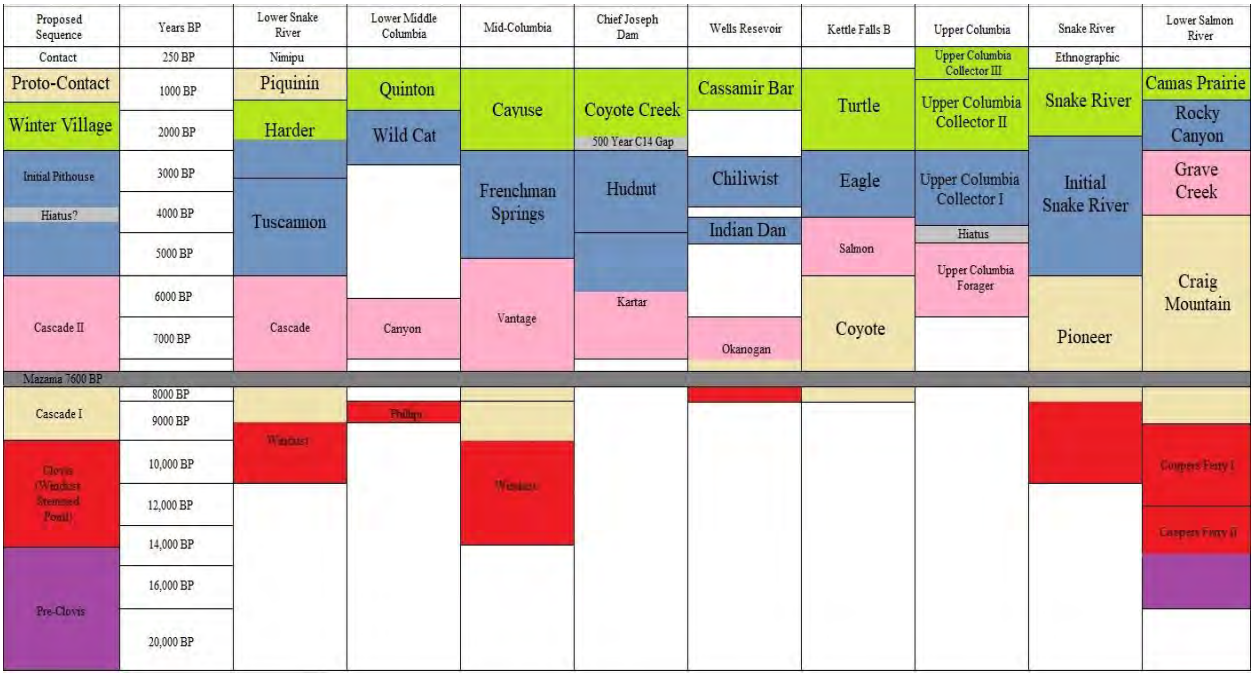

Table 2. Key to proposed sequence for Eastern Washington shown in Table 1

1) **PaleoIndian ~15,700 to 8000 B.P.** aka Early

A. Pre-Clovis - Western Stemmed

B. Regional expression including Clovis, Western Stemmed (Windust, Lind Coulee, Haskett), or Folsom traditions

2) **Archaic 8000 to 5000 B.P.** aka Middle

A. Cascade I - variety of Cascade point types

B. Cascade II - addition of large side notched points

3) **Pithouse 5000 to 400 B.P.** aka Late

A. Initial Pithouse - first appearance of a pithouses with transition to corner notch point forms, pithouse clusters

i. Hiatus - A 500 year gap in the construction of pithouses sometime between 3000 and 2000 B.P.

B. Winter Village – (A.D. 1 / 2000 B.P.) Longhouses, mat lodges, arrow points most advanced expression of the Plateau "winter village" pattern, large winter villages, longhouses, seasonal rounds, trade, prestige goods, slaves, regional differentiation in subsistence and point types/ethnogenesis

4) **Protohistory 400 B.P. to Present** aka Ethnographic

A. Protocontact 400 B.P. (ca. A.D. 1600) to 210 B.P. (A.D. 1740) - Down-the-line transmission of diseases and trade goods and horses

B. Contact 210 B.P. to present - Euroamerican trade and settlement (Lewis and Clark to present)

The Marmes Rockshelter provided some of the earliest evidence of human activity east of the Cascade Mountains. This Franklin County site is located on the Palouse River about 2 miles north of its confluence with the Snake River and approximately 100 miles southeast of the APE. A series of archaeological investigations at the site in the 1960s revealed ongoing human occupation at the site in a well-stratified geological context representing a time depth of more than 11,000 years. The human remains found in the deepest deposits of the site represented the oldest human remains ever found in the Western Hemisphere at the time, and Olivella shell beads provided the earliest evidence of trade with the peoples of the Pacific coast at the time (Hicks 2004; Weiss 1976).

Environmental warming following the end of the Last Glacial Period led to changes in subsistence strategies that defined the Archaic period beginning around 9000 B.P. With the extinction of the Pleistocene megafauna, hunting of large and medium game was supplemented with salmon, river mussels, and seeds. People of this period, though still highly mobile, settled into smaller ranges than those of the Paleo-Indian period to exploit locally abundant resources. Ground stone implements for processing plant materials, notched-stone fishing net weights, and microblade technology are among tools that characterize this period (Leonhardy and Rice 1970). The eruption of Mount Mazama (now Crater Lake) at approximately 7600 B.P. marks this period in the archaeological record, as an identifiable layer of volcanic ash fell across the majority of the Pacific Northwest (Zdanowicz et al. 1999).

Increasing moisture levels after approximately 5000 B.P. and the accompanying decline in temperatures until about 2000 B.P. led to a regional shift from mobile foraging to a more semisedentary subsistence pattern. Habitation sites close to resource locations were more regularly used and can be identified in the archaeological record by features such as hearths, storage features, middens, and shelters (Ames et al. 1998). Pit houses were first used during this period, and increased evidence of salmon and root processing has been identified (Ames et al. 1998; Landreau and Pitts 2019).

By approximately 2000 B.P, the Winter Village settlement and subsistence pattern in the Columbian Plateau was firmly established. Large, permanent villages, inhabited in winter, were located along permanent bodies of water (such as the Columbia River). Temporary camps were utilized the rest of the year for resource gathering, fishing, and hunting. Complex fishing technology was in use, as were diverse game and root resources such as biscuitroot, bitterroot, blue camas (*Camassia quamash*), and wild onion (Schuster 1998). Pit houses became widespread, and evidence for a heavy reliance on fishing, storage, and intensive exploitation of camas can be found in the archaeological record from this period (Landreau and Pitts 2019). Complex kinship, resource-sharing, trade, and socioreligious ties within and between local and regional groups were well established (Spier 1936; Walker 1998).

Ethnographic Period

Based on oral history and ethnographic accounts, this period is generally regarded as the transition from the Late Precontact period to the approximate point in time when Native Americans were placed on reservations. The Ethnographic period (500–150 B.P.) can be divided into Protocontact (500–210 B.P.) and Contact (210–150 B.P.) periods. This is in recognition of the significant impact that European activities had in the region prior to actual person-to-person interaction. These Protocontact impacts included disease and trade goods (both of which could have been introduced well ahead of the earliest European trappers and traders) (e.g., Ames et al. 1999). The Winter Village settlement and subsistence pattern, and its associated tool kit, continued as the core adaptive pattern. However, this period saw the introduction of down-the-line trade items, including the introduction of the horse, iron, and glass. The settlement pattern was the same as the Winter Village pattern, with horse-grazing elements, including evidence of pasturage locations, added. The subsistence strategy included logistical organization along the collector pattern with a focus on salmon and delayed-return strategies but with an increase in the prominence and social importance of raiding. Prentiss et al. (2005:98) have noted a sharp decline in camas processing at this time, possibly as a result of a drier climate and an overall decreasing population. Due to the increasing wealth represented by horse herds and the increased opportunity for slave taking, social inequality also increased, which can be seen in practices associated with both achieved and ascribed status. Burial practices show continuity with the Winter Village period but also include mass cremation and inhumation, possibly related to epidemic disease (Galm et al. 1981).

Early twentieth-century ethnographers documented the traditional lifeways and practices of the Northern and Southern Columbia Plateau indigenous populations that lived in and around the APE (Chalfant 1974; Elmendorf 1935–1936; Jacobs 1934, 1937a, 1937b; Ray 1933, 1936; Spier 1938; Teit 1928, 1930). At the time of physical contact with Euroamericans about 220 years ago, the APE was most closely associated with the traditional territories of the Okanogan, Nespelem, Sanpoil, and Colville (four of the twelve groups identified collectively as the Confederated Tribes of the Colville Reservation, also known as the CCT), all components of a comprehensive Interior Salish grouping that is sometimes referred to as Okanogan-Colville[1] (Kennedy and Bouchard 1998:238–240; Miller 1998:254). The APE was also utilized by peoples from neighboring territories, including the Methow to the west, the Moses-Columbia to the south, and the Lakes to the northeast (all three groups part of the CCT), as well as the Lower Spokane (distinct from the Middle and Upper Spokane bands) to the southeast (Kennedy and Bouchard 1998:240; Miller 1998:254; Ross 1998:271).

The traditional territories of the CCT comprise a total area of approximately 39 million acres and extend across eastern Washington and into portions of British Columbia, Oregon, and Idaho (Johnson 2021).

[1] In Okanogan-Colville, this language is called nsilxcín, meaning “people’s speech” (Kennedy and Bouchard 1998:238).

These tribes each occupied a territory that included their living sites and places or areas used for fishing and gathering, as well as hunting for foods, technological items, and medicines. Throughout the Northwest, tribes' territories generally consisted of watersheds or portions of them, depending on local geography. Geography and environmental variety, as well as their particular social history, means that each tribe's territory could be widely different in size and probably overlapped with their neighbors for certain uses through time. As noted above, areas of traditional usage attributed to a particular group or groups were not utilized to the exclusion of other groups. Rather, "the common Plateau custom of multi-tribal use of fisheries, root grounds, and other rich and important natural resources tended to make tribal lines less meaningful and more obscure" (Smith 1982:152). Although anthropologists have disagreed about tribes' concepts of territorial ownership, the recognition of tribal territories is important because they are the areas to which tribes adapted through their knowledge and use of local resources.

People moved around their territory to make the best use of seasonally abundant resources in a pattern often referred to as a seasonal round. During the winter season, people lived in aggregations (villages) of substantial structures that housed one to several extended families. Winter villages on what would become the Colville Reservation were often located in areas of relatively low elevation within major river valleys, near sources of water and fuel (that is, in productive fishing locations). Together, people living in these villages hunted and gathered fresh foods, depending on resource availability and weather conditions. This time of year was also a time of community social and ceremonial gatherings, storytelling, and intergenerational transmission of knowledge, as well as for making and repairing the many personal and technological items used throughout the year. These neighboring populations also had extensive interactions for marriage and trade (Ray 1939:135). From spring through fall, smaller family groups traveled away from the winter village to camp in temporary structures in areas where plentiful plant, fish, and game resources could be found. They also gathered materials for the construction of technological items (e.g., stone, wood) and traded for others during these seasonal travels. These tribes sent task groups back to the large rivers to fish for anadromous fish like salmon and steelhead as they swam upstream to spawn throughout the spring, summer, and fall. Similarly, large efforts were made to gather root plants at various times from spring until fall and to prepare them as stores for winter (Gough 1990).

Okanogan

The territory traditionally occupied by the Okanogan (sʔukʷnaʔqín ["seeing over the top"]) comprises the drainage systems of the Okanogan and upper Chewuch Rivers, from Okanogan Lake and the Similkameen Valley in British Columbia southward to the mouth of the Okanogan River (Johnson 2021; Spier 1938). Teit (1930) conducted the earliest ethnographic research on the Okanogan, focusing on Okanogan tribal members in Canada. A few years later, Spier (1938) worked primarily with Okanogan tribal members living in Washington—specifically the Okanogan bands south of Osoyoos Lake (immediately north of the

Canadian boundary). Spier (1938:3, 85–86, 73) distinguishes between two tribal units among these bands: the Southern Okanogan or Sinkaietk, who occupied the lower Okanogan River drainage (south of present-day Tonasket), and the remaining bands that occupied areas northward to Lake Osoyoos (i.e., southern bands of the Northern Okanogan). It should be noted that in other ethnographic studies (e.g., Teit [1930], Lerman [1952–1954], and Bouchard and Kennedy [1984a:238], cited by Kennedy and Bouchard [1998:238]), no such distinction is made.

Like other native groups in the region, the Southern Okanogan were semi-sedentary, hunting and gathering resources during seasonal subsistence rounds to the mountains and adjacent uplands, then processing and storing them for later use. Settlement patterns were based on resources, with temporary camps established for hunting and summer berry and root harvesting and more permanent villages located near spring root digging and fishing places (Rousseau 2004). Winter villages tended to be situated along large rivers and streams (primarily the Okanogan River and its tributaries, as well as the north bank of the Columbia River for the Southern Okanogan people).

Spring activities included collecting the first plant shoots and roots. Plant fibers were used to make cordage and nets, while roots and bulbs, including biscuitroot, blue camas, bitterroot, and wild onion, were eaten. Roots were also collected and stored for use in the following winter, and the bark of the silverberry, or "puqw'ay," was collected and woven into dresses (Bouchard and Kennedy 1984b:35). Summer was a time of considerable fishing with constructed fishing weirs and fishing stations, first for sturgeon and throughout the summer for the various runs of salmon. Large gatherings at major rivers centered on the July and August runs of chinook, coho, and sockeye salmon. Fall activities emphasized collecting fall roots, berries, and seeds; hunting deer, bighorn sheep, caribou, elk, and bear; traveling to places to the south where late salmon ran; and preparing the village for winter. Winter subsistence included some hunting but also considerable reliance on collected and stored foods (Bouchard and Kennedy 1984b:33; Johnson 2021).

The Southern Okanogan comprise four autonomous groups: the Tukoratum, Konkonelp, Kartar, and Tonasket. The current APE lies within areas occupied by the Konkonelp band, whose territory covered the banks of the Okanogan River from the mouth of Tallant Creek (about 3 miles upstream [northeast] of the community of Malott) northeast to present-day Omak, as well as a few miles up Omak Creek and No Name Creek to the north end of Omak Lake (Walters 1938:85–86). Based on interviews with tribal informants, Walters (1938:86) noted that the name for the area where present-day Omak is located was łáámina, which translates as “against the hill.” Walters (1938:86) described the locations of Southern Okanogan “winter sites,” many of which lie within or in close proximity to the APE. Villages and campsites included the following (from west to east):

- nixwïtïtk^{ux} (“little creeks”) – this winter settlement was located along the left (southeast) bank of the Columbia River, approximately 1.0 mile downriver (southwest) from present-day Okanogan and within the APE (Walters 1938:86).

- qó̓nqo̓nɬp or skúnqwu̓nɬEp – this winter settlement was located on the downriver (southwest) side of the mouth of Salmon Creek on the northwest side of the Columbia River, less than 0.1 miles northwest of the APE (Walters 1938:86).

- smo̓qátcin (“swallows”) – this winter settlement was located on the northeast side of the mouth of Salmon Creek, opposite qó̓nqo̓nɬp and less than 0.1 miles northwest of the APE (Walters 1938:86).

- káɬakɬák (“little rows of brush off the hill”) – this winter settlement was located on the northwest side of the Columbia River, between present-day Okanogan and Omak and approximately 0.5 miles northwest of the APE (Walters 1938:86).

- nstpíca?(m) (“bison robes”) – this winter settlement was located southeast of the river, approximately 1 mile east of the mouth of Omak Creek and in close proximity to the APE (Walters 1938:86).

- EnstEpitsa – this winter settlement was located on the south side of Omak Creek, just west of the confluence with Mission Creek and in close proximity to the APE (Walters 1938:86).

- EnaqatkatEnEtk (“cache in rocks”) – this winter settlement was located along the south side of Omak Creek, downriver (west) of Mission Falls, known as skʷənt (“falls”), and in close proximity to the APE (Walters 1938:86).

- nxuxalinak (“putting sticks up against the bluff”) – this winter settlement was located along the north side of Mission Creek in French Valley, in close proximity to the APE (Walters 1938:86).

- akcacaktku̓ɬp (“little pine trees”) – this winter settlement was located along the north side of Mission Creek in French Valley, upstream (east) of nxuxalinak and in close proximity to the APE (Walters 1938:86).

- EnsEsatqɬp (“a lot of pines”) – this winter settlement was located along Omak Creek, downstream (west) of skʷənt (Mission Falls) and within the APE (Walters 1938:86).

- su̓mu̓kwáaqaĭn (“snow on the brush”) – this winter settlement was located along No Name Creek, south of skʷənt (Mission Falls) and within the APE (Walters 1938:86).

- ne̓ao̓mEn – this winter settlement was located near the outlet (northwest edge) of Omak Lake and just south the APE (Walters 1938:86).

Nespelem

The Nespelem (nspiləm [“prairie”]) occupied territory extending from the headwaters of the Nespelem River (near the north boundary of the current Colville Reservation) south to the southern end of Banks Lake

(Johnson 2021). Similar to the Southern Okanogan, the Nespelem (nspiləm) were semi-sedentary, hunting and gathering resources during seasonal rounds to the mountains and adjacent uplands which were processed and stored for later use. Salmon became a focus for the Nespelem, who constructed fishing weirs and fishing stations, and plant resources were heavily utilized.

Settlement patterns followed resources. Temporary camps were established for hunting and summer berry and root harvesting, and more permanent villages were located near spring root digging and fishing places (Rousseau 2004). Ethnographers have noted that most of the permanent Nespelem villages were located along the north bank of the Columbia River and at the mouths of its tributaries (Masten 1988; Ray 1936). Ray (1936:137) described the locations of Nespelem settlements and resource gathering areas, four of which lie within or in relatively close proximity to the APE. Villages, campsites, and fishing locations along this stretch of the Columbia River and Omak Creek included the following (from north to south):

- səlxʷaʔxwíɬ ("big trail" or "where the trail meets the river") – this semi-permanent settlement was located on the right (northeast) side of the Columbia River, opposite the mouth of Sanderson Creek and the former town of Barry (approximately 0.7 miles southwest of the APE). Its population numbered possibly 150 people during the winter (Ray 1936:137).

- skxʷíɬxʷ – this winter camp was about 1 mile upriver (southeast) from səlxʷaʔxwíɬ, near the present-day town of Seatons Grove and within the APE. Its population numbered between 40 and 50 people (Ray 1936:137).

- maŝmaŝalĭmxw – this winter camp was about 1.5 miles upriver (southeast) from skxʷíɬxʷ, near present-day Elmer City and within the APE (Ray 1936:137).

- skɬaĭmtcm ("passing the coulee") – these fishing grounds were located opposite the mouth of Grand Coulee at the site of the dam (immediately east of the APE) and had a population of between 40 and 50 people (Ray 1936:137).

Sanpoil

The Sanpoil (sńpʕawílx ["gray as far as one can see"]) traditional territory centers on the Sanpoil River Valley and extends north to the boundary of the present-day Colville Reservation. The Sanpoil also followed a seasonal round, with large numbers of people gathered at salmon fishing camps, especially Kettle Falls, in the summer. Prior to the arrival of the horse, most trade routes followed the rivers (Walters 1938:74). Trade items included marine shells, obsidian and other raw materials, salmon pemmican, deer hides, roots, and berries (Stern 1998:641). Following the arrival of European explorers, trade beads, copper, furs, and horses all became important trade items. The Sanpoil traded with the Lakes, Okanogan, Colville Spokane, Kalispel, Coeur d'Alene, Nespelem, Moses Columbia, Chelan, Methow, and Wenatchi (Anastasio 1975).

The Sanpoil, with neighboring tribes, also traveled east across the Rocky Mountains to hunt buffalo (Teit 1917).

Ray (1936:137–140) described the locations of Sanpoil villages, two of which were relatively close to the APE. Villages along this stretch of the Columbia River included the following:

- ńpʕawílx – this was the principal village of the Sanpoil, located at the mouth of the Sanpoil River and approximately 1 mile west of the APE. Ray (1936:138) describes this village as comprised of "several smaller camps centering on the flats near the mouth of the Sanpoil River but extending up the river for a half mile or more." The total population of these camps numbered around 400 in summer and between 75 and 100 in winter.

- tkʷkʷarkʷrxnm – this winter village was located at Rogers Bar, near the mouth of Coyote Creek on the west side of the Columbia River, opposite the community of Hunters and approximately 2.5 miles south of the APE. The population of the village numbered around 150 people (Ray 1936:139).

Colville

The Colville (sxʷýʔłpx ["sharp pointed trees"]) occupied territory around the Columbia River, from the mouth of the Spokane River in the south to beyond Christina Lake just north of the Canadian border, as well as the Colville River Valley to the east and as far west as the Frosty Meadows area (Johnson 2021). The Colville traditionally controlled access to fishing sites at Kettle Falls (Kennedy and Bouchard 1998:238–252), the second most important fish procurement site on the Columbia, second only to the Dalles-Celilo Falls. Ethnographically, the Colville controlled access to the fishery and established villages along the Columbia River. According to Boas and Teit (1996 [1930]:174), villages were established near Marcus, Northport, and Bossburg, as well as in areas along the Lower Kettle River. In addition to relationships with the Spokane, the Colville also interacted with the Athapaskan-speaking Blackfoot, the Sahapatan-speaking Nez Perce, and the linguistically isolated Kootenai.

Colville villages were established in the river bottoms and valleys of the region, but the people also utilized the uplands for rich hunting and resource gathering. There was variability in the degree of mobility exercised by the Colville and the neighboring Lakes group to the north. The Lakes were more mobile, using canoes for transportation and relying more heavily on hunting for subsistence, while the Colville were more sedentary, relying mainly on locally available fish (Kennedy and Bouchard 1998:239).

Villages varied in size and consisted of individually organized households associated with one another by trade, family, and proximity (Kennedy and Bouchard 1998:239). They consisted of semi-subterranean pit houses or mat lodges that sheltered one or two families. Both house types varied in size and, in the case of the mat lodges, shape. The mobile and individually organized households meant that village membership also varied. Groups and individuals changed village membership, moving in idiosyncratic ways based on

their associations. Kinship systems also varied. Some researchers argue that bilateral systems predominated, while others describe “non-unilinear” systems. Chiefs, with inherited status, were important for organizing hunts, upland plant gathering, fish procurement and processing, ceremonies, and occasional raids (Kennedy and Bouchard 1998:239–240). It is relevant to note that intermarriage among tribal groups was common (Boas and Teit 1996 [1930]:286–289).

Ray (1936:141–142) and Kennedy and Bouchard (1998:240–241) described the locations of Colville settlements, many of which lie within or in relatively close proximity to the APE. Villages and campsites along this stretch of the Columbia River included the following (from north to south):

- ntcumutastum – this settlement was located just downriver (south) of Kettle Falls, in close proximity to the northeast corner of the APE, and had a population of approximately 25 to 30 people (Ray 1936:141).

- nilamin (“place where the river enters a basin, causing an eddy”) – this settlement was located approximately 6 miles downriver (south) of ntcumutastum, in close proximity to the APE. Its population numbered about 75 people (Ray 1936:141).

- qəqəlápia (“water logged”) – this settlement was located along the west side of the Columbia River (opposite the present-day town of Harvey), in close proximity to the APE. It had a population of between 25 and 30 people (Ray 1936:141).

- nqʷaʔsíʔm (“big eddy” or “bay”) – this settlement was located opposite and just upriver from the present-day town of Daisy, in close proximity to the APE. Its population numbered approximately 50 people (Ray 1936:140).

- ncaʔlíʔm (“hits the river” or “water hitting against something”) – this permanent village was located about a mile north of the present-day community of Inchelium, in close proximity to the APE, and had a population of approximately 150 people (Ray 1936:140).

- nlkʷutm (“go-around area”) – this settlement was located along the west side of the Columbia River, just east of present-day Inchelium and in close proximity to the APE (Kennedy and Bouchard 1998:240–241).

- skʷiʔíkstn (“bite-hand place”) – this settlement was located near the mouth of Stray Dog Canyon, approximately 6 miles south of nlkʷutm and in close proximity to the APE (Kennedy and Bouchard 1998:240–241).

- nɬəkʷlaʔxʷcín (“dirt in mouth of stream; delta”) – this settlement was located near the mouth of Falls Creek, approximately 5 miles south-southeast of skʷiʔíkstn and in close proximity to the APE (Kennedy and Bouchard 1998:240–241).

The Contact period (210–150 B.P.) is represented in the ethnographic record and marks a transition from Native and traditional lifeways to the adoption of agriculture, ranching, and consumer culture. A period of warfare from 1855 to 1858 marked the end of traditional settlement and subsistence patterns and was followed by the movement of populations to reservations. Diagnostic artifacts of this period include projectile points made of glass and other hybrid technologies.

Establishment of Reservations

The U.S. government exerted pressure in the mid-1850s as Territorial Governor Isaac Stevens was ordered to conduct treaty negotiations with Native American tribes and to place these groups onto reservations to free up land for settlers heading west. Through these treaties, Native Americans ceded territory to the U.S. government in exchange for reservations, where residents were expected to adopt Christianity and sedentary agricultural lifestyles. They also received promises of funding and education to help reservation residents develop that agricultural lifestyle (Beckham 1998; Harrison 2008; Meinig 1995; White 1991).

Representatives of the groups that would come to be known as the CCT attended Governor Stevens' treaty negotiations in 1855 but did not sign a treaty. The original Colville Indian Reservation, created by an Executive Order by President Ulysses S. Grant on April 19, 1872, covered an area of 2.8 million acres east of the Columbia River. However, within three months of this Executive Order, President Grant moved the Colville Indian Reservation to a smaller territory along the west bank of the Columbia River. In 1885, approximately 150 Sahaptin-speaking Nez Perce, under Chief Joseph, arrived in Colville after eight years of exile in Oklahoma Territory, and in the 1890s, the reservation was further reduced when the northern half was ceded to the United States by the U.S. Congress. Twelve tribes and bands ultimately were placed on the Colville Indian Reservation, which today encompasses 1.4 million acres. These 12 tribes still comprise the CCT and include the Wenatchi, Nespelem, Moses-Columbia (Sinkayuse), Methow, Colville, Okanogan, Palus, Sanpoil, Entiat, Chelan, Lakes, and Nez Perce tribes (Miller 1998:255).

Historic Period

Explorers, Traders, and Missionaries

As mentioned earlier, the influences of non-Native traders, trappers, and settlers were felt before the first Euroamericans directly encountered the peoples of the project vicinity. News of Spanish and Russian fur trading expeditions reached the Plateau in the 1600s and by the 1740s, Plateau groups were hearing of the horse long before seeing one. With the coming of the horse, settlement and subsistence patterns changed as greater mobility enabled groups to extend resource location boundaries.

The disease epidemics introduced by European explorers, to which aboriginal people had no resistance, had dire consequences. Campbell's (1989) work has suggested that estimated populations in the Pacific

Northwest declined abruptly as early as the A.D. 1500s, which Campbell (1989:186) hypothesized was the result of the first North American smallpox epidemic in A.D. 1520 . Although populations appear to have recuperated in the intervening period, conservative estimates suggest that the total middle Columbia population was significantly reduced again as a result of the local area's first recorded smallpox epidemic in 1780 (Hunn 1990:241; Schuster 1998:343). Year after year, Europeans traveling through the Columbia River valley carried new diseases, including measles, "intermittent fever," "virus influenza," "ague," and "pestilence" (Schuster 1982:21). These devastating epidemics had a profound impact on the Plateau societies, wiping out many of the elders who were more susceptible to disease and subsequently severing the flow of wisdom and traditional cultural practices. Shifts in both population distribution (including massive migrations) and the focus of subsistence activities likely also occurred to varying extents in the regions affected by these epidemics (Campbell 1989:187–188).

Explorers and fur traders began to appear in the Inland Northwest in the early 1800s, utilizing similar methods of transportation to those of the indigenous people. At first, this meant travel via dugout canoes on navigable waterways and on foot and horse via long-established overland routes. The British Hudson's Bay Company (HBC) established a fur trading post, Spokane House, near the confluence of the Spokane and Little Spokane rivers (approximately 41.4 miles southeast of the APE) in 1810. In 1811, David Thompson and representatives of the North West Company explored the upper Columbia River in what would become Washington State and established depots among the Colville and Lakes groups. These efforts to strengthen British claims to the region were matched by American interests. John Jacob Astor's Pacific Fur Company established Fort Okanogan that same year at the confluence of the Okanogan and Columbia rivers (Fuller 1931:78–80, 83; Tate 2005), approximately 17.5 miles south-southwest of the APE.

After a decade of fierce competition and establishing claims to the Columbia River area, the HBC acquired the North West Company in 1821. The HBC constructed supply and administrative forts in areas on or near the Columbia River with favorable agricultural lands for raising produce and livestock. After negotiations with the local Colville chief, the HBC chose a new site in 1824 for a fort near Kettle Falls. Construction of Fort Colvile was completed in 1826 near the present-day town of Marcus, approximately 6.6 miles northeast of the current APE. The fort was named after Andrew Wederburn Colvile, who eventually became governor of the HBC, and consisted of an enclosed fort with supply buildings surrounded by pickets and bastions on the inside and cedar houses for the employees located outside (Bohm and Holstine 1983:6–8; Fuller 1931:121). It should be noted that the spelling was later changed to "Colville" by the U.S. Army, who used the American spelling for designating its military post established in 1859 on Mill Creek (Fuller 1931:121), approximately 18 km (11 miles) southeast of the HBC fort and 20 km (13 miles) east of the APE.

By the mid-1830s, Presbyterian and Catholic missionaries arrived in what would become northeast Washington State and by the mid-1840s, tensions had increased between the missionaries and local Native

Americans (Beckham 1998:149–151). By the 1850s, the U.S. government had established a new system of transfer and ownership of land through survey, mapping, payment, and government title. In 1850, Congress passed the Donation Land Law (also known as the Oregon Donation Act) as further incentive for settlement in the Oregon Territory. Under the new law, each settler could claim a 320-acre tract (married couples could claim 640 acres) of land not yet legally acquired by the U.S. government (Beckham 1998; Karson 2006; Meinig 1995; Rochester 1998; White 1991). American settlers north of the Columbia River petitioned for a separate territory in November 1852, and, in spite of the low American population density north of the river, Congress created Washington Territory in March 1853.

As described above, pressure from the U.S. government was exerted in the mid-1850s when, to free up land for settlers heading west, Territorial Governor Isaac Stevens was ordered to conduct treaty negotiations with Native American tribes and to place these groups onto reservations. Later in the 1850s, as a result of dissatisfaction with the treaty's implementation and Euroamerican settlers and miners continuing to move onto unceded traditional territories, indigenous groups throughout the region fought American volunteer and regular army forces (Beckham 1998).

Homesteaders, Miners, Farmers, and Ranchers

Vast portions of the newly formed Washington Territory were designated "public land" under Federal ownership. Gaining title to public land was accomplished through a variety of methods, including squatting, cash sales, railroad land grants, and claims made under the various homesteading acts. The original 1862 Homestead Act allowed U.S. citizens, or those who were intending to become citizens, who were either a head of a family or single and over 21 years old to claim 160 acres of public land available for entry for a modest filing fee. By carrying out certain "improvements" and living on the land for at least five years, a claimant that was judged by the General Land Office (GLO) to have "proved up," gained title to the property after payment of a final "proof" fee. Through the Homestead Act and its many variants, some 270 million acres across 30 states passed from public to private hands by the end of the twentieth century (Bruce 2001; Church and Clark 2007). Through its effect on demographic and settlement patterns alone, homesteading proved one of the most influential federal land policies passed in the nineteenth century. Few of the original homes built in the area to fulfill the homesteading requirement are still standing, but signs of the irrigated agriculture that homesteaders helped develop remain prominent features of the region's landscape and economy.

Spurred on by the Homestead Act of 1862 and again in 1891 when the north half of the Colville Reservation was ceded and opened to non-Native settlement, Americans hungry for land and looking for wealth (through minerals, timber, or agriculture) began to settle northeast Washington in growing numbers, following aboriginal travel routes, as well as establishing new routes (Meinig 1995:171–172). In addition to homesteading, mining drew many Americans west during the late 1800s, and in the 1880s, gold strikes occurred in the east Cascades. By that time, placer mining operations had been established along the

tributaries of the Columbia and Sanpoil rivers, and silver and copper were also being mined in the area. By the turn of the twentieth century, however, the mining boom was over, and some former mining towns were deserted (Wilma 2006).

As the population of Americans settling northeast Washington swelled, counties were created. The Washington Territorial Legislature created Stevens County in 1863, which encompassed most of northeast Washington, including what would become Okanogan and Ferry counties, and designated Colville as the county seat. However, because of their distance from the county seat, Okanogan Valley residents petitioned for a separate county, and Okanogan County was formed in 1888. In 1899, the legislature took the southern portion of Okanogan (and northern portion of Kittitas) to form Chelan County, resulting in Okanogan County's current boundaries. That same year, Ferry County was formed from Stevens County, and Republic was declared the county seat (Wilma 2006).

Farming pursuits increased in the 1880s, with farmers and stockmen beginning to settle in the Okanogan Valley as early as 1886 (Roe 1980). Okanogan County was officially formed in 1888, but formal surveys of the area did not begin until 1893 and took over a decade to complete. Impatient settlers squatted on unsurveyed lands and refused removal by officials, until eventually many squatter's rights were deemed valid. As farming and ranching increased, the population of Okanogan County nearly tripled between 1890 and 1900 and again by 1910, with homesteaders arriving in droves, mostly by train (Wilma 2006). By 1893, the Great Northern Railroad built a line across Stevens Pass and the area increased in population and industry as a result.

A few ranchers settled in Okanogan County after 1886, with cattle and sheep being the primary stock. One early rancher, L. C. Mallot, settled in the area in 1886 and built a large barn and house at the junction of a busy wagon road that eventually became a stage stop. He invested in 250 head of cattle in 1889 but did not anticipate the harsh winters that occasionally hit the area and lost all but 35 of the cattle during the winter of 1892. Until 1900, cattle had exclusive use of the open range, but in 1901, sheepherders introduced 50,000 sheep onto the range within Okanogan County, resulting in increased tensions as sharing the range with the incoming sheep herds prompted hostilities by the established cattle ranchers. Unknown arsonists burned the hay supplies of sheepherders and sent threatening notes to anyone who might sell hay to the sheepmen. Some even went so far as to butcher hundreds of sheep that were part of the herd owned by sheepherder C. C. Curtis near Okanogan (Roe 1980).

Irrigated Agriculture and Hydropower

Landowners began irrigating their own properties as early as the 1860s near Lake Osoyoos (just north of present-day Oroville), and Okanogan Valley farmers began developing their own irrigation networks in the 1880s (Emerson 1996; Wilma 2006). The demand for more water began as early as 1892 and continued

to grow. With pressure mounting on the federal government to invest in large-scale irrigation projects, Congress passed the Reclamation Act in 1902. This legislation established the U.S. Reclamation Service (later named the Bureau of Reclamation) and committed the government to build and maintain networks of irrigation features to irrigate arid lands in western states. However, this also required many landowners to sell portions of their homesteads, as the law required that no more than 40 acres per plot could receive irrigation water. New farmers arrived to buy up the newly available plots, which also increased demand for effective irrigation canals, leading to struggles to overcome maintenance issues (Wilma 2006).

The newly formed U.S. Reclamation Service proposed solutions, but none were accepted by the voters (Tate 2005). It was not until the 1920s that two principal ideas emerged to improve irrigation: a “gravity plan” and a “pumping plan.” The gravity plan involved damming the Pend Oreille River in Idaho and bringing the water to eastern Washington; the pumping plan involved damming the Columbia River. After a failed attempt by the Washington legislature to move forward with a plan, the federal government conducted a survey, and in 1932, the Butler Report concluded that the best option was the pumping plan because it would benefit not only irrigation, but would also allow for the production of electricity and create jobs. The Great Depression was ongoing, and the construction of the Grand Coulee Dam would provide jobs through the Public Works Administration. On July 16, 1933, Senator Clarence Dill broke ground on the project. The size of the construction project required the development of infrastructure like railways and bridges, and entire towns were founded, including Osborne, Electric City, and Grand Coulee (Stevens 1997).

Lake Roosevelt, the storage reservoir created by the construction of Grand Coulee Dam in 1941, represents one of the most extensive alteration of landscapes associated with a federal undertaking in the twentieth century. When filled by the backwaters created by the dam’s construction, the reservoir extended approximately 134 miles in length, averaged about 4,000 feet in width, and had a maximum depth of roughly 374 feet behind the spillway (Luttrell and Bruce 1994:10.3). This inundation drastically changed the salmon-based culture of the indigenous peoples in the region. The earlier construction of Rock Island Dam in 1933 had caused an immediate drop in the salmon harvest, but Grand Coulee Dam completely blocked spawning salmon from the upper Columbia River, resulting in a loss of resources that further impacted the tribes who centered their life on seasonal runs of migratory fish (Pulley 2014). The rising pool behind the dam also submerged landforms essential to the salmon-based culture, such as Kettle Falls, and heavily impacted orchard-based agriculture. Towns like Peach and Plum, originally established along the Columbia River to take advantage of the river irrigation, vanished beneath the rising water of Lake Roosevelt (United States Bureau of Reclamation 2021).

Efforts to facilitate relocation of Native American graves to new cemeteries established by the Bureau of Reclamation on the Colville and Spokane reservations were directed by the tribes themselves with support provided by the Office of Indian Affairs (forerunner of the Bureau of Indian Affairs). Partially in response to the

pressure, a federal contract was awarded in 1939 to Ball & Dodd, a funeral home based in Spokane, to remove and relocate approximately 600 to 800 graves from a list of 33 known cemeteries. Subsequent to that contract, however, more interments were removed from at least 17 additional cemeteries not included in the original list (Galm and Luttrell 1994:3.2). According to an interview with funeral director Howard Ball in 1965, a total of 1,380 graves were moved during the project (Sprague 1971:3); however, the number of cemeteries visited and the final number of graves relocated appear to be far larger than the original estimates (Galm and Luttrell 1994:3.4). In addition to noting that accompanying grave goods often disappeared during the relocations, archaeologists conducting salvage excavations later that year noted that the work was "done in such a manner as recklessly to destroy the archaeological evidence" (Collier et al. 1942:39).

Chief Joseph Dam, located approximately 30 miles west of Grand Coulee Dam and 24 miles south of the west edge of the APE, was originally authorized as Foster Creek Dam in the River and Harbor Act of 1946 for power and irrigation. The project was renamed Chief Joseph Dam in 1948, and construction began the following year. The first eight generating units were brought online in 1955, and construction was completed by 1956. The construction of the dam created Rufus Woods Lake, which extends upstream a total of 51 miles. In addition to being the second-largest producer of hydroelectric power in the United States, Chief Joseph Dam produces irrigation water for area farmers and has provided decades of employment for Bridgeport-area residents (Becker 2006; Kershner 2015). Plans for a fish ladder were discussed to allow salmon passage over Chief Joseph Dam; however, these plans were rejected because Grand Coulee Dam blocked salmon passage just 51 miles downstream (Pulley 2014),

Burial relocations in preparation for the construction of Chief Joseph Dam coincided with the first organized archaeological work along this stretch of the Columbia River (between Grand Coulee Dam and Bridgeport), conducted by the Smithsonian Institution River Basin Surveys in 1950 (Campbell et al. 1984). During testing of housepit sites along the north bank of the river, the remains of five people were recovered (Osborne et al. 1952). A few years later, at the request of the CCT and under contract with the U.S. Army Corps of Engineers (USACE), University of Washington archaeologist James Garner exhumed 37 burials from an "Indian Tribal Burial Mound" (site 45OK20) and relocated the remains in a Catholic cemetery in Nespelem (Garner 1956). In the 1970s, the University of Idaho contracted with USACE and conducted surveys of possible burial sites and relocation of ancestral remains (Sprague and Birkby 1973; Sprague and Miller 1979; Sprague and Mulinski 1980).

Construction of the Wells Hydroelectric Project, located approximately 48 river km (30 river miles) downstream from Chief Joseph Dam, began in 1963 and was completed in 1967 (Becker 2006). Excavations in preparation of the Wells Reservoir resulted in a total of 17 burials being found at two different sites (Sloan and Greengo 1963).

ARCHAEOLOGICAL RESEARCH AND RECORDS SEARCH

WestLand staff reviewed the Washington State Department of Archaeology and Historic Preservation's (DAHP's) online Washington Information System for Architectural and Archaeological Records Data (WISAARD) for records of archaeological sites and reports for cultural resource surveys located directly within or in close proximity (i.e., within 33 m [100 feet]) of the APE. DAHP's statewide predictive model layer was also reviewed for probability estimates for the presence of cultural resources. WestLand also examined online resources including the Bureau of Land Management's (BLM's) GLO survey records database, U.S. Geological Survey Historical Topographic Map Explorer, the National Oceanic and Atmospheric Administration Historical Map and Chart Collection, and HistoricMapWorks.org.

Previous Cultural Resource Investigations

The records search of WISAARD revealed that there have been 34 previous cultural resources investigations directly within the APE, and seven additional studies have been conducted within a 33-m (100-foot) radius **(Table 3)**. Nine of these studies resulted in the recordation of cultural resources within the 33-m (100-foot) radius. Investigations completed within the past 10 years encompass approximately 17.6 acres, or less than 1 percent, of the APE (a total of approximately 2 miles of the total fiber route).

One of the earliest comprehensive archaeological studies on the Colville Reservation was conducted from July 1939 through September 1940 by the Columbia Basin Archaeological Survey and was designed to gather as much information as possible about the archaeology of the area to be inundated by the water behind Grand Coulee Dam. Test excavations were conducted at numerous locations, but unless evidence of "more than sporadic occupation" was found, the locations were not recorded as sites (Collier et al. 1942:13). Extensive excavations were performed at 35 sites, which were categorized into three types: habitations, shell middens, and cemeteries. While none of these sites lie within 33 m (100 feet) of the APE, several are located relatively close (three near the mouth of the Sanpoil River and seven along the upper stretch of the Columbia River between Inchelium and Kettle Falls). Three of the 35 sites had pictographs and one had petroglyphs. The habitation sites included open sites, as well as rockshelters, short-term camps, and villages. Although no evidence of houses was recorded, hearth and oven features were observed at habitation sites. The shell midden sites lacked much evidence of occupation, but a total of 150 graves was identified at 13 of the sites, and grave goods in these burials accounted for approximately half of all of the artifacts that were collected (Coller et al. 1942:14). The burials consisted of pits excavated into soft sediments (n = 134) and talus slopes (n = 16).

More recently, Miss (1995) conducted a cultural resources assessment for the Okanogan County Department of Public Works' improvements to the water delivery system for the community of Seatons

Grove and recorded 15 precontact archaeological sites on the ground surface, as well as one historic cabin. These precontact resources, consisting of habitation sites, burials, talus depressions, and one pictograph, were identified more than 100 feet from the current APE (along Elmer City Access Road) but are situated within 600 feet (downslope [southwest] of State Route [SR] 155).

Table 3. Previous cultural resources surveys within 33 m (100 feet) of the APE

NADB	Reference	Report Title	Cultural Resources Identified*
1334532	Miss 1995	Archaeological Reconnaissance for the Proposed Seatons Grove Water System Improvements, Okanogan County, Washington	None
1341048	Harder and Pouley 2001	Okanogan Triple Project Cultural Resource Survey	None
1341093	Holstine 2000	A Cultural Resources Survey of the Washington State Department of Transportation's Proposed Granite Creek Re-channelization Project, Ferry County, Washington	None
1341098	Roulette 2001	Results of a Cultural Resource Reconnaissance Survey of a 3.65-acre Property located on Manila Creek, Ferry County, Washington	None
1341343	Gough and Axton 2002	Cultural Resources Survey for the Washington State Department of Transportation's Golden Harvest Culvert Replacement Project, Ferry County, Washington	None
1342383	Shong 2003	Heritage Resources Investigations for the Sanpoil Bridge Scour Repairs, Ferry County, Washington	None
1342638	Wilt 2003	Results of Archaeological Investigations Along Lower Bridge Creek	None
1343490	Cowan and Thompson 2000	Letter to Frank Rowland Regarding Cultural Resource Assessment for the Proposed NoaNet Project, Grand Coulee, Grant County, Washington	None
1343872	Harder 2004	Archaeological and Historical Survey Report Cultural Resource Survey for the Ferry County Public Utility District Caudell Line Extension, FCPUD-04-009	None
1344491	Hokanson and Broadhead 2005	Archaeological Survey of Facilities of the Washington National Guard	None
1344996	Harder 2005	Public Utility District No. 1 of Ferry County, High-Energy Cost Community Service Cost Assistance Program: Report of Investigations for 2004	None
1346338	Root and Ferguson 2005a	Archaeological Survey of the Proposed 180 LBO Conversions RV Park Development, Okanogan County	45OK1145
1346714	Root and Ferguson 2005b	Archaeological Survey of Six Locations for the City of Omak Water Supply Improvement Project	None
1348261	Martinez 2006	Addendum to: Cultural Resources Inventory for the Chief Joseph Dam Hatchery Project Program: Final Report - Bridgeport's Alternative Option 1 Housing Site and Omak's Revised Acclimation Pond Location	None
1349355	Komen 2007	Cultural Resources Survey for the Department of Transportation US 97 Guardrail Improvement Project	None
1350903	Root 2008	Proposal for Archaeological Monitoring in the Eastside Park for the City of Omak Water Supply Improvement Project, Omak	None
1351401	Harder and Hannum 2008	Third Avenue Improvements Project Cultural Resource Survey, Elmer City, Washington	None
1351562	Pouley et al. 2008	Results of the 2007 Drawdown Monitoring and Erosion Sites Monitoring Projects, Grand Coulee Dam Cultural Resources Project Area	None

Table 3. Previous cultural resources surveys within 33 m (100 feet) of the APE

NADB	Reference	Report Title	Cultural Resources Identified*
1352832	Oxendine et al. 2006	Methow Transmission Project Cultural Resources Inventory	45OF96
1353359	Covington and Pouley 2009	DRAFT: Results of the 2008 Site Condition Monitoring, Grand Coulee Dam Project Area	LR08-01
1353731	Hess 2009	Warehouse A, Warehouse B, and Machine Shop Roof Project - Documentation in Support of a Finding of No Adverse Effects, Grand Coulee Dam Project	None
1353742	Pouley 2009	Results of the Prioritized Inventory of Fee, Recreation and Wildlife Management Lands, Chief Joesph Dam Cultural Resources Project Area	None
1354437	Meyer and Pouley 2008	Cultural Resources Inventory for Aspects of the Rainbow Trout Habitat/Passage Improvement Project, Colville Indian Reservation	None
1354594	Noll and Harder 2010	Archaeological Probing, Site Testing, and Monitoring for the Omak Eastside Park Water System Improvement Project	45OK1431
1680557	DePuydt 2011	Archaeological Clearance Survey 11LARO11 to Install a Hydraulic Vehicle Lift and Building at Coulee Dam Headquarters	None
1681456	Coyote 2011	Cultural Resources Inventory for the BPA Grand Coulee to Okanogan Tranmission Line Pole Replacement Project	None
1681714	Palmer and Nowick 2011	John W. Keys III Pump-Generating Plant Modernization Project, Grand Coulee, Washington, Finding of Effect on Architectural Resources	Grand Coulee Dam
1681716	Berryman et al. 2011	John W. Keys III Pump-Generating Plant Modernization Project, Grand Coulee Dam, Washington, Finding of Effect on Archaeological Resources	45GR2559
1683198	Meyer 2012	Okanogan Subbasin 2012 Conservation Fencing and Wildhorse Spring Creek Well Installation Project Cultural Resources Survey	None
1684045	Covington and Naumann 2013	Results of the 2012 Site Condition Monitoring, Grand Coulee Dam Project Area	45FE6
1684495	Oosahwee-Voss 2013a	Heldman EQIP Cultural Resource Inventory, Colville Reservation	None
1684497	Oosahwee-Voss 2013b	Seymour EQIP Cultural Resource Inventory, Colville Reservation	None
1685597	Ellis 2014	Ferry Conservation District Konz/Hoffman Bank Stabilization Project Cultural Resources Survey Report, Ferry County, Washington	None
1686616	Harder et al. 2015	Cultural Resource Survey of the Elmer City Sidewalk Project	None
1686917	Chilvers and Gordon 2014	Ferry County PUD #1: Electric Line Maintenance Trail - Sanpoil River Line	None
1689606	Rorabaugh 2017	Cultural Resources Survey Short Report Konz Livestock Pipeline	None
1692874	Coyote 2013	Monitoring Test Excavation for the City of Omak Sewer Project	None
1693825	Muschal et al .2019	Results of the 2017 Archaeological Inventory of Areas in the Grand Coulee Dam Project Area (1230-1400 ft. AMSL), Douglas, Ferry, Lincoln, Okanogan, and Stevens Counties, Washington	None
1694216	Gordon et al. 2020	Cultural Resource Survey for Grand Coulee District FY18 Priority Pole Replacement Project, Douglas and Okanogan Counties, Washington	None
1694840	Whistler et al. 2021	Cultural Resource Survey for the Grand Coulee Federal Avenue SCAP Project, Grant County, Washington	One historic building
1694966	Fulkerson et al. 2021	Cultural Resource Survey for the City of Omak 5th Avenue SCSP Project, Okanogan County, Washington	None

* Within 33 m (100 feet) of the APE

Previously Recorded Archaeological Resources

The records search documented 45 previously recorded archaeological resources within the APE, with an additional 10 resources located within a 33-m (100-foot) radius **(Table 4)**. Of the 55 documented resources, two are listed in the Washington Heritage Register (WHR) (45DT10 and 45FE8), two have been determined Eligible for listing in the National Register of Historic Places (NRHP) (45FE384 and 45GR3688), and one has been determined Not Eligible for listing in the NRHP (45OK485). The remaining resources have not been formally evaluated.

Most of the 55 archaeological resources (n = 40) reflect the relatively recent history of past land use within the project vicinity—homesteading, in particular. The other Historic period resources are sites predominantly related to mining, with a few associated with timber harvesting, railroads, irrigation activities, and Bureau of Indian Affairs administration. Three of the Historic period resources contain (or are associated with) burials: the Chief Joseph Burial Site (45OK1021), Little Mission (45FE40), and the former site of a Catholic church and cemetery (45FE474). One of these resources (45FE40) is situated within the APE; 45FE474 and 45OK1021 are located 5 m and 30 m, respectively, outside the APE. Fifteen of the previously recorded resources are precontact sites and isolates, including five precontact camps, four shell middens, two lithic scatters, two petroglyph/pictograph sites, one cairn, and one isolate (chert bimarginally retouched flake tool). The three remaining resources contain both precontact and historic components: two are surface and subsurface scatters of historic debris and lithic material (45OK1098 and 45OK1805); the third is the Rufus Woods Lake Archaeological District (RWLAD; 45DT10).

Table 4. Previously recorded archaeological resources within 33 m (100 feet) of the APE

Smithsonian Number	Resource Type	Resource Description	Location	Relationship to APE and Project Elements*	NRHP Eligibility
45DT10	Archaeological district (precontact and historic sites)	Rufus Woods Lake Archaeological District; includes cairns, 1 rockshelter, open camps, hunting blinds, Condon Ferry and historic townsite, farmsteads, dumps and placer mines	T29N R30E, Sec 1; T29N R31E, Sec 6–8, 17, 19, 20; T30N R30E, Sec 36	Within APE along east side of Columbia River north of Elmer City	Nominated (NRHP); Listed (WHR)
45FE6	Historic debris scatter/ concentration	Extensive domestic artifact scatter (glass bottle and jar bases and fragments, whiteware and porcelain fragments, sanitary milk cans, bed and car seat springs)	T29N R33E, Sec 9	Within APE; intersects at Aerial Backbone Cable 122, 133	Survey/ inventory
45FE8	Historic culturally modified trees	3 culturally modified trees (2 logs and one living tree), lithics	T33N R32E, Sec 35	Within APE; 10 m west-southwest of Aerial Backbone Cable 37	Potentially Eligible (NRHP); Listed (WHR)

Table 4. Previously recorded archaeological resources within 33 m (100 feet) of the APE

Smithsonian Number	Resource Type	Resource Description	Location	Relationship to APE and Project Elements*	NRHP Eligibility
45FE33	Precontact camp	3 mortars, 2 cobble choppers, and fire-modified rock	T34N R36E, Sec 14	Less than 5 m east of APE near Underground Backbone Cable 59, Vault 252	Survey/ inventory
45FE37	Precontact camp	Mortars, hearths and fire-modified rock, large block of abraded stone, lithic flakes	T34N R36E, Sec 23	Within APE; intersects at Underground Backbone Cable 59	Survey/ inventory
45FE40	Historic religious property; cemetery/burial; historic debris scatter	Collapsed mission structures and burials (reportedly removed to Inchelium)	T34N R36E, Sec 23	Within APE; 15 m northeast of Aerial Backbone Cable 2, Splice Case 83	Survey/ inventory
45FE316	Precontact camp	Lithic flakes, projectile point, quartzite knife fragment	T34N R32E, Sec 1	Within APE; 30 m east-northeast of Underground Backbone Cable 130	Survey/ inventory
45FE333	Precontact cairn	3 rock cairns, earthen mound, and depression	T29N R33E, Sec 20	Within APE; 15 m west-northwest of Aerial Backbone Cable 102	Survey/ inventory
45FE384	Precontact petroglyphs	3 petroglyphs on bedrock outcrop	T35N R32E, Sec 12	Within APE; 10 m northeast of Aerial Backbone Cable 109	Determined Eligible
45FE419	Historic mining property	Unpatented mining claim with collapsed log cabin, collapsed privy and collapsed pole barn or shed	T31N R36E, Sec 2	Within APE; intersects at Aerial Backbone Cable 87	Potentially Eligible
45FE432	Historic residential structure	Historic Old Keller School (ca. 1940s)	T30N R33E, Sec 17	18 m north of APE near Conduit 57	Potentially Eligible
45FE437	Historic religious property	St. Rose of Lima Catholic Church (ca. 1920s)	T30N R33E, Sec 17	Within APE; 25 m south of Underground Distribution Cable 302, Aerial Distribution Cable 19	Potentially Eligible
45FE474	Historic religious property; cemetery/burial	Site of Catholic mission and cemetery (no remnants observed)	T30N R33E, Sec 17	5 m east-northeast of APE near Aerial Backbone Cable 2	Potentially Eligible
45FE713	Historic debris scatter	Surface scatter of glass and ceramic fragments	T34N R32E, Sec 11	Less than 10 m south of APE near Underground Backbone Cable 101	Potentially Eligible
45FE728	Historic logging property	Log hoist shed, log dump platform	T34N R32E, Sec 11	Within APE; 10 m east-northeast of Aerial Backbone Cable 57	Potentially Eligible
45FE743	Historic homestead	Homestead, collapsed barn, cabin foundation, probable child's burial mound (ca. 1920–1950)	T31N R36E, Sec 22	Within APE; intersects at Aerial Backbone Cable 98	Potentially Eligible
45FE867	Historic debris scatter	Sparse surface scatter of glass bottles and fragments	T30N R32E, Sec 33	Within APE; 23 m east of Underground Backbone Cable 59	Potentially Eligible
45FE1080	Historic debris scatter/ concentration	50 metals cans (evaporated mike, oil, beer, coffee), glass jars and bottles	T32N R33E, Sec 19	Within APE; intersects at Underground Backbone Cable 68, Vault 218	Potentially Eligible

Table 4. Previously recorded archaeological resources within 33 m (100 feet) of the APE

Smithsonian Number	Resource Type	Resource Description	Location	Relationship to APE and Project Elements*	NRHP Eligibility
45FE1081	Historic mining property	2 adits with historic debris (spray cans, coffee and pull tab beer cans, beer bottles, glass jars, rubber shoe sole)	T32N R33E, Sec 18	Within APE; intersects at Underground Backbone Cable 68	Potentially Eligible
45FE1108	Historic debris scatter	Half a car body, cans, jars, metal pieces, and wire	T34N R32E, Sec 2	Within APE; intersects at Aerial Backbone Cable 129	Potentially Eligible
45FE1134	Historic homestead; historic debris scatter	Historic debris, locust and other non-native trees	T30N R33E, Sec 19	Within APE; 20 m northwest of Aerial Backbone Cable 18	Potentially Eligible
45FE1135	Historic debris scatter	Hole-in-top and sanitary cans (ca. 1940s–1950s)	T30N R33E, Sec 19	Within APE; 12 m northwest of Aerial Backbone Cable 18	Potentially Eligible
45FE1137	Historic debris scatter	Stove parts, vehicle parts, a license plate V2639 Washington 1949, and pieces of clear glass	T30N R33E, Sec 19	Within APE; 12 m northwest of Aerial Backbone Cable 18, 15 m west of Splice Case 138	Potentially Eligible
45GR2559	Historic railroad property	Railroad grade and associated features, related to construction of Grand Coulee Dam	T28N R30E, Sec 1, 10, 11, 12; T29N R30E, Sec 36	Within APE; intersects at Underground Backbone Cable 113	Potentially Eligible
45GR2870	Historic isolate	Green glass fragment	T28N R30E, Sec 1	Less than 5 m west of APE near Underground Backbone Cable 113	Survey/ inventory
45GR3688	Historic cairn/ rock feature; Historic debris/ concentration	Piled rock alignments, concrete foundations, depressions, and artifact concentrations	T28N R30E, Sec 11	Within APE; intersects at Underground Backbone Cable 113	Determined Eligible
45OK462	Precontact camp	Shell deposits, lithic debris and tools, talus slope depressions, and possible housepit	T29N R31E, Sec 7	Within APE; 12 m southwest of Underground Backbone Cable 64	Survey/ inventory
45OK485	Historic railroad property; historic agricultural property	Narrow-gauge railroad gauge, wood frame house, 2 stock barns, 2 irrigation canals, wagon, and log skidding plate	T33N R26E, Sec 1	Within APE; 15 m northeast of Aerial Backbone Cable 60	Determined Not Eligible
45OK500	Historic debris scatter/ concentration	Hole-in-top and sanitary cans, can fragments, milk and Mason jar glass, stoneware fragments, iron stove parts	T33N R27E, Sec 8,9	Within APE; intersects at Underground Backbone Cable 29, Splice Case 38, Vault 419	Potentially Eligible
45OK707	Precontact pictograph	Very faint and indistinct pictograph on a large basalt erratic	T30N R30E, Sec 36	Less than 5 m northeast of APE near Underground Distribution Cable 172	Survey/ inventory
45OK778	Precontact lithic material	Fire-modified rock, bone fragments, two flakes	T33N R26E, Sec 10	Within APE; intersects at Aerial Backbone Cable 83, Distribution Point 273, Splice Case 94	Survey/ inventory
45OK792	Precontact/ historic cairn	Small cairn (unknown age)	T30N R31E, Sec 1	Within APE; 17 m northeast of Underground Backbone Cable 5	Survey/ inventory

Table 4. Previously recorded archaeological resources within 33 m (100 feet) of the APE

Smithsonian Number	Resource Type	Resource Description	Location	Relationship to APE and Project Elements*	NRHP Eligibility
45OK831	Precontact lithic material	Fire-modified rock, bone and shell fragments, 2 flakes	T29N R31E, Sec 17	Within APE; intersects at Underground Backbone Cable 64, Distribution Point 266, Vault 55	Survey/ inventory
45OK932	Historic homestead	Log cabin and small shed	T29N R31E, Sec 15	10 m west-southwest of APE near Underground Backbone Cable 49	Survey/ inventory
45OK959	Historic homestead	2 cabins connected with frame enclosure	T33N R28E, Sec 16	Less than 10 mwest of APE near Underground Backbone Cable 134	Potentially Eligible
45OK990	Historic logging property	11 features associated with Disautel townsite (collapsed cabins)	T33N R28E, Sec 13; T33N R29E, Sec 18	Within APE; intersects at Underground Distribution Cable 158; Distribution Point 6; Splice Case 81; Vault 441, 442, 444; Conduit 106, 107	Potentially Eligible
45OK991	Historic public works	2 outhouses, pole corral, old barn	T33N R29E, Sec 34	Within APE; intersects at Distribution Point 34; 378	Potentially Eligible
45OK1015	Historic government property	Early Bureau of Indian Affairs headquarters building (ca. 1930s–1040s)	T31N R30E, Sec 25	Within APE; 15 m west-northwest of Underground Backbone Cable 33, Splice Case 8	Potentially Eligible
45OK1016	Historic religious property	Single log structure (Skolaskin Church)	T30N R30E, Sec 1	Within APE; 23 m south of Underground Backbone Cable 143	Potentially Eligible
45OK1019	Historic government property	Early Bureau of Indian Affairs house	T31N R30E, Sec 25	20 m east of APE near Underground Backbone Cable 51, Splice Case 8	Potentially Eligible
45OK1020	Historic government property	Early Bureau of Indian Affairs house	T31N R30E, Sec 25	Within APE; 20 m east of Underground Backbone Cable 70, 25 m northeast of Vault 503	Potentially Eligible
45OK1021	Historic burial	Nez Perce Cemetery	T31N R30E, Sec 25	30 m northwest of APE near Underground Backbone Cable 38	Potentially Eligible
45OK1022	Historic irrigation property	Ditch and headgate of irrigation system	T31N R36E	Within APE; 15 m west-northwest of Underground Distribution Cable 54, 27 m west-northwest of Distribution Point 311	Potentially Eligible
45OK1023	Historic rodeo	Historic Nespelem rodeo grounds and mountain race site	T31N R31E, Sec 19,30	Within APE; intersects at Aerial Backbone Cable 98	Potentially Eligible
45OK1052	Historic irrigation	Nespelem irrigation ditch system	T31N R30E, Sec 13	Within APE; intersects at Underground Backbone Cable 14, 41, 63, 167; 10 m west of Underground Backbone Cable 121, 13 m west-northwest of Underground Distribution Cable 54	Potentially Eligible

Table 4. Previously recorded archaeological resources within 33 m (100 feet) of the APE

Smithsonian Number	Resource Type	Resource Description	Location	Relationship to APE and Project Elements*	NRHP Eligibility
45OK1098	Historic and precontact components	3 precontact artifacts, hundreds of historic artifacts, and 4 historic surface features	T33N R27E, Sec 9,16	Within APE; intersects at Underground Backbone Cable 29; Vaults 416, 417	Survey/ inventory
45OK1145	Historic isolate	Survey marker	T33N R26E, Sec 9	Within APE; intersects at Aerial Backbone Cable 20, 60 m northeast of Splice Case 88	Potentially Eligible
45OK1285	Precontact shell midden	Large shell midden with scattered fire-modified rock and additional shell	T34N R27E, Sec 31	Within APE; intersects at Underground Backbone Cable 31; Splice Case 159; Vault 454	Survey/ inventory
45OK1430	Precontact shell midden	Buried shell midden	T34N R26E, Sec 26	Within APE; immediately northeast of Distribution Point 160; Underground Backbone Cable 78	Survey/ inventory
45OK1432	Precontact isolate	Chert bimarginally retouched flake tool	T34N R26E, Sec 26	Within APE; 20 m northeast of Aerial Backbone Cable 95	Survey/ inventory
45OK1433	Precontact camp	Core, cobble tool, chert flake, fire-modified rock	T34N R26E, Sec 35	Within APE; immediately south of Aerial Backbone Cable 95	Survey/ inventory
45OK1434	Precontact shell midden	Shell, 1 piece of fire-modified rock	T34N R26E, Sec 35	Within APE; 20 m northeast of Aerial Backbone Cable 95, 30 m east-northeast of Splice Case 111	Survey/ inventory
45OK1512	Historic homestead	House and 2 outbuildings	T31N R30E, Sec 24	Within APE; intersects at Underground Backbone Cable 41	Survey/ inventory
45OK1528	Precontact shell midden	Buried fresh water bivalve shell midden with scatter of non-diagnostic historic material	T34N R26E, Sec 35	Within APE; 10 m east of Aerial Distribution Cable 153, 20 m north-northeast of Splice Case 111	Survey/ inventory
45OK1805	Historic and precontact components	Hole-in-top cans, dust pan handle, colorless glass jar and fragments; 2 lithic flakes	T33N R26E, Sec 16	Within APE; 15 m southeast of Aerial Backbone Cable 20	Potentially Eligible

* Specific project elements identified by Feature Identification Number

Washington Heritage Register–listed Archaeological Resources

The USACE, Washington Office of Archaeology and Historic Preservation (OAHP; now DAHP), and CCT documented the RWLAD in preparation for the 1981 pool raise of Rufus Woods Lake "with the goal of justifying data recovery as mitigation for sites in jeopardy of inundation from the pool raise" (USACE 2021:32). In cooperation with the USACE and CCT, the OAHP defined the RWLAD as consisting of 243 precontact sites recorded between 1945 and 1977, including 128 open camps, 45 winter villages, 44 burial sites, 19 cairns, three hunting blinds, three pictographs, and one rockshelter (Stump 1978). The RWLAD occupies both banks of the Columbia River from Chief Joseph Dam near Bridgeport (River Mile [RM] 543) upstream to Elmer City

(RM 593), extending 0.5 miles inland from the Columbia River and 0.75 miles upriver on both banks of the Nespelem at its confluence with the Columbia (Stump 1978). The portion of the APE along Elmer City Access Road and SR 155 north of Elmer City falls within the RWLAD. Stump (1978:2) notes that an additional 61 Historic period sites representing occupation and use by ancestors of the CCT, Euroamerican immigrants and Chinese laborers are located within and near the RWLAD but remain unevaluated. The archaeological significance of the RWLAD, Stump (1978:8) explains, lies in the high density and wide variation of well-preserved cultural resources "that provide a continuous record of occupation for the last 8,000 to 10,000 years." The RWLAD was determined NRHP-Eligible by the OAHP, and an NRHP nomination form for 45DT10 was submitted to the Advisory Council of Historic Preservation (ACHP) in 1978; however, the ACHP was unable to make a determination of eligibility due to insufficient information (USACE 2021:32). The nomination has not been resubmitted with the additional information requested by the ACHP; however, 45DT10 is currently listed in the WHR.

Site 45FE8 is also listed in the WHR and was recorded as three culturally modified trees (one log, one ponderosa pine stump, and one living ponderosa pine) located along North Nanamkin Creek in the Sanpoil River Valley (Walter 1969). On the WHR nomination form, Walter (1969:2) describes carved human figures on the trees and log at the edge of an "old Indian camp ground" where lithics had been reported on the ground surface nearby. The site lies immediately west of SR 21 and partially within the APE.

National Register of Historic Places–Eligible Archaeological Resources

Site 45FE384 is a petroglyph located on a broad, slightly concave rock surface approximately 3 m from the paved surface of SR 21 in the Sanpoil River Valley, within the current APE and roughly 16 m north of 45FE8. Hicks (1996) noted the petroglyph appeared to be precontact in age but with recent damage to one of the two human figures represented. Hicks (1996) recommended 45FE384 Eligible for listing in the NRHP under Criterion D, and the DAHP concurred.

Site 45GR3688 consists of piled rock alignments, concrete foundations, depressions, and artifact concentrations that are likely the remnants of the Historic period residential and commercial area known as "B Street," which began in the 1930s with the initial infrastructure development and operation of Grand Coulee Dam. The buildings and structures were used as housing for the workers and later transitioned to a commercial and nightlife district (Durkin 2019). The site is located immediately north of SR 155 in the city of Grand Coulee and partially within the APE. Durkin (2019) recommended 45GR3688 Eligible for listing in the NRHP under Criteria A and D, and DAHP concurred.

Cemeteries

Five cemeteries have been documented within the APE, and an additional four have been documented within a 33-m (100-foot) radius **(Table 5)**. These locations vary widely in terms of size, level of maintenance, and

eligibility status; most are small with no regular maintenance and only a few headstones (if any). Two contain graves of notable individuals, one of which has been recommended Eligible for listing in the NRHP (45FE449); the other is listed in the NRHP and WHR. The Keller Cemetery (45FE449) is located approximately 30 m north-northeast of the APE. It was created as a new resting place for remains removed prior to the inundation of the Lake Roosevelt Reservoir but remains in use today for modern burials (Coyote 2012). The cemetery has been recommended Eligible for listing in the NRHP under Criterion B for the presence of the graves of Sanpoil Chiefs Skolaskin and Jim James, as well as Criterion A for its association with the event of Lake Roosevelt Reservoir's inundation (Coyote 2012).

The Nez Perce Cemetery (45OK494) is a private cemetery that contains the remains of many Nez Perce, including members of the Chief Joseph Band who participated in the Nez Perce War of 1877. A monument was erected on Chief Joseph's gravesite in 1905, and many of the graves are either unmarked or have markers dating from throughout the twentieth century. The cemetery was listed in the NRHP and WHR in 1973 (DAHP 1973) and is located partially within the APE, near the northeast corner of the town of Nespelem.

Table 5. Known cemeteries within 33 m (100 feet) of the APE

Smithsonian Number	Resource Name	Reference	Location	Distance and Direction from APE
45FE449	Sanpoil Cemetery	Eminger 1990; Coyote 2012	T29N R33E, Sec 9	30 m north-northeast of APE near Aerial Backbone Cable 122
45FE474	Catholic Mission and Cemetery Site	Bruce and Regan 1990	T34N R36E, Sec 36	Within APE; 16 m east-northeast of Aerial Backbone Cable 2, Distribution Point 321
45FE598	Cemetery	DAHP 2023	T31N R33E, Sec 19	Less than 10 m west of APE near Aerial Backbone Cable 28
45FE599	Covington Family Cemetery	DAHP 2001	T31N R33E, Sec 7	Within APE; 15 m east-southeast of Aerial Backbone Cable 28, 40 m northeast of Distribution Point 28
45FE600	Keller Cemetery	DAHP 2006	T30N R33E, Sec 20	Within APE; intersects at Aerial Backbone Cable 28, Splice Case 24
45OK494	Chief Joseph Memorial (Nez Perce Cemetery)	Eminger 1990	T31N R30E, Sec 24	Within APE; less than 5 m north of Underground Backbone Cable 38, 105; Splice case 120, Vault 30
45OK1018	Historic Cemetery	Regan 1990	T30N R31E, Sec 6	5 m north of APE near Underground Backbone Cable 33
45OK1458	Cemetery	Rail 2004	T31N R30E, Sec 24	Within APE; 18 m east-southeast of Underground Distribution Cable 92
45OK1462	Sacred Heart Cemetery	Rail 2000	T31N R30E, Sec 30, 24	27 m west of APE near Underground Distribution Cable 92

DAHP Predictive Model

DAHP has developed a predictive model for the probability of encountering precontact and Historic period cultural resources in a given location. The probabilities are calculated using information from two general sources: 1) data derived from ethnographic studies and archaeological investigations conducted prior to model development; and 2) a consideration of the relationship between these recorded sites and various environmental factors such as proximity to water and slope (Kauhi 2009). DAHP's model uses five categories for the predictions: Low Risk, Moderately Low Risk, Moderate Risk, High Risk, and Very High Risk.

Based on this model, DAHP predicts a High to Very High Risk within more than 99 percent of the APE for encountering archaeological features or deposits, primarily due to its proximity to the Columbia, Okanogan, and Sanpoil rivers and their tributaries. The project's proposed tower and pole locations vary from Low to Moderate Risk, primarily because they would be located in steeper terrain and at a greater distance from permanent water sources.

Historic Map Research

WestLand staff also examined GLO survey plats, available online through the BLM website, to locate potential historical features. These nineteenth- and early twentieth-century maps, arranged by township and range, indicate locations of then-extant historical structures, trails, roads, and features. Although most of these structures are no longer extant, the maps indicate where Historic period archaeological resources could be encountered. An online review of the GLO survey records database revealed that a total of 35 survey plats from the 1880s to the 1930s depict features within a 33-m (100-foot) radius of the APE (U.S. Surveyor General 1884, 1902, 1904a–c, 1908a–c, 1909a–u, 1910a–d, 1924, 1939) **(Table 6)**. Most of these features are trails, wagon roads, cabins and other buildings, cultivated fields, and mining claims, and most are situated along the major rivers and tributaries.

Table 6. GLO features within 33 m (100 feet) of the APE

Township	Range	Section(s)	Date	Features
28N	30E	11	1884	"Chelan and Spokane Road"
29N	30E	1	1908	"Road to Nespelem"
29N	30E	36	1908	Unnamed road
29N	31E	6	1909	"House"
29N	31E	7, 19, 20	1909	Unnamed road
29N	31E	15	1909	Cultivated field (?)
29N	31E	30, 31	1909	Unnamed road
29N	32E	11, 13, 14	1909	"Keller to Nespelem" trail
29N	33E	3	1909	"Silver Creek Road," "ZIPP" and "TEDIE" mining claims

Table 6. GLO features within 33 m (100 feet) of the APE

Township	Range	Section(s)	Date	Features
29N	33E	4	1909	"Silver Creek Road," "Road to Humboldt Mines," spur roads, "Dewey" mining claim
29N	33E	9	1909	"KELLER TOWNSITE," unnamed road
29N	33E	10	1909	"ZIPP Mining Claim"
29N	33E	17, 20	1909	Road to Leightons," spur road
30N	30E	1, 12, 25, 36	1908	Unnamed road, spur roads
30N	31E	30, 31	1909	Unnamed road
30N	33E	17, 20, 22, 28, 29, 33, 34	1909	"State Road," "Jack Creek Road," "Road from Keller to Whitestone," and spur roads
31N	30E	1, 12, 13, 35, 36	1908	"Omache Lake & Nespelem Wagon Road" and spur roads
31N	30E	24, 25	1908	Buildings ("House & Barn," "Government," etc.), "Omache Lake & Nespelem Wagon Road" and spur roads
31N	31E	6, 7, 18	1909	Unnamed road
31N	31E	19	1909	"Barn," unnamed road
31N	31E	19, 30	1939	"NESPELEM TOWNSITE"
31N	33E	6, 7, 18, 19	1909	Unnamed roads
31N	36E	1, 2	1910	"Post Office"
31N	36E	8, 9, 12, 13, 21, 23, 24, 26	1910	Unnamed roads
32N	30E	35	1908	Unnamed roads, cabin
32N	33E	20, 29, 31	1909	Unnamed roads
32N	33E	32	1909	Unnamed roads, "House"
32N	36E	1, 11-14, 24, 25	1910	Unnamed roads
32N	36E	35, 36	1910	"Post Office," unnamed roads
32N	37E	6, 7, 18, 19, 31	1910	Unnamed roads, "Ditch" (2)
32N	37E	30	1910	Unnamed roads, "Theodore Boyeau"
33N	26E	1-3, 9, 10, 16, 20	1909	"Riverside Road," "Okanogan Road," "House"
33N	27E	4, 6, 12	1909	Unnamed roads
33N	27E	9, 16, 21	1909	Buildings associated with "Mission" ("Dormitory," "Chapel," 'Park Bldg," "Garden"), unnamed roads
33N	27E	28	1909	"Houses" and "Stable" ("Edwards")
33N	28E	7, 9, 13, 15, 16, 18	1909	Unnamed road, "M. Brooks" cabin, "Barn"
33N	29E	17, 18, 21, 27	1909	Unnamed roads, trails
33N	32E	2, 14	1909	Unnamed road
33N	32E	35	1909	"Cabin"
33N	36E	1, 12	1909	Unnamed roads
33N	36E	24-26	1909	Unnamed roads
33N	36E	35, 36	1909	"House," "Spring," unnamed roads
33N	37E	30, 31	1909	Unnamed road
34N	26E	35, 36	1909	"Dwelling," "School", "House," "Telephone Line," unnamed roads

Table 6. GLO features within 33 m (100 feet) of the APE

Township	Range	Section(s)	Date	Features
34N	27E	29, 31-33	1909	Unnamed roads
34N	32E	1, 2, 14, 24, 25, 35, 36	1909	Unnamed roads
34N	32E	10, 11	1909	“Dewey Placer” claim, unnamed roads
34N	36E	25, 26, 36	1909	Unnamed roads
34N	36E	23	1909	“Cabin,” unnamed roads
35N	32E	1, 12, 24, 25, 36	1904	Unnamed road
35N	33E	19, 30, 31	1924	“State Highway”
35N	37E	4, 17	1910	Unnamed road
35N	37E	8	1910	“A. D. Charton” cabin, unnamed road
36N	32E	24, 25, 36	1904	Unnamed road
36N	33E	7, 18	1904	“Tramway”
36N	33E	19	1904	“Cabin”
36N	37E	28, 33	1902	Unnamed roads

SUMMARY OF RESEARCH

Based on a review of the background information presented above, including the project's proximity to several rivers (e.g., Columbia, Nespelem, Sanpoil) and their tributaries, sites previously recorded on similar landforms in the area, and DAHP's predictive model, WestLand anticipates that the APE has a high probability for intact archaeological deposits that may be protected under state law and/or eligible for listing in the NRHP. Although there have been historic and more recent disturbances that may have impacted cultural resources (e.g., road, railroad, and bridge construction and maintenance; utility installation; and agricultural land use), the overall risk remains high.

Precontact sites are common along the rivers and tributaries within the project vicinity; these sites are often identified by the presence of lithic debitage or fire-modified rock. Cultural materials and/or features associated with hunter-fisher-gatherer, ethnographic, or historic Native American groups include stone or bone tools related to hunting, fishing, or processing activities (e.g., net weights, cobble choppers, and fish clubs); lithic debris associated with the manufacture and maintenance of these tools; processing features such as hearths, identified by the presence of fire-modified rock, charcoal, charcoal-stained soils, and/or possibly faunal and floral remains; and larger symbolic features such as rock/boulder cairns and other piled rock features.

Historical records for the area indicate Euroamerican settlers were present in the area from ca. 1810. Historic Euroamerican cultural materials would likely be deposits and features associated with agriculture and/or homesteads, including household dumps containing ceramics, glass, and other domestic items. Cultural materials could also be related to logging, mining, and/or farming activities. These materials may include personal items, such as clothing or items associated with clothing (e.g., buttons), tobacco cans, and glass or ceramic beads or vessels, or they may consist of items associated with industry, such as metal fragments or machinery pieces, axes or saw blades, shovel heads, railroad ties and spikes, and braided steel logging cables.

The majority of the underground portion of the proposed fiber installation will correspond with existing underground electric utilities. Mixed soils and/or fill materials can be expected in areas in and adjacent to roadways. Agricultural development and construction of highways, side streets, and residential and commercial structures, as well as previous utility installation, has likely disturbed much of the area within and adjacent to the APE. However, undisturbed and undamaged resources could still exist in these locations, regardless of previous disturbance.

Undisturbed areas could contain intact archaeological resources. Sensitive areas for precontact sites would be along the terraces of the Columbia, Sanpoil, and Okanogan rivers and their tributaries, where remains such as lithic scatters and isolates, hearth sites and fire-modified rocks may indicate temporary camp sites. Historic period remains would be related to early settlement, railroad construction, or historical agricultural activities and could include structural foundations, rock walls, and debris scatters.

RECOMMENDATIONS

WestLand recommends the following regarding ground-disturbing activities associated with the CCT NTIA 2.5GHz Wireless, Middle Mile and Fiber to the Home Project:

1. WestLand's research identified multiple high probability areas (HPAs) within the APE. These are defined as being within 100 feet of a GLO-documented feature or previously recorded cultural resource (i.e., sites, isolates, and cemeteries) or within 300 feet of any permanent water source (i.e., rivers and tributaries) **(see Appendix B)**.

2. Due to the high risk of encountering precontact or Historic period sites during any proposed ground-disturbing activities within the HPAs, avoidance is recommended.

3. If avoidance is not possible within an HPA where there is proposed plowed conduit installation; open trenching, entry/exit pits for directional boring; construction of towers, poles, or access roads; or installation of associated vaults, power, fiber, or the COW site, WestLand recommends pedestrian survey to identify any cultural resources that may be on the ground surface and shovel testing to examine subsurface soils for the presence of cultural materials (see **Appendix B** for locations of proposed burial installation within HPAs).

4. For proposed buried installation portions of the APE situated within previously recorded archaeological sites or isolates (n = 23) or known cemeteries (n = 2), WestLand recommends these be redesigned (i.e., avoidance or aerial installation) to avoid the possibility of encountering intact subsurface deposits and/or human remains (see **Appendix C** for locations of sites and cemeteries within the APE). If these segments cannot be redesigned, consultation with the CCT and the NTIA (and DAHP if located outside the Colville Reservation) regarding appropriate permitting and methods of minimization or mitigation of the effects will be needed.

5. For proposed aerial installation portions of the APE situated within the HPAs, WestLand recommends pedestrian survey to identify any cultural resources that may be present on the ground surface (e.g., lithic scatters, rock/boulder cairns and/or other piled rock features), as well as revisits to previously recorded sites and isolates (n = 21) and known cemeteries (n = 3). Although no ground disturbance is proposed for these areas, surface disturbances from vehicles are possible. Avoidance or mitigation efforts to any impacted sites should be developed in coordination with the CCT and NTIA as needed.

6. No additional work is recommended for the remaining locations (i.e., non-HPA portions of the APE); however, in the event that archaeological deposits are inadvertently discovered during proposed activities in any portion of the APE, ground-disturbing activities should be halted immediately in an area large enough to maintain integrity of the deposits. If the area is outside the Colville

Reservation, the NTIA and DAHP should be notified directly. The NTIA and DAHP would then contact the CCT. If the discovery is made on the Colville Reservation, the NTIA and CCT must be contacted immediately. If the find includes or consists of human remains, ground-disturbing activities must be halted immediately and the CCT Law Enforcement Officer (if on the reservation) or County Sheriff (if off the reservation) and coroner must be notified. These parties are responsible for contacting DAHP if the remains are found to be nonforensic. Treatment of archaeological deposits or human remains would then be coordinated through consultation among these parties.

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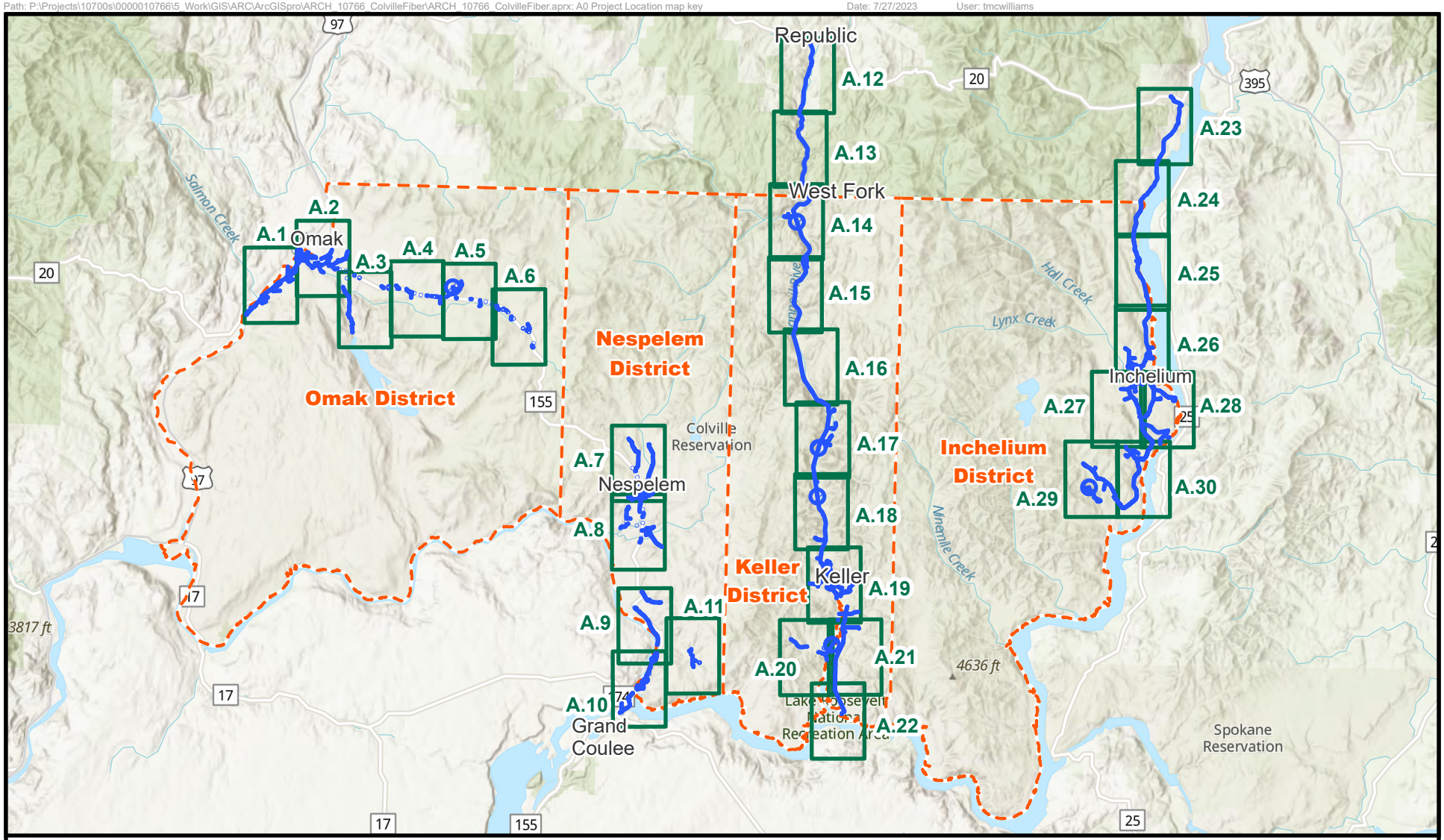
APPENDIX A
Project Location Maps



Townships 28-36 North, Ranges 26-37 East
Douglas, Ferry, Grant, and Okanogan Counties, Washington,
Data Source: ArcGIS Online, World Topographic Map
Projection: NAD 1983 UTM Zone 11N

Legend

- APE
- Appendix A map extent
- Colville Reservation District Boundary

N

0 5 10 Miles

0 8 16 Kilometers

WestLand
100% EMPLOYEE OWNED
Engineering & Environmental Services, Inc.

Figure A.0. Project Location map key

Path: P:\Projects\10700s\0000010766\5_Work\GIS\ARC\ArcGISpro\ARCH_10766_ColvilleFiber\ARCH_10766_ColvilleFiber.aprx: A Project location Date: 9/21/2023 User: tmcwilliams

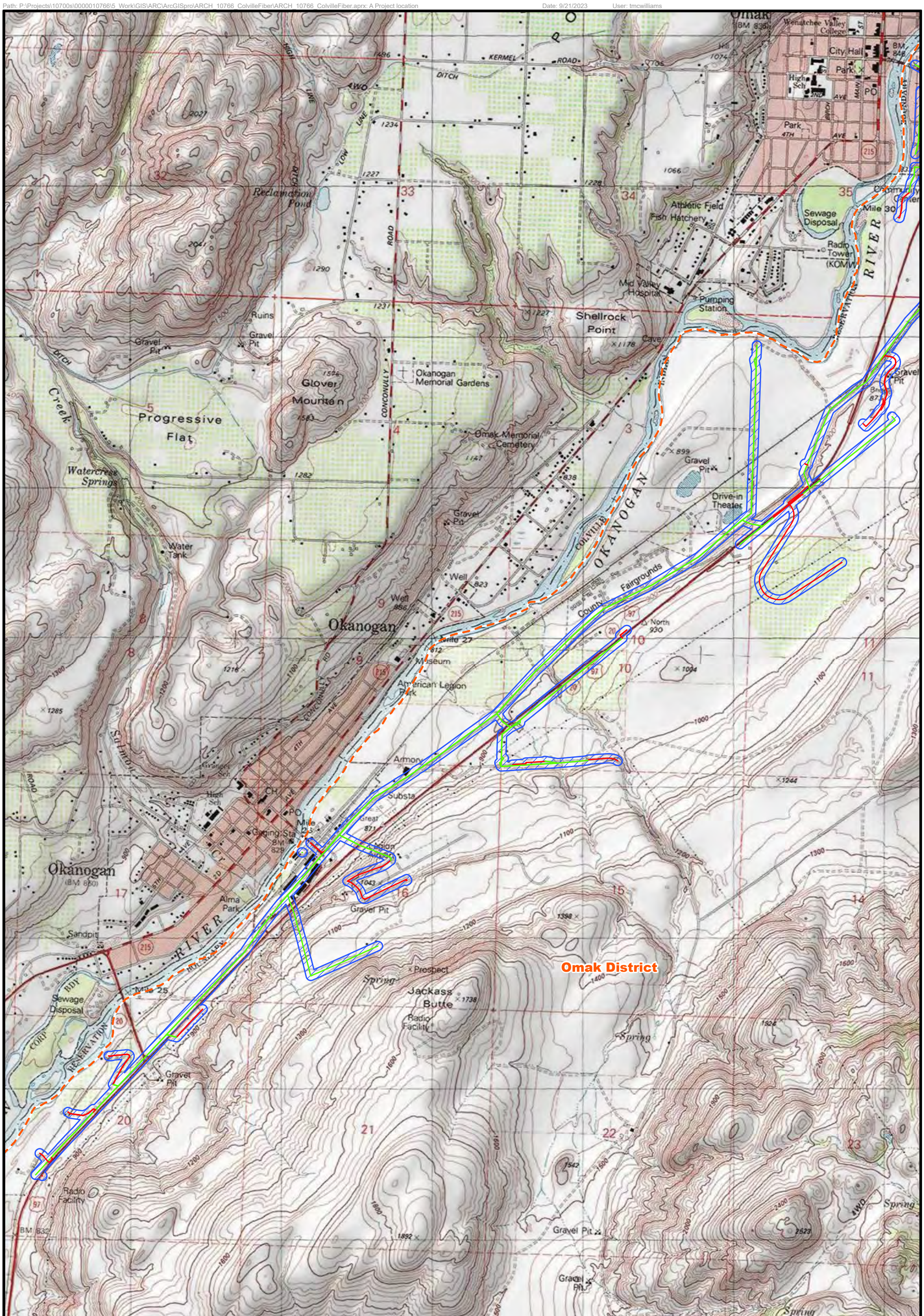


Figure A.1. Project location map

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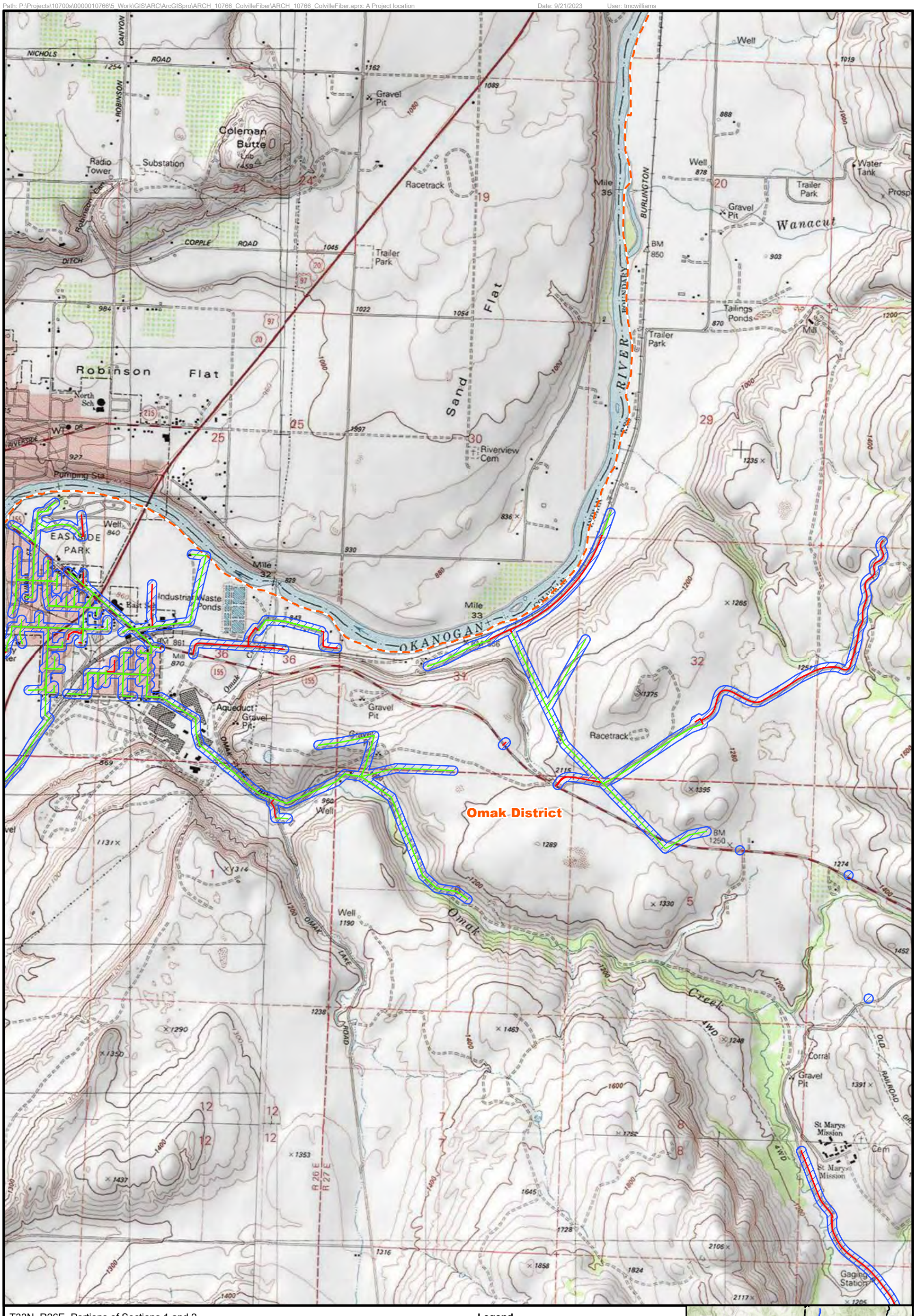

Figure A.2. Project location map

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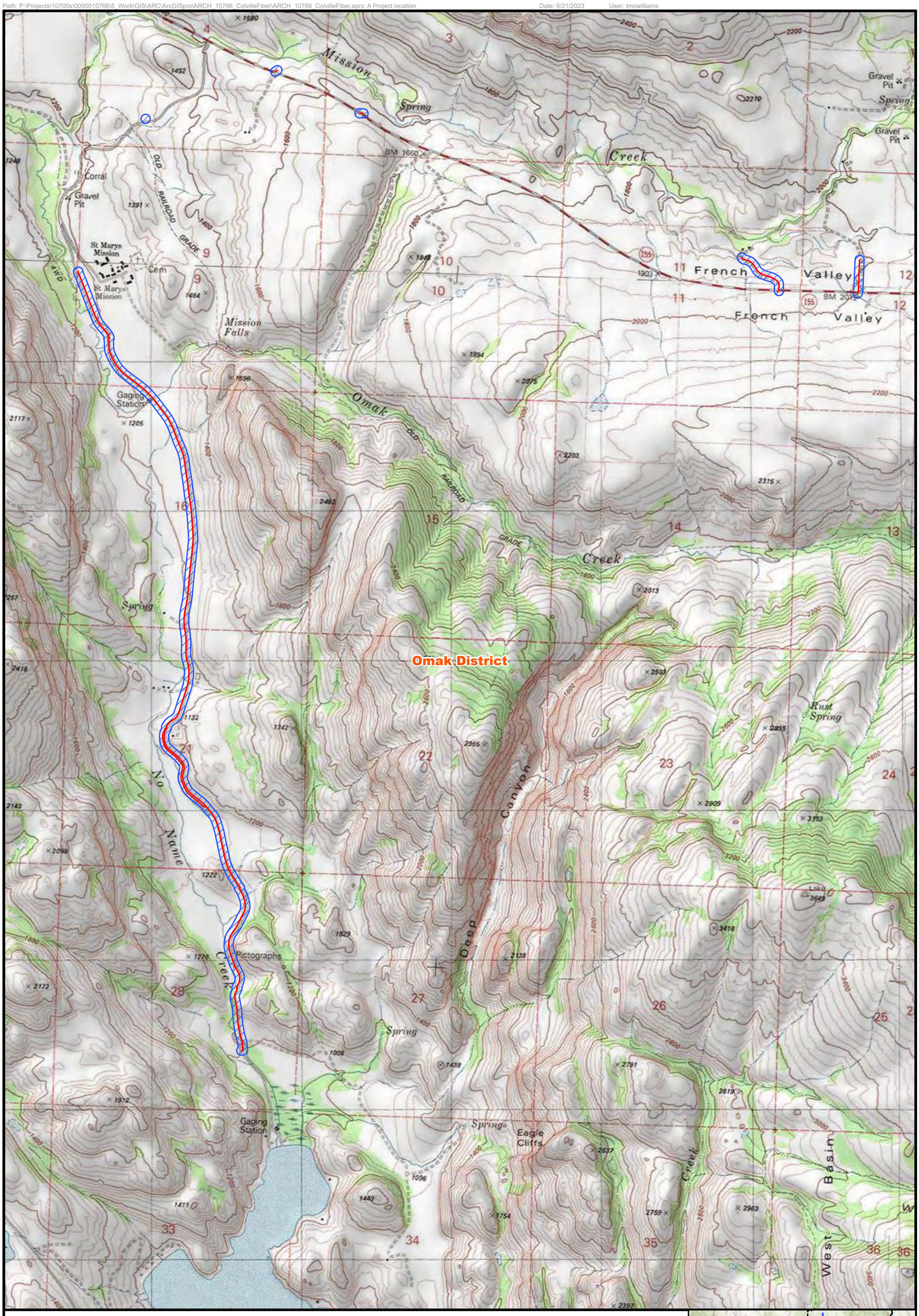


T33N, R27E, Portions of Sections 3, 4, 8, 9, 11, 12, 16, 21, and 28,
Okanogan County, Washington,
The Pothole and Omak Lake USGS 7.5' Quadrangles,
Projection: NAD 1983 UTM Zone 11N

Legend

- Proposed underground fiber
- Colville Reservation District Boundary
- APE (Area of Direct Effects)

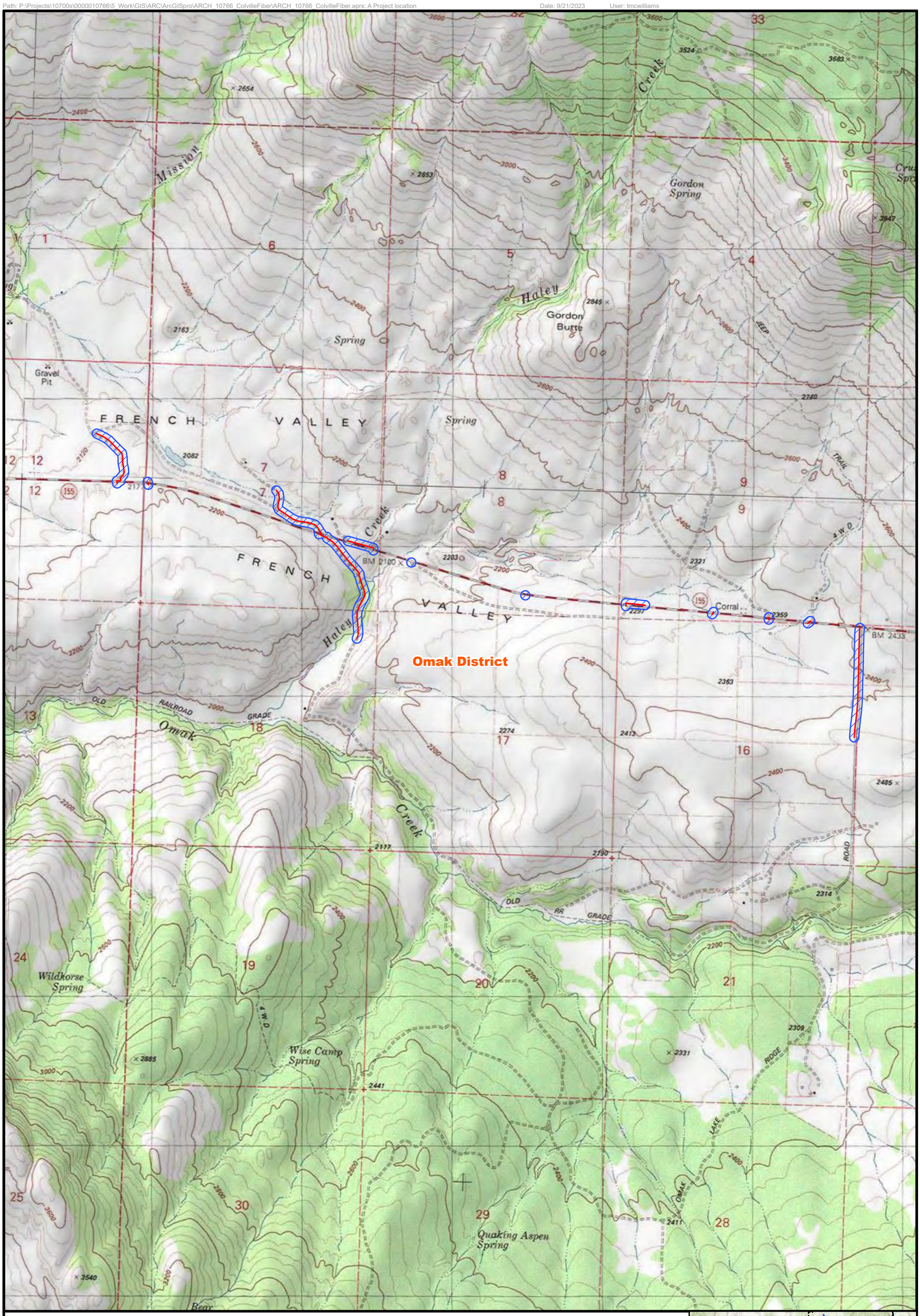
N

0 1,000 2,000 Feet

0 300 600 Meters

WestLand
100% EMPLOYEE OWNED
Engineering & Environmental Services, Inc.

Figure A.3. Project location map



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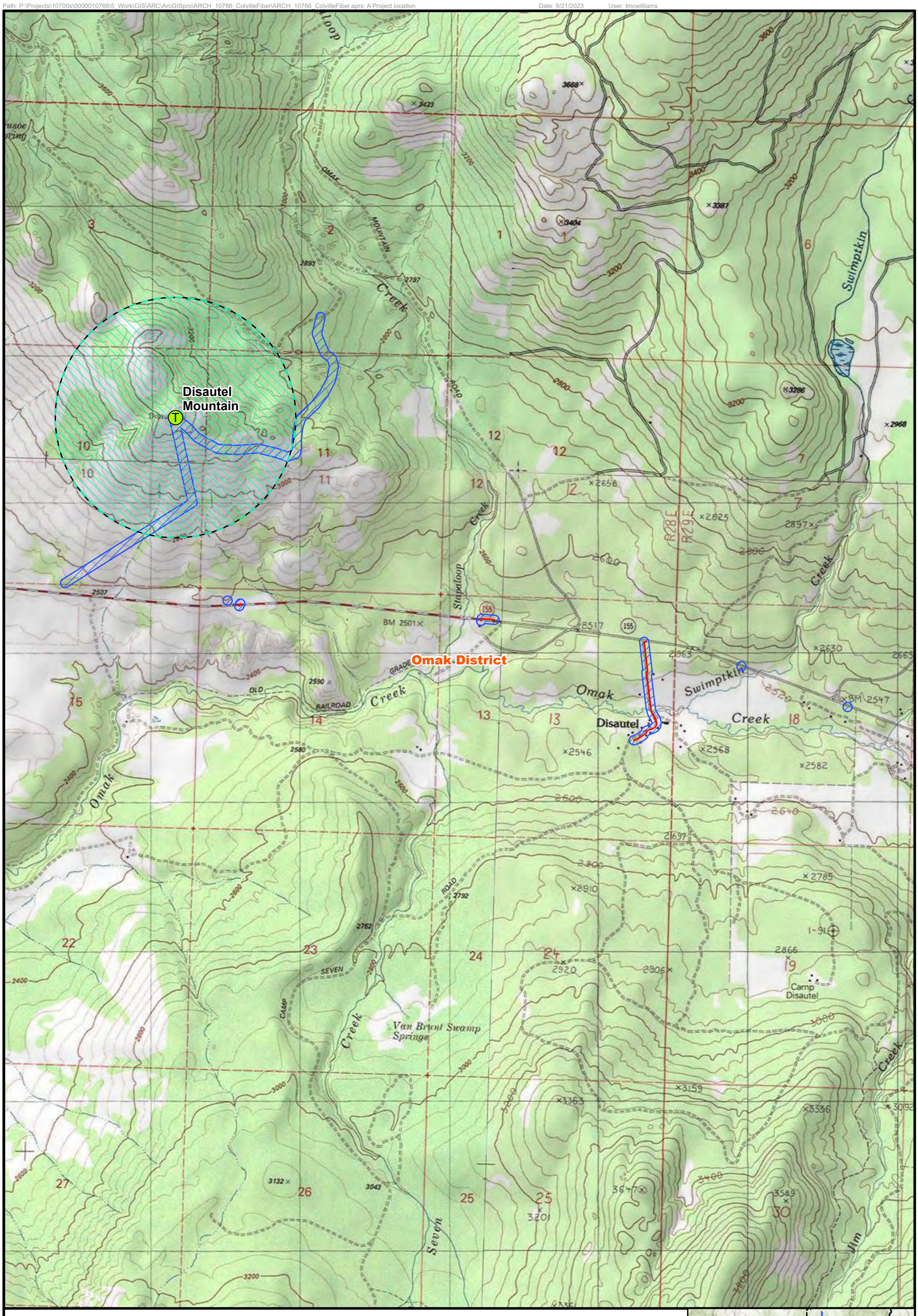

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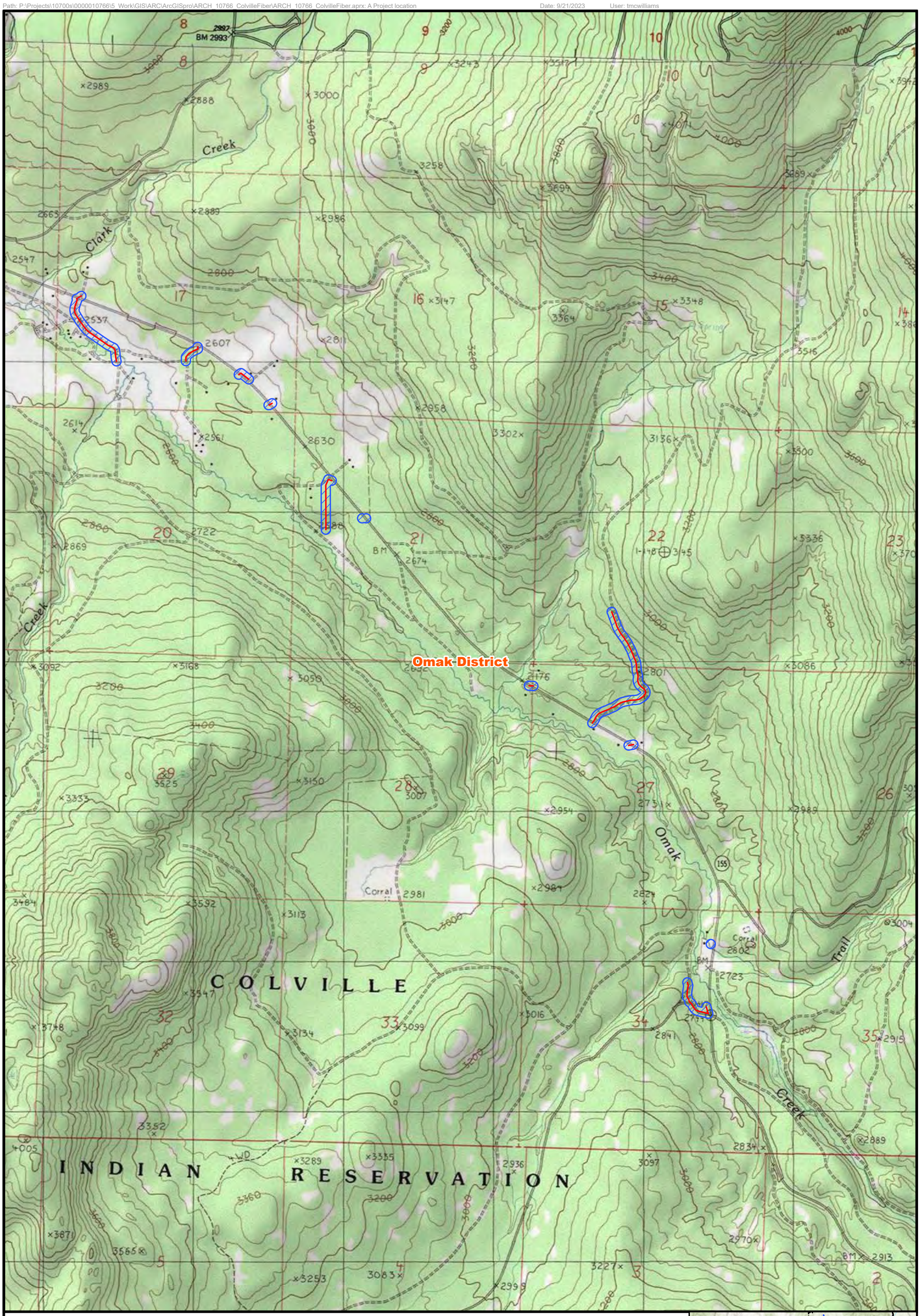


Figure A.6. Project location map

Nespelem District

T31N, R30E, Portions of Sections 1, 2, 12, 13, and 23-26,
T31N, R31E, Portions of Sections 6, 7, 18, 19, and 30,
T32N, R30E, a Portion of Section 35,
Okanogan County, Washington,
Armstrong Creek and Nespelem USGS 7.5' Quadrangles,
Projection: NAD 1983 UTM Zone 11N

Legend

- Proposed aerial fiber
- Proposed underground fiber
- Colville Reservation District Boundary
- APE (Area of Direct Effects)

N

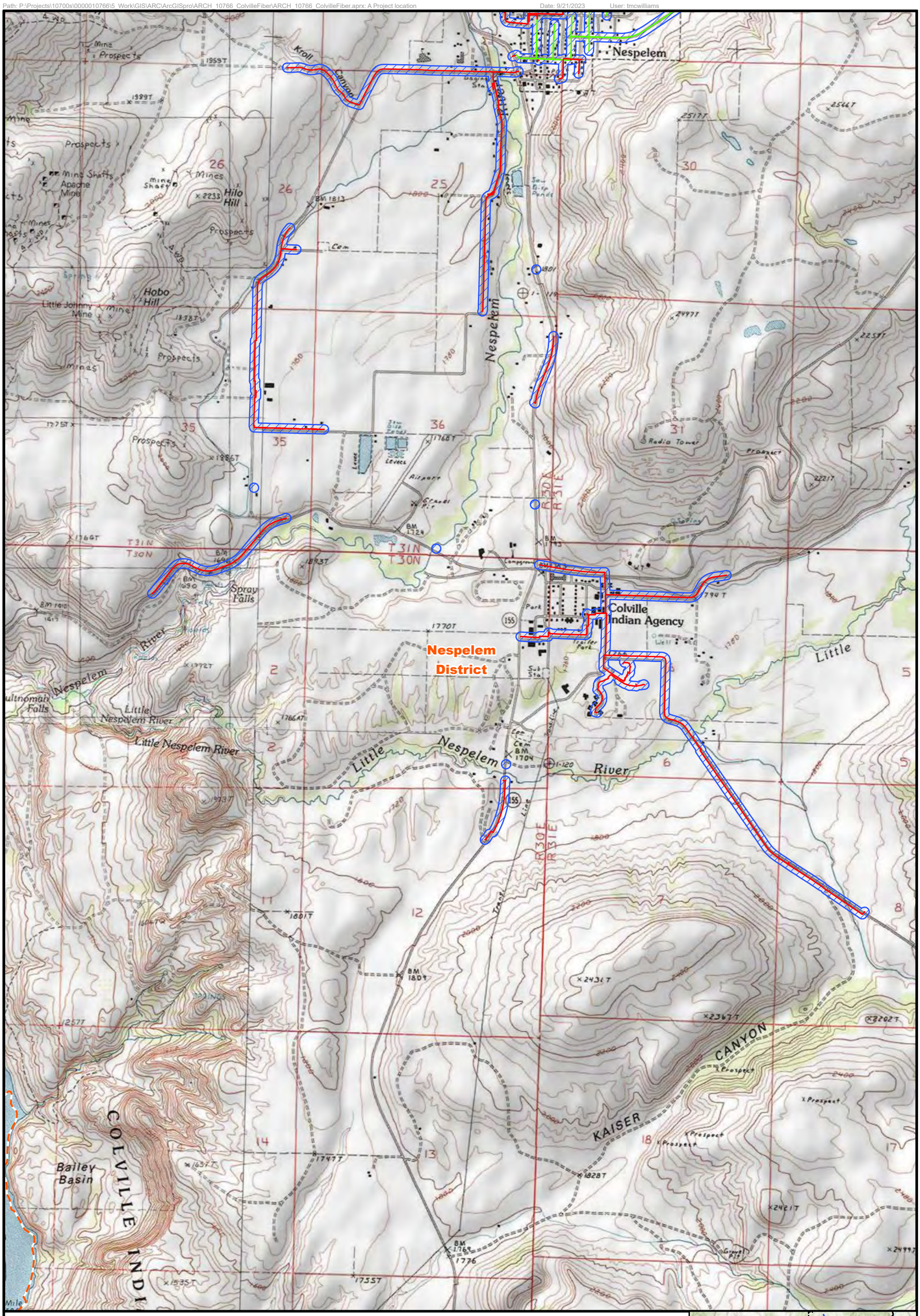
0 1,000 2,000 Feet

0 300 600 Meters

WestLand 100% EMPLOYEE OWNED Engineering & Environmental Services, Inc.

Figure A.7. Project location map

Path: P:\Projects\10700s\0000010766\5_Work\GIS\ARC\ArcGISpro\ARCH_10766_ColvilleFiber\ARCH_10766_ColvilleFiber.aprx: A Project location Date: 9/21/2023 User: tmcwilliams



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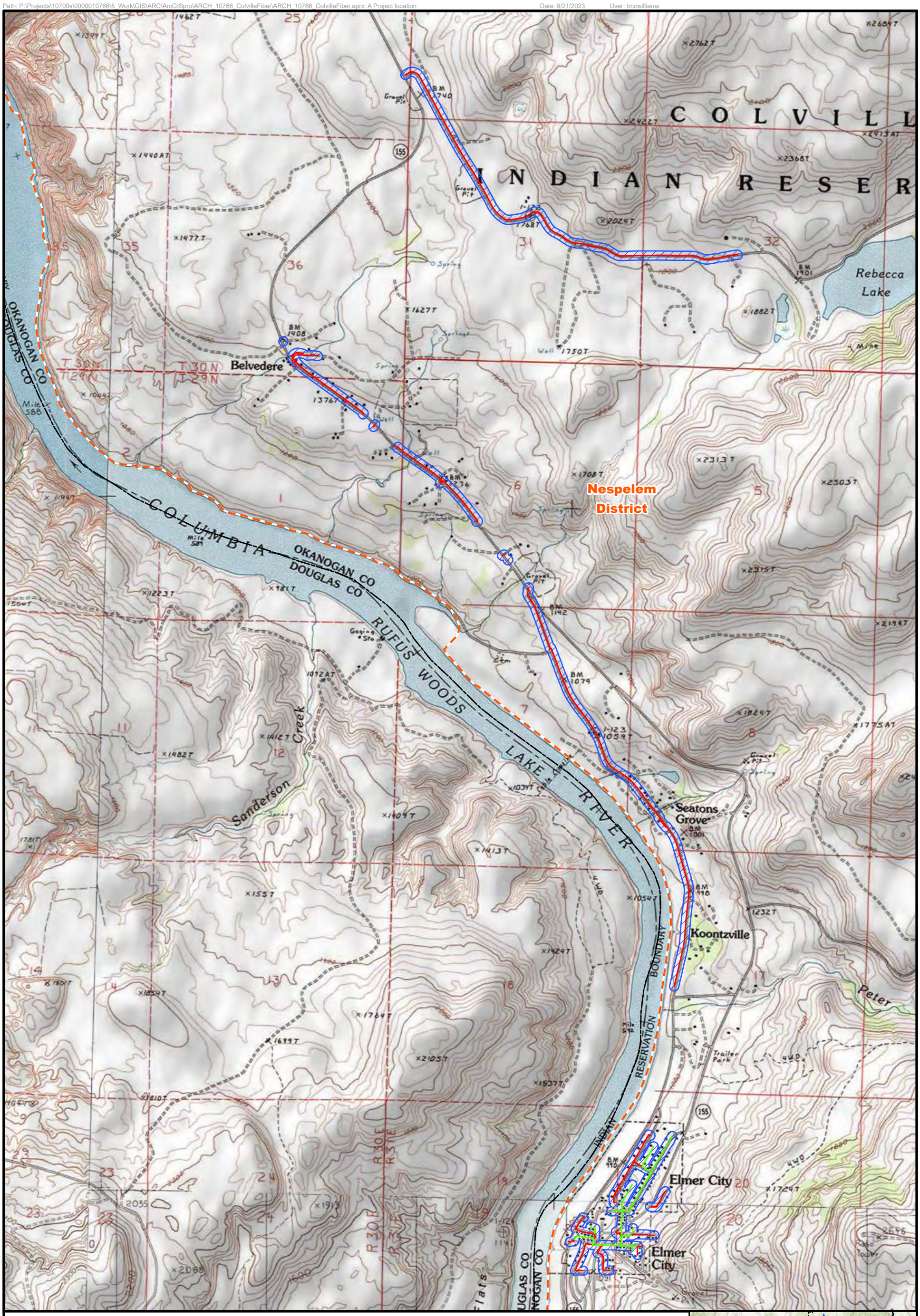


Figure A.9. Project location map

T28N, R30E, Portions of Sections 1, 2, 11, and 12,
T29N, R30E, a Portion of Section 36,
T29N, R31E, Portions of Sections 19, 20, 30, and 31
Douglas, Grant, and Okanogan Counties, Washington,
Belvedere, Grand Coulee Dam, and Electric City USGS 7.5' Quadrangles,
Projection: NAD 1983 UTM Zone 11N

Legend

- Proposed aerial fiber
- Proposed underground fiber
- Colville Reservation District Boundary
- APE (Area of Direct Effects)

N

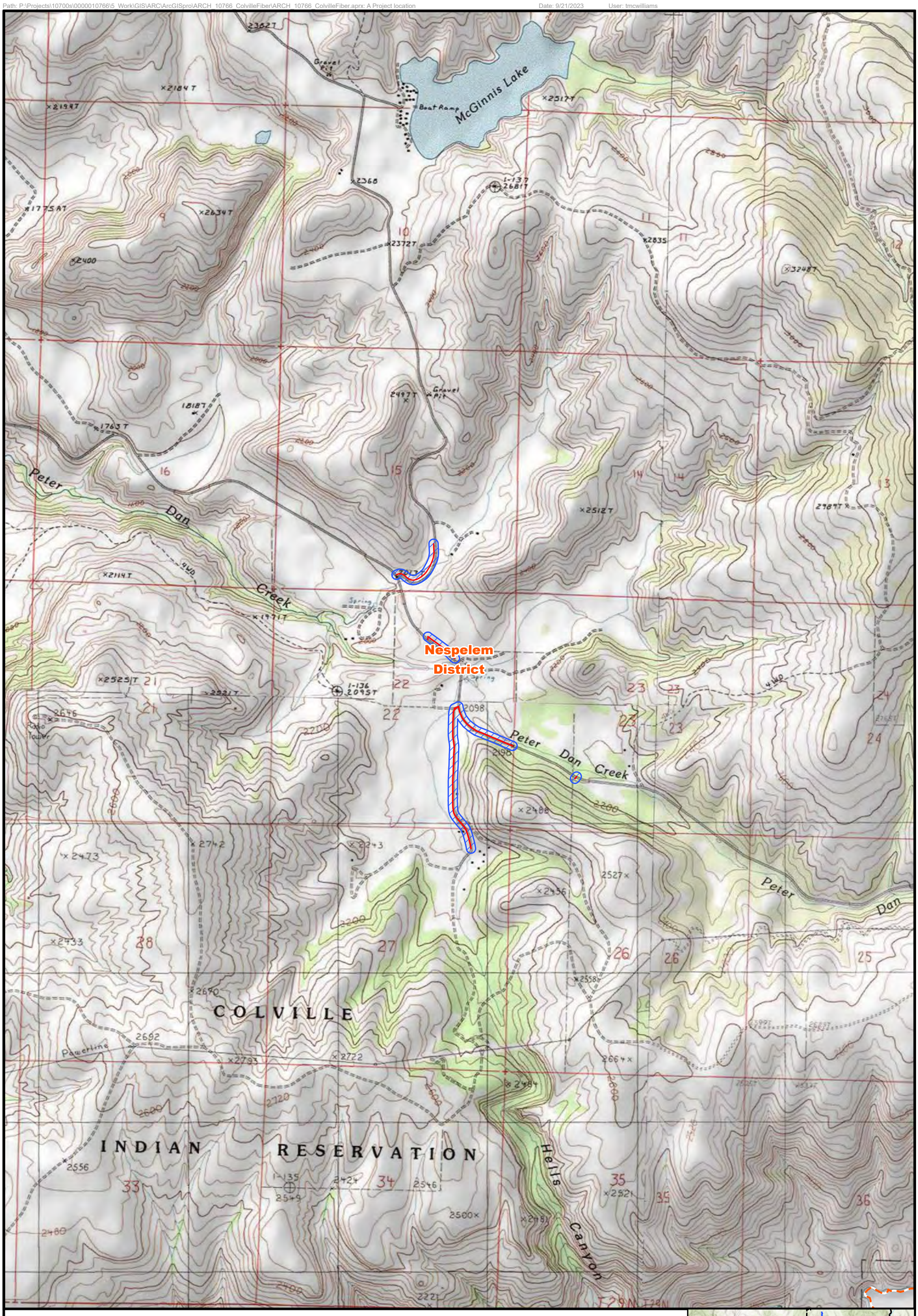
0 1,000 2,000 Feet

0 300 600 Meters

WestLand
100% EMPLOYEE OWNED
Engineering & Environmental Services, Inc.

Figure A.10. Project location map

Path: P:\Projects\10700s\0000010766\5_Work\GIS\ARC\ArcGISpro\ARCH_10766_ColvilleFiber\ARCH_10766_ColvilleFiber.aprx: A Project location Date: 9/21/2023 User: tmcwilliams



T29N, R31E, Portions of Sections 15, 22, 23, and 27,
Okanogan County, Washington,
Belvedere and Grand Coulee Dam USGS 7.5' Quadrangles,
Projection: NAD 1983 UTM Zone 11N

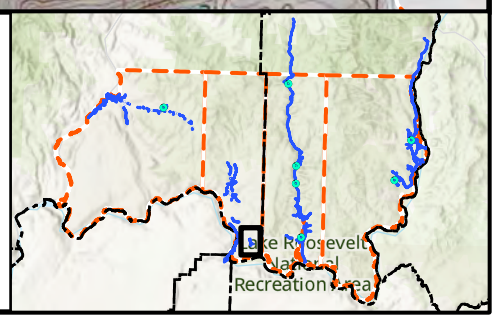
Legend

- Proposed underground fiber
- Colville Reservation District Boundary
- APE (Area of Direct Effects)

N

0 1,000 2,000 Feet

0 300 600 Meters



WestLand
100% EMPLOYEE OWNED
Engineering & Environmental Services, Inc.

Figure A.11. Project location map

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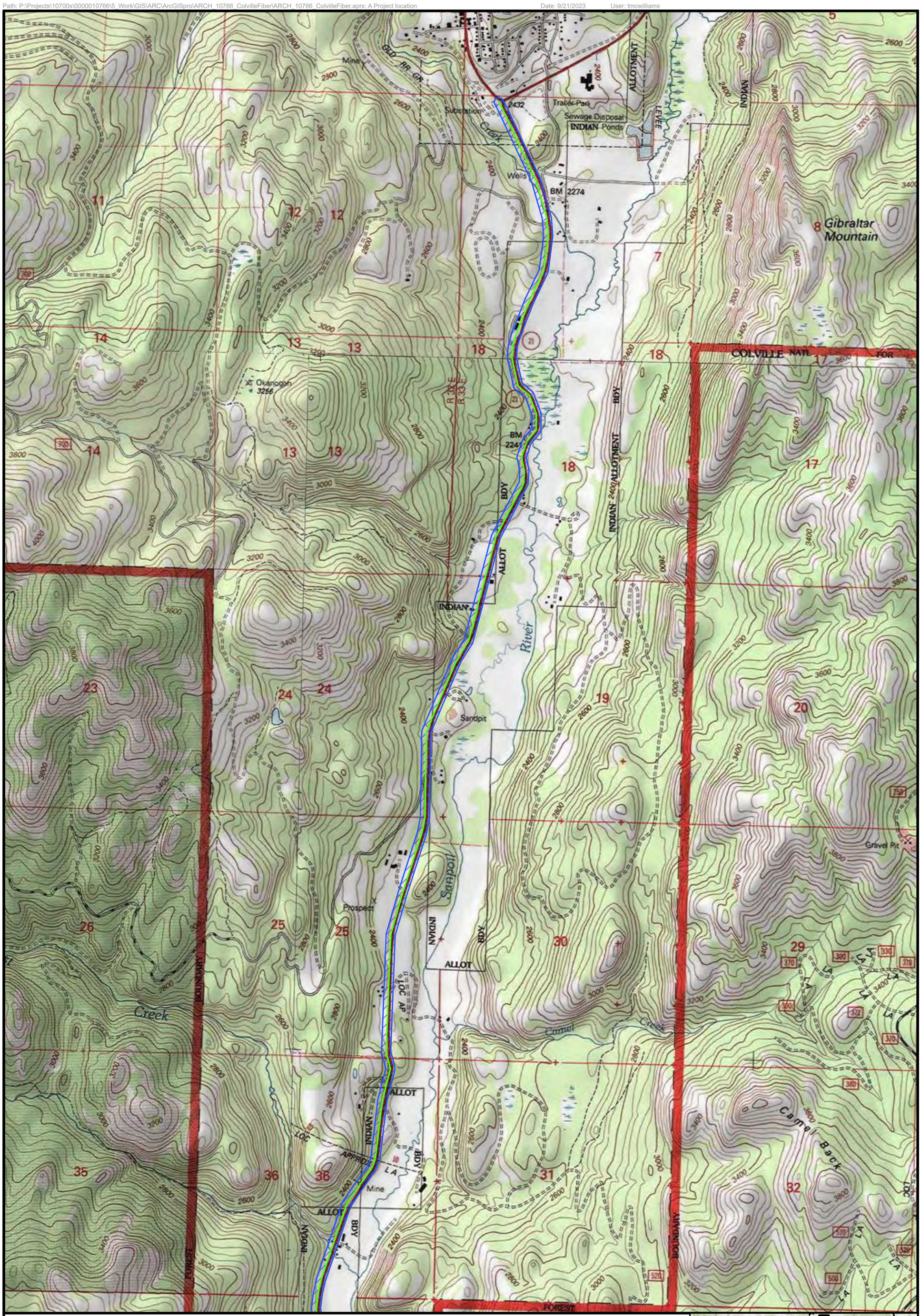

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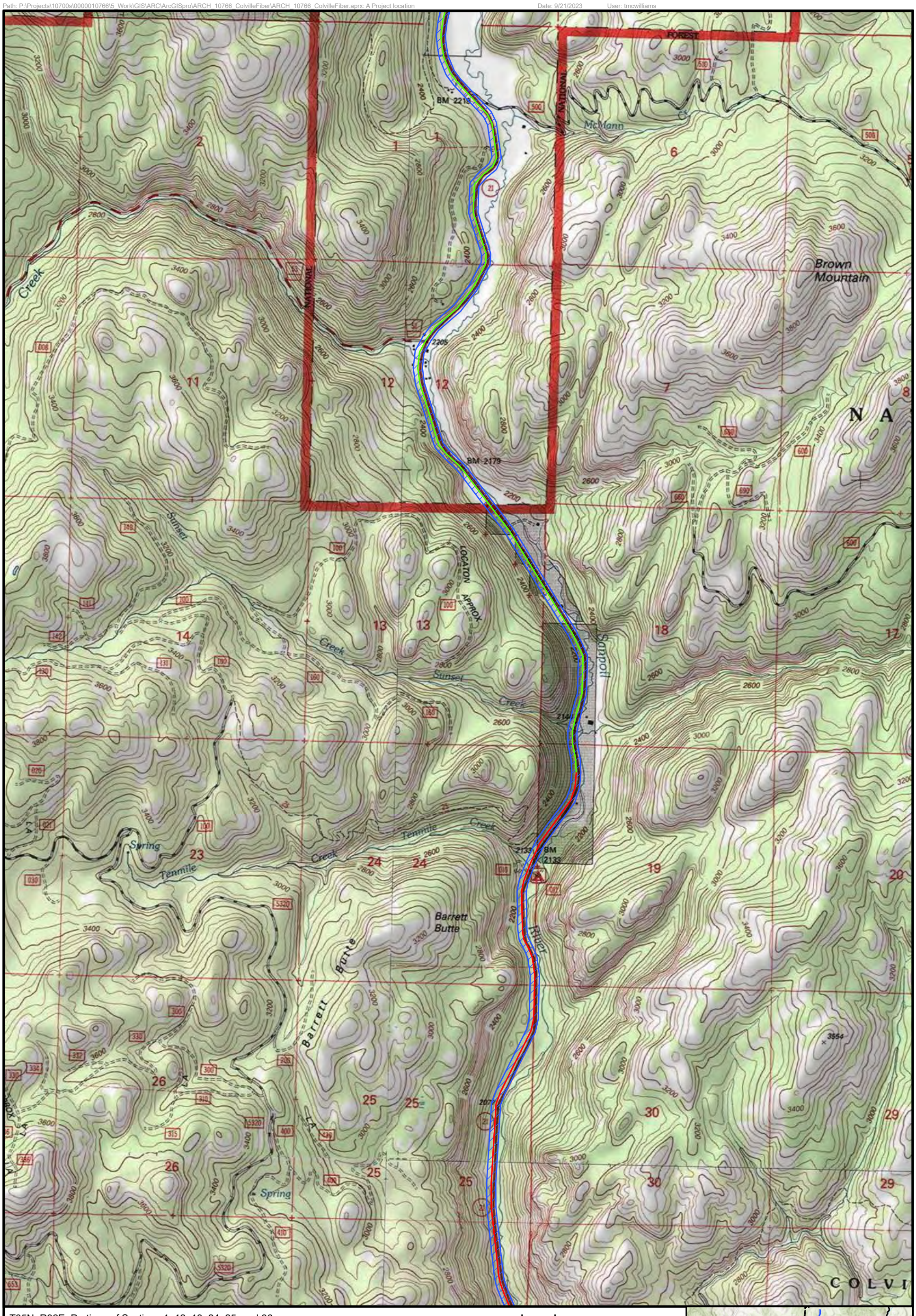


T35N, R32E, Portions of Sections 1, 12, 13, 24, 25, and 36,
T35N, R33E, Portions of Sections 18, 19, and 30,
Ferry County, Washington,
Bear Mountain, Swan Lake, and Thirteenmile Creek USGS 7.5' Quadrangles,
Projection: NAD 1983 UTM Zone 11N

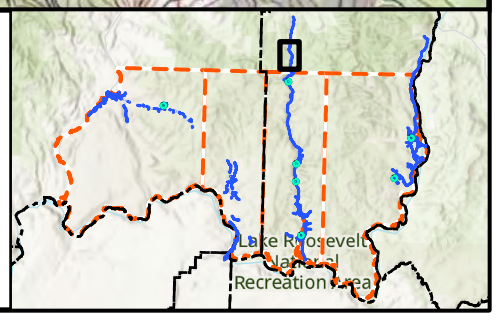
Legend

- Proposed aerial fiber
- Proposed underground fiber
- APE (Area of Direct Effects)

N

0 1,000 2,000 Feet

0 300 600 Meters



WestLand
100% EMPLOYEE OWNED
Engineering & Environmental Services, Inc.

Figure A.13. Project location map

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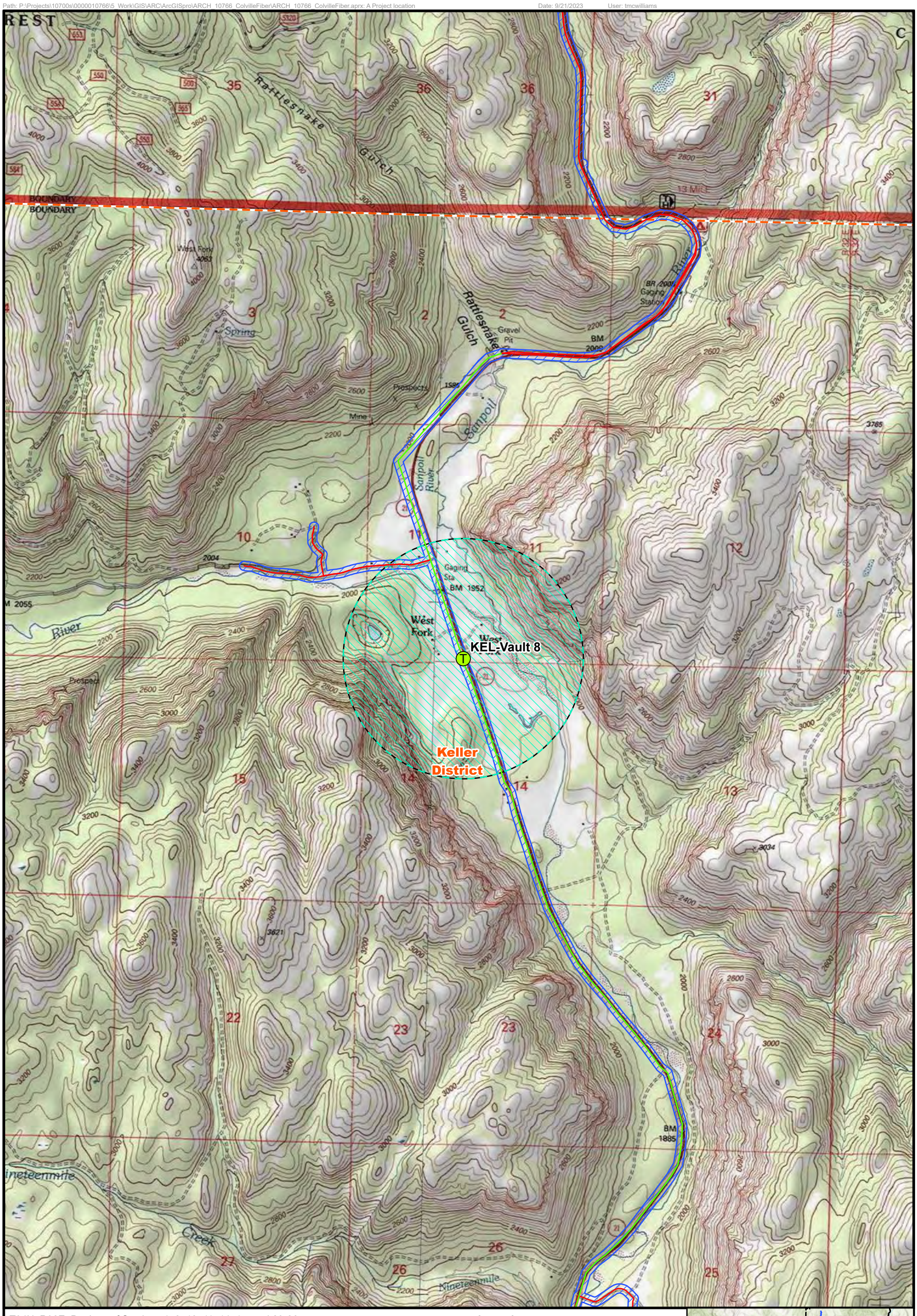

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Keller District

T33N, R32E, Portions of Sections 2, 11, 14, and 23,
T34N, R32E, Portions of Sections 25, 26, 35, and 36,
Ferry County, Washington,
Thirteenmile Creek, Central Peak, and Cody Butte USGS 7.5' Quadrangles,
Projection: NAD 1983 UTM Zone 11N

Legend

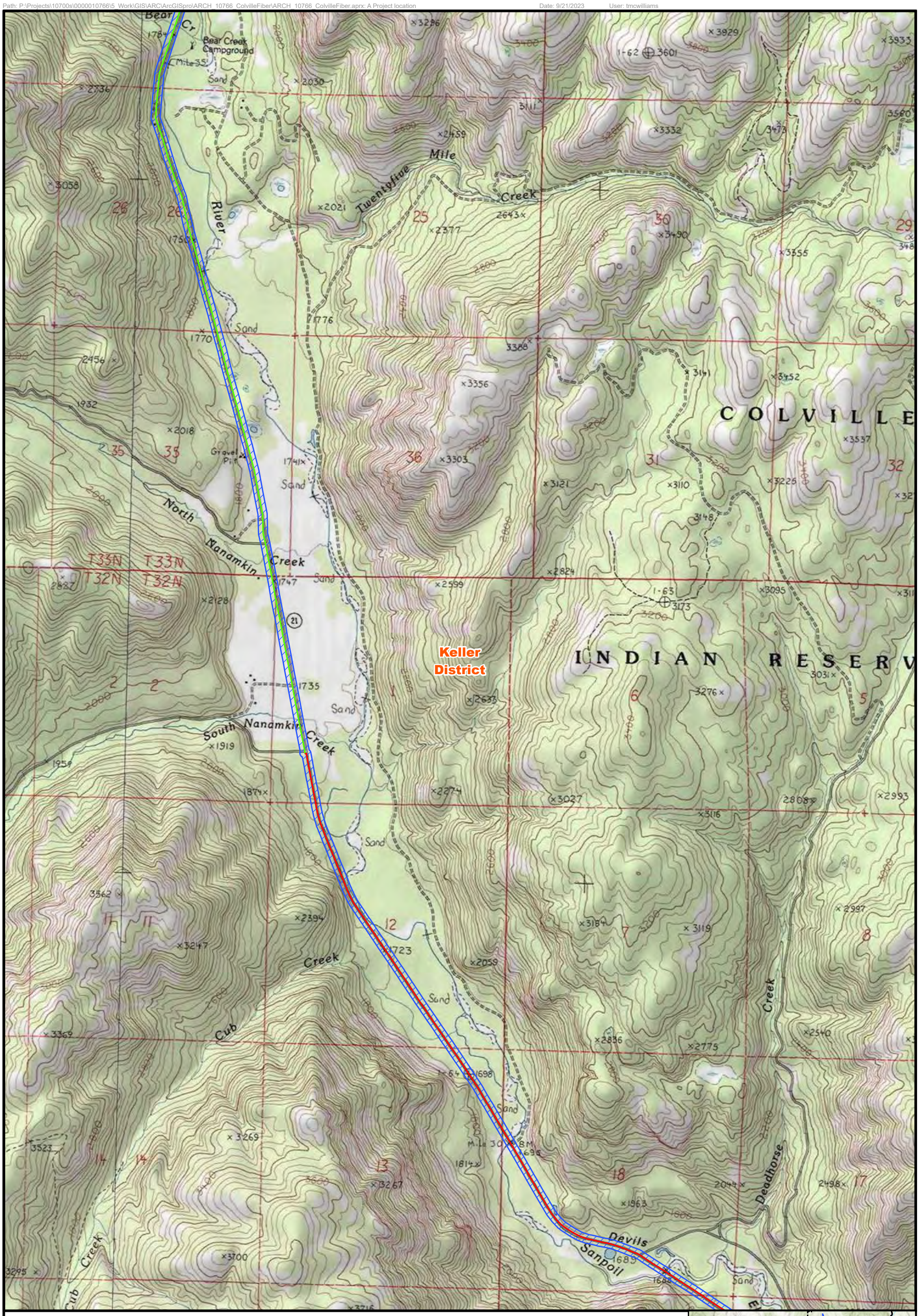
- Proposed aerial fiber
- Proposed underground fiber
- Colville Reservation District Boundary
- APE (Area of Direct Effects)

N 0 1,000 2,000 Feet
0 300 600 Meters

WestLand 100% EMPLOYEE OWNED Engineering & Environmental Services, Inc.

Figure A.15. Project location map

Path: P:\Projects\10700s\0000010766\5_Work\GIS\ARC\ArcGISpro\ARCH_10766_ColvilleFiber\ARCH_10766_ColvilleFiber.aprx: A Project location Date: 9/21/2023 User: tmcwilliams



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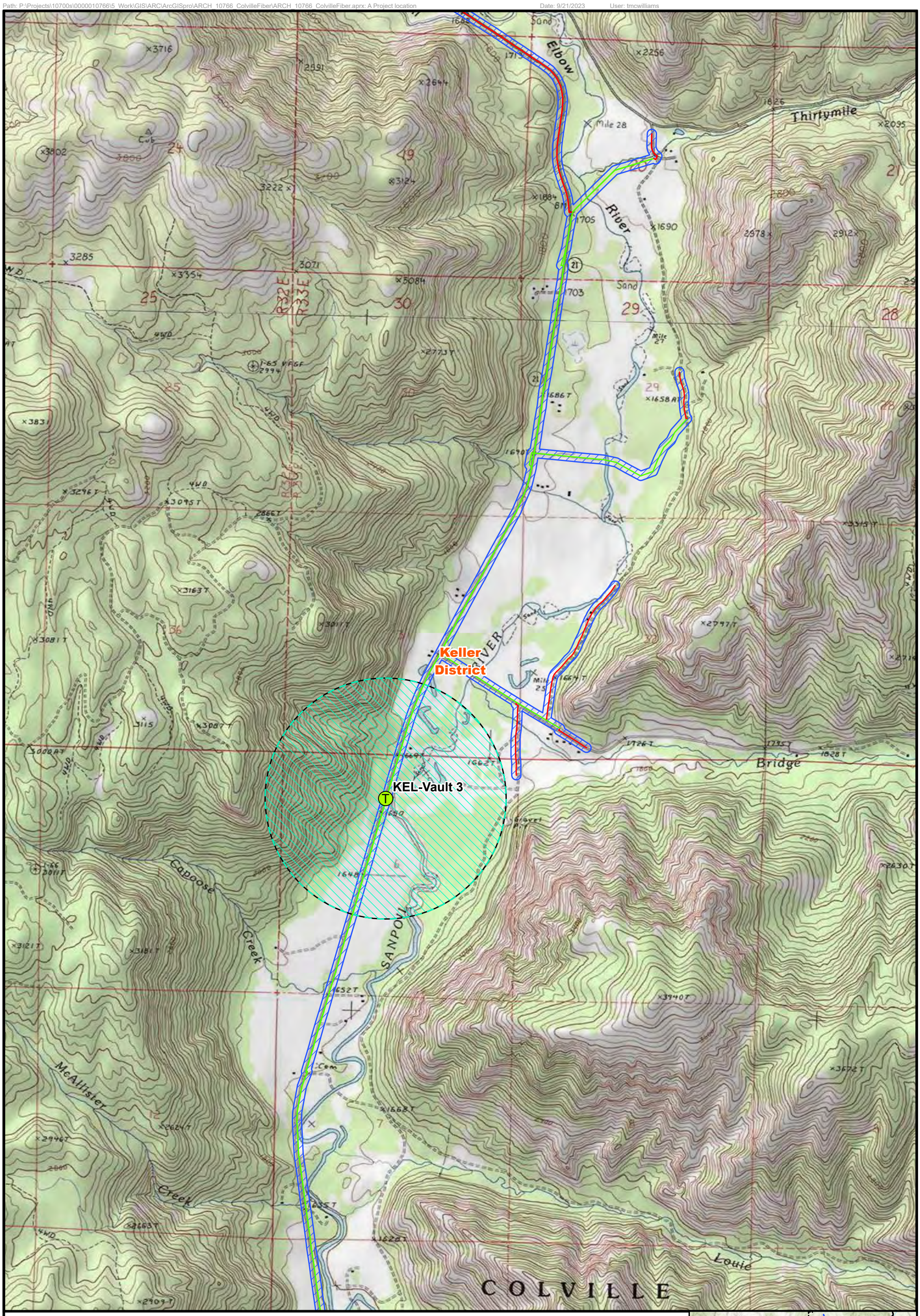

Figure A.17. Project location map

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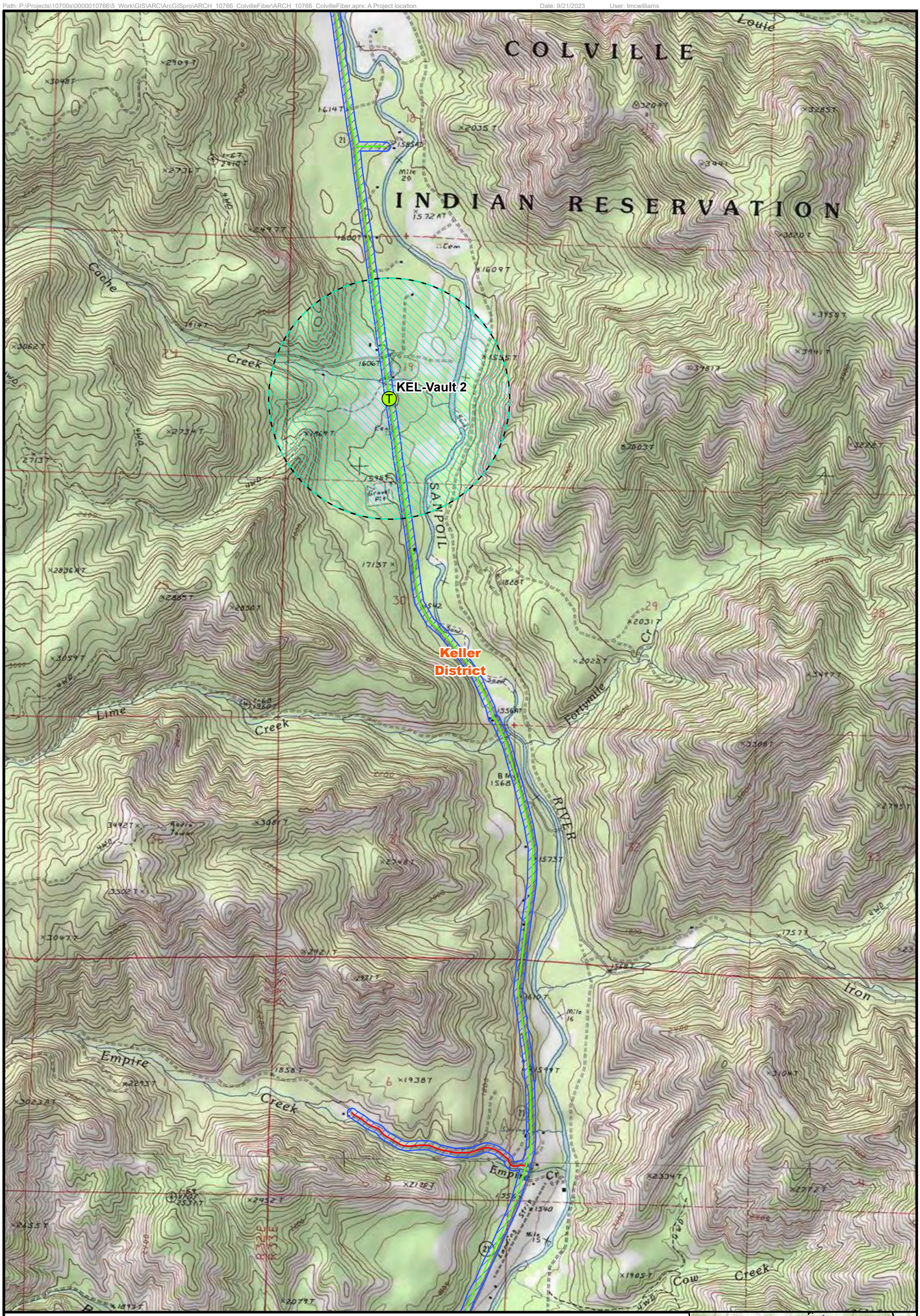


Figure A.18. Project location map

Keller District

COLVILLE INDIAN RESERVATION

T29N, R33E, Portions of Sections 3 and 4,
T30N, R33E, Portions of Sections 7, 17-22, 27-30, 33, and 34,
Ferry County, Washington,
Keller USGS 7.5' Quadrangle,
Projection: NAD 1983 UTM Zone 11N

Legend

- Proposed aerial fiber
- Proposed underground fiber
- Colville Reservation District Boundary
- APE (Area of Direct Effects)

N

0 1,000 2,000 Feet

0 300 600 Meters

WestLand 100% EMPLOYEE OWNED Engineering & Environmental Services, Inc.

Figure A.19. Project location map

Path: P:\Projects\10700s\0000010766\5_Work\GIS\ARC\ArcGISpro\ARCH_10766_ColvilleFiber\ARCH_10766_ColvilleFiber.aprx: A Project location Date: 9/21/2023 User: tmcwilliams

T29N, R32E, Portions of Sections 11, 13, and 14,
T29N, R33E, Poritons of Sections 8, 17-20,
Ferry County, Washington,
Keller USGS 7.5' Quadrangle,
Projection: NAD 1983 UTM Zone 11N

Legend

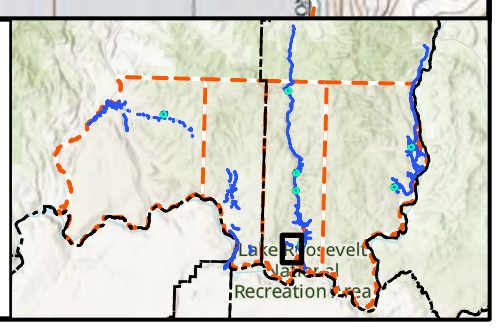
- Proposed aerial fiber
- Proposed underground fiber
- COW
- Colville Reservation District Boundary
- APE (Area of Direct Effects)
- APE (Area of Indirect Effects)

N

0 1,000 2,000 Feet

0 300 600 Meters

WestLand
100% EMPLOYEE OWNED
Engineering & Environmental Services, Inc.



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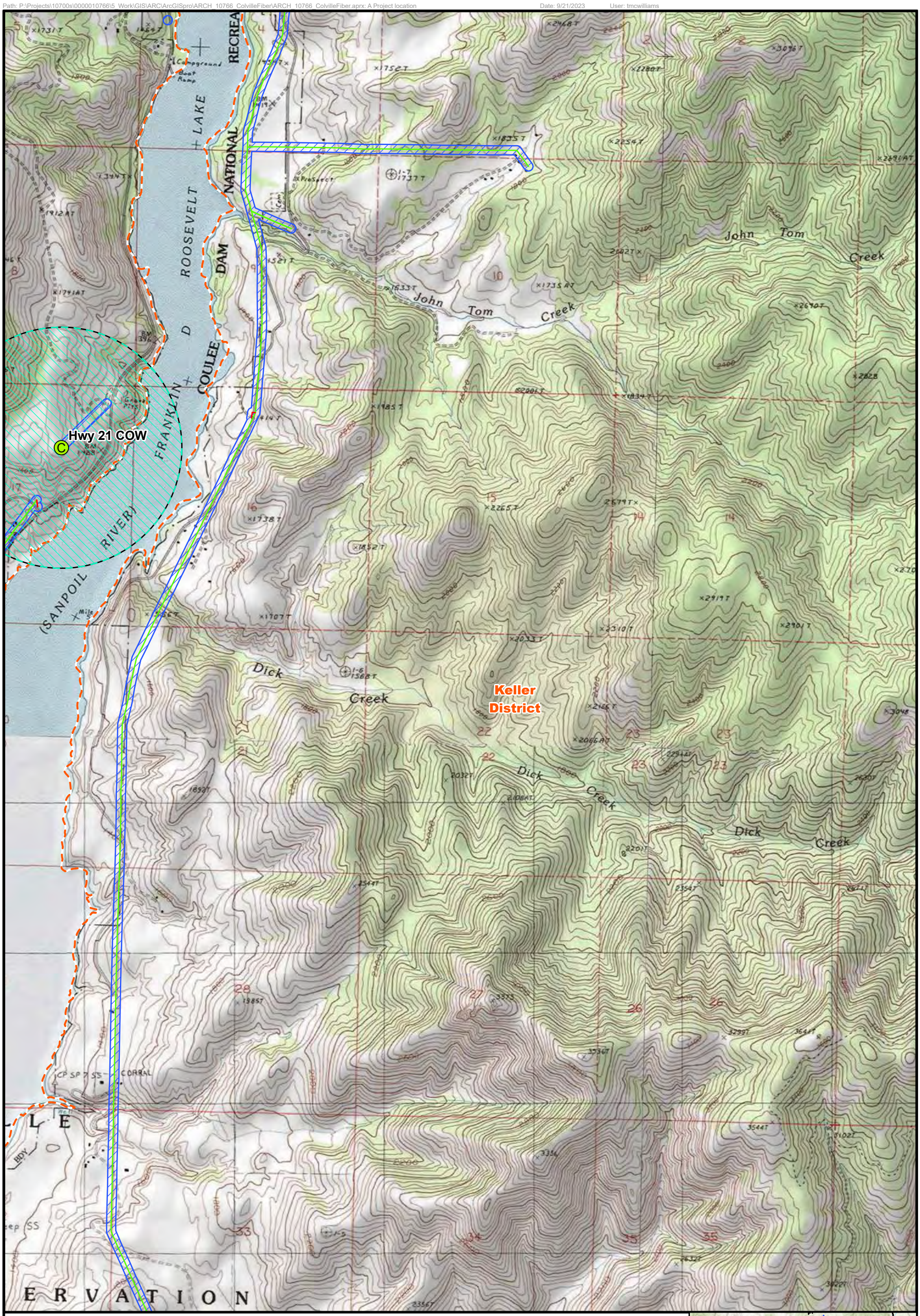

Figure A.21. Project location map

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Keller District

T28N, R33E, Portions of Sections 3, 4, 9, and 10,
T29N, R33E, Portions of Sections 32 and 33,
Ferry County, Washington,
Keller Ferry USGS 7.5' Quadrangle,
Projection: NAD 1983 UTM Zone 11N

Legend

- Proposed aerial fiber
- Colville Reservation District Boundary
- APE (Area of Direct Effects)

N

0 1,000 2,000 Feet

0 300 600 Meters

WestLand
100% EMPLOYEE OWNED
Engineering & Environmental Services, Inc.

Figure A.22. Project location map

T35N, R37E, Portions of Sections 4, 8, 9, 17, and 20,
T36N, R37E, Portions of Sections 27, 28, and 33,
Ferry County, Washington,
Bangs Mountain USGS 7.5' Quadrangle,
Projection: NAD 1983 UTM Zone 11N

Legend

- Proposed aerial fiber
- Proposed underground fiber
- APE (Area of Direct Effects)

N

0 1,000 2,000 Feet

0 300 600 Meters

WestLand
100% EMPLOYEE OWNED
Engineering & Environmental Services, Inc.

Figure A.23. Project location map

Path: P:\Projects\10700s\0000010766\5_Work\GIS\ARC\ArcGISpro\ARCH_10766_ColvilleFiber\ARCH_10766_ColvilleFiber.aprx: A Project location Date: 9/21/2023 User: tmcwilliams

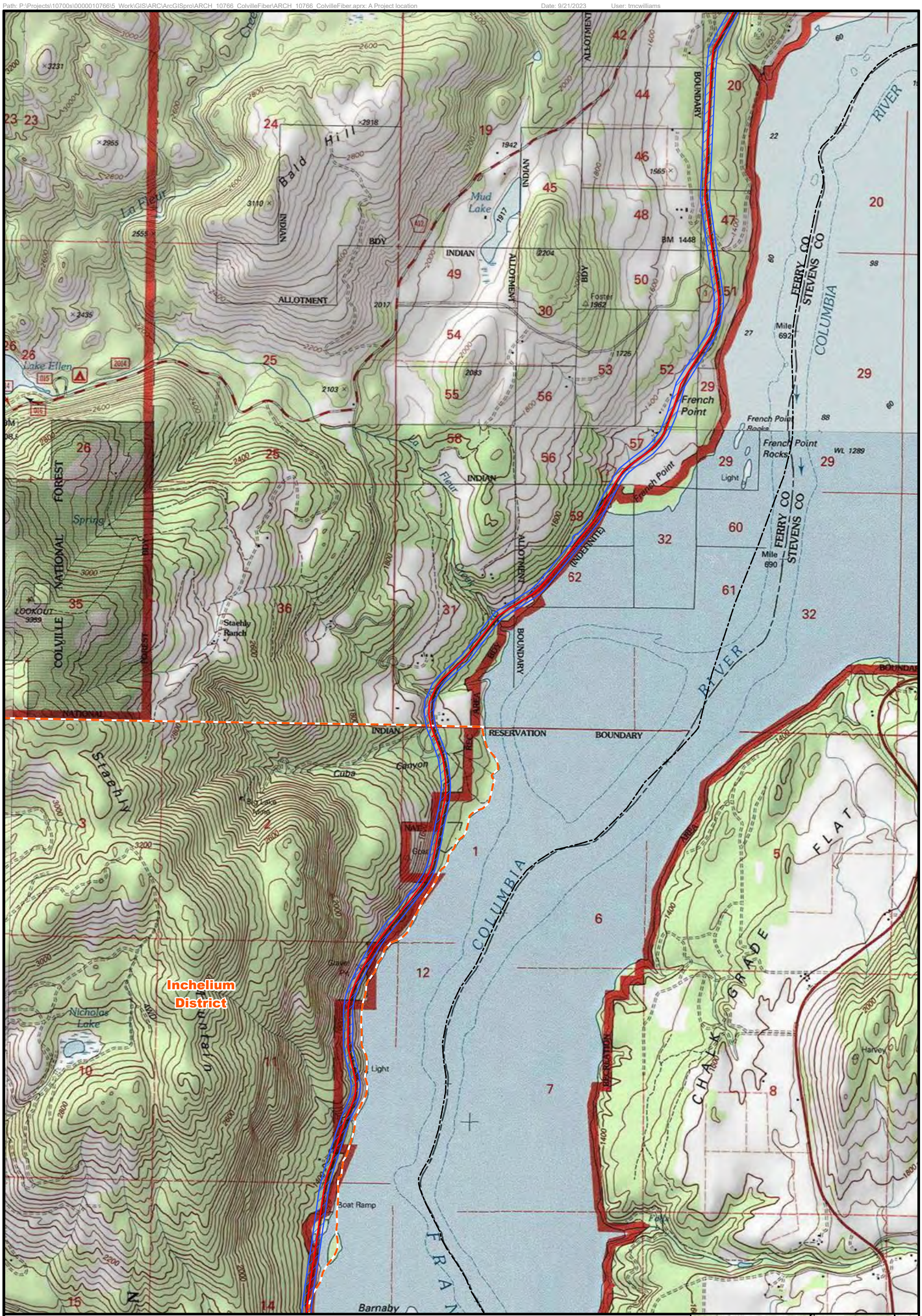

Figure A.24. Project location map

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Inchelium District

T33N, R36E, Portions of Sections 1 and 12,
T34N, R36E, Portions of Sections 14, 23, 25, 26, 35, and 36,
Ferry County, Washington,
Rice and Inchelium USGS 7.5' Quadrangles,
Projection: NAD 1983 UTM Zone 11N

Legend

- Proposed aerial fiber
- Proposed underground fiber
- Colville Reservation District Boundary
- APE (Area of Direct Effects)

N

0 1,000 2,000 Feet

0 300 600 Meters

WestLand
100% EMPLOYEE OWNED
Engineering & Environmental Services, Inc.

Figure A.25. Project location map

Path: P:\Projects\10700s\0000010766\5_Work\GIS\ARC\ArcGISpro\ARCH_10766_ColvilleFiber\ARCH_10766_ColvilleFiber.aprx: A Project location Date: 9/21/2023 User: tmcwilliams

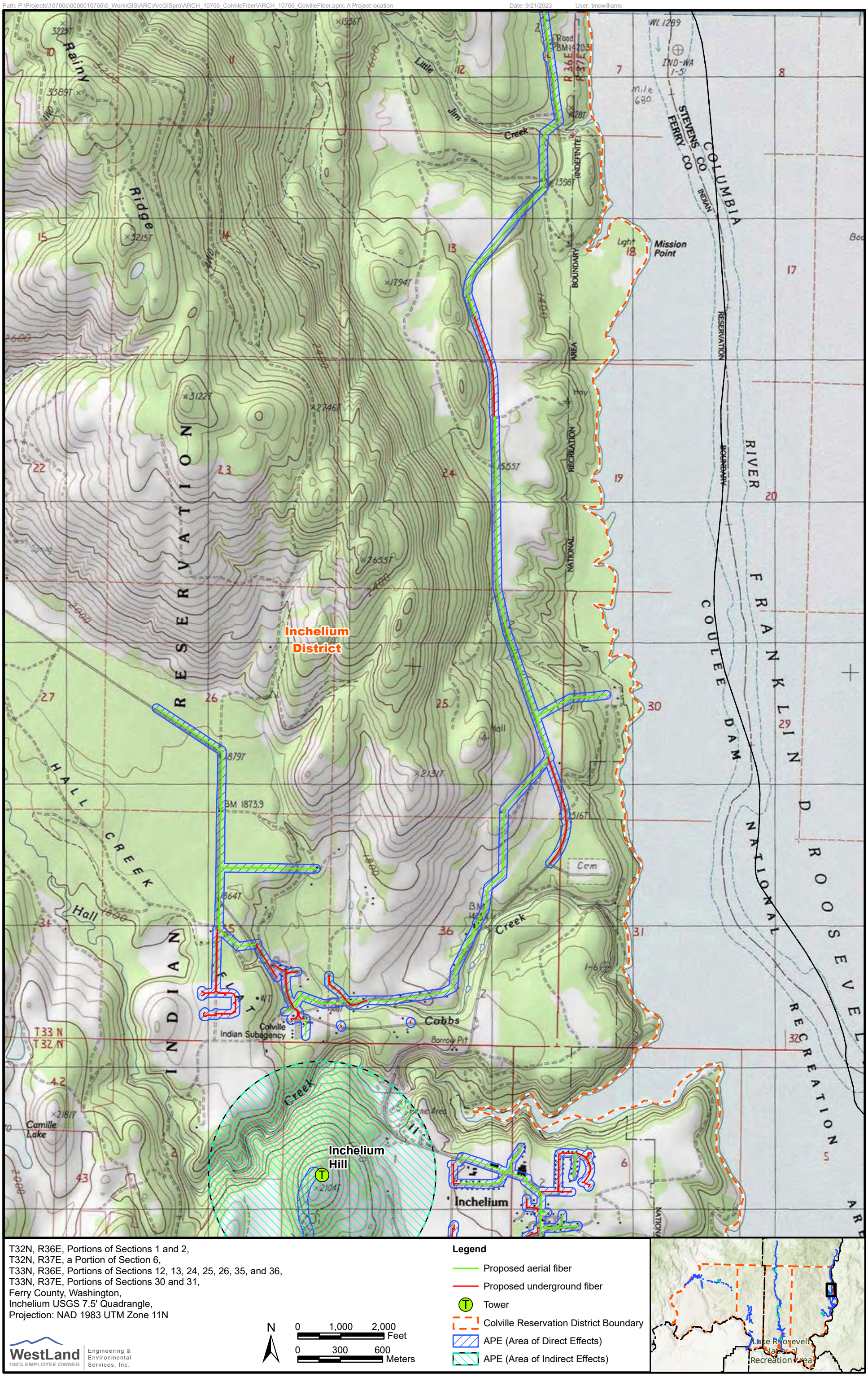

Figure A.26. Project location map

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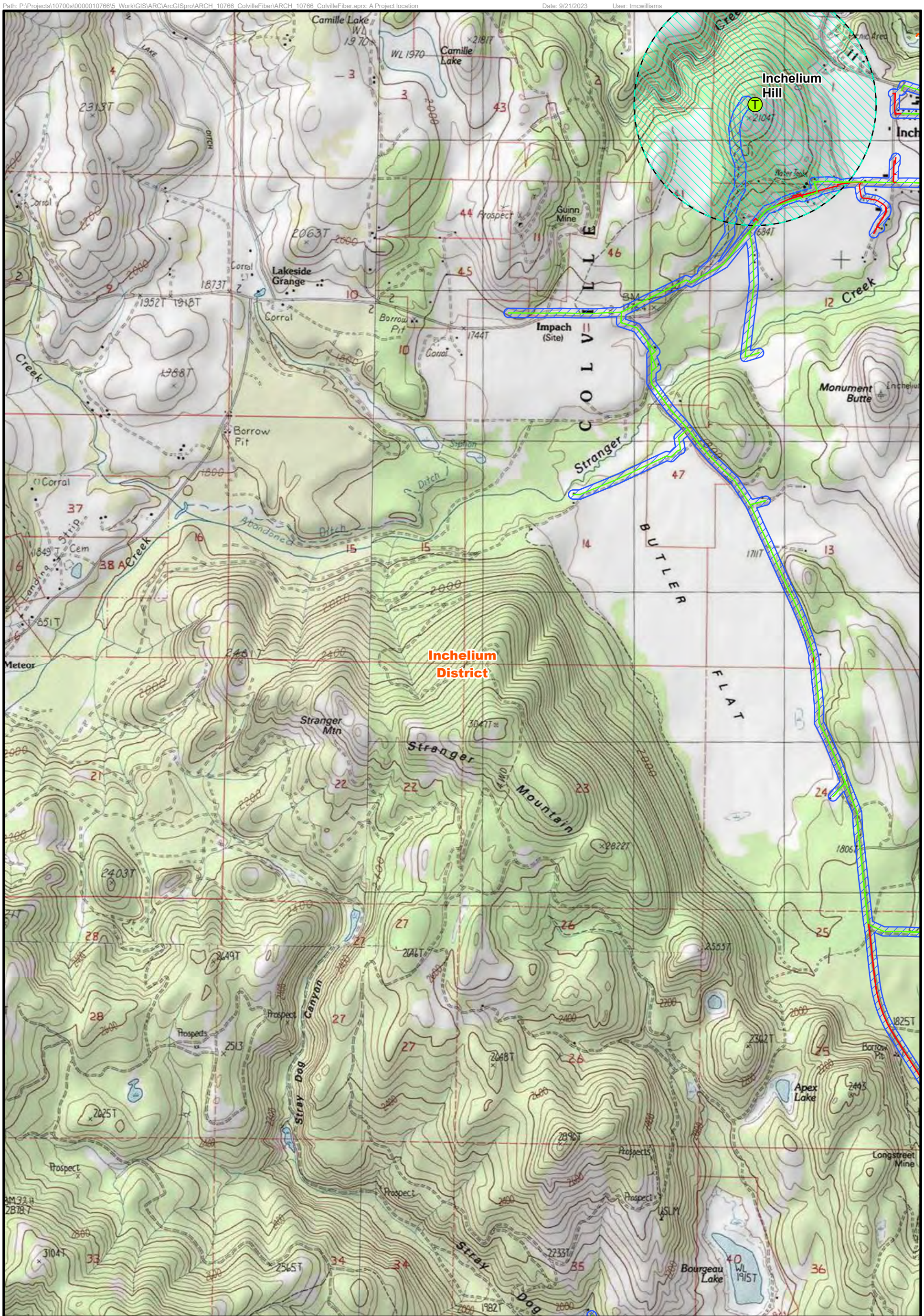

Figure A.27. Project location map

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Inchelium District

T32N, R36E, Portions of Sections 1, 12, 24, and 25,
T32N, R37E, Portions of Sections 6-8, 16-19, and 29-32,
Ferry County, Washington,
Inchelium and Cedonia USGS 7.5' Quadrangles,
Projection: NAD 1983 UTM Zone 11N

Legend

- Proposed aerial fiber
- Proposed underground fiber
- Colville Reservation District Boundary
- APE (Area of Direct Effects)
- APE (Area of Indirect Effects)

N

0 1,000 2,000 Feet

0 300 600 Meters

WestLand
100% EMPLOYEE OWNED
Engineering & Environmental Services, Inc.

Figure A.28. Project location map

Path: P:\Projects\10700s\0000010766\5_Work\GIS\ARC\ArcGISpro\ARCH_10766_ColvilleFiber\ARCH_10766_ColvilleFiber.aprx: A Project location Date: 9/21/2023 User: tmcwilliams

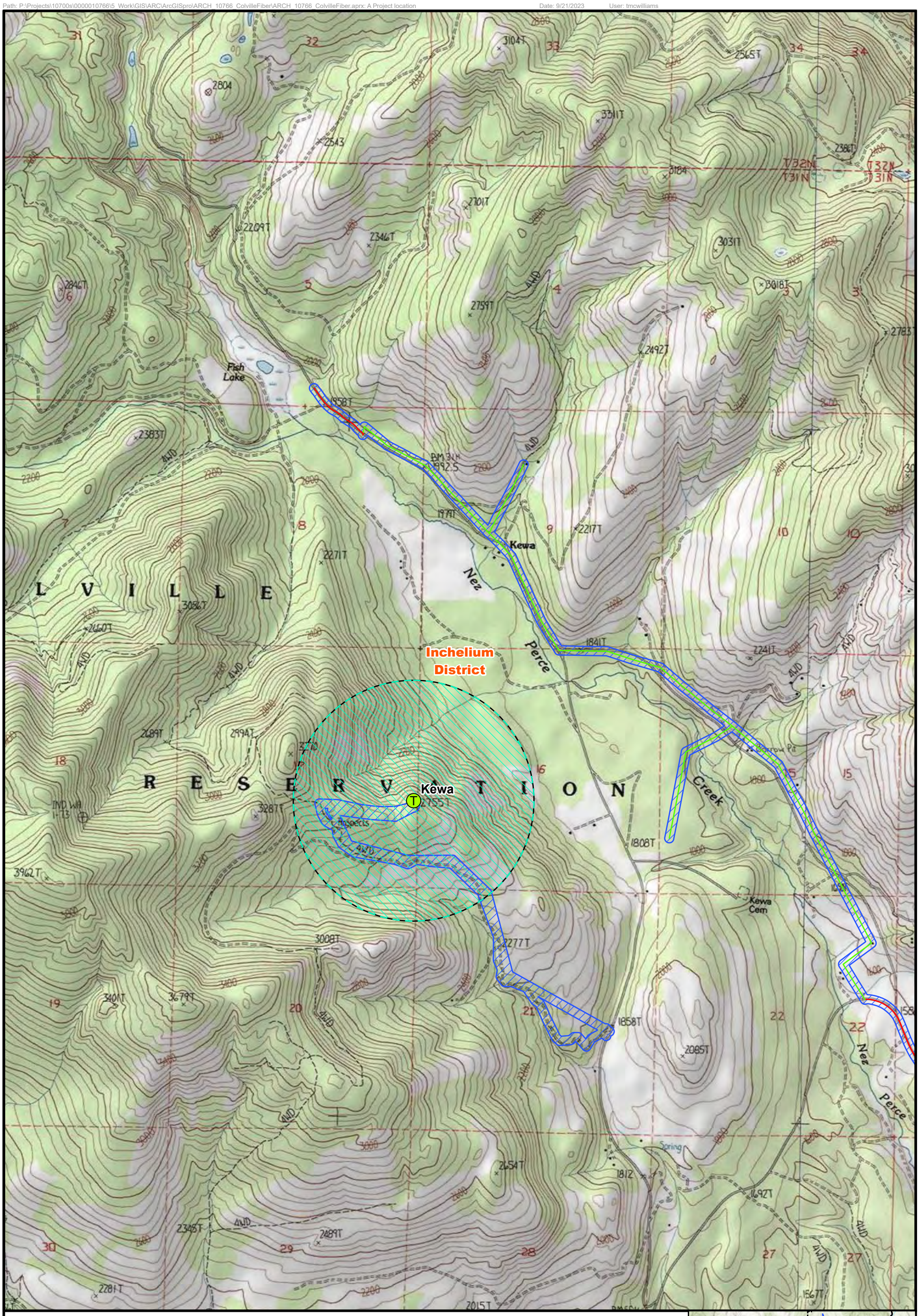
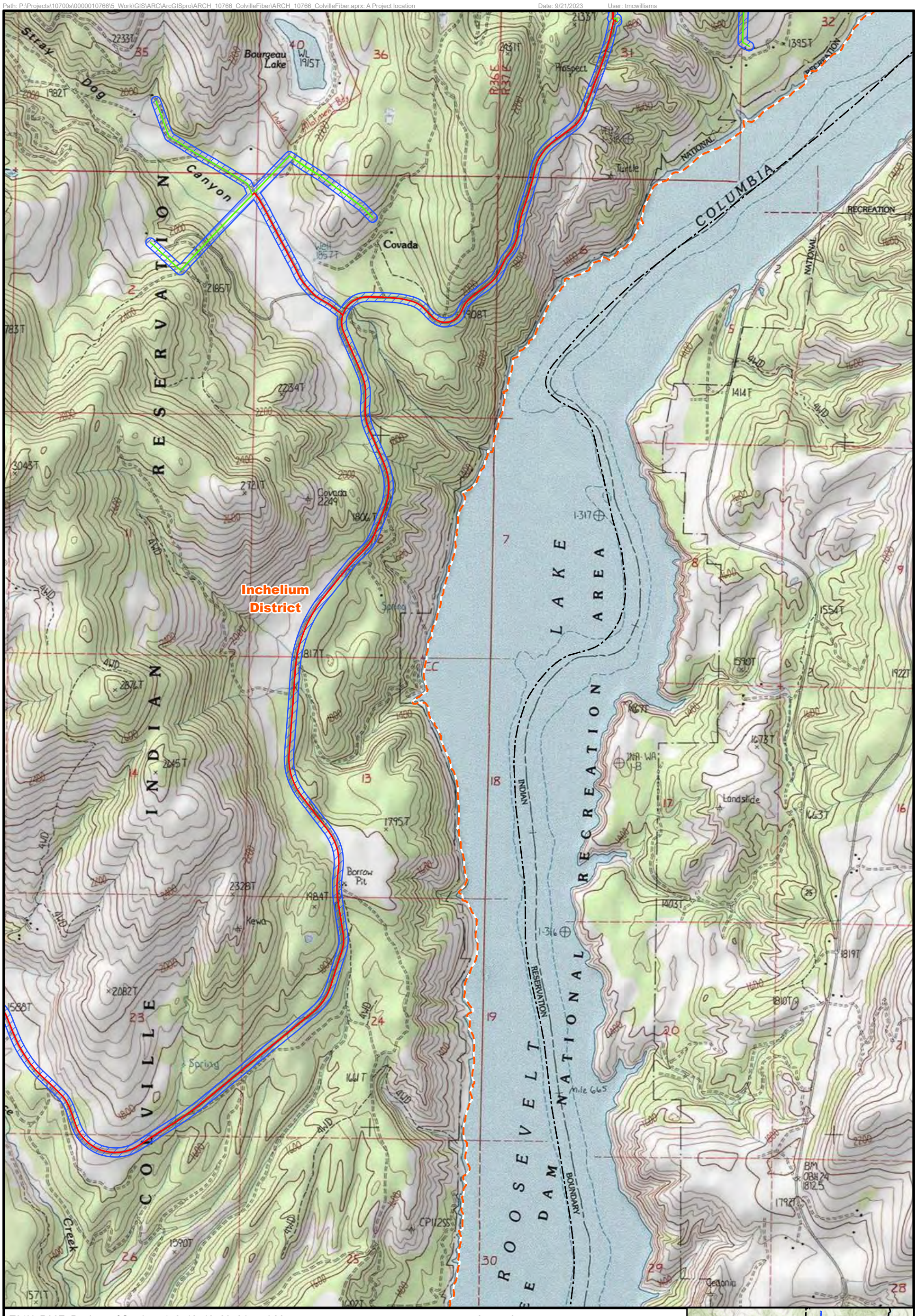


Figure A.29. Project location map



T31N, R36E, Portions of Sections 1, 2, 12, 13, 23, 24, and 26,
T31N, R37E, a Portion of Section 6,
T32N, R36E, Portions of Sections 35 and 36,
T32N, R37E, Portions of Sections 31 and 32,
Ferry County, Washington,
Cedonia USGS 7.5' Quadrangle,
Projection: NAD 1983 UTM Zone 11N

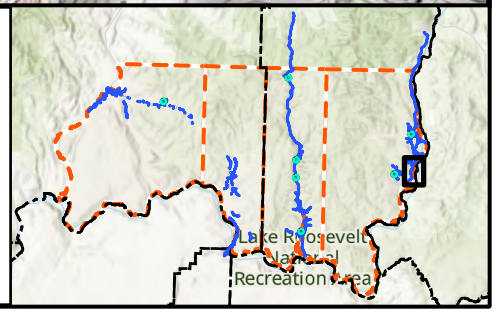
Legend

- Proposed aerial fiber
- Proposed underground fiber
- Colville Reservation District Boundary
- APE (Area of Direct Effects)

N

0 1,000 2,000 Feet

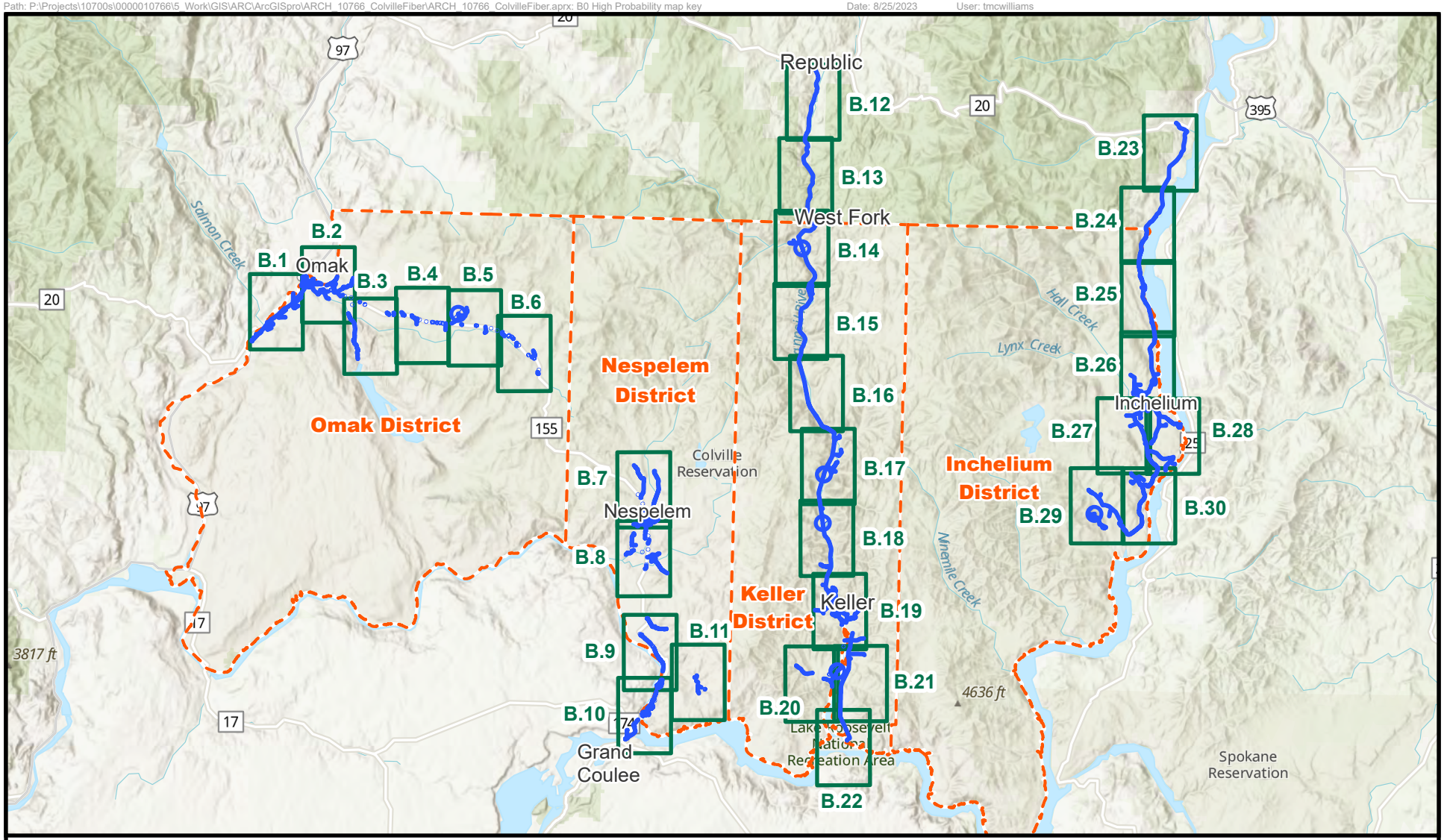
0 300 600 Meters



WestLand
100% EMPLOYEE OWNED
Engineering & Environmental Services, Inc.

Figure A.30. Project location map

Appendix B
Results Maps Showing High Probability Areas



Townships 28-36 North, Ranges 26-37 East
Douglas, Ferry, Grant, and Okanogan Counties, Washington,
Data Source: ArcGIS Online, World Topographic Map
Projection: NAD 1983 UTM Zone 11N

Legend

- APE
- Appendix B map extent
- Colville Reservation District Boundary

N

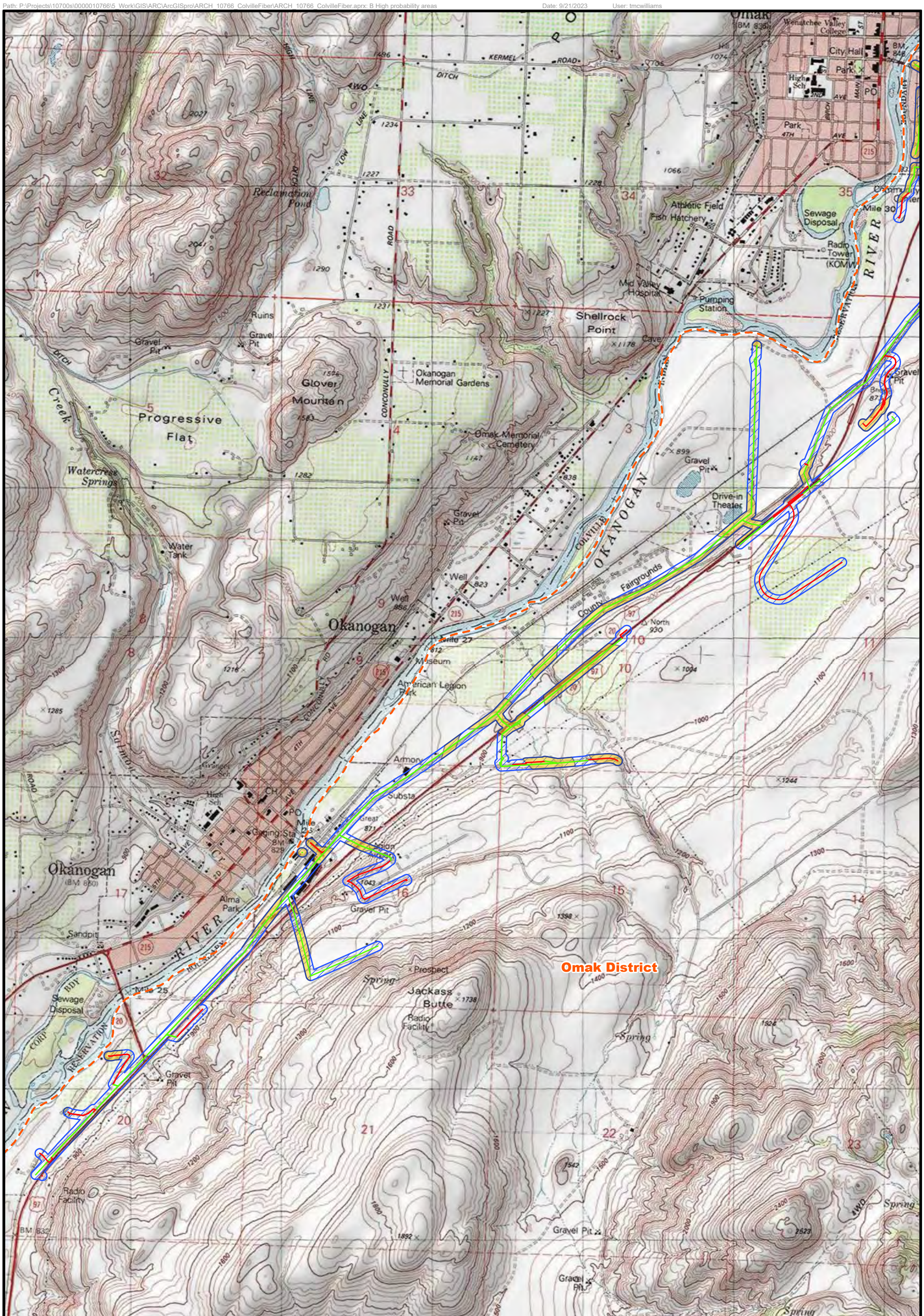
0 5 10 Miles

0 8 16 Kilometers

WestLand
100% EMPLOYEE OWNED
Engineering & Environmental Services, Inc.

Figure B.0. High probability areas map key

Path: P:\Projects\10700s\0000010766\5_Work\GIS\ARC\ArcGISpro\ARCH_10766_ColvilleFiber\ARCH_10766_ColvilleFiber.aprx: B High probability areas Date: 9/21/2023 User: tmcwilliams



T33N, R26E, Portions of Sections 2, 3, 9-11, 16, 17, and 20,
T34N, R26E, a Portion of Section 35,
Okanogan County, Washington,
Omak and Okanogan USGS 7.5' Quadrangles,
Projection: NAD 1983 UTM Zone 11N

- Proposed aerial fiber
- Proposed underground fiber
- APE (Area of Direct Effects)
- High probability area
- Colville Reservation District Boundary

N

0 1,000 2,000 Feet

0 300 600 Meters

WestLand
100% EMPLOYEE OWNED
Engineering & Environmental Services, Inc.

Figure B.1. Recommended avoidance areas

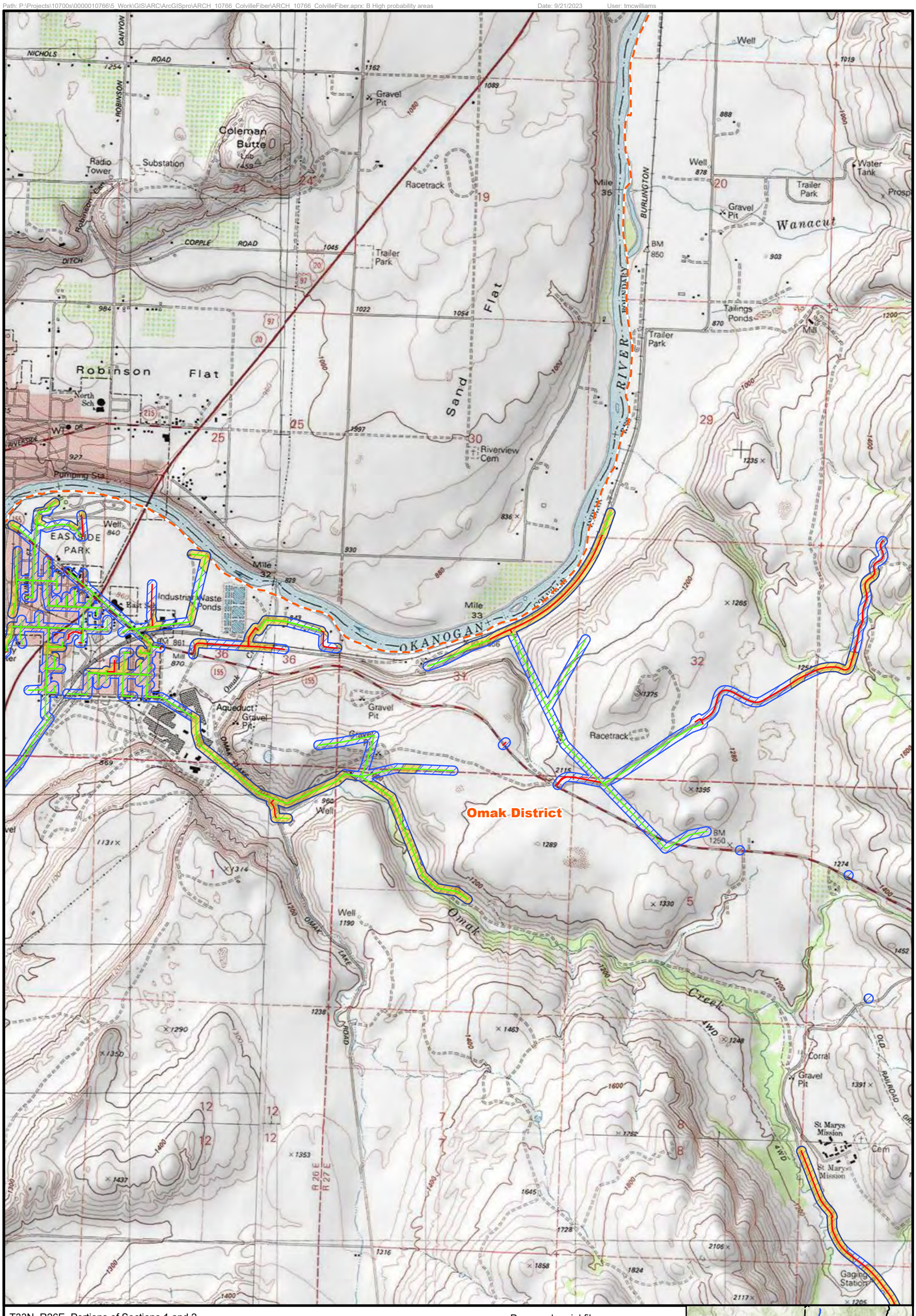


Figure B.2. Recommended avoidance areas

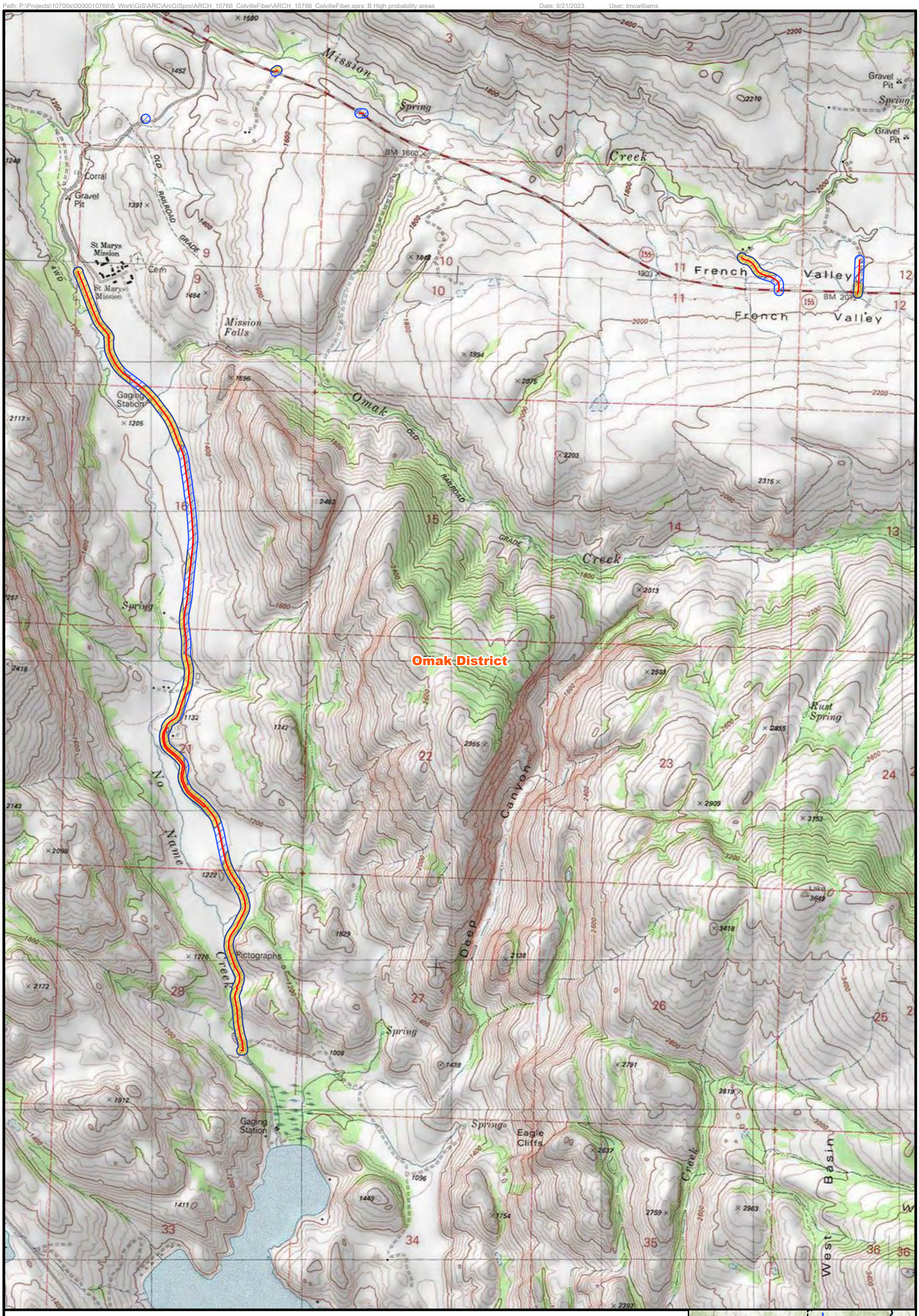


Figure B.3. Recommended avoidance areas

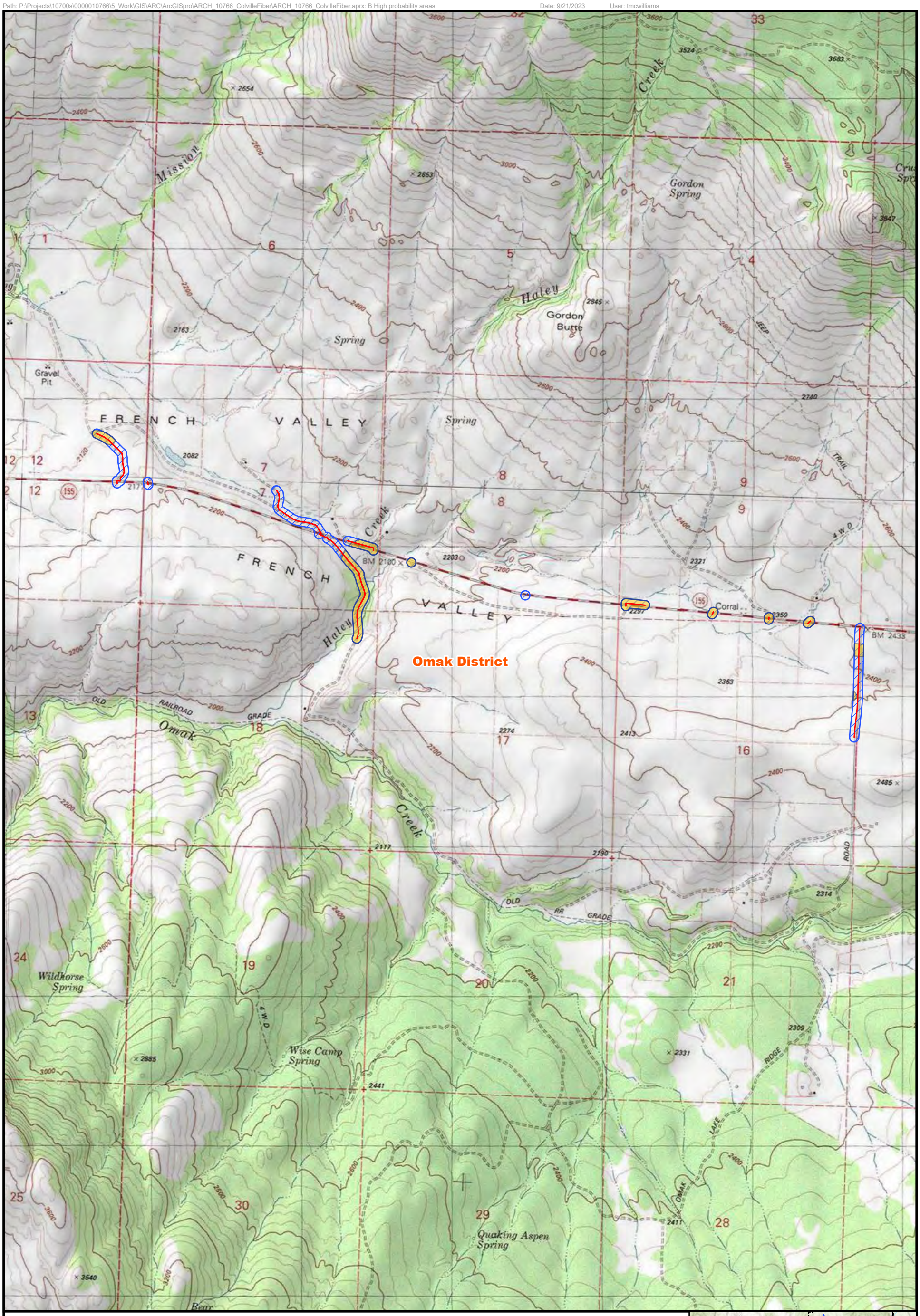
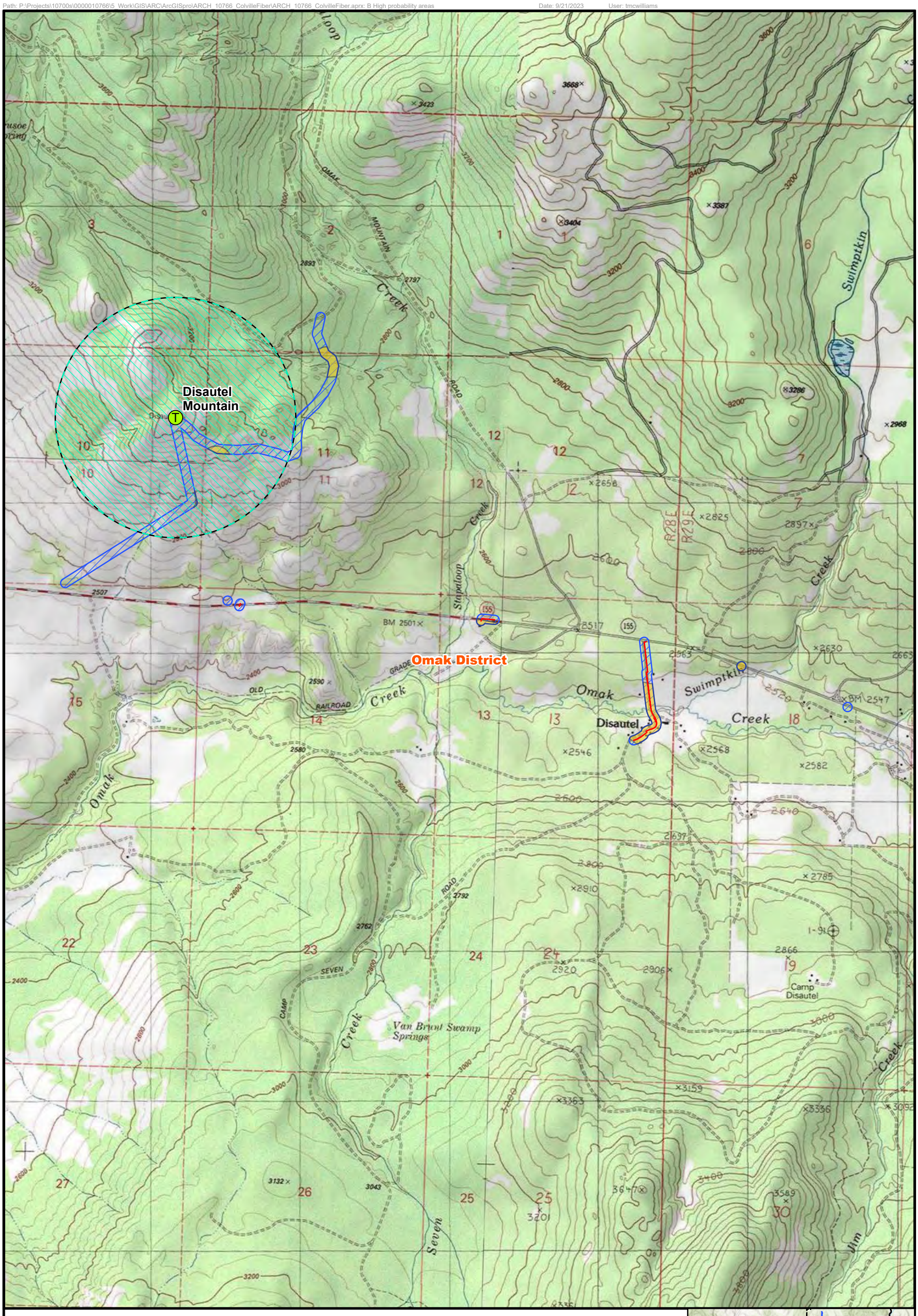


Figure B.4. Recommended avoidance areas

Path: P:\Projects\10700s\0000010766\5_Work\GIS\ARC\ArcGISpro\ARCH_10766_ColvilleFiber\ARCH_10766_ColvilleFiber.aprx: B High probability areas Date: 9/21/2023 User: tmcwilliams



T33N, R28E, Portions of Sections 2, 3, 10, 11, 13, and 14,
T33N, R29E, a Portion of Section 18,
Okanogan County, Washington,
Omak Mountain, Camp Seven, and Disautel USGS 7.5' Quadrangles,
Projection: NAD 1983 UTM Zone 11N

- Proposed underground fiber
- Tower
- APE (Area of Direct Effects)
- APE (Area of Indirect Effects)
- High probability area
- Colville Reservation District Boundary

N

0 1,000 2,000 Feet

0 300 600 Meters

WestLand
100% EMPLOYEE OWNED
Engineering & Environmental Services, Inc.

Figure B.5. Recommended avoidance areas

Omak District

COLVILLE INDIAN RESERVATION

T33N, R29E, Portions of Sections 17, 21, 22, 27, 28, and 34,
Okanogan County, Washington,
Disautel USGS 7.5' Quadrangle,
Projection: NAD 1983 UTM Zone 11N

Proposed underground fiber
APE (Area of Direct Effects)
High probability area
Colville Reservation District Boundary

N
0 1,000 2,000 Feet
0 300 600 Meters

WestLand
100% EMPLOYEE OWNED
Engineering & Environmental Services, Inc.

Figure B.6. Recommended avoidance areas

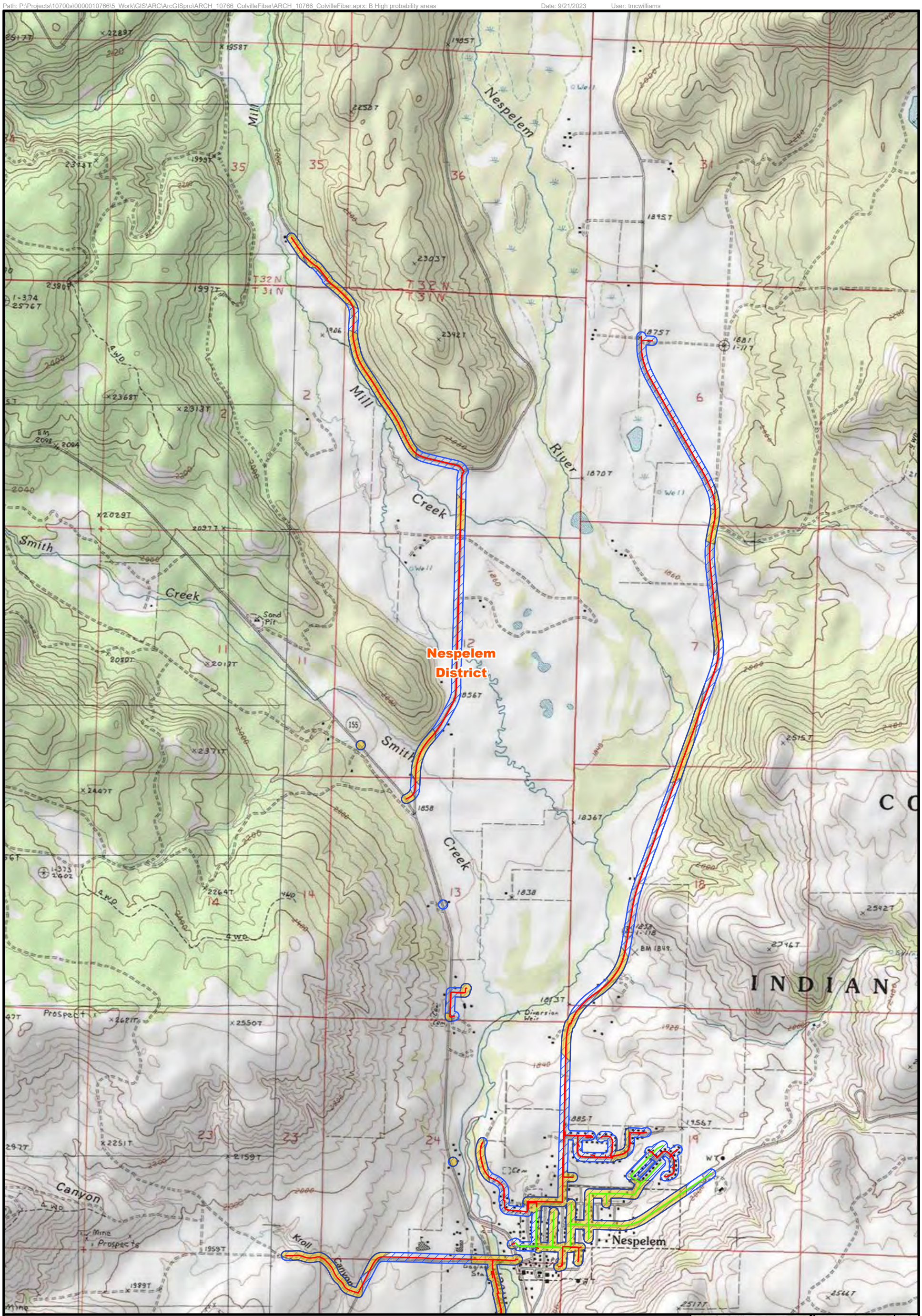


Figure B.7. Recommended avoidance areas

Nespelem

Nespelem District

Colville Indian Agency

T30N, R30E, Portions of Sections 1, 2, and 12,
T30N, R31E, Portions of Sections 6-8,
T31N, R30E, Portions of Sections 23-26, 35, and 36,
T31N, R31E, Portions of Sections 19, 30, and 31,
Okanogan County, Washington,
Armstrong Creek, Nespelem, and Belvedere USGS 7.5' Quadrangles,
Projection: NAD 1983 UTM Zone 11N

Proposed aerial fiber
Proposed underground fiber
APE (Area of Direct Effects)
High probability area
Colville Reservation District Boundary

N
0 1,000 2,000 Feet
0 300 600 Meters

WestLand
100% EMPLOYEE OWNED
Engineering & Environmental Services, Inc.

Lake Roosevelt National Recreation Area

Figure B.8. Recommended avoidance areas

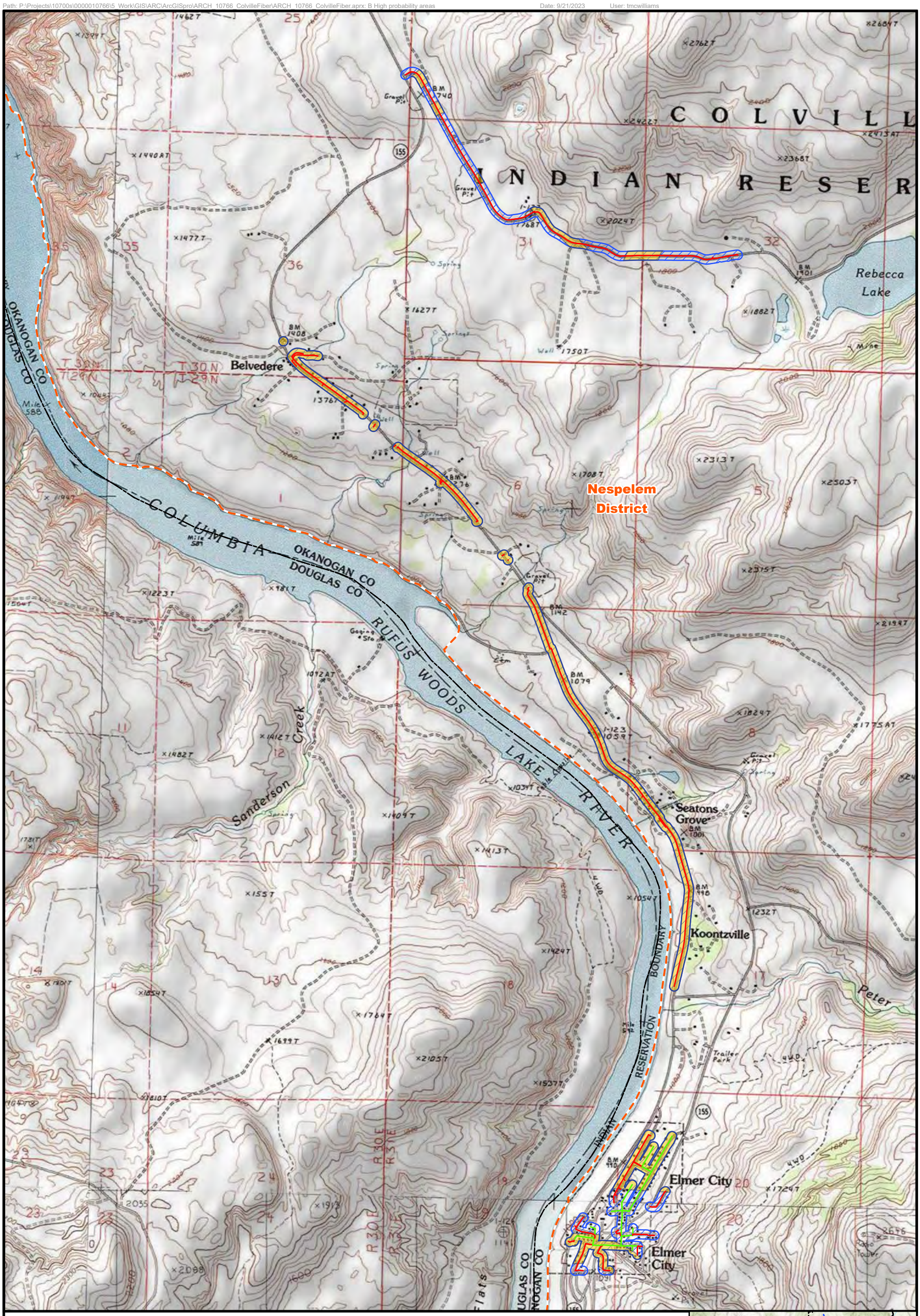


Figure B.9. Recommended avoidance areas

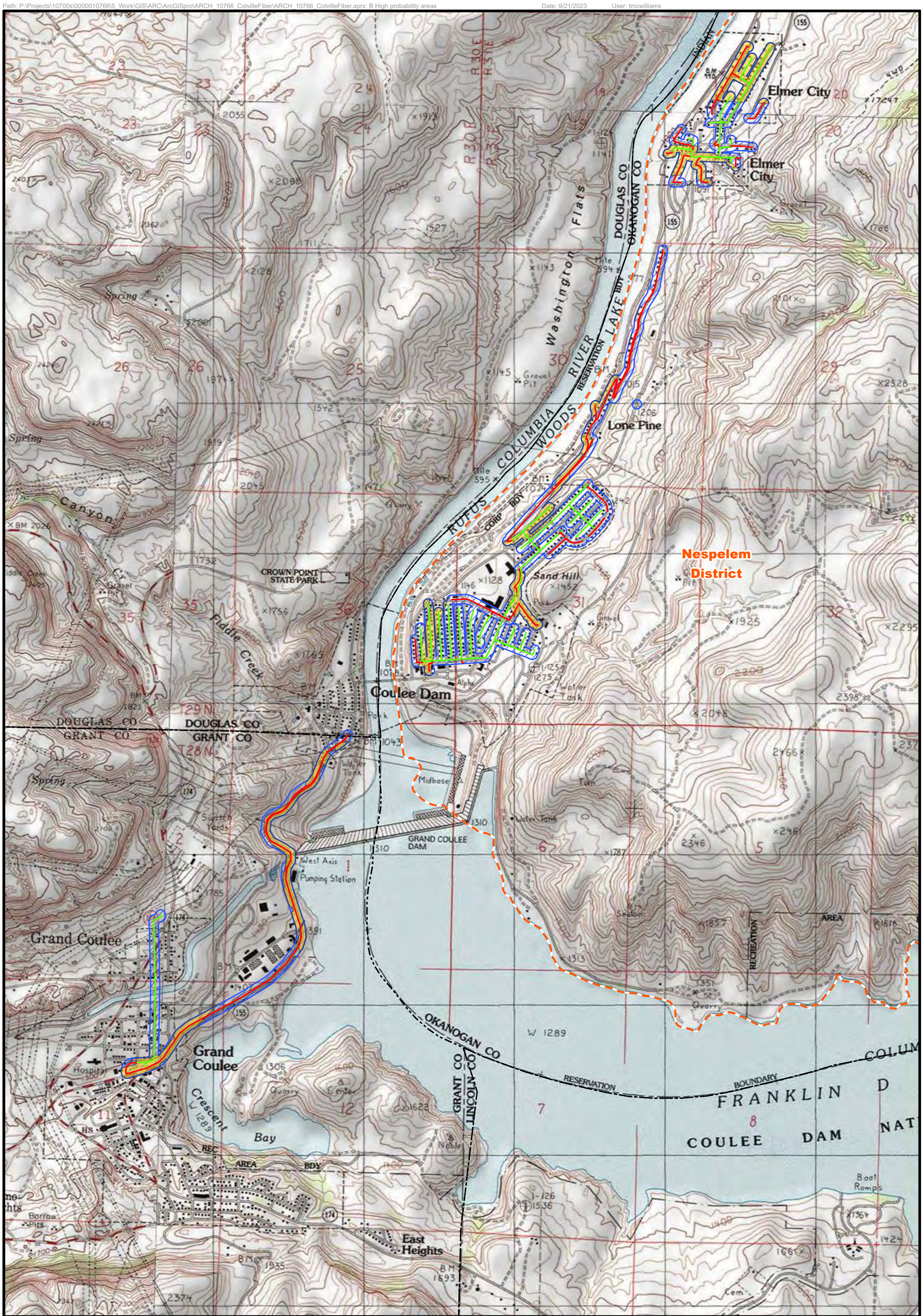
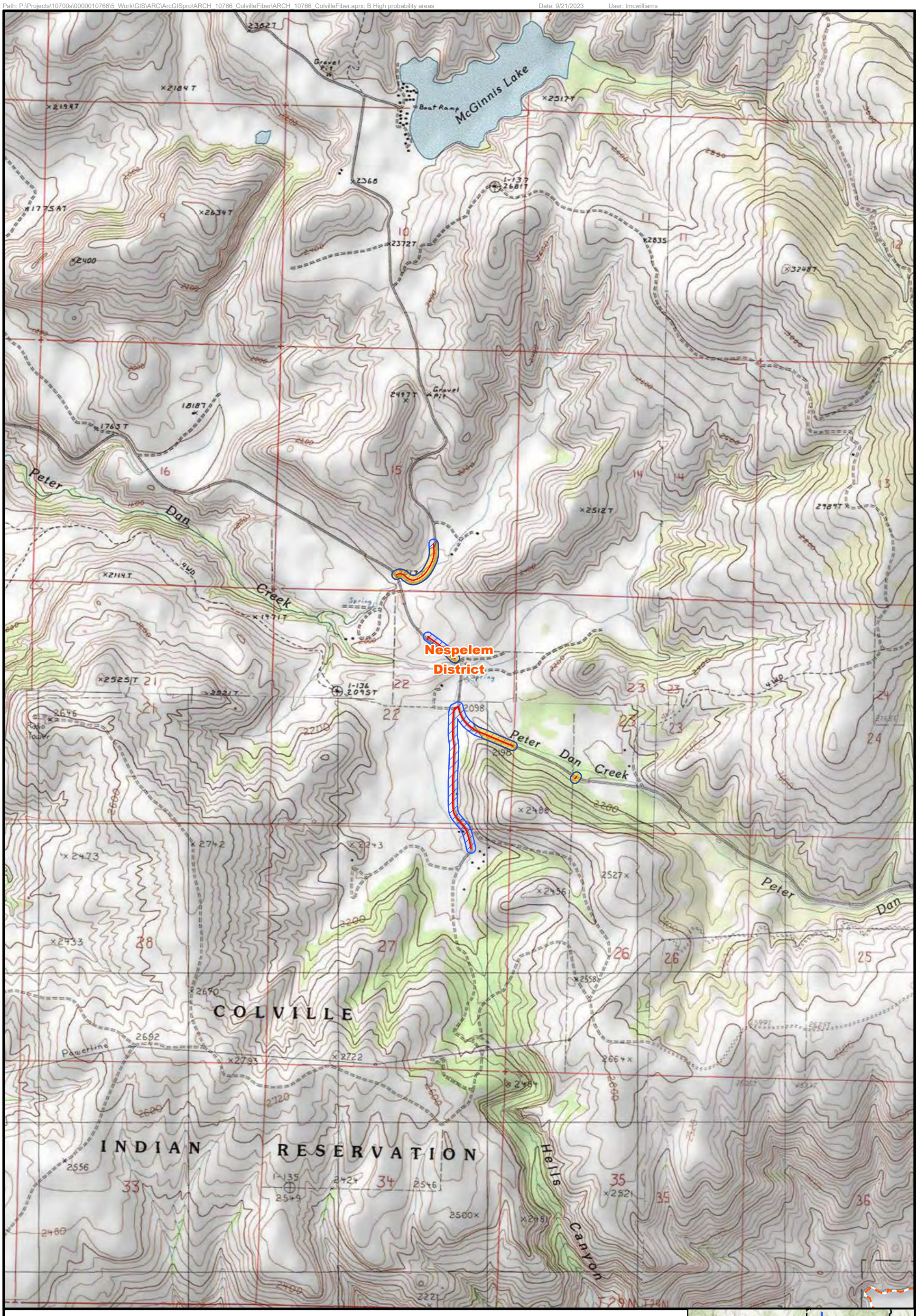


Figure B.10. Recommended avoidance areas



T29N, R31E, Portions of Sections 15, 22, 23, and 27,
Okanogan County, Washington,
Belvedere and Grand Coulee Dam USGS 7.5' Quadrangles,
Projection: NAD 1983 UTM Zone 11N

- Proposed underground fiber
- APE (Area of Direct Effects)
- High probability area
- Colville Reservation District Boundary

N

0 1,000 2,000 Feet

0 300 600 Meters

WestLand
100% EMPLOYEE OWNED
Engineering & Environmental Services, Inc.

Figure B.11. Recommended avoidance areas

Path: P:\Projects\10700s\0000010766\5_Work\GIS\ARC\ArcGISpro\ARCH_10766_ColvilleFiber\ARCH_10766_ColvilleFiber.aprx: B High probability areas Date: 9/21/2023 User: tmcwilliams

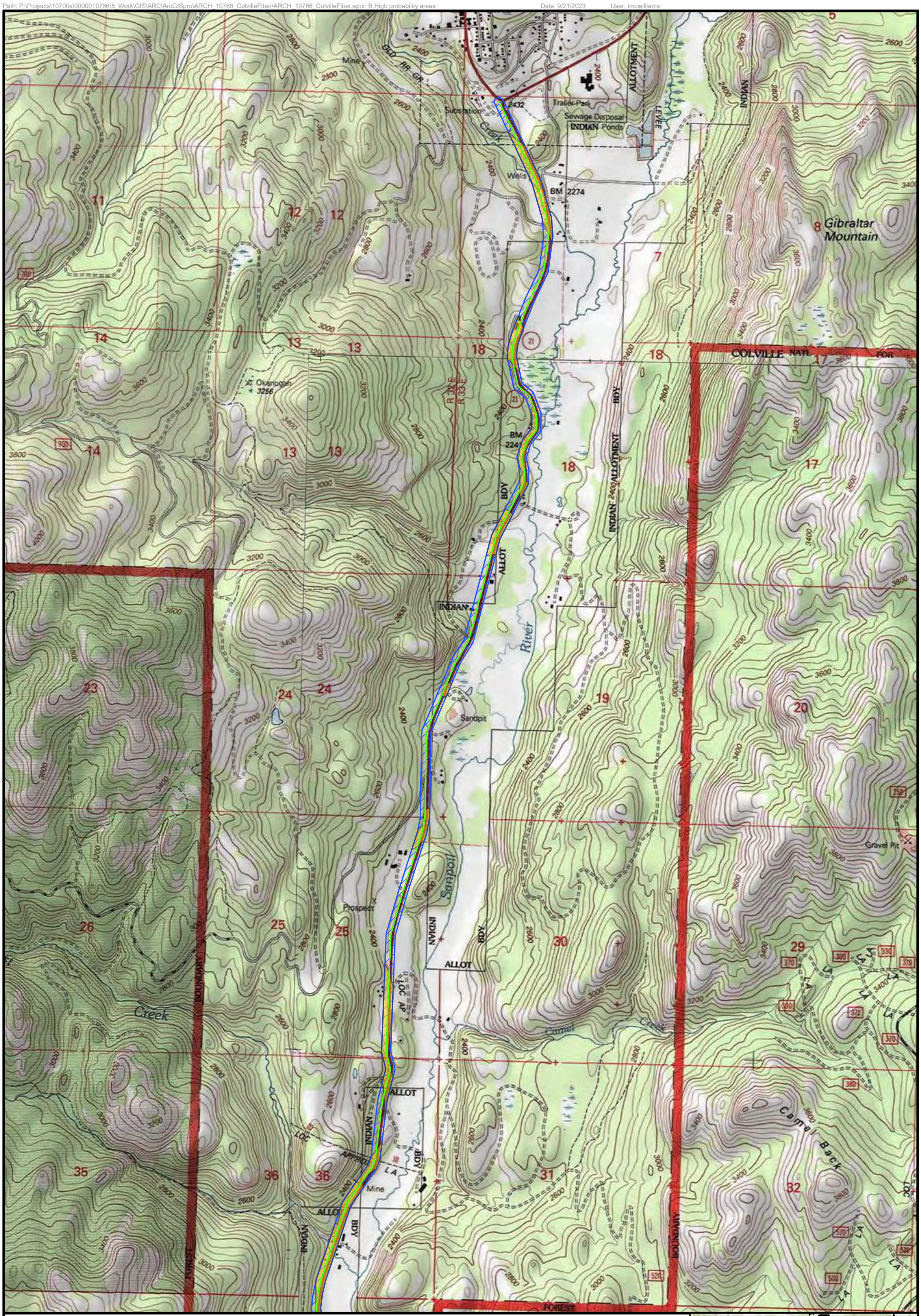


Figure B.12. Recommended avoidance areas

T35N, R32E, Portions of Sections 1, 12, 13, 24, 25, and 36,
T35N, R33E, Portions of Sections 18, 19, and 30,
Ferry County, Washington,
Bear Mountain, Swan Lake, and Thirteenmile Creek USGS 7.5' Quadrangles,
Projection: NAD 1983 UTM Zone 11N

Proposed aerial fiber
Proposed underground fiber
APE (Area of Direct Effects)
High probability area

N
0 1,000 2,000 Feet
0 300 600 Meters

WestLand
100% EMPLOYEE OWNED
Engineering & Environmental Services, Inc.

Lake Roosevelt National Recreation Area

Figure B.13. Recommended avoidance areas

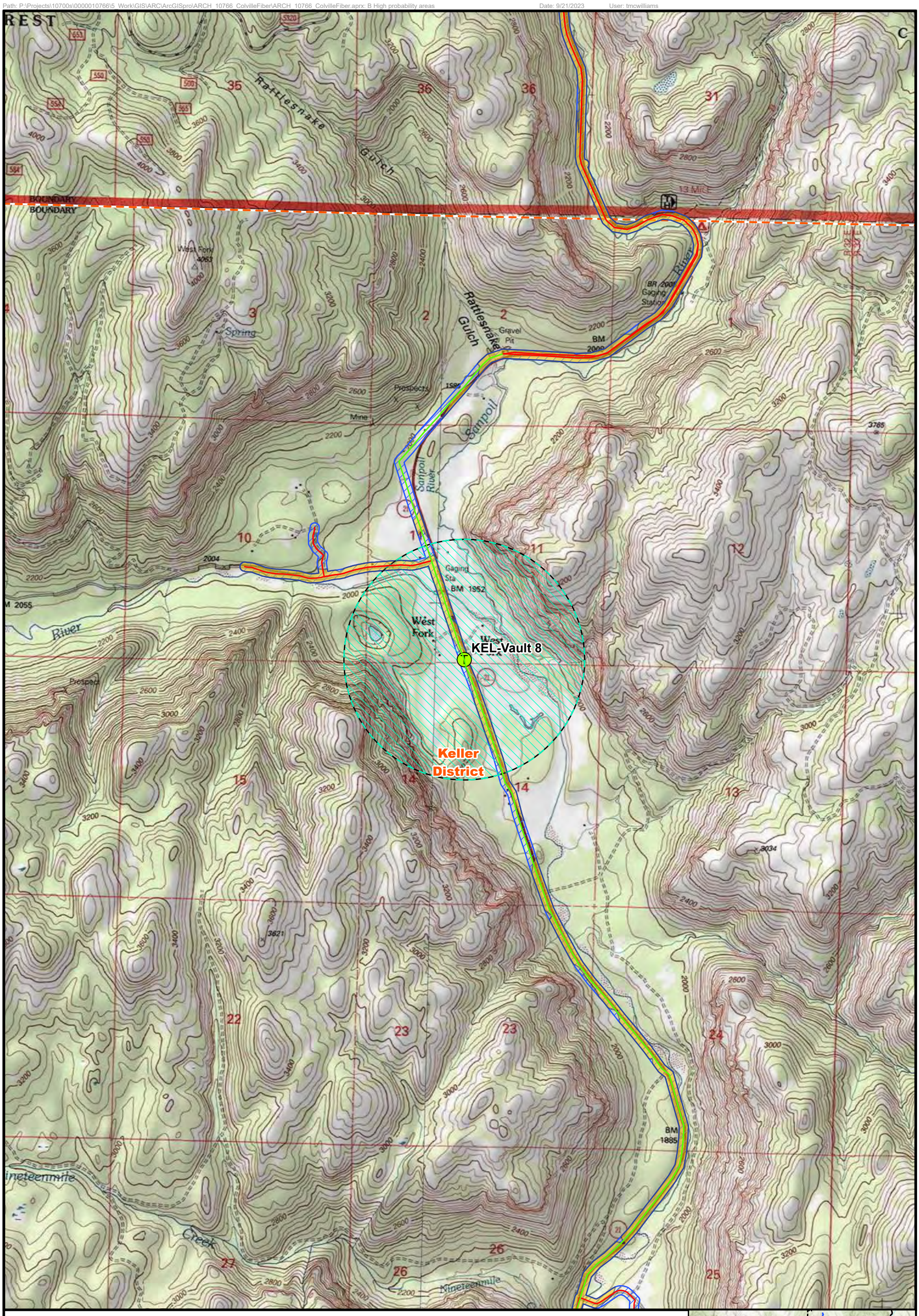


Figure B.14. Recommended avoidance areas

Keller District

T33N, R32E, Portions of Sections 2, 11, 14, and 23,
T34N, R32E, Portions of Sections 25, 26, 35, and 36,
Ferry County, Washington,
Thirteenmile Creek, Central Peak, and Cody Butte USGS 7.5' Quadrangles,
Projection: NAD 1983 UTM Zone 11N

Proposed aerial fiber
Proposed underground fiber
APE (Area of Direct Effects)
High probability area
Colville Reservation District Boundary

N
0 1,000 2,000 Feet
0 300 600 Meters

WestLand
100% EMPLOYEE OWNED
Engineering & Environmental Services, Inc.

Lake Roosevelt National Recreation Area

Figure B.15. Recommended avoidance areas

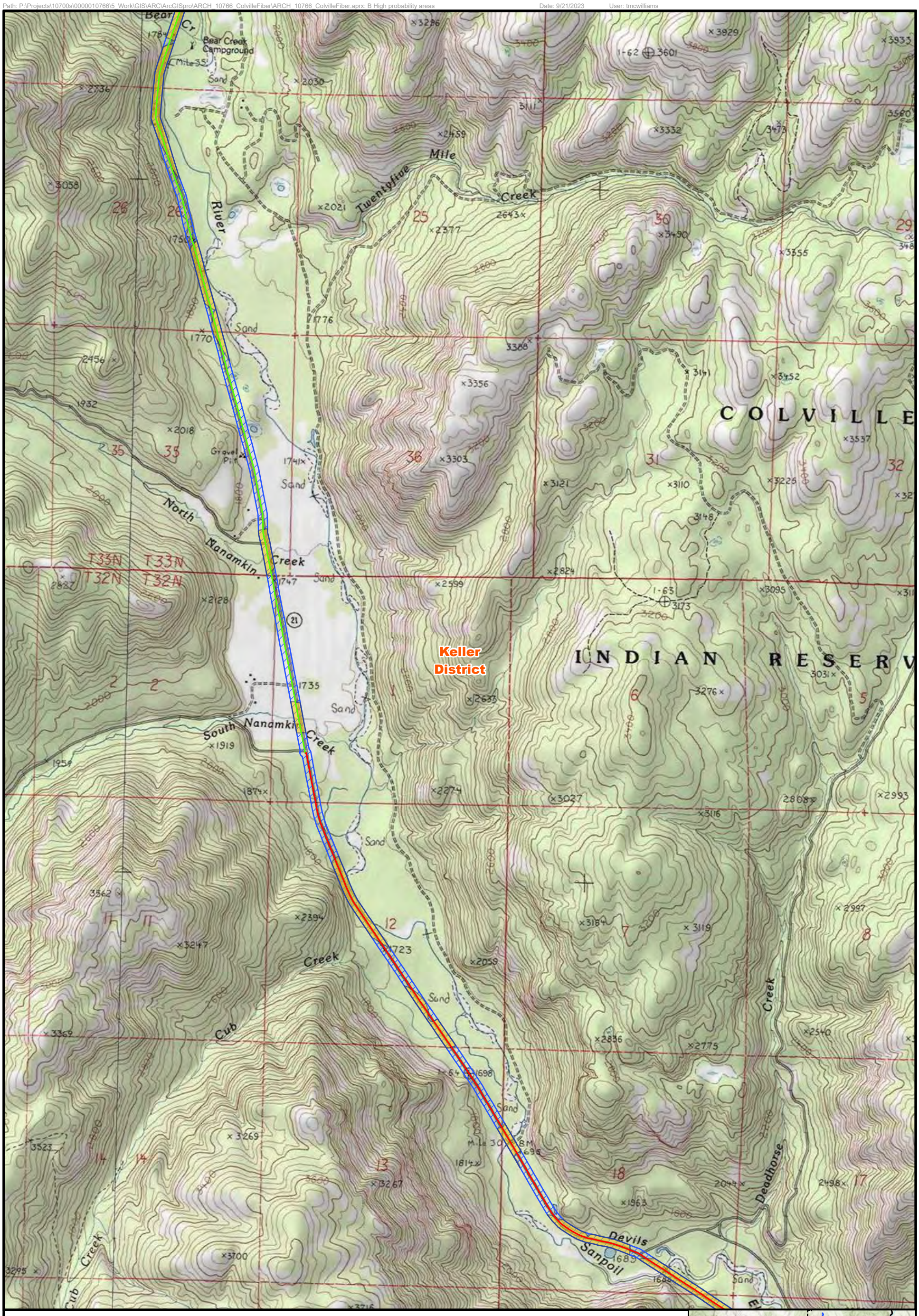


Figure B.16. Recommended avoidance areas

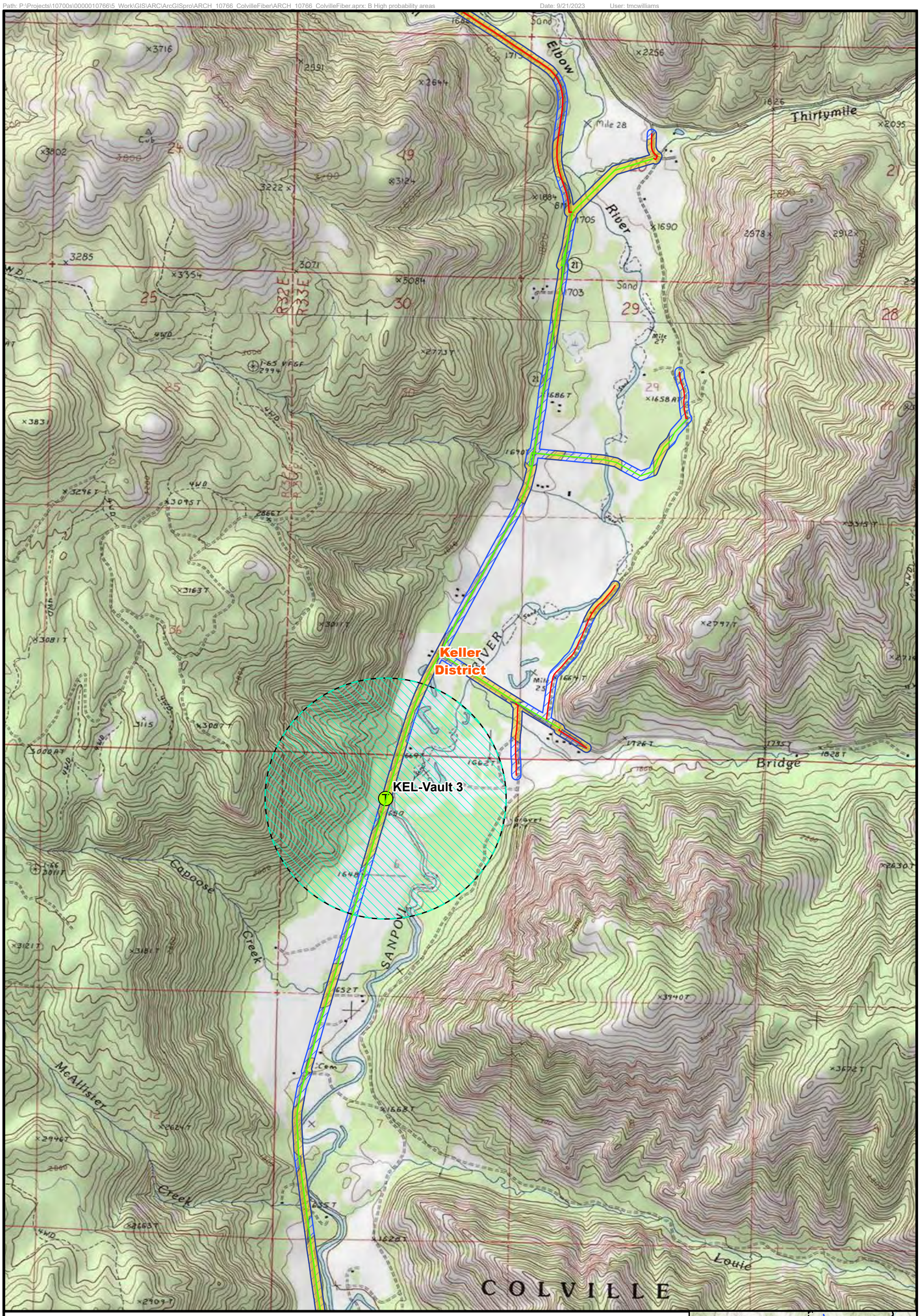


Figure B.17. Recommended avoidance areas

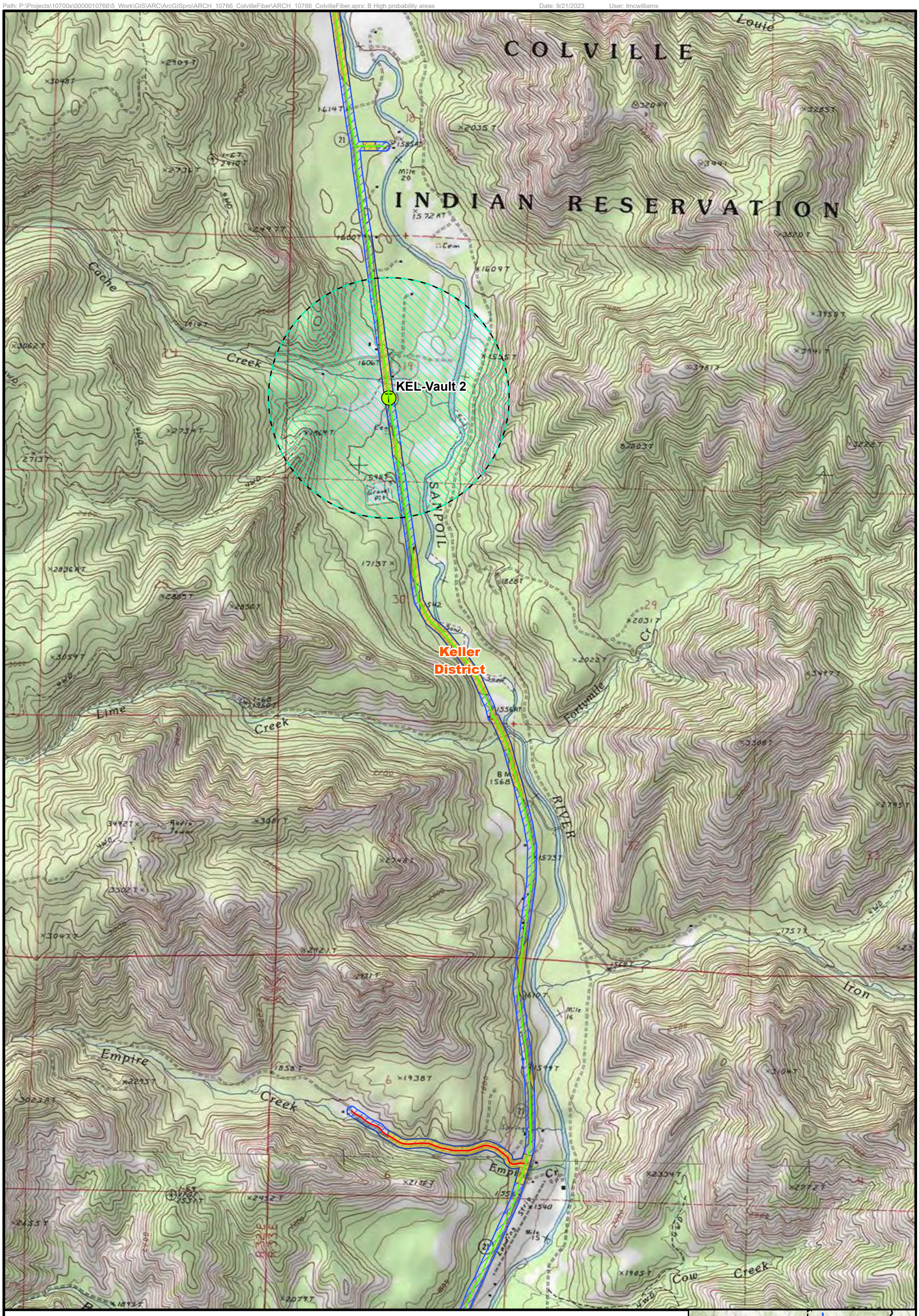


Figure B.18. Recommended avoidance areas

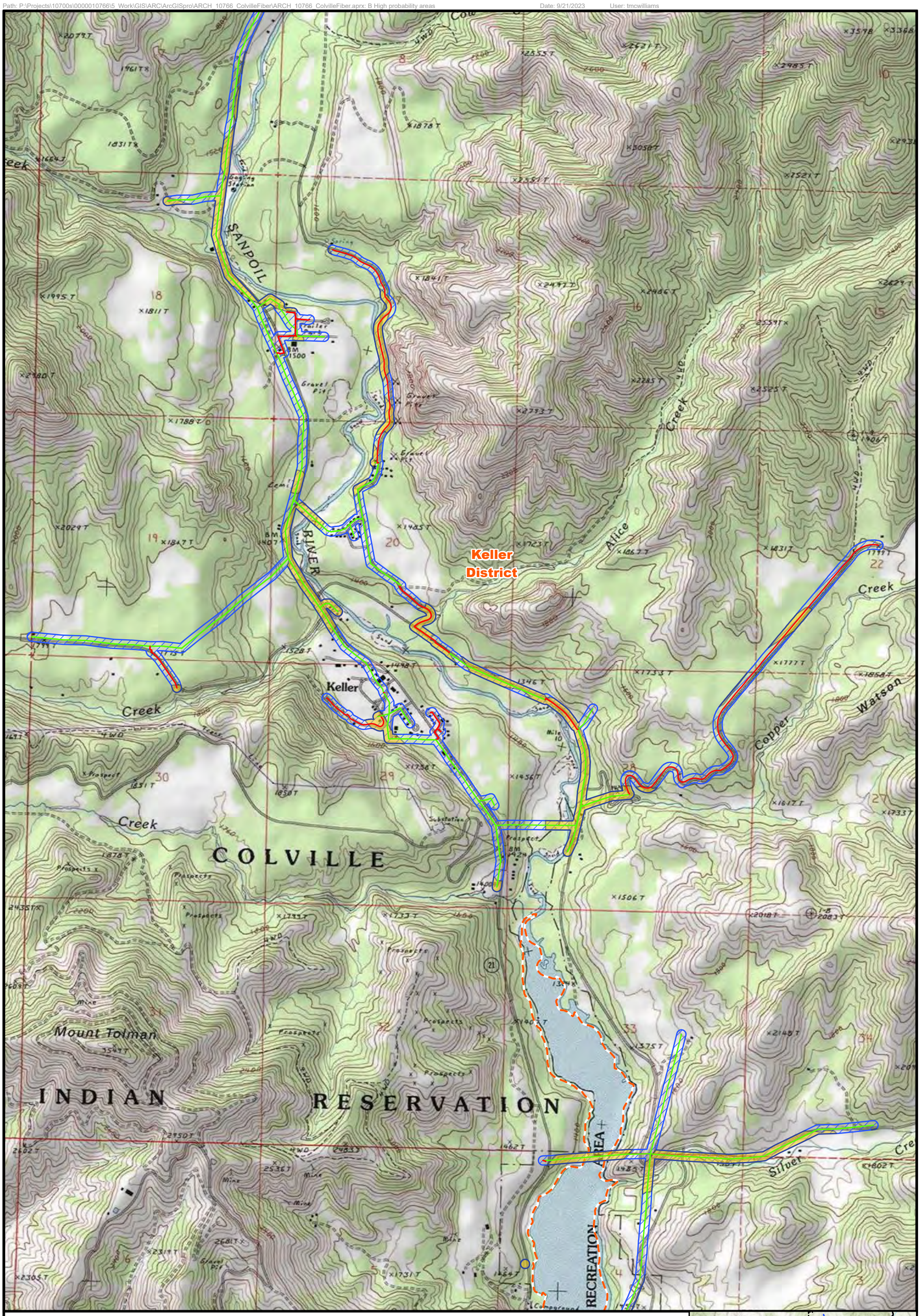


Figure B.19. Recommended avoidance areas

Path: P:\Projects\10700s\0000010766\5_Work\GIS\ARC\ArcGISpro\ARCH_10766_ColvilleFiber\ARCH_10766_ColvilleFiber.aprx: B High probability areas Date: 9/21/2023 User: tmcwilliams

Hwy 21 COW

Keller District

Manila Creek

French Johns Lake

SANPOIL RIVER

COLVILLE INDIAN RESER

T29N, R32E, Portions of Sections 11, 13, and 14,
T29N, R33E, Poritons of Sections 8, 17-20,
Ferry County, Washington,
Keller USGS 7.5' Quadrangle,
Projection: NAD 1983 UTM Zone 11N

Proposed aerial fiber
Proposed underground fiber
COW
APE (Area of Direct Effects)
APE (Area of Indirect Effects)
High probability area
Colville Reservation District Boundary

N
0 1,000 2,000 Feet
0 300 600 Meters

WestLand
100% EMPLOYEE OWNED
Engineering & Environmental Services, Inc.

Lake Roosevelt National Recreation Area

Figure B.20. Recommended avoidance areas

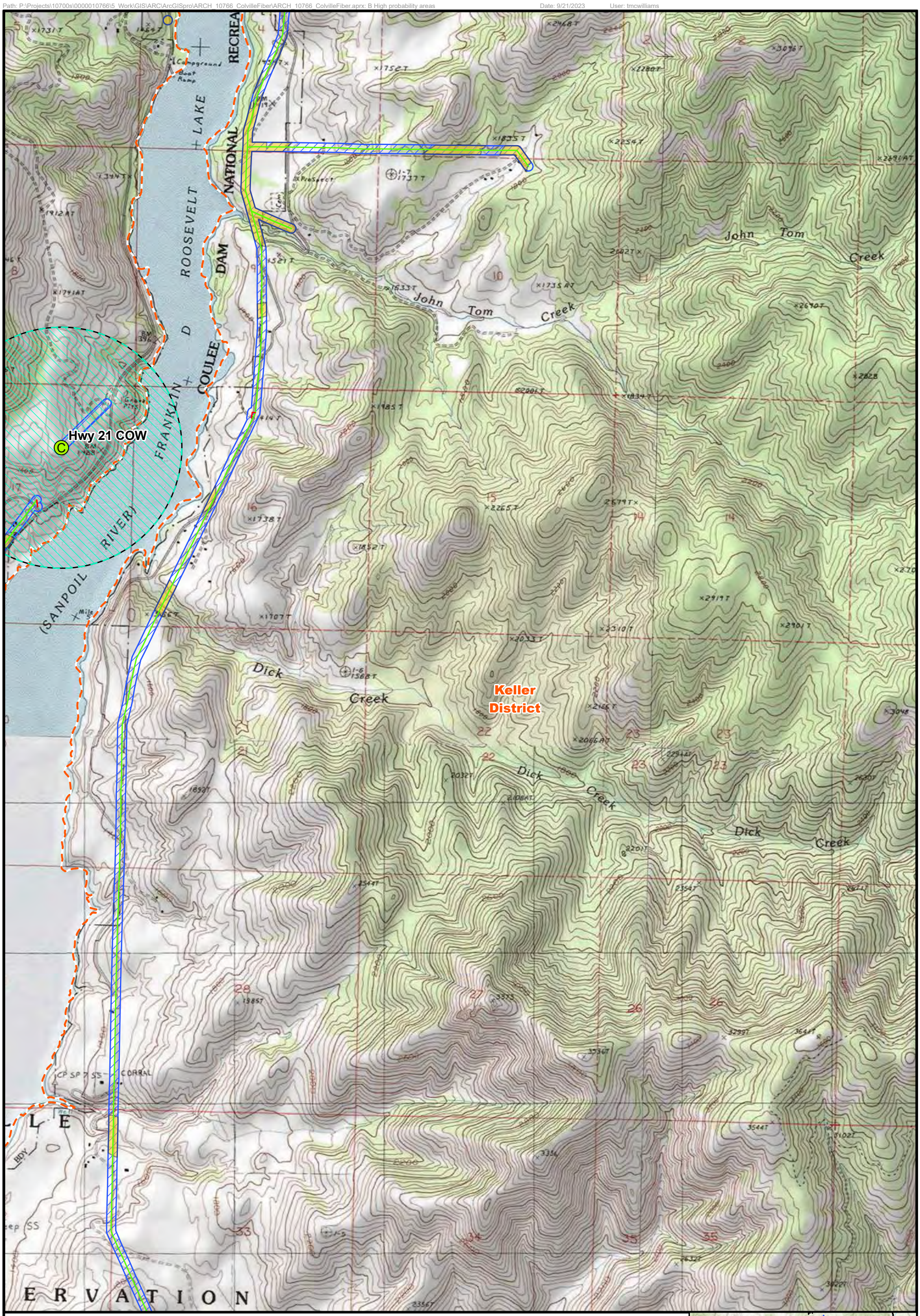


Figure B.21. Recommended avoidance areas

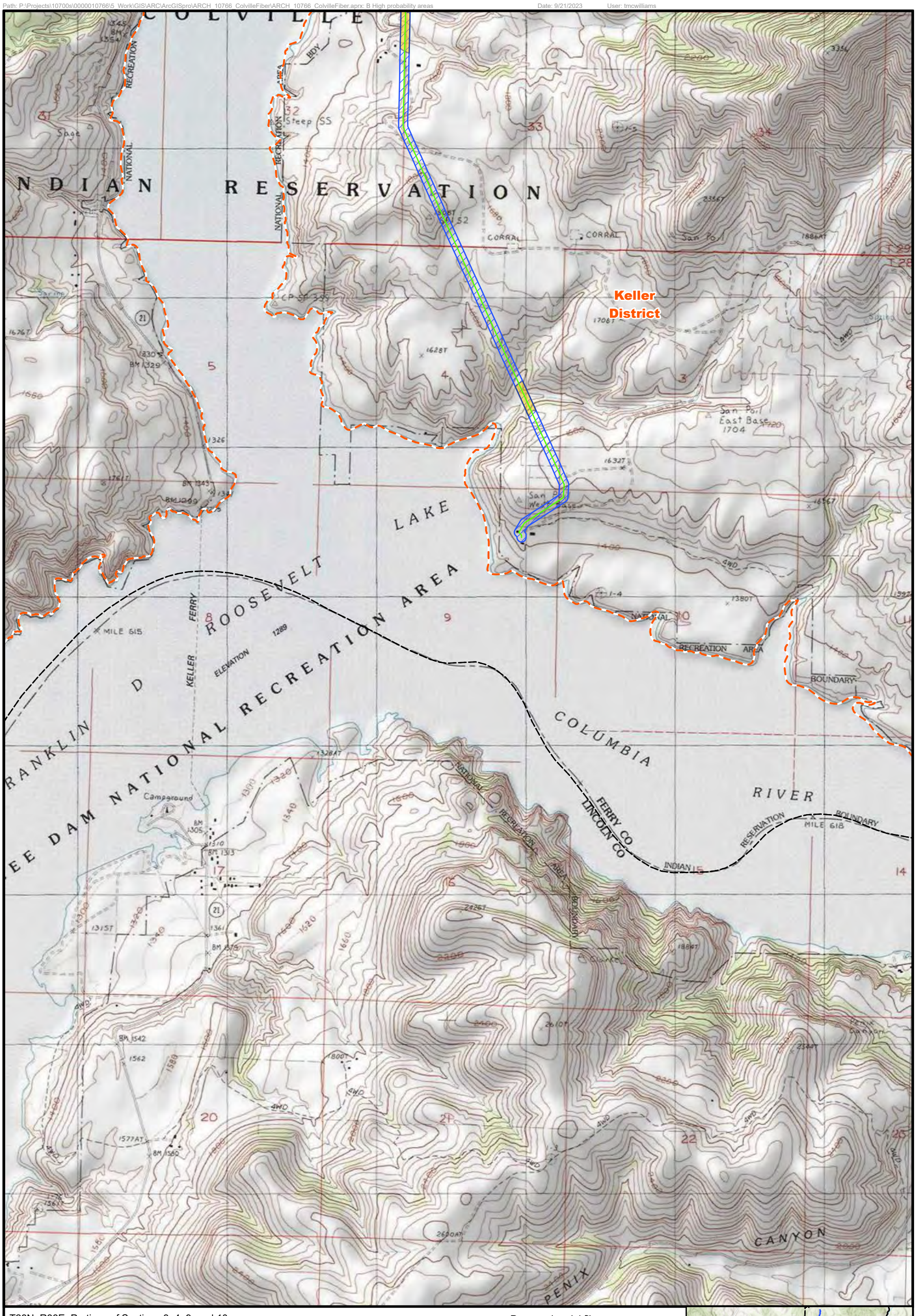
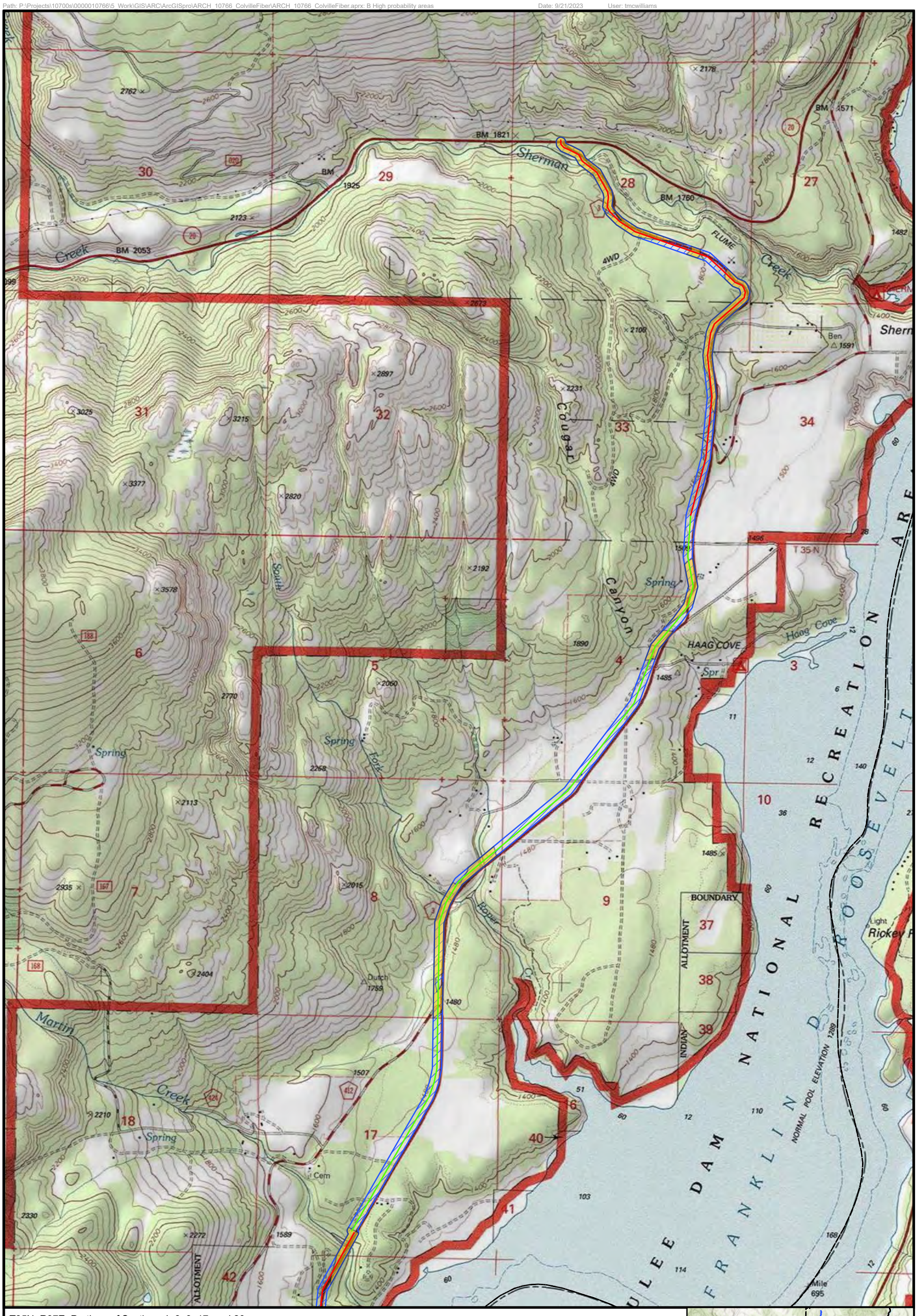


Figure B.22. Recommended avoidance areas



T35N, R37E, Portions of Sections 4, 8, 9, 17, and 20,
T36N, R37E, Portions of Sections 27, 28, and 33,
Ferry County, Washington,
Bangs Mountain USGS 7.5' Quadrangle,
Projection: NAD 1983 UTM Zone 11N

Proposed aerial fiber
Proposed underground fiber
APE (Area of Direct Effects)
High probability area

N
0 1,000 2,000 Feet
0 300 600 Meters

WestLand
100% EMPLOYEE OWNED
Engineering & Environmental Services, Inc.

Figure B.23. Recommended avoidance areas

Path: P:\Projects\10700s\0000010766\5_Work\GIS\ARC\ArcGISpro\ARCH_10766_ColvilleFiber\ARCH_10766_ColvilleFiber.aprx: B High probability areas Date: 9/21/2023 User: tmcwilliams

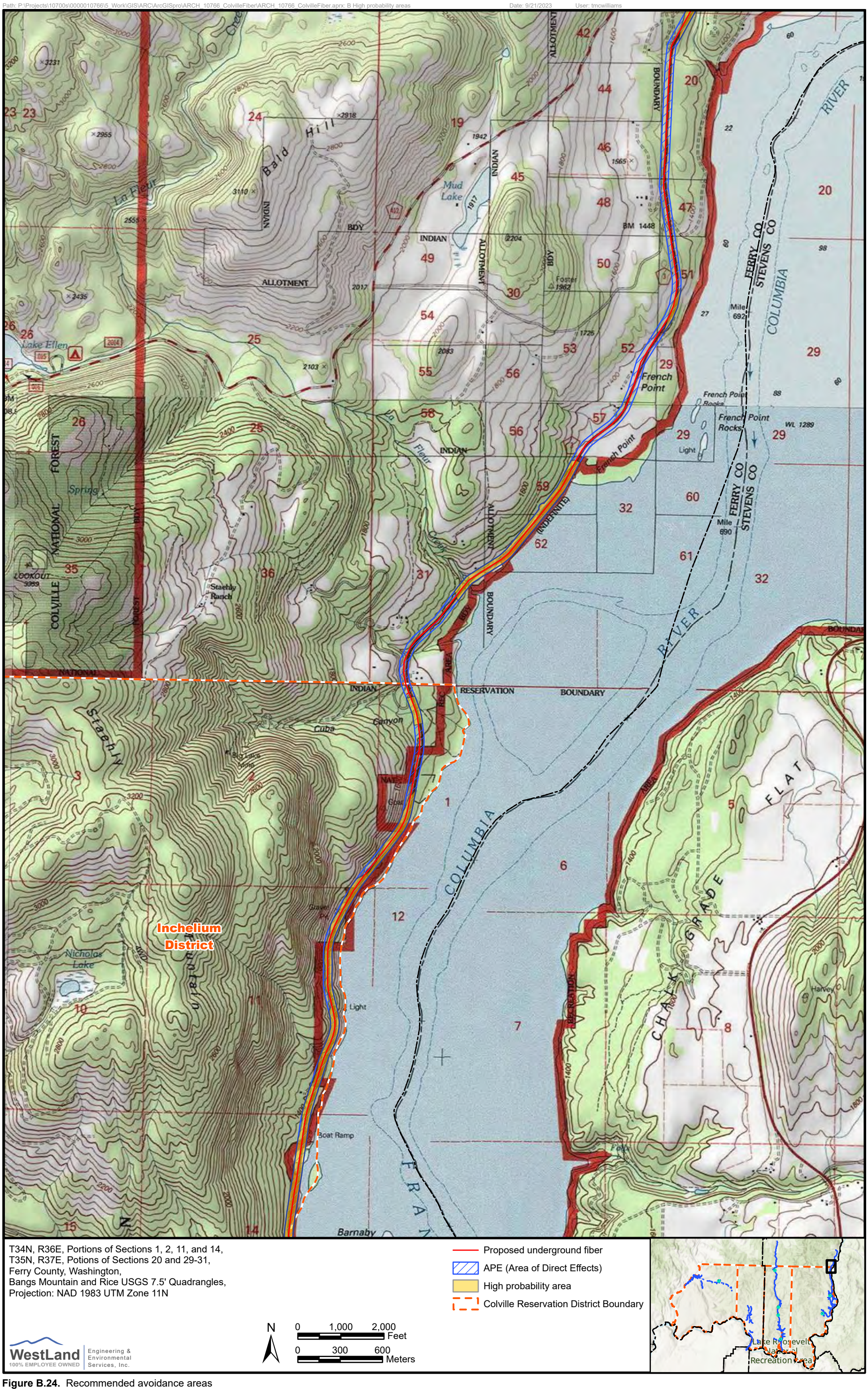


Figure B.24. Recommended avoidance areas

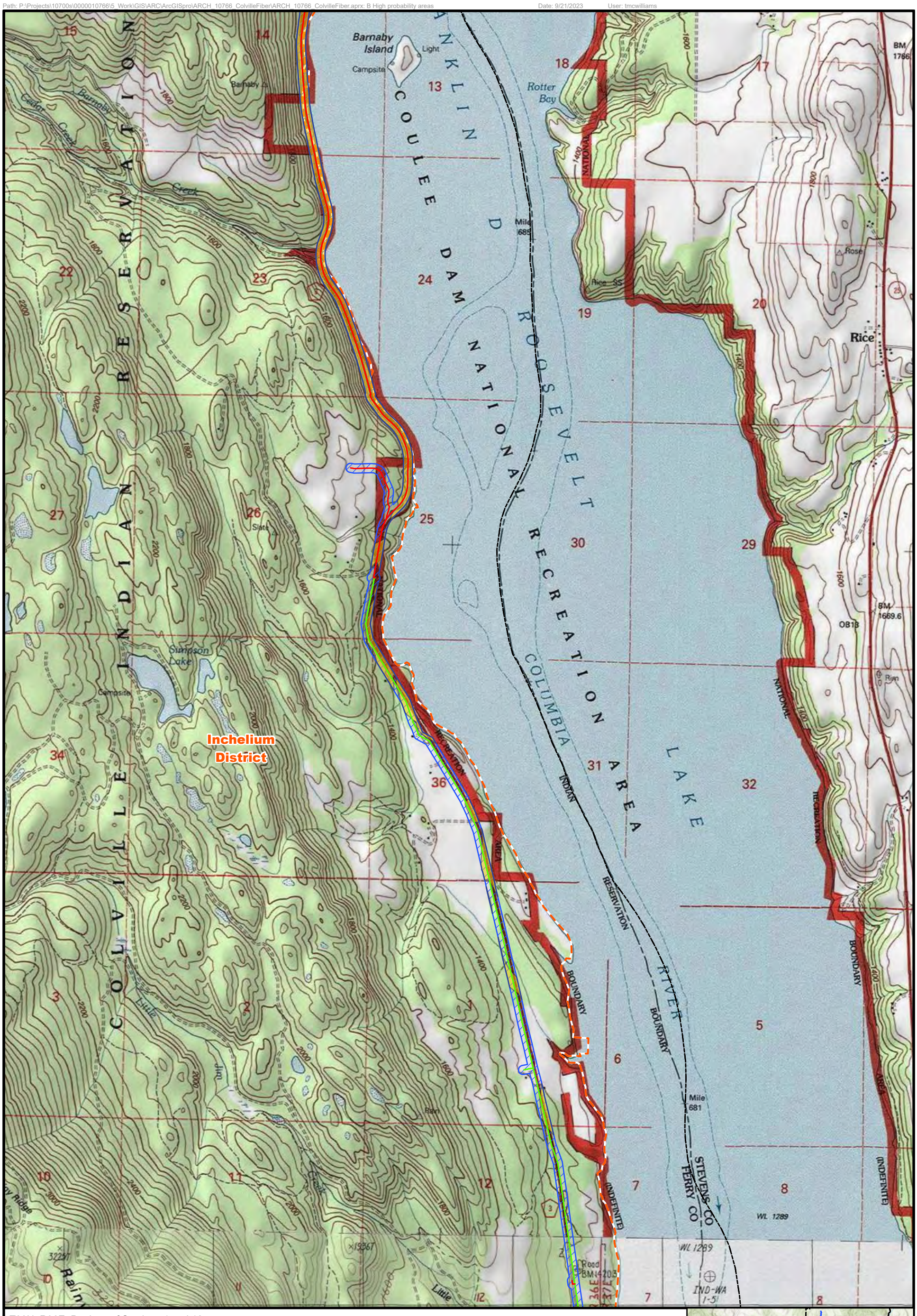


Figure B.25. Recommended avoidance areas

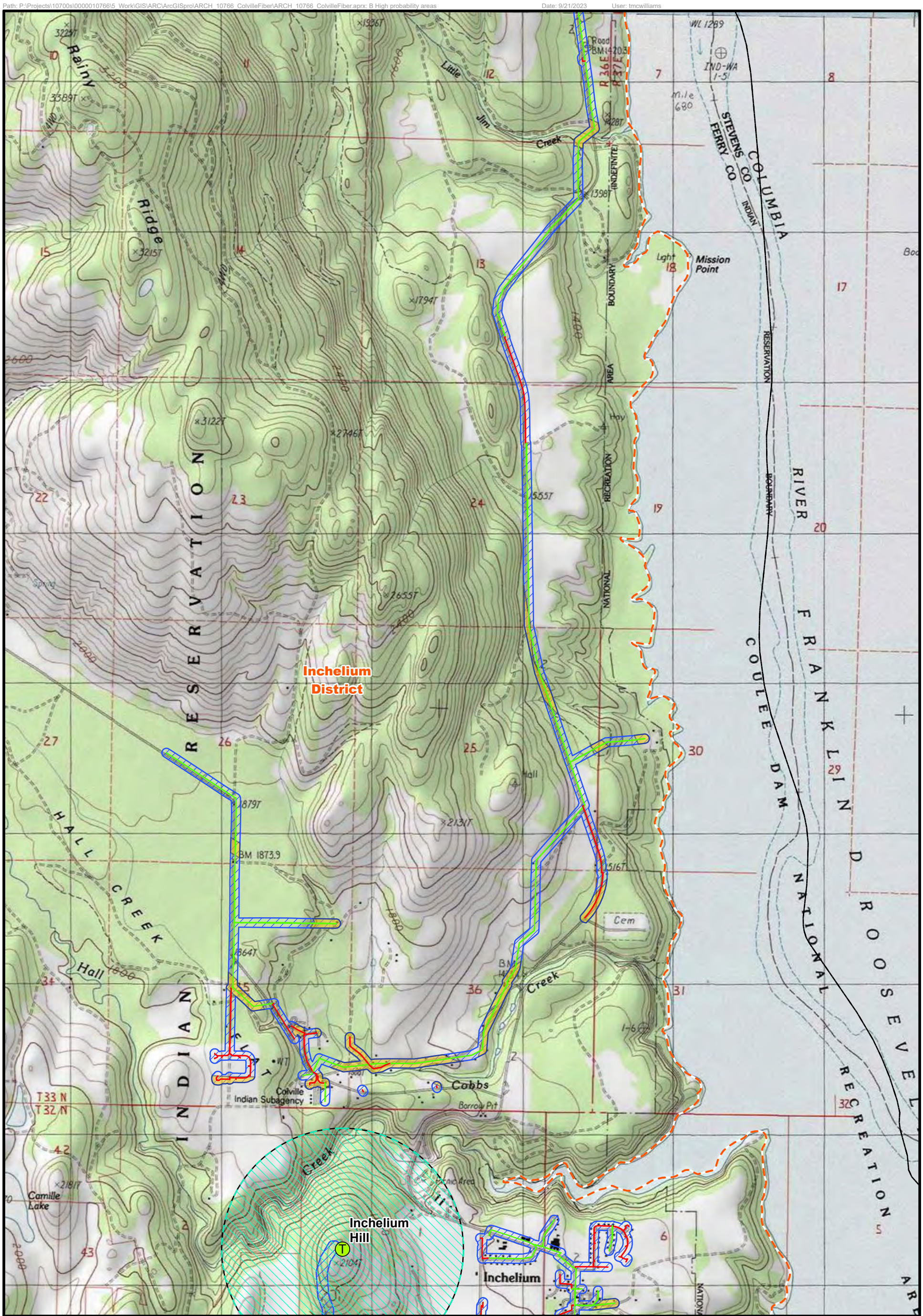
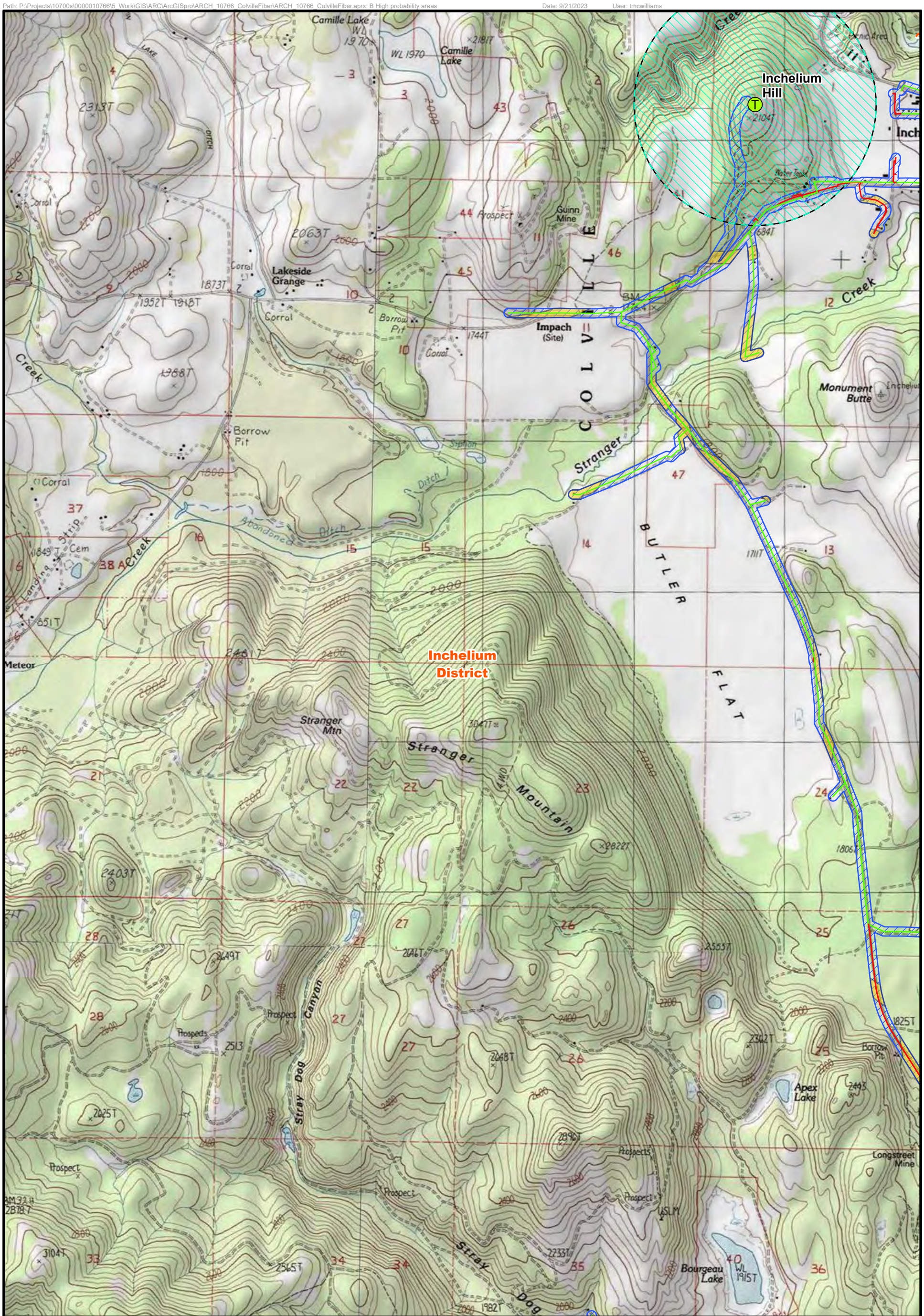


Figure B.26. Recommended avoidance areas

Path: P:\Projects\10700s\0000010766\5_Work\GIS\ARC\ArcGISpro\ARCH_10766_ColvilleFiber\ARCH_10766_ColvilleFiber.aprx: B High probability areas Date: 9/21/2023 User: tmcwilliams



T32N, R36E, Portions of Sections 1, 2, 11-14, 24, 25, and 35,
Ferry County, Washington,
Inchelium, and Cedonia USGS 7.5' Quadrangles,
Projection: NAD 1983 UTM Zone 11N

- Proposed aerial fiber
- Proposed underground fiber
- Tower
- APE (Area of Direct Effects)
- APE (Area of Indirect Effects)
- High probability area
- Colville Reservation District Boundary

N

0 1,000 2,000 Feet

0 300 600 Meters

WestLand
100% EMPLOYEE OWNED
Engineering & Environmental Services, Inc.

Figure B.27. Recommended avoidance areas

Inchelium District

T32N, R36E, Portions of Sections 1, 12, 24, and 25,
T32N, R37E, Portions of Sections 6-8, 16-19, and 29-32,
Ferry County, Washington,
Inchelium and Cedonia USGS 7.5' Quadrangles,
Projection: NAD 1983 UTM Zone 11N

Proposed aerial fiber
Proposed underground fiber
APE (Area of Direct Effects)
APE (Area of Indirect Effects)
High probability area
Colville Reservation District Boundary

N
0 1,000 2,000 Feet
0 300 600 Meters

WestLand
100% EMPLOYEE OWNED
Engineering & Environmental Services, Inc.

Figure B.28. Recommended avoidance areas

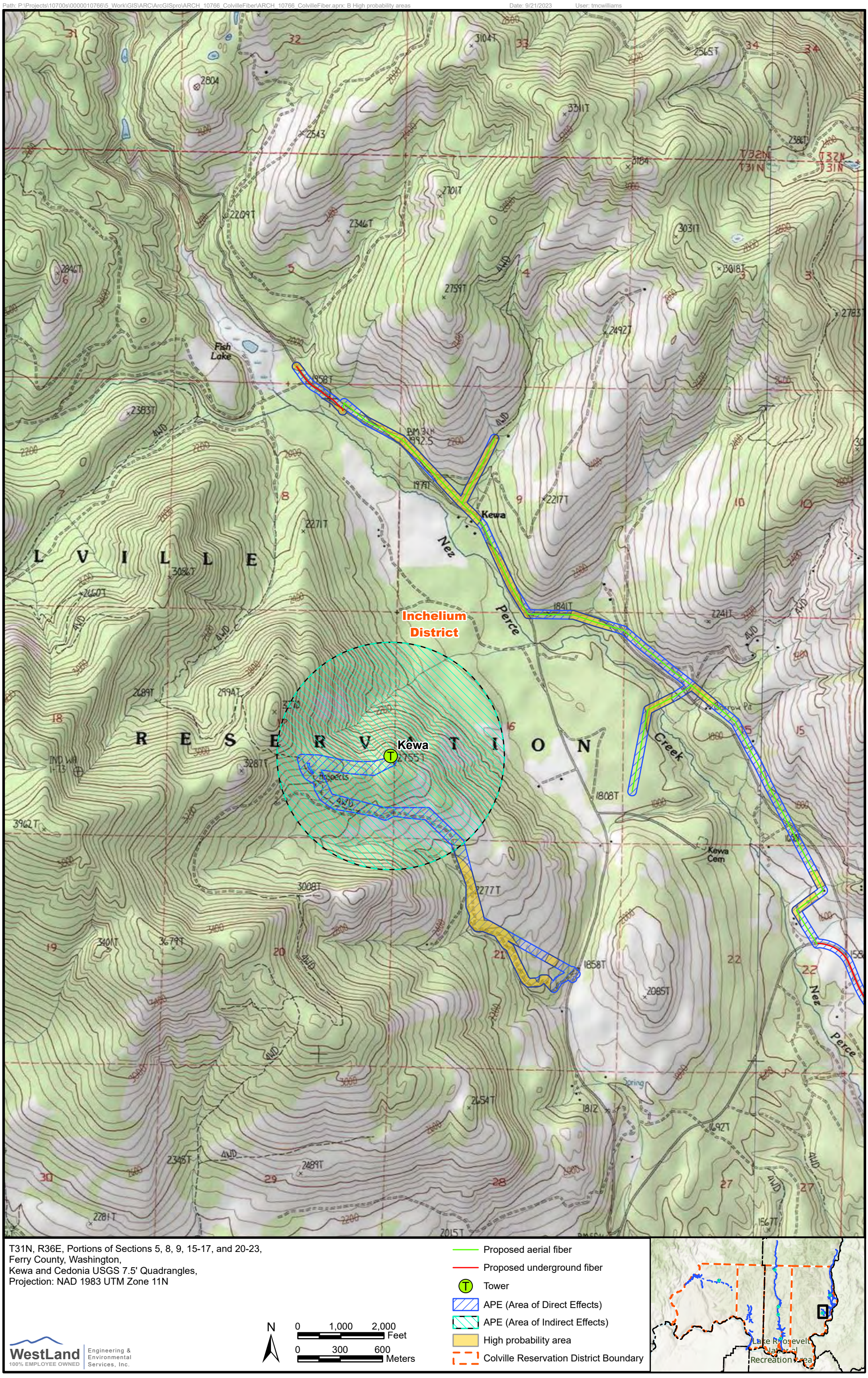
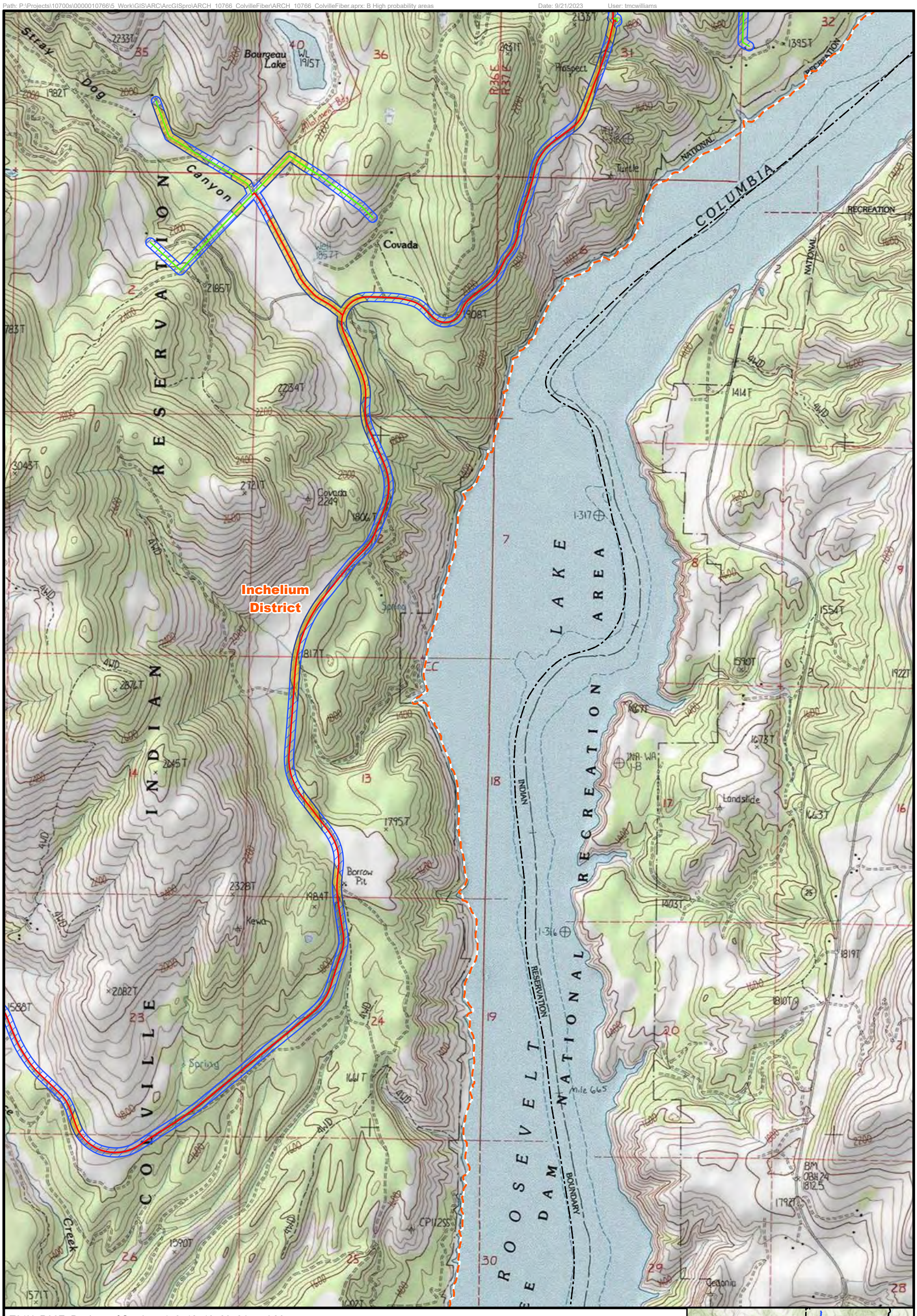


Figure B.29. Recommended avoidance areas



T31N, R36E, Portions of Sections 1, 2, 12, 13, 23, 24, and 26,
T31N, R37E, a Portion of Section 6,
T32N, R36E, Portions of Sections 35 and 36,
T32N, R37E, Portions of Sections 31 and 32,
Ferry County, Washington,
Cedonia USGS 7.5' Quadrangle,
Projection: NAD 1983 UTM Zone 11N

- Proposed aerial fiber
- Proposed underground fiber
- APE (Area of Direct Effects)
- High probability area
- Colville Reservation District Boundary

N

0 1,000 2,000 Feet

0 300 600 Meters

WestLand 100% EMPLOYEE OWNED Engineering & Environmental Services, Inc.

Figure B.30. Recommended avoidance areas

Appendix C

Soil Units in Project Area

Mapped Soil Unit Name	Drainage Class	Farm Class	Work Description
Bernhill loam, dry, 0 to 5 percent slopes	Well drained	All areas are prime farmland	Buried
Boesel fine sandy loam, 0 to 3 percent slopes	Moderately well drained	All areas are prime farmland	Aerial
Cubcreek fine sandy loam, 0 to 3 percent slopes	Moderately well drained	All areas are prime farmland	Aerial/Buried
Disautel very fine sandy loam, 0 to 8 percent slopes	Well drained	All areas are prime farmland	Buried
Duleylake loam, 0 to 8 percent slopes	Moderately well drained	All areas are prime farmland	Aerial
Goldlake silt loam, 0 to 8 percent slopes	Moderately well drained	All areas are prime farmland	Buried
Hodgson silt loam, 0 to 5 percent slopes	Moderately well drained	All areas are prime farmland	Aerial/Buried
Hunters ashy silt loam, 0 to 5 percent slopes	Well drained	All areas are prime farmland	Aerial/Buried
Inchelium silt loam, 0 to 5 percent slopes	Moderately well drained	All areas are prime farmland	Aerial/Buried
Kewach silt loam, 0 to 5 percent slopes	Moderately well drained	All areas are prime farmland	Aerial/Buried
Martella silt loam, dry, 0 to 8 percent slopes	Moderately well drained	All areas are prime farmland	Buried
Narcisse silt loam, 0 to 3 percent slopes	Moderately well drained	All areas are prime farmland	Aerial/Buried
Narcisse silt loam, dry, 0 to 3 percent slopes	Moderately well drained	All areas are prime farmland	Buried
Nespelem silt loam, 0 to 5 percent slopes	Well drained	All areas are prime farmland	Aerial/Buried
Omak silt loam, 0 to 8 percent slopes	Moderately well drained	All areas are prime farmland	Buried
Phoebe fine sandy loam, 0 to 5 percent slopes	Well drained	All areas are prime farmland	Aerial/Buried
Picard very fine sandy loam, 0 to 8 percent slopes	Well drained	All areas are prime farmland	Aerial/Buried
Scala very fine sandy loam, 0 to 5 percent slopes	Well drained	All areas are prime farmland	Aerial/Buried
Stevens ashy silt loam, 0 to 8 percent slopes	Well drained	All areas are prime farmland	Aerial
Swipkin silt loam, 0 to 5 percent slopes	Well drained	All areas are prime farmland	Buried
Bernhill loam, dry, 5 to 20 percent slopes	Well drained	Farmland of statewide importance	Aerial/Buried
Bisbee loamy fine sand, warm, 0 to 20 percent slopes	Somewhat excessively drained	Farmland of statewide importance	Aerial/Buried
Bong sandy loam, 0 to 30 percent slopes	Somewhat excessively drained	Farmland of statewide importance	Buried
Borgeau loam, 8 to 30 percent slopes	Well drained	Farmland of statewide importance	Buried
Cashmere fine sandy loam, 5 to 10 percent slopes	Well drained	Farmland of statewide importance	Aerial
Cedonia ashy silt loam, 0 to 5 percent slopes	Well drained	Farmland of statewide importance	Aerial/Buried
Cedonia ashy silt loam, 5 to 15 percent slopes	Well drained	Farmland of statewide importance	Aerial/Buried
Cedonia ashy silt loam, 15 to 35 percent slopes	Well drained	Farmland of statewide importance	Aerial/Buried
Conconully fine sandy loam, 8 to 15 percent slopes	Well drained	Farmland of statewide importance	Buried
Cumulic Haploxerolls, 3 to 10 percent slopes	Moderately well drained	Farmland of statewide importance	Buried
Dart, warm-Springdale complex, 5 to 30 percent slopes	Somewhat excessively drained	Farmland of statewide importance	Aerial/Buried
Dehart gravelly loam, 8 to 30 percent slopes	Well drained	Farmland of statewide importance	Tower
Dehart-Rock outcrop complex, 8 to 30 percent slopes	Well drained	Farmland of statewide importance	Aerial/Buried/Tower
Disautel very fine sandy loam, 8 to 15 percent slopes	Well drained	Farmland of statewide importance	Buried
Disautel-Nespelem complex, 3 to 20 percent slopes	Well drained	Farmland of statewide importance	Buried
Donavan loam, dry, 5 to 15 percent slopes	Well drained	Farmland of statewide importance	Aerial/Buried/Tower
Elvedere-Leahy silt loams complex, 0 to 15 percent slopes	Moderately well drained	Farmland of statewide importance	Buried
Fivelakes fine sandy loam, moist, 0 to 5 percent slopes	Moderately well drained	Farmland of statewide importance	Buried
Garrison ashy loam, 5 to 25 percent slopes	Somewhat excessively drained	Farmland of statewide importance	Aerial
Glenrose silt loam, 8 to 15 percent slopes	Well drained	Farmland of statewide importance	Buried
Goddard silt loam, 0 to 20 percent slopes	Well drained	Farmland of statewide importance	Aerial
Haley fine sandy loam, 5 to 10 percent slopes	Well drained	Farmland of statewide importance	Buried
Hodgson silt loam, 5 to 15 percent slopes	Moderately well drained	Farmland of statewide importance	Aerial
Hudnut gravelly sandy loam, 0 to 20 percent slopes	Well drained	Farmland of statewide importance	Aerial/Buried/Tower
Inchelium silt loam, 5 to 10 percent slopes	Moderately well drained	Farmland of statewide importance	Aerial/Buried
Inkler gravelly silt loam, dry, 5 to 20 percent slopes	Well drained	Farmland of statewide importance	Aerial

Mapped Soil Unit Name	Drainage Class	Farm Class	Work Description
Kewach silt loam, 5 to 15 percent slopes	Moderately well drained	Farmland of statewide importance	Buried
Lostcreek loam, 3 to 15 percent slopes	Moderately well drained	Farmland of statewide importance	Tower
Parmenter silt loam, 8 to 20 percent slopes	Well drained	Farmland of statewide importance	Buried
Phoebe fine sandy loam, 10 to 25 percent slopes	Well drained	Farmland of statewide importance	Aerial/Buried
Pogue fine sandy loam, 5 to 10 percent slopes	Somewhat excessively drained	Farmland of statewide importance	Aerial/Buried
Poween loam, 0 to 5 percent slopes	Moderately well drained	Farmland of statewide importance	Buried
Rebecca gravelly sandy loam, 3 to 15 percent slopes	Well drained	Farmland of statewide importance	Aerial/Buried
Republic loam, 3 to 15 percent slopes	Well drained	Farmland of statewide importance	Aerial/Buried
Sacheen loamy fine sand, dry, 0 to 20 percent slopes	Somewhat excessively drained	Farmland of statewide importance	Buried
Spokane loam, 5 to 20 percent slopes	Well drained	Farmland of statewide importance	Buried
Springdale gravelly sandy loam, 15 to 30 percent slopes	Somewhat excessively drained	Farmland of statewide importance	Aerial/Buried
Stapaloop fine sandy loam, 0 to 20 percent slopes	Well drained	Farmland of statewide importance	Aerial
Stapaloop fine sandy loam, dry, 0 to 20 percent slopes	Well drained	Farmland of statewide importance	Tower
Stevens ashy silt loam, 8 to 15 percent slopes	Well drained	Farmland of statewide importance	Aerial/Buried
Swipkin silt loam, 5 to 10 percent slopes	Well drained	Farmland of statewide importance	Buried
Torboy fine sandy loam, 0 to 20 percent slopes	Well drained	Farmland of statewide importance	Aerial
Wapal gravelly ashy sandy loam, 0 to 15 percent slopes	Somewhat excessively drained	Farmland of statewide importance	Aerial/Buried
Wapal gravelly sandy loam, 15 to 30 percent slopes	Somewhat excessively drained	Farmland of statewide importance	Aerial/Buried
Ahtanum silt loam, 0 to 3 percent slopes	Somewhat poorly drained	Not prime farmland	Buried
Aquic Xerofluvents, cool, 0 to 3 percent slopes	Moderately well drained	Not prime farmland	Aerial/Buried
Aquic Xerofluvents, warm, 0 to 3 percent slopes	Moderately well drained	Not prime farmland	Aerial/Buried
Beverly gravelly loamy sand, 2 to 25 percent slopes	Somewhat excessively drained	Not prime farmland	Aerial/Buried
Bisbee loamy fine sand, warm, 20 to 40 percent slopes	Somewhat excessively drained	Not prime farmland	Aerial/Buried
Bong sandy loam, 30 to 70 percent slopes	Somewhat excessively drained	Not prime farmland	Buried
Borgeau loam, 30 to 65 percent slopes	Well drained	Not prime farmland	Buried/Tower
Borgeau-Rock outcrop complex, 30 to 65 percent slopes	Well drained	Not prime farmland	Aerial/Buried
Borosaprists, 0 to 2 percent slopes	Very poorly drained	Not prime farmland	Aerial
Bossburg muck, 0 to 2 percent slopes	Very poorly drained	Not prime farmland	Buried
Cashmont gravelly sandy loam, fan, 3 to 15 percent slopes	Well drained	Not prime farmland	Aerial
Cedonia ashy silt loam, 30 to 65 percent slopes	Well drained	Not prime farmland	Aerial/Buried
Conconully fine sandy loam, 15 to 30 percent slopes	Well drained	Not prime farmland	Buried
Conconully stony fine sandy loam, 3 to 25 percent slopes	Well drained	Not prime farmland	Buried
Conconully stony fine sandy loam, 25 to 65 percent slopes	Well drained	Not prime farmland	Buried
Couleedam-Rock outcrop complex, 30 to 70 percent slopes	Well drained	Not prime farmland	Buried
Dart loamy coarse sand, warm, 40 to 65 percent slopes	Somewhat excessively drained	Not prime farmland	Aerial/Buried
Disautel-Rock outcrop complex, 3 to 30 percent slopes	Well drained	Not prime farmland	Buried
Donavan bouldery sandy loam, warm, 20 to 40 percent slopes	Well drained	Not prime farmland	Buried
Donavan loam, dry, 15 to 30 percent slopes	Well drained	Not prime farmland	Aerial/Buried
Donavan loam, dry, 30 to 65 percent slopes	Well drained	Not prime farmland	Buried
Donavan, dry-Rock outcrop complex, 5 to 20 percent slopes	Well drained	Not prime farmland	Aerial/Buried
Donavan, dry-Rock outcrop complex, 20 to 40 percent slopes	Well drained	Not prime farmland	Aerial
Elbowlake silt loam, warm, 20 to 40 percent slopes	Well drained	Not prime farmland	Tower
Elvedere silt loam, 15 to 30 percent slopes	Well drained	Not prime farmland	Buried
Elvedere stony silt loam, 3 to 25 percent slopes	Well drained	Not prime farmland	Buried
Elvedere stony silt loam, 25 to 45 percent slopes	Well drained	Not prime farmland	Buried
Emdent silt loam, 0 to 3 percent slopes	Somewhat poorly drained	Not prime farmland	Aerial/Buried

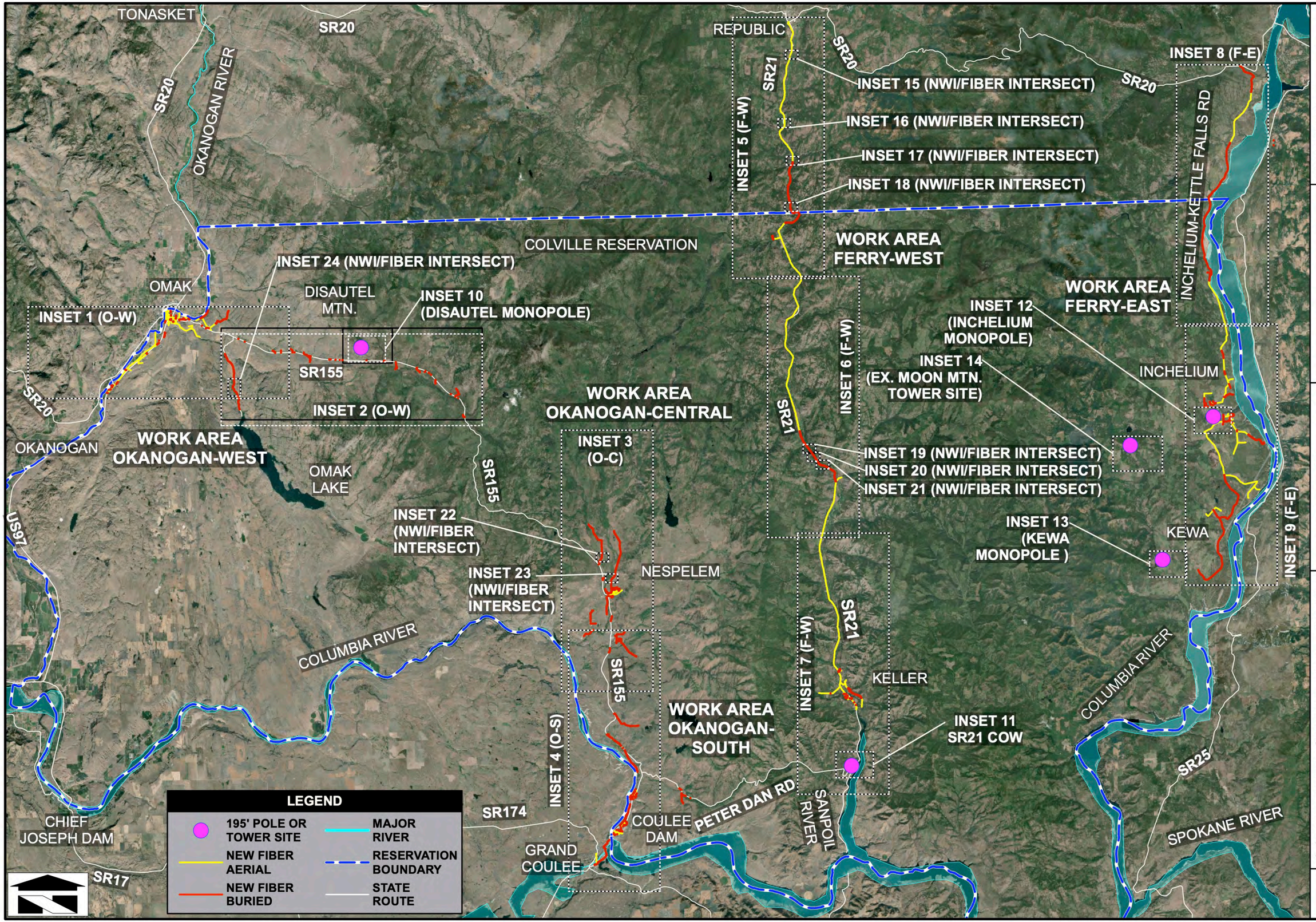
Mapped Soil Unit Name	Drainage Class	Farm Class	Work Description
Emdent silt loam, wet, 0 to 2 percent slopes	Somewhat poorly drained	Not prime farmland	Aerial/Buried
Ewall coarse sand, 10 to 25 percent slopes	Excessively drained	Not prime farmland	Aerial
Ewall loamy fine sand, 0 to 10 percent slopes	Excessively drained	Not prime farmland	Buried
Ewall loamy fine sand, 10 to 25 percent slopes	Excessively drained	Not prime farmland	Buried
Ewall gravelly loamy sand, 30 to 60 percent slopes	Excessively drained	Not prime farmland	Aerial
Fivelakes stony loam, 0 to 25 percent slopes	Well drained	Not prime farmland	Aerial/Buried
Fivelakes stony loam, 30 to 65 percent slopes	Well drained	Not prime farmland	Aerial/Buried
Ginnis loam, 15 to 35 percent slopes	Well drained	Not prime farmland	Buried
Haley fine sandy loam, 10 to 25 percent slopes	Well drained	Not prime farmland	Buried
Haploxerolls, 30 to 70 percent slopes	Well drained	Not prime farmland	Buried
Terric Haplosaprists, ponded	Very poorly drained	Not prime farmland	Buried
Hobohill stony sandy loam, 3 to 25 percent slopes	Somewhat excessively drained	Not prime farmland	Buried
Hodgson silt loam, 15 to 30 percent slopes	Moderately well drained	Not prime farmland	Buried
Hodgson silt loam, 30 to 50 percent slopes	Moderately well drained	Not prime farmland	Buried
Hudnut gravelly sandy loam, 20 to 40 percent slopes	Well drained	Not prime farmland	Buried
Hunters silt loam, warm, 30 to 65 percent slopes	Well drained	Not prime farmland	Aerial/Buried
Inkler gravelly ashy silt loam, dry, 20 to 40 percent	Well drained	Not prime farmland	Buried
Inkler, dry-Baldknob-Rock outcrop complex, 5 to 30 percent slopes	Well drained	Not prime farmland	Buried
Inkler, dry-Baldknob-Rock outcrop complex, 30 to 65 percent slopes	Well drained	Not prime farmland	Aerial
Inkler, dry-Rock outcrop complex, 20 to 40 percent slopes	Well drained	Not prime farmland	Buried
Inkler, dry-Rock outcrop complex, 40 to 65 percent slopes	Well drained	Not prime farmland	Aerial/Buried
Jimcreek silt loam, 0 to 5 percent slopes	Somewhat poorly drained	Not prime farmland	Aerial/Buried
Karamin fine sandy loam, 40 to 65 percent slopes	Well drained	Not prime farmland	Aerial/Buried
Kewach silt loam, 15 to 30 percent slopes	Moderately well drained	Not prime farmland	Aerial
Lakesol silt loam, 30 to 65 percent north slopes	Well drained	Not prime farmland	Aerial/Buried
Logy very stony sandy loam, 3 to 25 percent slopes	Somewhat excessively drained	Not prime farmland	Buried
Malott stony very fine sandy loam, 3 to 25 percent slopes	Well drained	Not prime farmland	Buried
Malott stony very fine sandy loam, 25 to 65 percent slopes	Well drained	Not prime farmland	Aerial/Buried
Martella silt loam, dry, 8 to 30 percent slopes	Moderately well drained	Not prime farmland	Aerial
Mineral-Rock outcrop complex, 20 to 40 percent slopes	Well drained	Not prime farmland	Tower
Nespelem silt loams complex, 5 to 30 percent slopes	Well drained	Not prime farmland	Buried
Northstar gravelly loam, dry, 30 to 65 percent slopes	Well drained	Not prime farmland	Aerial
Northstar-Louiecreek-Rock outcrop complex, 40 to 65 percent slopes	Well drained	Not prime farmland	Aerial
Owhi stony loam, 3 to 30 percent slopes	Well drained	Not prime farmland	Buried
Oxerine-Rock outcrop complex, 30 to 65 percent slopes	Well drained	Not prime farmland	Aerial
Parmenter silt loam, 20 to 40 percent slopes	Well drained	Not prime farmland	Buried
Parmenter bouldery silt loam, 8 to 20 percent slopes	Well drained	Not prime farmland	Aerial
Phoebe fine sandy loam, 40 to 65 percent slopes	Well drained	Not prime farmland	Aerial/Buried
Picard very fine sandy loam, 8 to 30 percent slopes	Well drained	Not prime farmland	Aerial/Buried
Pits, sand and gravel	N/A	Not prime farmland	Aerial/Buried
Pogue fine sandy loam, 10 to 25 percent slopes	Somewhat excessively drained	Not prime farmland	Aerial/Buried
Pogue stony fine sandy loam, 0 to 25 percent slopes	Somewhat excessively drained	Not prime farmland	Aerial/Buried
Pogue stony fine sandy loam, 25 to 65 percent slopes	Somewhat excessively drained	Not prime farmland	Aerial/Buried
Quincy fine sand, 25 to 60 percent slopes	Excessively drained	Not prime farmland	Aerial
Quincy loamy sand, fan, 2 to 10 percent slopes	Excessively drained	Not prime farmland	Aerial/Buried
Quincy loamy fine sand, 0 to 10 percent slopes	Excessively drained	Not prime farmland	Aerial/Buried

Mapped Soil Unit Name	Drainage Class	Farm Class	Work Description
Quincy loamy fine sand, 0 to 10 percent slopes, eroded	Excessively drained	Not prime farmland	Aerial/Buried
Quincy loamy fine sand, 10 to 25 percent slopes	Excessively drained	Not prime farmland	Aerial/Buried
Raisio channery loam, dry, 40 to 65 percent slopes	Well drained	Not prime farmland	Buried
Raisio, dry-Rock outcrop complex, 20 to 40 percent slopes	Well drained	Not prime farmland	Aerial/Buried
Raisio, dry-Rufus-Rock outcrop complex, 30 to 65 percent slopes	Well drained	Not prime farmland	Aerial/Buried
Raisio, warm-Rufus channery loams complex, 8 to 30 percent slopes	Well drained	Not prime farmland	Aerial/Buried
Raisio, warm-Rufus channery loams complex, 30 to 65 percent slopes	Well drained	Not prime farmland	Aerial
Republic loam, 15 to 30 percent slopes	Well drained	Not prime farmland	Aerial
Republic loam, 30 to 65 percent slopes	Well drained	Not prime farmland	Aerial/Tower
Riverwash	N/A	Not prime farmland	Aerial/Buried
Rock outcrop	N/A	Not prime farmland	Aerial/Buried
Rock outcrop-Rufus complex, 20 to 65 percent slopes	Well drained	Not prime farmland	Buried
Rock outcrop-Swakane complex, 5 to 30 percent slopes	Well drained	Not prime farmland	Buried
Rubble land	Excessively drained	Not prime farmland	Aerial
Rubble land-Rock outcrop complex	Excessively drained	Not prime farmland	Buried
Scoap gravelly ashy loam, 20 to 40 percent slopes	Well drained	Not prime farmland	Aerial
Scoap gravelly ashy loam, 40 to 65 percent slopes	Well drained	Not prime farmland	Aerial
Scoap-Rock outcrop complex, 40 to 65 percent slopes	Well drained	Not prime farmland	Aerial/Buried
Skaha loamy sand, 0 to 10 percent slopes	Excessively drained	Not prime farmland	Aerial
Skaha gravelly loamy sand, 0 to 10 percent slopes	Excessively drained	Not prime farmland	Aerial/Buried
Skaha extremely gravelly loamy sand, 30 to 65 percent slopes	Excessively drained	Not prime farmland	Buried
Skaha very stony sandy loam, 5 to 30 percent slopes	Excessively drained	Not prime farmland	Buried
Skaha very stony sandy loam, 30 to 65 percent slopes	Excessively drained	Not prime farmland	Aerial/Buried
Skaha-Rock outcrop complex, 30 to 65 percent slopes	Excessively drained	Not prime farmland	Buried
Skanid gravelly sandy loam, 20 to 40 percent slopes	Well drained	Not prime farmland	Aerial
Skanid gravelly sandy loam, 40 to 65 percent slopes	Well drained	Not prime farmland	Aerial
Spens very stony loamy sand, dry, 20 to 40 percent slopes	Somewhat excessively drained	Not prime farmland	Buried
Spens very stony loamy sand, dry, 40 to 65 percent slopes	Somewhat excessively drained	Not prime farmland	Aerial/Buried
Springdale gravelly ashy sandy loam, dry, 0 to 15 percent slopes	Somewhat excessively drained	Not prime farmland	Aerial/Buried
Springdale gravelly sandy loam, 30 to 65 percent slopes	Somewhat excessively drained	Not prime farmland	Aerial/Buried
Stapaloop fine sandy loam, 20 to 40 percent slopes	Well drained	Not prime farmland	Buried
Stevens silt loam, 15 to 30 percent slopes	Well drained	Not prime farmland	Aerial
Stevens gravelly silt loam, 30 to 65 percent slopes	Well drained	Not prime farmland	Aerial
Swakane cobbly loam, 25 to 65 percent slopes	Well drained	Not prime farmland	Buried
Swakane-Rock outcrop complex, 30 to 70 percent slopes	Well drained	Not prime farmland	Buried
Typic Xerorthents-Typic Xerochrepts complex, 5 to 50 percent slopes	Well drained	Not prime farmland	Aerial/Buried
Ultic Haploxerolls, 40 to 70 percent slopes	Well drained	Not prime farmland	Aerial/Buried
Vanbrunt-Rock outcrop complex, 5 to 20 percent slopes	Well drained	Not prime farmland	Tower
Vanbrunt-Rock outcrop complex, 20 to 40 percent slopes	Well drained	Not prime farmland	Tower
Vanbrunt-Rock outcrop complex, 40 to 65 percent slopes	Well drained	Not prime farmland	Aerial/Buried
Wapal cobbly sandy loam, 0 to 15 percent slopes	Somewhat excessively drained	Not prime farmland	Aerial/Buried
Wapal gravelly sandy loam, 30 to 65 percent slopes	Somewhat excessively drained	Not prime farmland	Aerial/Buried
Winchester-Rock outcrop complex, 0 to 25 percent slopes	Excessively drained	Not prime farmland	Aerial
Xeric Torriorthents, fill, 0 to 15 percent slopes	Somewhat excessively drained	Not prime farmland	Aerial/Buried
Xeric Torriorthents, escarpments, 30 to 65 percent slopes	Somewhat excessively drained	Not prime farmland	Aerial/Buried
Xerochrepts-Rubble land-Rock outcrop complex, 40 to 90 percent slopes	Well drained	Not prime farmland	Aerial/Buried

Mapped Soil Unit Name	Drainage Class	Farm Class	Work Description
Coxlake silt loam, 0 to 3 percent slopes	Somewhat poorly drained	Prime farmland if drained	Buried
Ralsen silt loam, 0 to 3 percent slopes	Poorly drained	Prime farmland if drained	Buried
Ret silt loam, 0 to 3 percent slopes	Somewhat poorly drained	Prime farmland if drained	Aerial
Sanpoil silt loam, 0 to 2 percent slopes	Poorly drained	Prime farmland if drained	Aerial/Buried
Aeneas fine sandy loam, 0 to 5 percent slopes	Well drained	Prime farmland if irrigated	Aerial/Buried
Aeneas fine sandy loam, 0 to 10 percent slopes	Well drained	Prime farmland if irrigated	Aerial
Bong sandy loam, cool, 0 to 8 percent slopes	Somewhat excessively drained	Prime farmland if irrigated	Aerial
Cashmere fine sandy loam, 0 to 5 percent slopes	Well drained	Prime farmland if irrigated	Aerial/Buried
Ellisforde silt loam, 0 to 5 percent slopes	Well drained	Prime farmland if irrigated	Aerial/Buried
Farrell fine sandy loam, 0 to 5 percent slopes	Well drained	Prime farmland if irrigated	Aerial/Buried
Garrison ashy loam, 0 to 5 percent slopes	Somewhat excessively drained	Prime farmland if irrigated	Aerial/Buried
Haley fine sandy loam, 0 to 5 percent slopes	Well drained	Prime farmland if irrigated	Buried
Hallcreek loam, 0 to 10 percent slopes	Somewhat excessively drained	Prime farmland if irrigated	Aerial/Buried
Kartar sandy loam, warm, 0 to 10 percent slopes	Well drained	Prime farmland if irrigated	Aerial
Malott very fine sandy loam, 0 to 5 percent slopes	Well drained	Prime farmland if irrigated	Aerial
Monse silt loam, 0 to 8 percent slopes	Moderately well drained	Prime farmland if irrigated	Aerial/Buried
Okanogan loam, 0 to 5 percent slopes	Well drained	Prime farmland if irrigated	Aerial/Buried
Owhi loam, 0 to 8 percent slopes	Well drained	Prime farmland if irrigated	Aerial/Buried
Parmenter silt loam, 0 to 8 percent slopes	Well drained	Prime farmland if irrigated	Aerial/Buried
Pogue fine sandy loam, 0 to 5 percent slopes	Well drained	Prime farmland if irrigated	Aerial/Buried
Pogue gravelly fine sandy loam, 0 to 10 percent slopes	Somewhat excessively drained	Prime farmland if irrigated	Aerial/Buried

Appendix D

National Wetlands Inventory



WRI Job #23093

SCALE 1" = 5 MILES

Drawn By: Niels Pedersen

Revision 2 Date: June 13, 2024

Rev. 0: 10.13.23
Rev.1: 5.9.24

PREPARED FOR:
The Confederated Tribes of the Colville Reservation
21 Colville St
Nespelem, WA 99155

PREPARED BY:
NOANET

IN PARTNERSHIP WITH:

WETLAND RESOURCES, INC.
9505 19th AVENUE SE, SUITE 106
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425.337.3174 mailbox@wetlandresources.com

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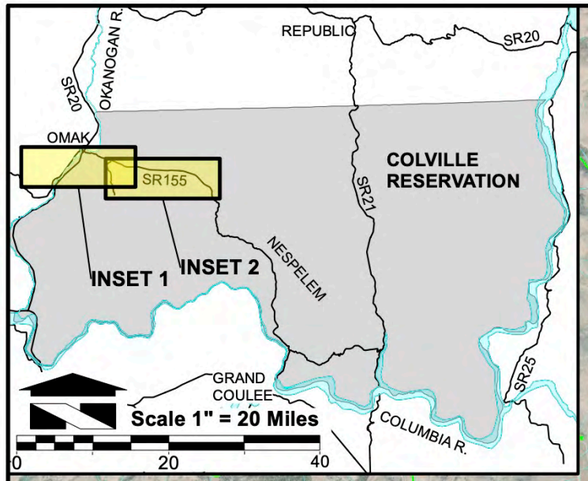
NATIONAL WETLANDS INVENTORY
PROJECT OVERVIEW

SHEET 1/12



LEGEND

- NEW 195' POLE SITE
- NEW FIBER AERIAL
- NEW FIBER BURIED
- RESERVATION BOUNDARY
- PALUSTRINE WETLAND
- RIVERINE WETLAND
- STATE ROUTE
- TOWER ACCESS ROAD

OMAK
RESERVATION BOUNDARY
OMAK MTN. RD
MOOMAW RD
OKANOGAN RIVER
SR215
SR97
COLVILLE RESERVATION
OKANOGAN
MATCH LINE - SEE INSET 2
INSET 2
SR155
N END LAKE OMAK RD
INSET 24 (SHEET 12/12)
INSET 1
INSET 2
MATCH LINE SEE INSET 1
INSET 1
SR155
N END LAKE OMAK RD
INSET 24 (SHEET 12/12)
INSET 1
DISAUTEL MTN MONOPOLE SITE
INSET 10 (SHEET 7/12)
BIA-71
HALEY CREEK RD
OMAK CREEK
SR155
BIA-56
OMAK LAKE

WRI Job #23093
SCALE 1" = 1 MILE
Drawn By: Niels Pedersen
Revision 2 Date: June 13, 2024
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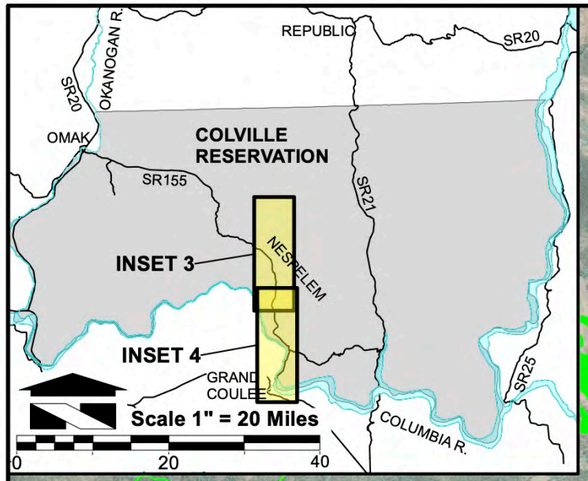
NATIONAL WETLANDS INVENTORY
OKANOGAN WEST (O-W)

SHEET 2/12



LEGEND

- NEW FIBER AERIAL
- NEW FIBER BURIED
- PALUSTRINE WETLAND
- RESERVATION BOUNDARY
- STATE ROUTE
- RIVERINE WETLAND

INSET 4

INSET 3

NESPELEM

GOLD LAKE RD

NESPELEM RIVER

PARK CITY LOOP RD

INSET 22 (SHEET 11/12)

INSET 23 (SHEET 11/12)

SR155

BUFFALO LK RD S

MATCH LINE - SEE INSET 4

SR155

RIVER RD

COLUMBIA RIVER

INSET 3

INSET 4

BUFFALO LK RD S

MATCH LINE - SEE INSET 3

INSET 3

BUFFALO LK RD

PETER DAN RD

ELMER CITY

COULEE DAM

SR174

GRAND COULEE DAM

NESPELEM

SR155

RIVER RD

COLUMBIA RIVER

GRAND COULEE

SR174

SR155

AERIAL CROSSING OVER BANKS LAKE DIVERSION

BANKS LAKE

WRI Job #23093

SCALE 1" = 1 MILE

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NATIONAL WETLANDS INVENTORY
OKANOGAN CENTRAL (O-C) AND OKANOGAN SOUTH (O-S)

SHEET 3/12

INSET 15 (SHEET 9/12)

INSET 16 (SHEET 9/12)

INSET 17 (SHEET 9/12)

NEW 50' POLE

THIRTEENMILE CAMPGROUND

SR20

REPUBLIC

SANPOIL RIVER

SR21

NF-53

TENMILE TRAILHEAD

INSET 18 (SHEET 10/12)

FERRY COUNTY

RESERVATION BOUNDARY

WEST GOLD CREEK RD

SANPOIL RIVER

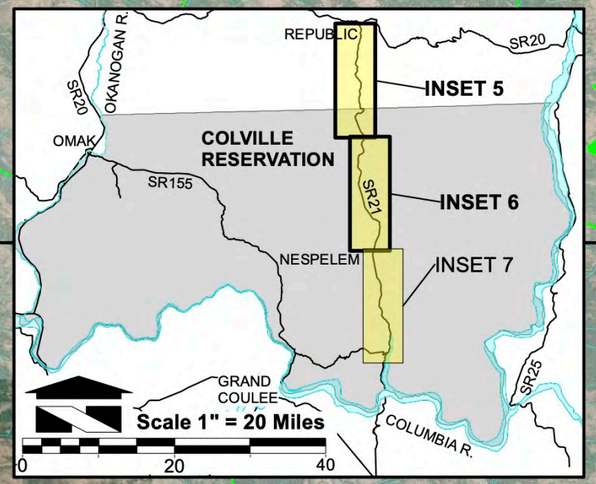
SR21

NEW 100' POLE

MATCH LINE - SEE INSET 6

INSET 5

INSET 6



LEGEND

- NEW 50'/100' POLE
- NEW FIBER AERIAL
- NEW FIBER BURIED
- STATE ROUTE
- RESERVATION BOUNDARY
- PALUSTRINE WETLAND
- RIVERINE WETLAND

MATCH LINE - SEE INSET 5

SANPOIL RIVER

NEW 50' POLE

NEW 50' POLE

NEW 50' POLE

SR21

SR21

TWENTYONE MILE CAMPGROUND

BEAR CREEK CAMPGROUND

NANAMKIN CREEK RD

THIRTYMILE RD

SANPOIL RIVER

NEW 50' POLE

BRIDGE CREEK RD

SR21

NEW 100' POLE

INSET 21 (NWI/FIBER INTERSECT)

INSET 20 (NWI/FIBER INTERSECT)

INSET 19 (NWI/FIBER INTERSECT)

MATCH LINE - SEE INSET 7

WRI Job #23093

SCALE 1" = 1 MILE

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NATIONAL WETLANDS INVENTORY
FERRY WEST (F-W)

SHEET 4/12

MATCH LINE - SEE INSET 6

SANPOIL RIVER

SR21

CACHE CREEK RD

NEW 100' POLE

EMPIRE CREEK RD

NEW 50' POLE

BRUSH CREEK RD

SILVER CREEK RD

KELLER

JACK CREEK RD

SR21

NEW 50' POLE

INSET 11

SANPOIL RIVER ARM

SR21 COW SITE
(NEW 100' POLE)

NEW 50' POLE

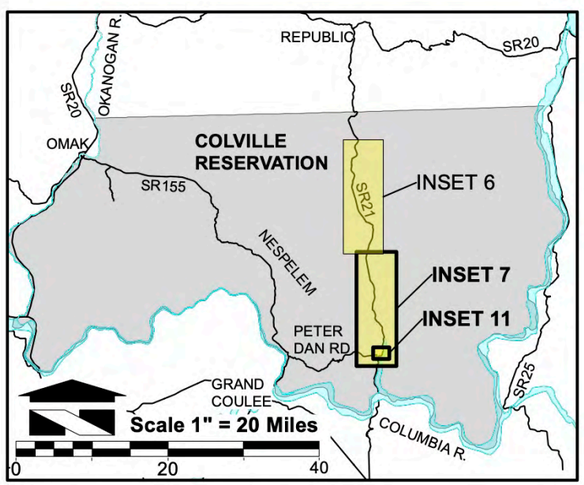
MANILLA CREEK RD

NEW 50' POLE

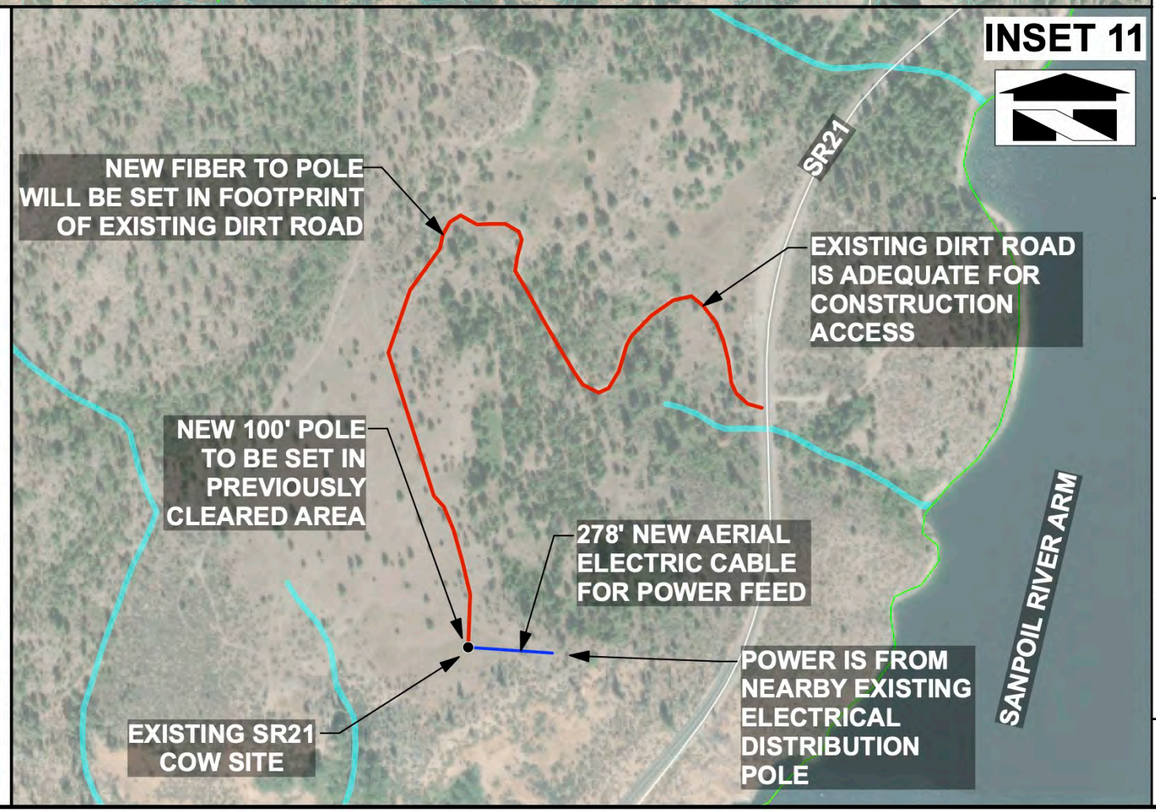
INSET 7

LEGEND

- NEW 50'/100 POLE
- NEW FIBER AERIAL
- NEW FIBER BURIED
- STATE ROUTE
- PROPOSED POWER
- PALUSTRINE WETLAND
- RIVERINE WETLAND



INSET 11



WRI Job #23093

INSET 7 SCALE 1" = 1 MILE
INSET 11 SCALE 1" = 500 FEET

Drawn By: Niels Pedersen

Revision 2 Date: June 13, 2024

Rev. 0: 10.13.23
Rev.1: 5.9.24

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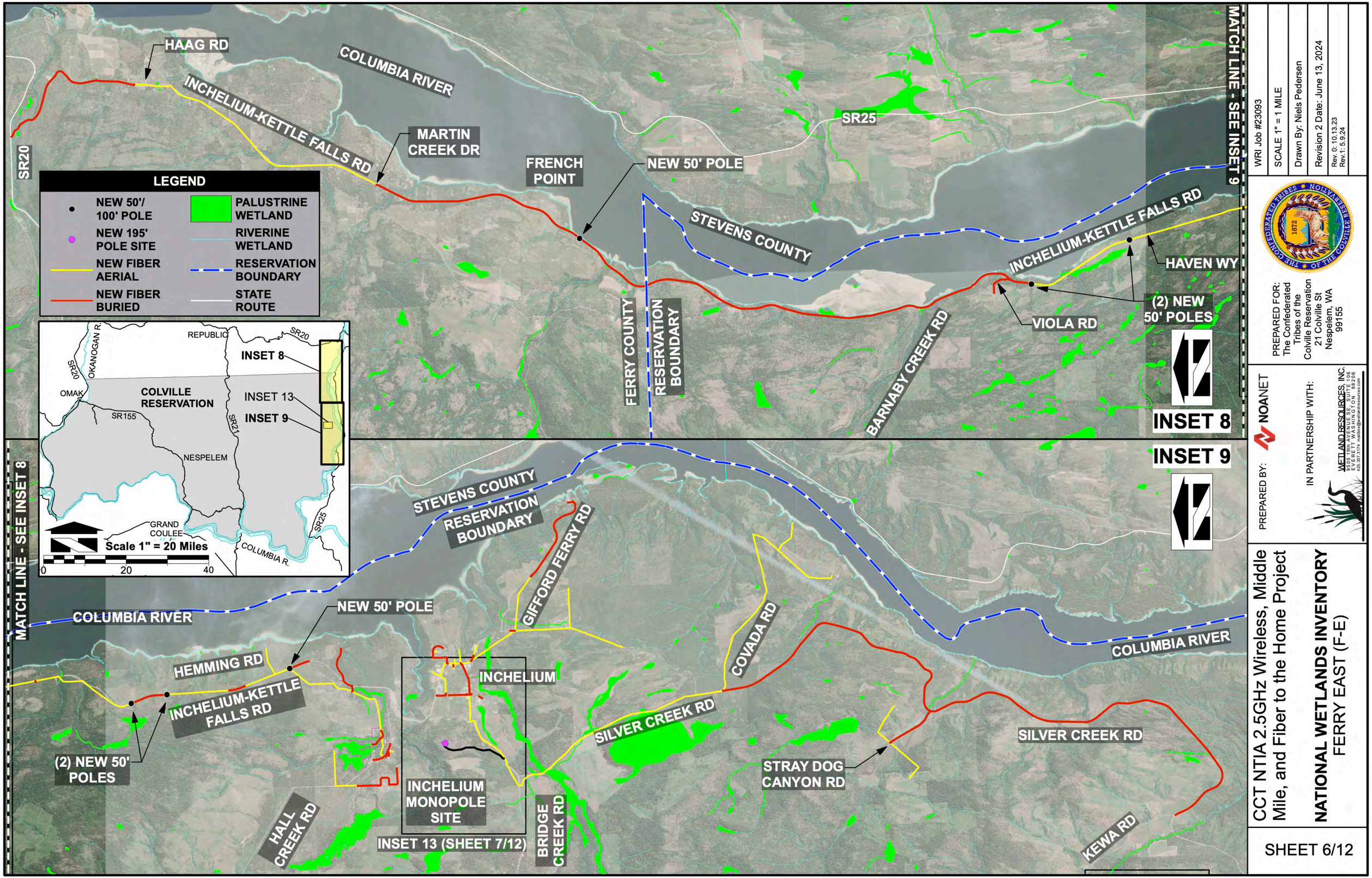
NATIONAL WETLANDS INVENTORY
FERRY WEST (F-W) AND SR21 COW TOWER SITE

SHEET 5/12



WRI Job #23093

SCALE 1" = 1 MILE

Drawn By: Niels Pedersen

Revision 2 Date: June 13, 2024

Rev. 0: 10.13.23
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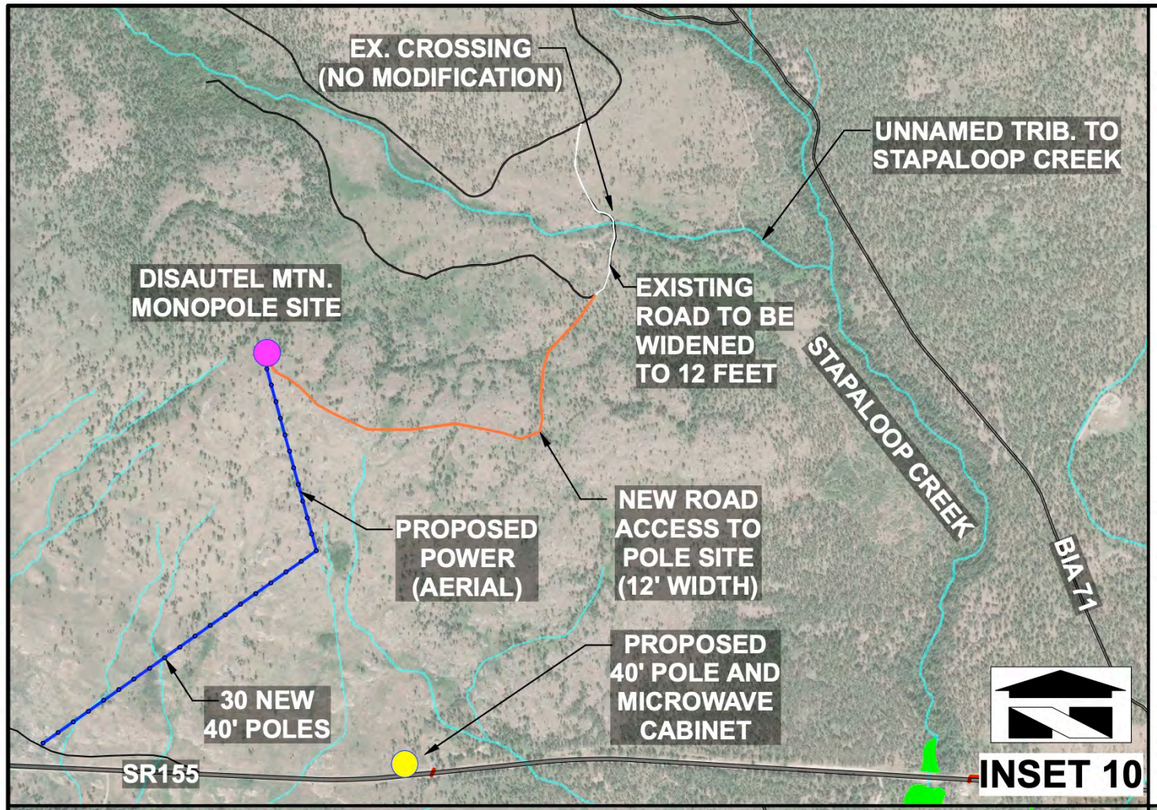
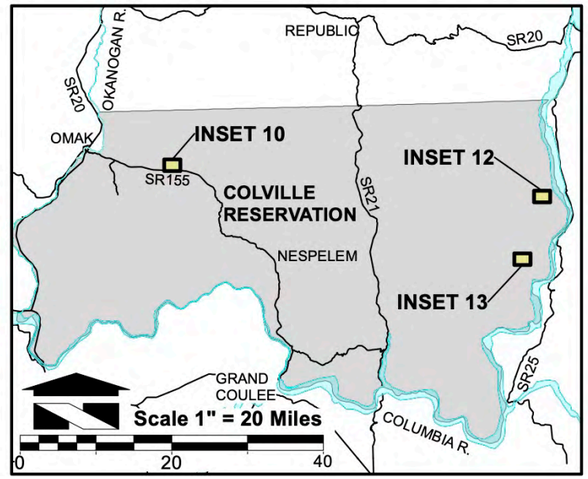
NATIONAL WETLANDS INVENTORY
FERRY EAST (F-E)

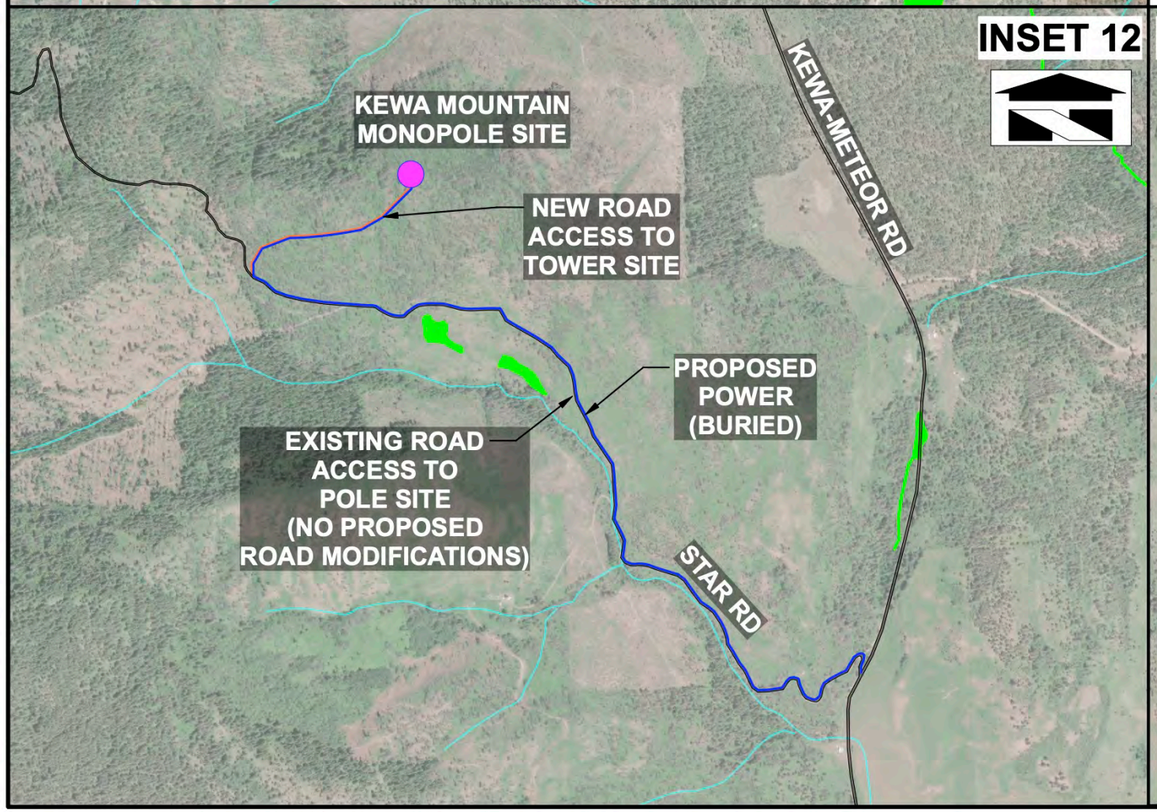
SHEET 6/12

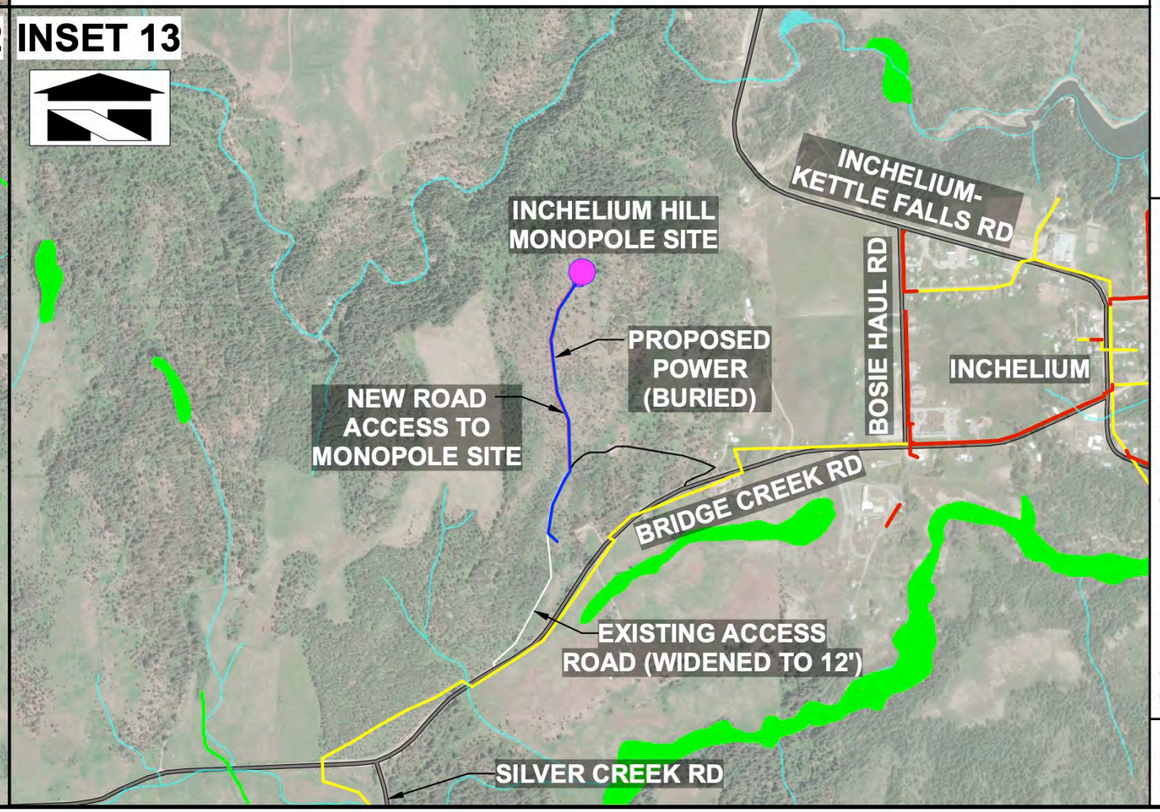




LEGEND

NEW 195' POLE SITE	NEW ROAD	NEW FIBER AERIAL	RIVERINE WETLAND
NEW MICROWAVE CABINET/POLE	WIDEN EX. ROAD	NEW FIBER BURIED	
PROPOSED POWER	EXISTING ROAD	PALUSTRINE WETLAND	





WRI Job #23093

SCALE 1" = 1,500 FEET

Drawn By: Niels Pedersen

Revision 2 Date: June 13, 2024

Rev. 0: 10.13.23
Rev.1: 5.9.24

PREPARED FOR:
The Confederated
Tribes of the
Colville Reservation
21 Colville St
Nespelem, WA
99155

PREPARED BY:
NOANET
IN PARTNERSHIP WITH:
WETLAND RESOURCES, INC.
9505 19th AVENUE SE, SUITE 106
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425.337.3174 mailbox@wetlandresources.com

CCT NTIA 2.5GHz Wireless, Middle Mile, and Fiber to the Home Project

NATIONAL WETLANDS INVENTORY
DISAUTEL, INCHELIUM, AND KEWA
TOWER SITES

SHEET 7/12

INSET 14

NEW WIRELESS HARDWARE AFFIXED TO EXISTING 195-FOOT TOWER

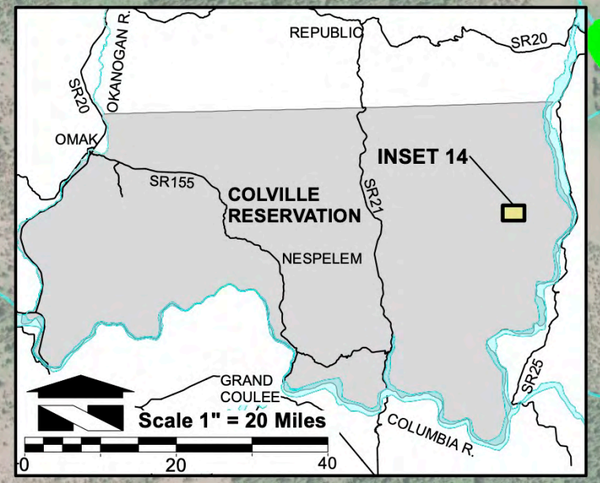
MOON MOUNTAIN TOWER SITE (EXISTING)

EXISTING ROAD ACCESS TO TOWER SITE (NO PROPOSED MODIFICATIONS)

METEOR RD

MOON MOUNTAIN RD

METEOR RD



Scale 1" = 1,000'

0 1,000 2,000

LEGEND

- EXISTING TOWER SITE
- EXISTING ROAD
- PALUSTRINE WETLAND
- RIVERINE WETLAND

WRI Job #23093

SCALE 1" = 1,000 FEET

Drawn By: Niels Pedersen

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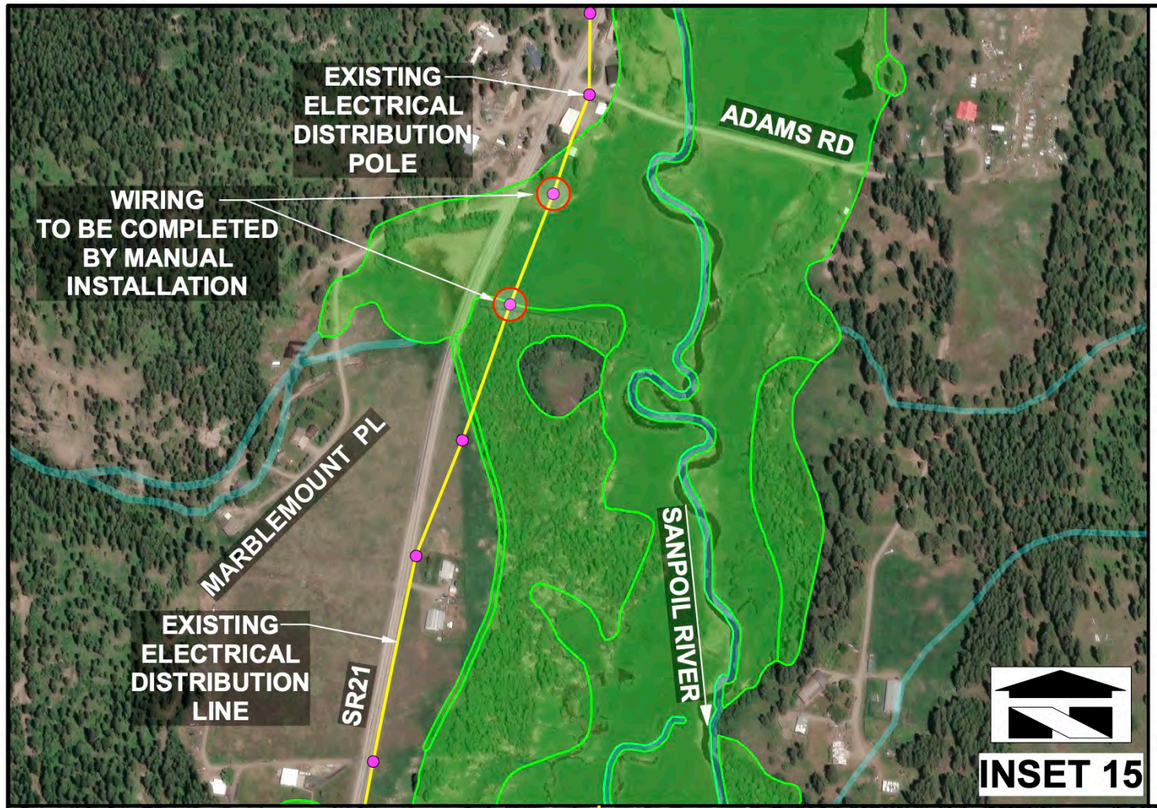
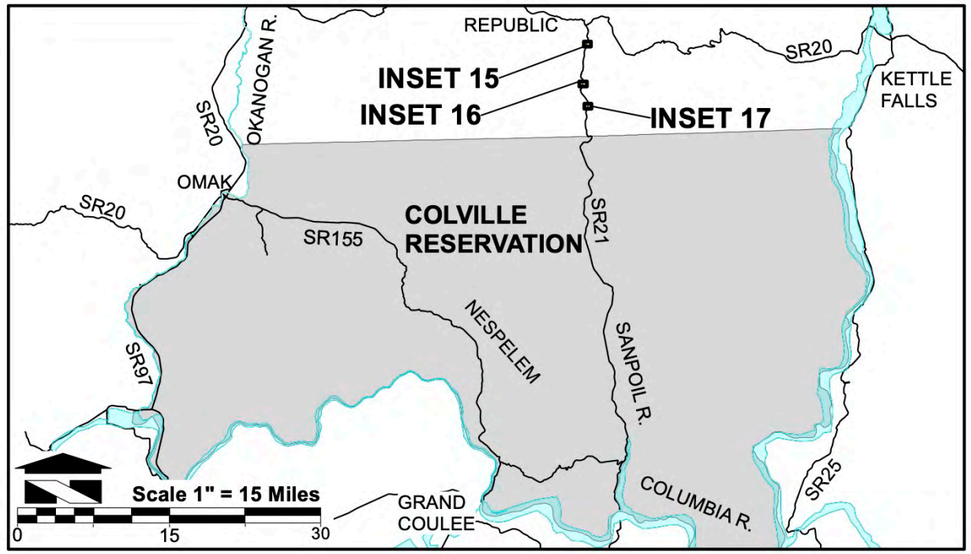
NATIONAL WETLANDS INVENTORY
DISAUTEL, INCHELIUM, AND KEWA TOWER SITES

SHEET 8/12



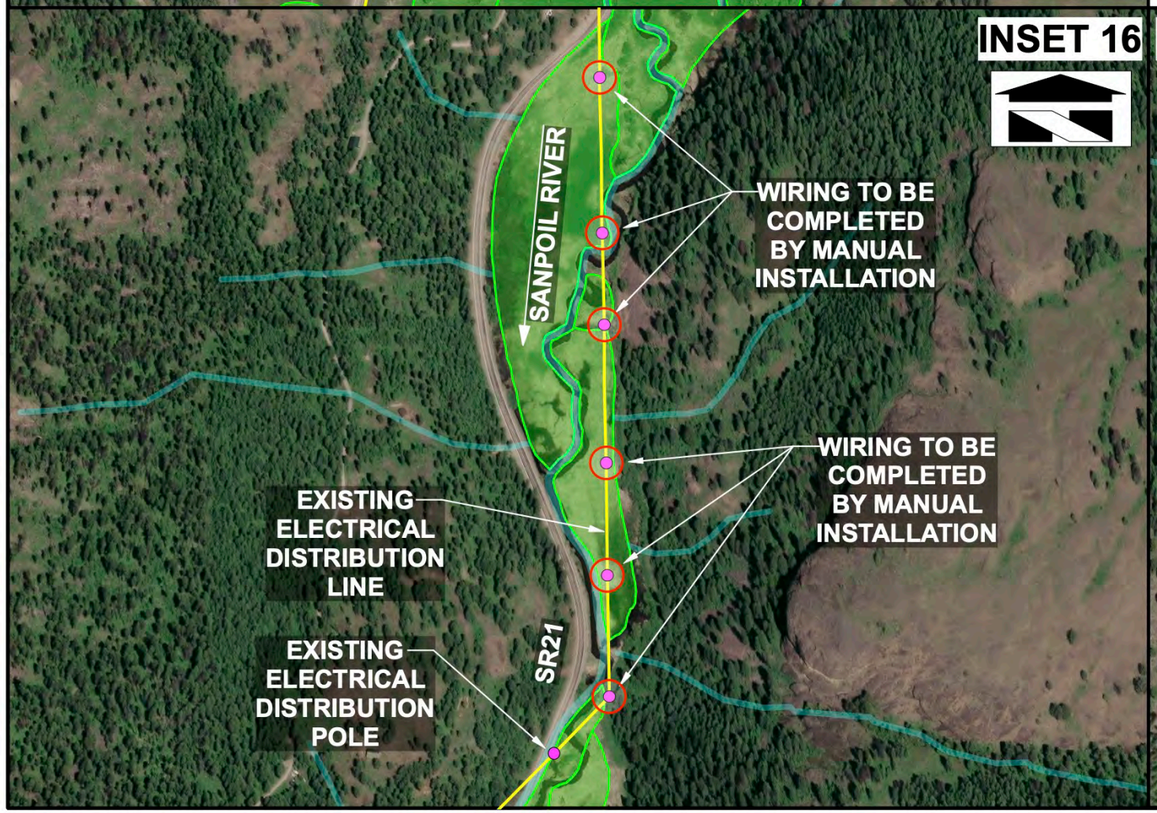
INSET 15



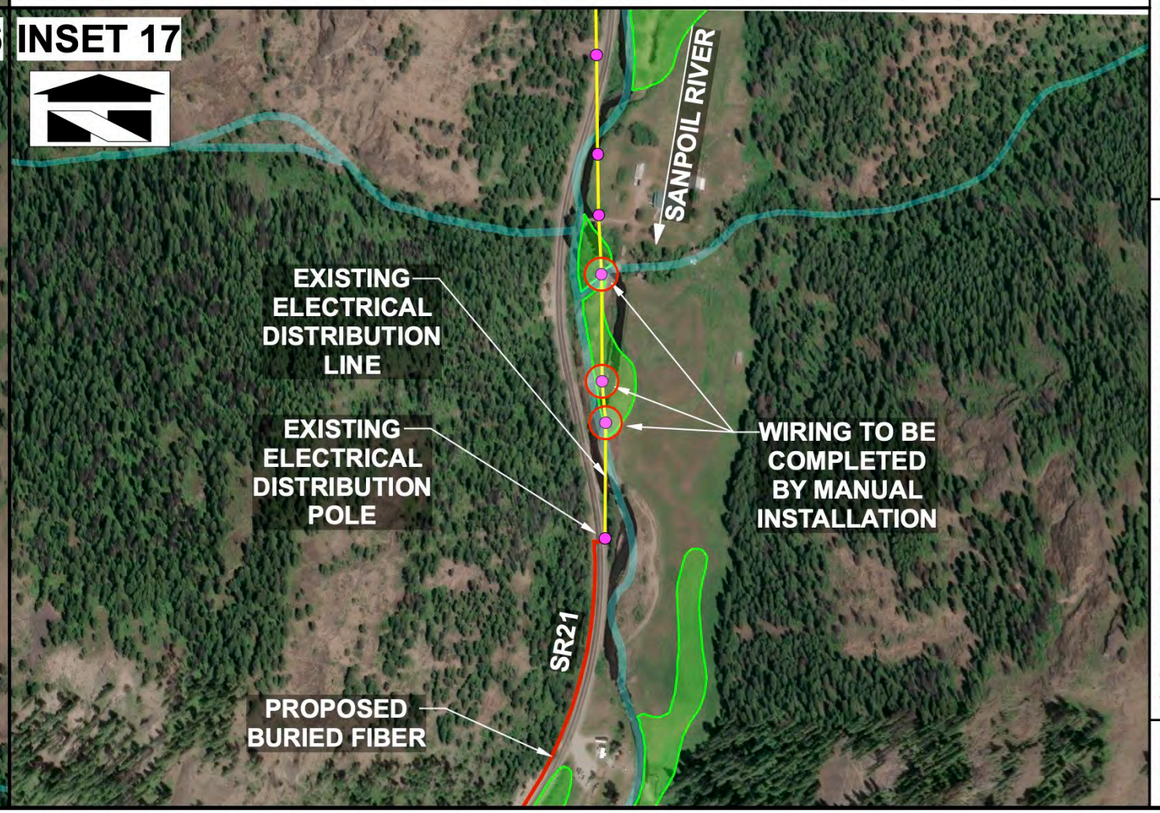
LEGEND

- EXISTING POLE
- MANUAL WIRING
- NEW FIBER AERIAL
- NEW FIBER BURIED
- PALUSTRINE WETLAND
- RIVERINE WETLAND

INSET 16



INSET 17



WRI Job #23093

SCALE 1" = 500 FEET

Drawn By: Niels Pedersen

Revision 2 Date: June 13, 2024

Rev. 0: 10.13.23
Rev.1: 5.9.24

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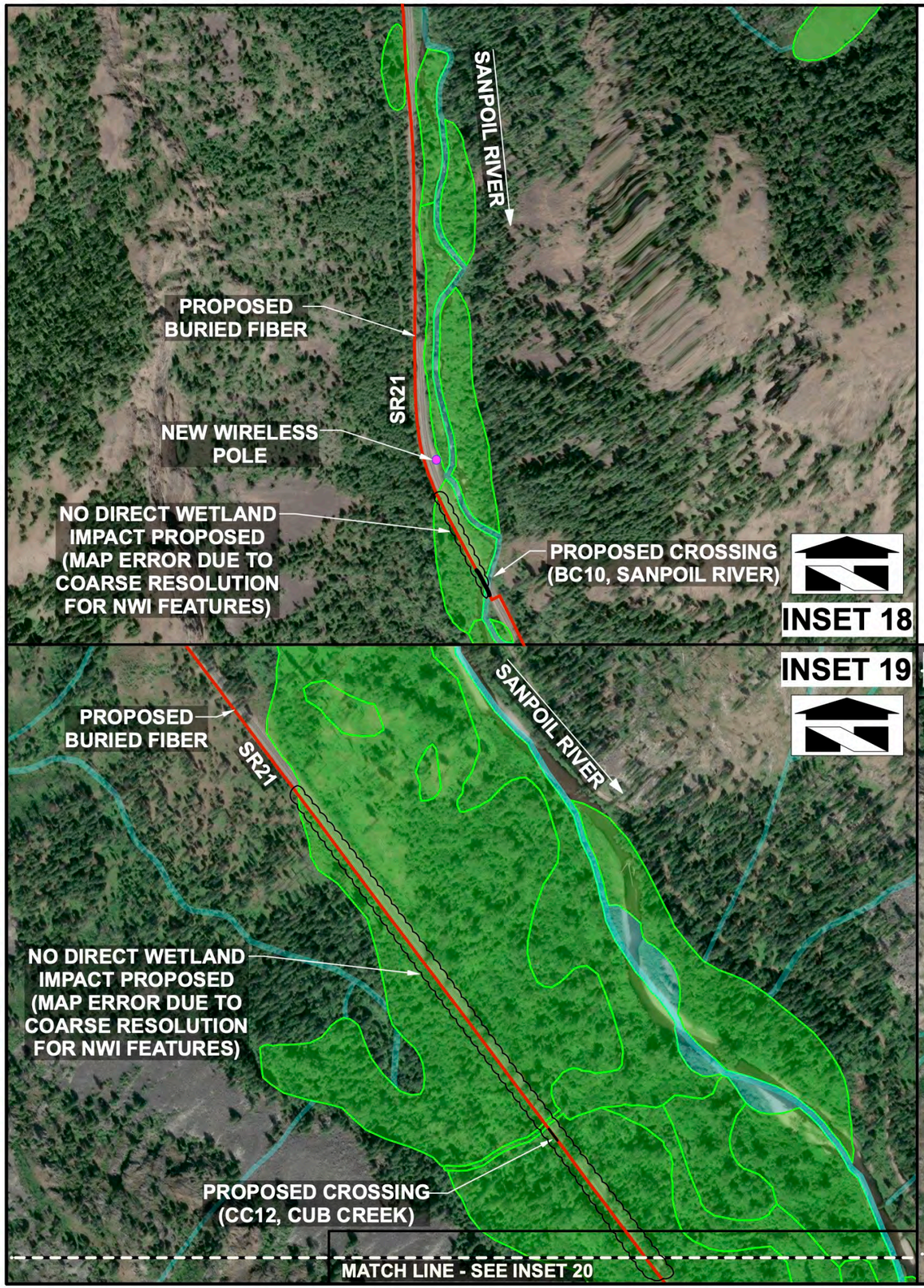
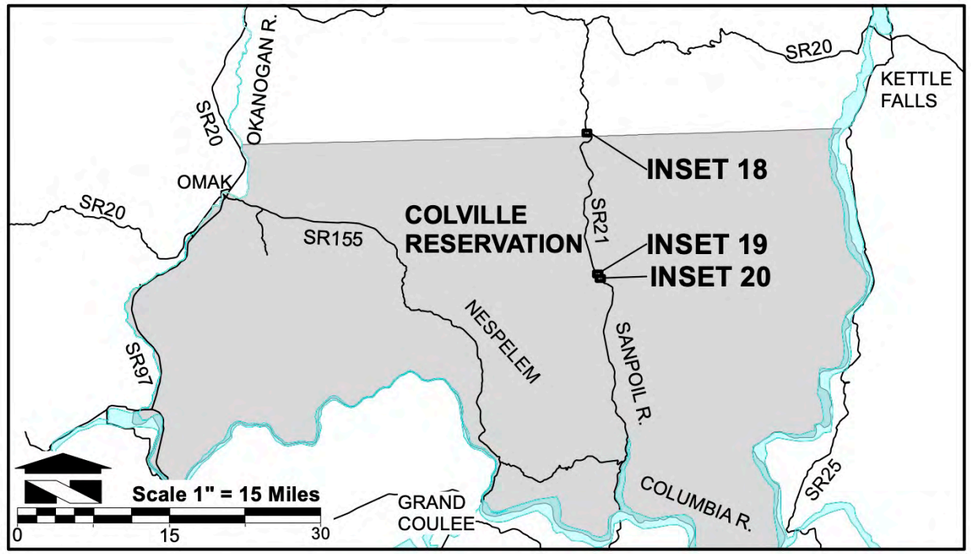
NATIONAL WETLANDS INVENTORY
NWI/FIBER INTERSECT
DETAIL SHEETS - INSETS 15-17

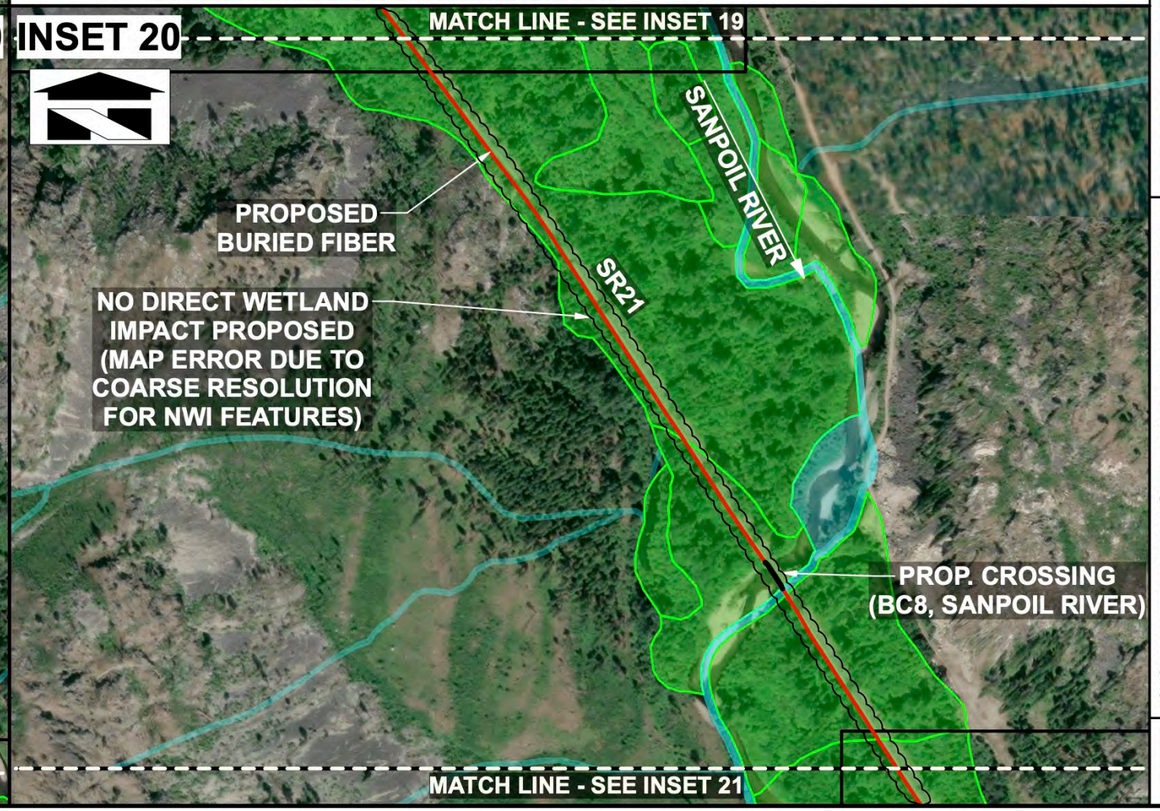
SHEET 9/12





LEGEND

- NEW FIBER BURIED
- NEW TOWER
- PROP. STREAM CROSSING
- PALUSTRINE WETLAND
- RIVERINE WETLAND



WRI Job #23093

SCALE 1" = 500 FEET

Drawn By: Niels Pedersen

Revision 2 Date: June 13, 2024

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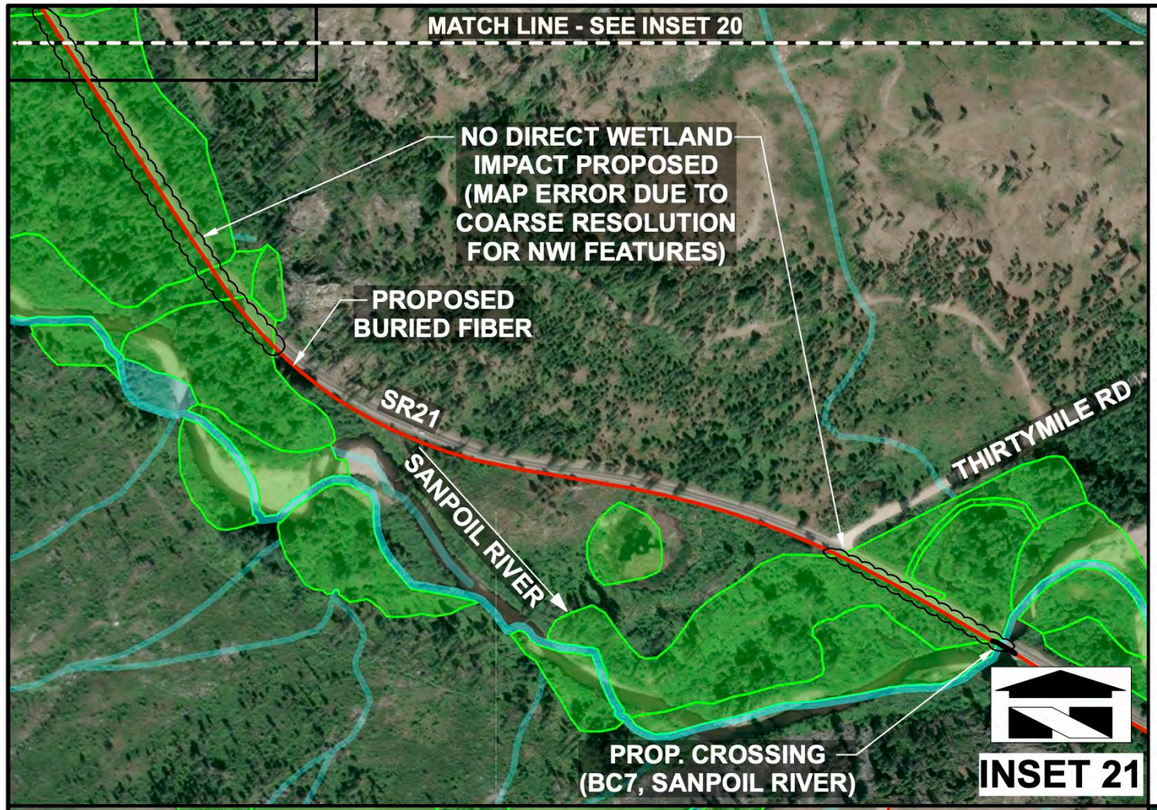
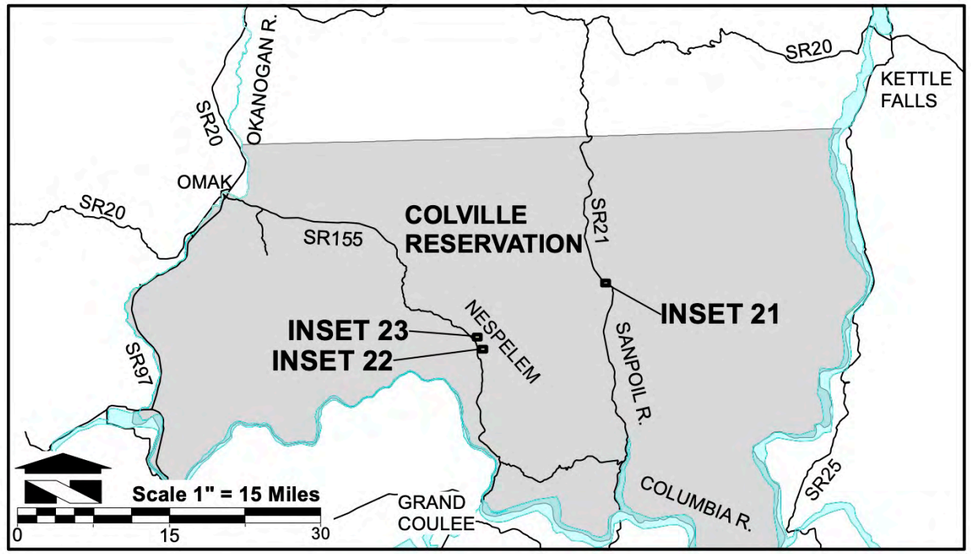
NATIONAL WETLANDS INVENTORY
NWI/FIBER INTERSECT
DETAIL SHEETS - INSETS 18-20

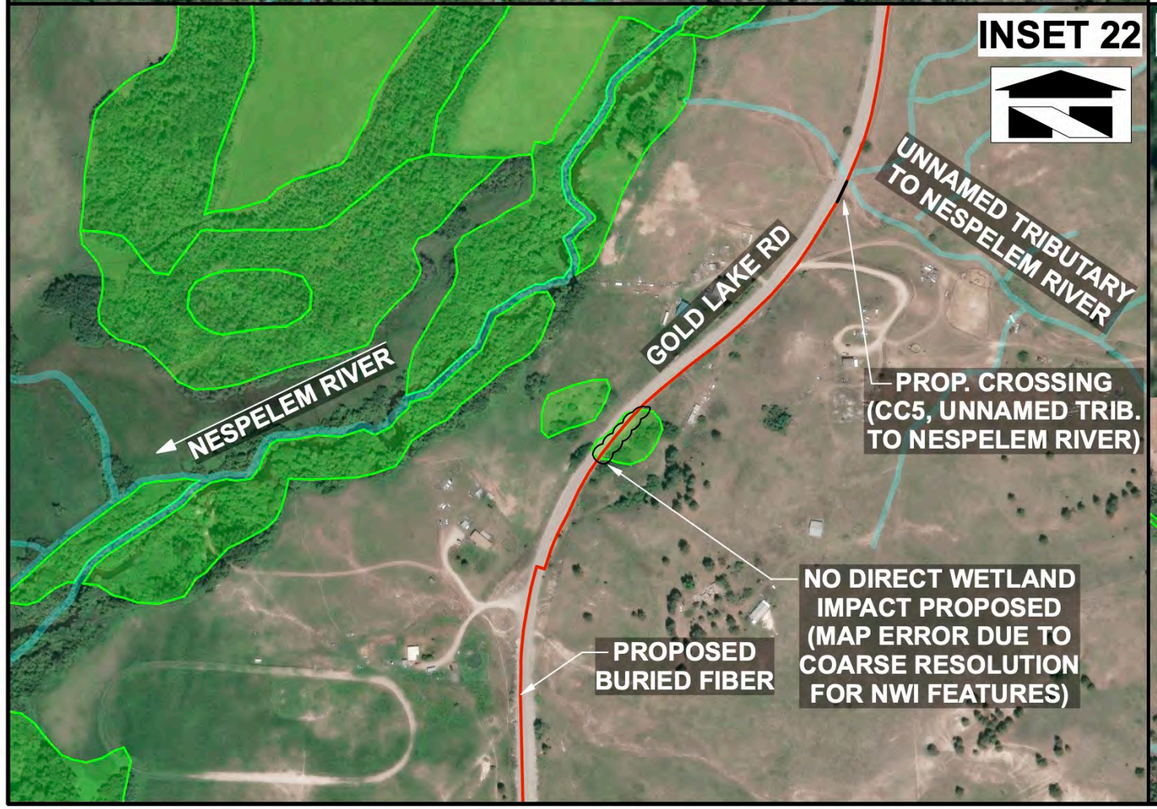
SHEET 10/12

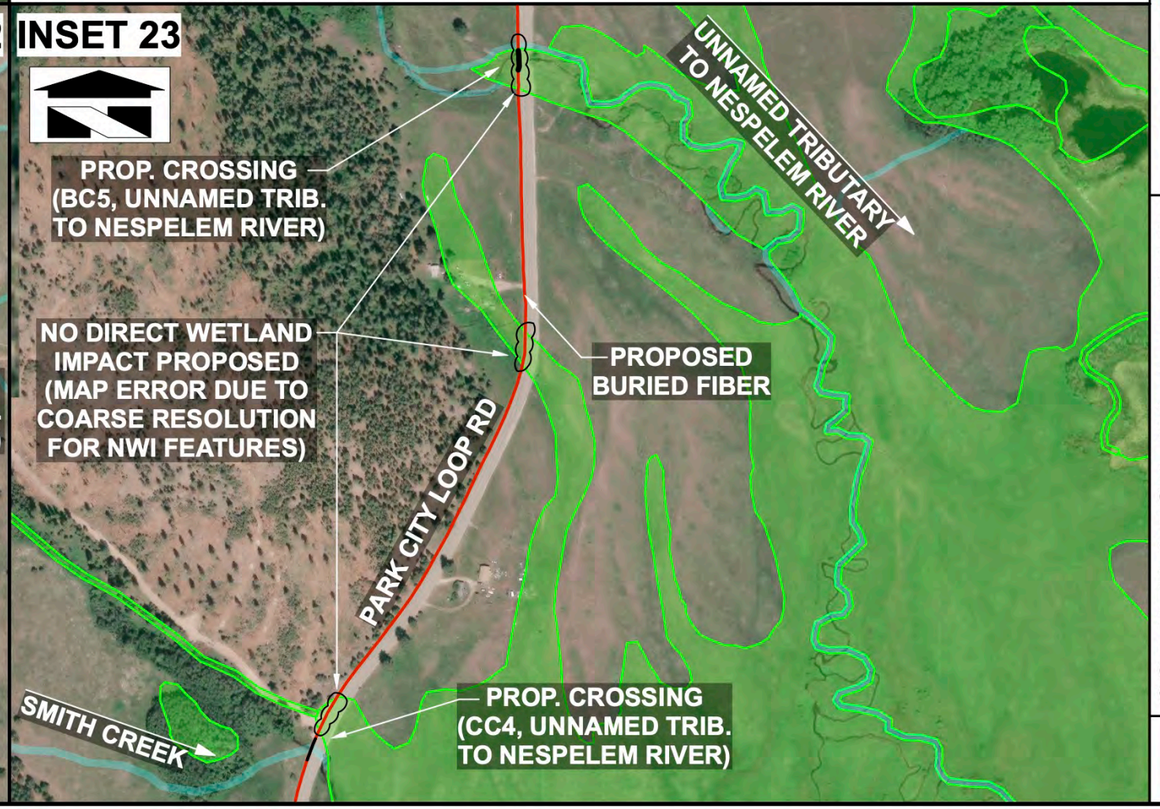




LEGEND

NEW FIBER BURIED	PALUSTRINE WETLAND
PROP. STREAM CROSSING	RIVERINE WETLAND





WRI Job #23093

SCALE 1" = 500 FEET

Drawn By: Niels Pedersen

Revision 2 Date: June 13, 2024

Rev. 0: 10.13.23
Rev.1: 5.9.24

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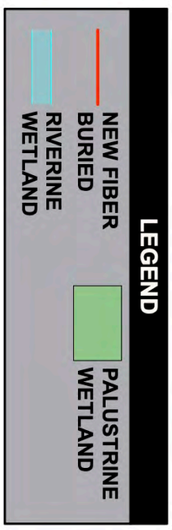
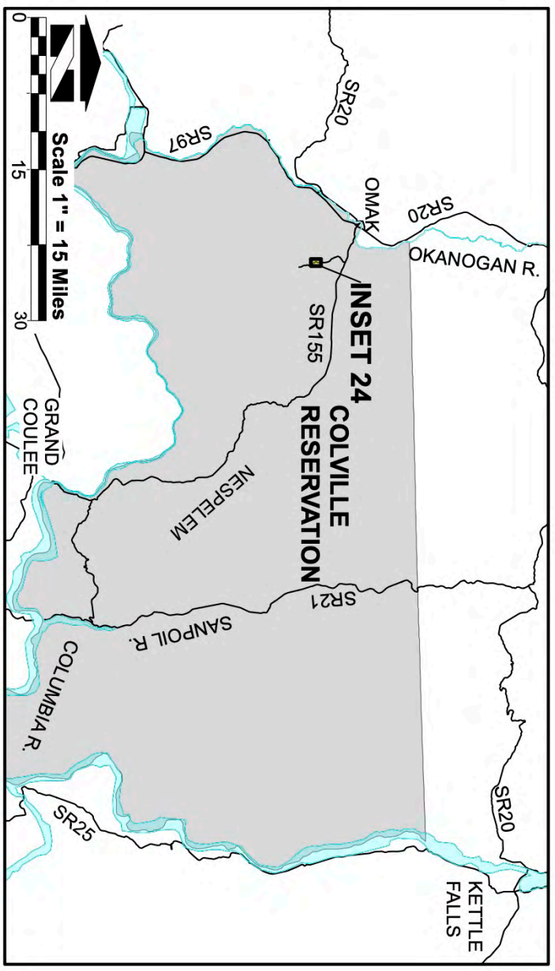
CCT NTIA 2.5GHz Wireless, Middle Mile, and Fiber to the Home Project

NATIONAL WETLANDS INVENTORY
NWI/FIBER INTERSECT
DETAIL SHEETS - INSETS 21-23

SHEET 11/12





SHEET 12/12

CCT NTIA 2.5GHz Wireless, Middle Mile, and Fiber to the Home Project

NATIONAL WETLANDS INVENTORY
NWI/FIBER INTERSECT
DETAIL SHEETS - INSET 24

PREPARED BY: NOANET

IN PARTNERSHIP WITH:

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PREPARED FOR:
The Confederated Tribes of the Colville Reservation
21 Colville St
Nespelem, WA
99155

WRI Job #23093	
SCALE 1" = 500 FEET	
Drawn By: Niels Pedersen	
Revision 2 Date: June 13, 2024	
Rev. 0: 10.13.23 Rev.1: 5.9.24	

Appendix E

Okanogan River Tributary Crossings

CROSSING TYPE	WORK AREA	WA DNR WC ID	STREAM NAME	FLOW TYPE	ROAD NAME	INSET NUMBERS
BRIDGE/GIRDLE	BC1	1119925	OMAK CREEK	PERENNIAL	OMAK RIVERSIDE E RD	INSET 1, 1.1
BRIDGE/GIRDLE	BC2	1121586	OMAK CREEK	PERENNIAL	N END OMAK LK RD	INSET 2, 2.1
BRIDGE/GIRDLE	BC3	1122158	OMAK CREEK	PERENNIAL	JIM CREEK RD	INSET 3, 3.1
CULVERT/BURIED	CC1	1119544	UNNAMED TRIB. TO OKANOGAN RIVER	INTERMITTENT	OMAK MTN RD	INSET 4, 4.1
CULVERT/BURIED	CC2	1121326	HALEY CREEK	INTERMITTENT	SR155	INSET 5, 5.1
CULVERT/BURIED	CC3	1121798	OMAK CREEK	PERENNIAL	JIM CREEK RD	INSET 6, 6.1
FORD/EXISTING	EF1	1120746	UNNAMED TRIB. TO STAPALOOP CK.	INTERMITTENT	UNNAMED SPUR WEST OF BIA-71	INSET 7, 7.1

OKANOGAN RIVER
SR20
OMAK
BRIDGE CROSSING 1
OMAK CREEK AT
OMAK RIVERSIDE E RD
CULVERT CROSSING 1
UNNAMED TRIB. TO OKANOGAN R.
(WA DNR WC ID 1119544)
AT OMAK MTN RD
INSET 1
INSET 4
OMAK CREEK
SR155
INSET 2
INSET 5
HALEY CREEK
DISAUTEL POLE
SITE & PROPOSED
ACCESS ROAD
UNNAMED TRIB. TO
STAPALOOP CREEK
EXISTING CROSSING AT
UNNAMED TRIB. TO
STAPALOOP CREEK
INSET 7
STAPALOOP CREEK
CULVERT CROSSING 3
OMAK CREEK AT
JIM CREEK RD - W
SR155
CULVERT CROSSING 2
HALEY CREEK AT SR155
INSET 3
OMAK CREEK
INSET 6
OMAK CREEK
BRIDGE CROSSING 3
OMAK CREEK AT
JIM CREEK RD - E
BRIDGE CROSSING 2
OMAK CREEK AT
N END OMAK LK RD
OMAK LAKE

LEGEND

- NEW 195' POLE SITE
- PROPOSED ACCESS
- NEW FIBER (AERIAL)
- NEW FIBER (BURIED)
- MAJOR OKANOGAN RIVER TRIBUTARIES
- MINOR OKANOGAN RIVER TRIBUTARIES
- STATE ROUTE

Scale 1" = 5,280'
0 5,280 10,560

WRI Job #23093
SCALE 1" = 1 MILE
Drawn By: Niels Pedersen
Revision 2 Date: June 13, 2024
Rev. 0: 10.13.23
Rev.1: 5.9.24

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The Confederated Tribes of the Colville Reservation
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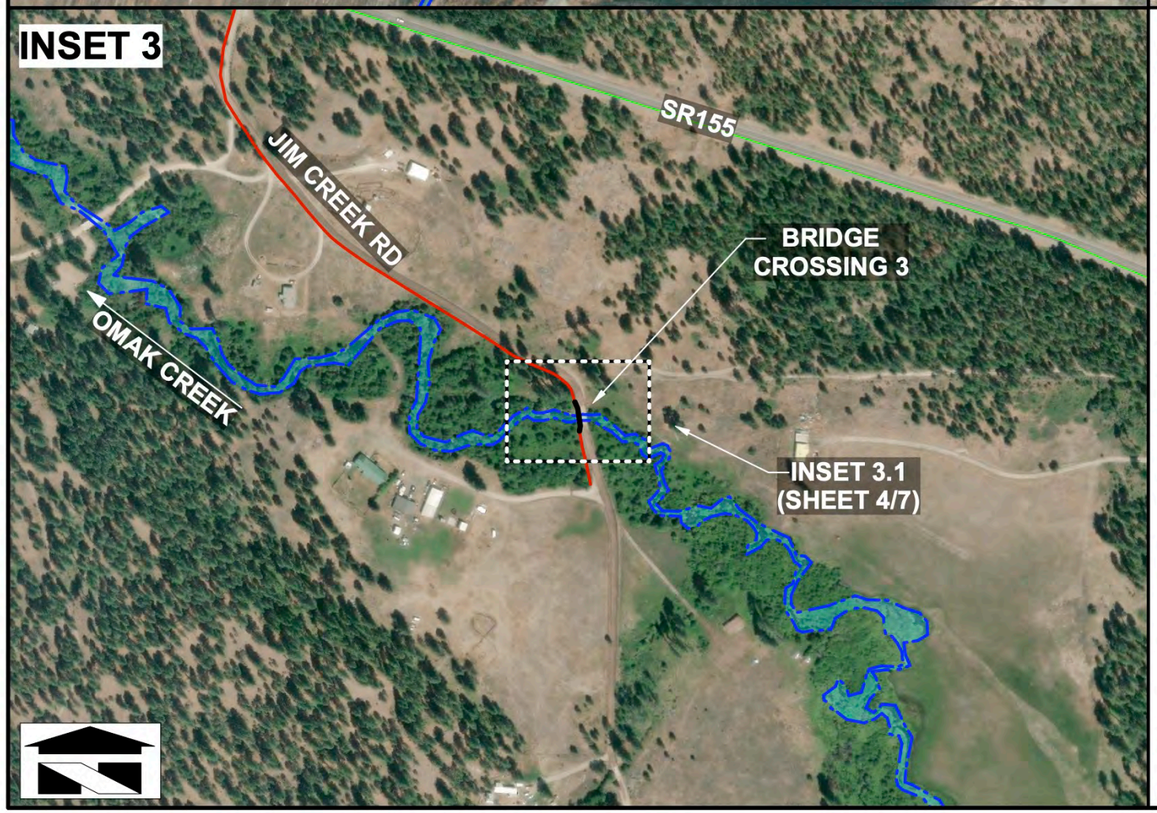
CCT NTIA 2.5GHz Wireless, Middle Mile, and Fiber to the Home Project

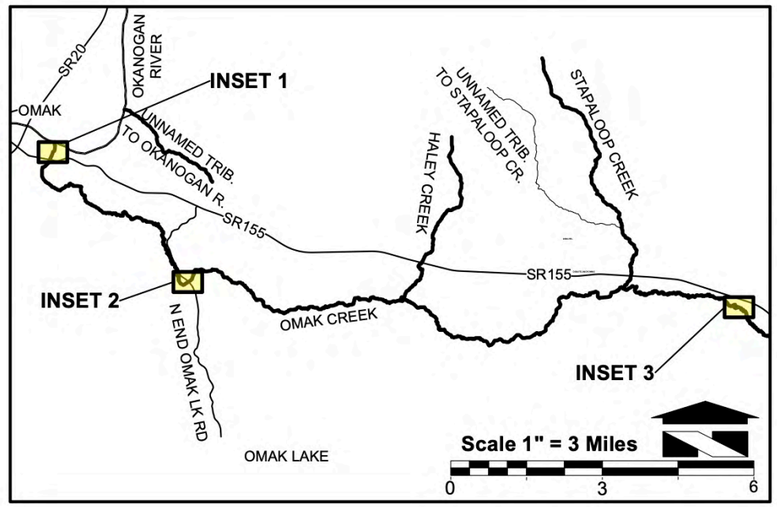
OKANOGAN RIVER TRIBUTARY CROSSINGS
OVERVIEW

SHEET 1/7



LEGEND

- NEW FIBER (BURIED)
- EXISTING FIBER (BURIED)
- MAJOR OKANOGAN RIVER TRIBUTARIES
- NEW BRIDGE CROSSING



WRI Job #23093

SCALE 1" = 400'

Drawn By: Niels Pedersen

Revision 2 Date: June 13, 2024

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Rev.1: 5.9.24

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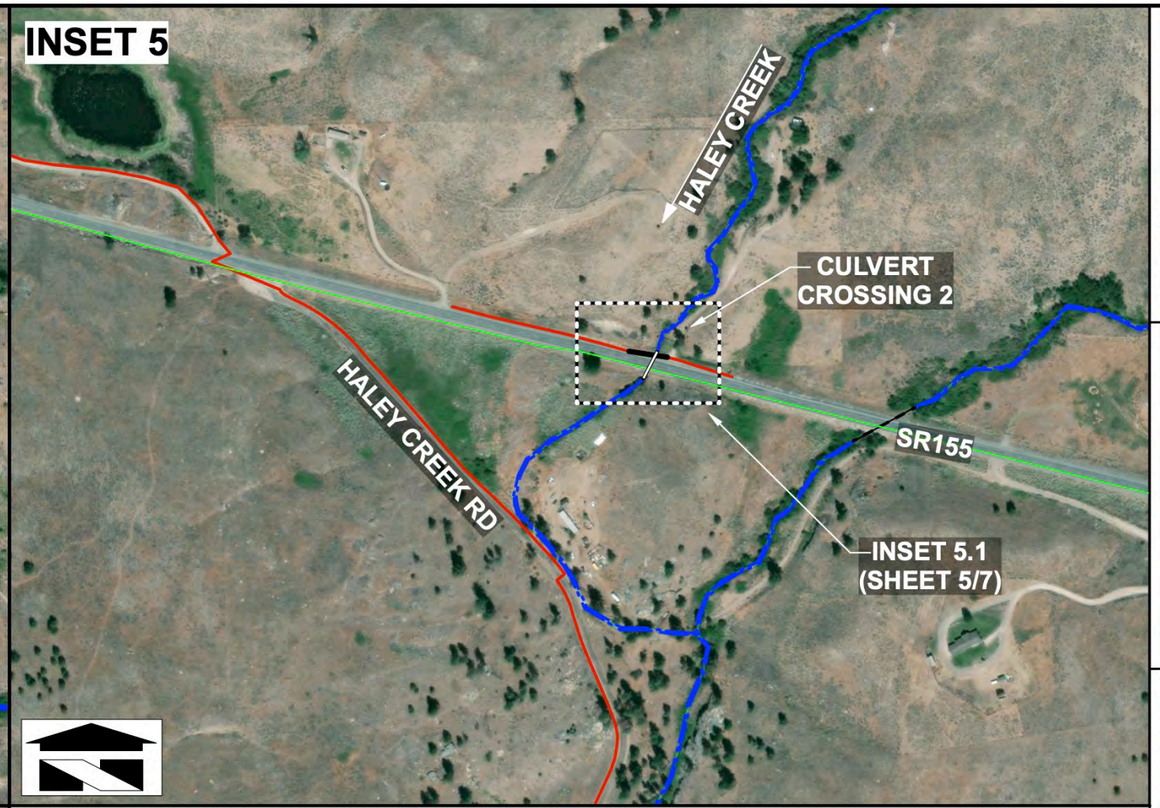
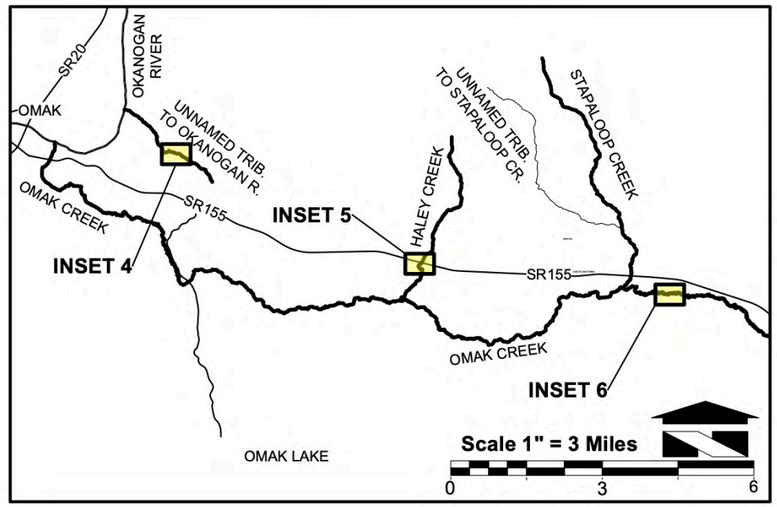
OKANOGAN RIVER TRIBUTARY CROSSINGS
BRIDGE CROSSINGS - OVERVIEW

SHEET 2/7



LEGEND

- NEW FIBER (BURIED)
- EXISTING FIBER (BURIED)
- EXISTING CULVERT
- MAJOR OKANOGAN RIVER TRIBUTARIES
- NEW CULVERT CROSSING



WRI Job #23093

SCALE 1" = 400'

Drawn By: Niels Pedersen

Revision 2 Date: June 13, 2024

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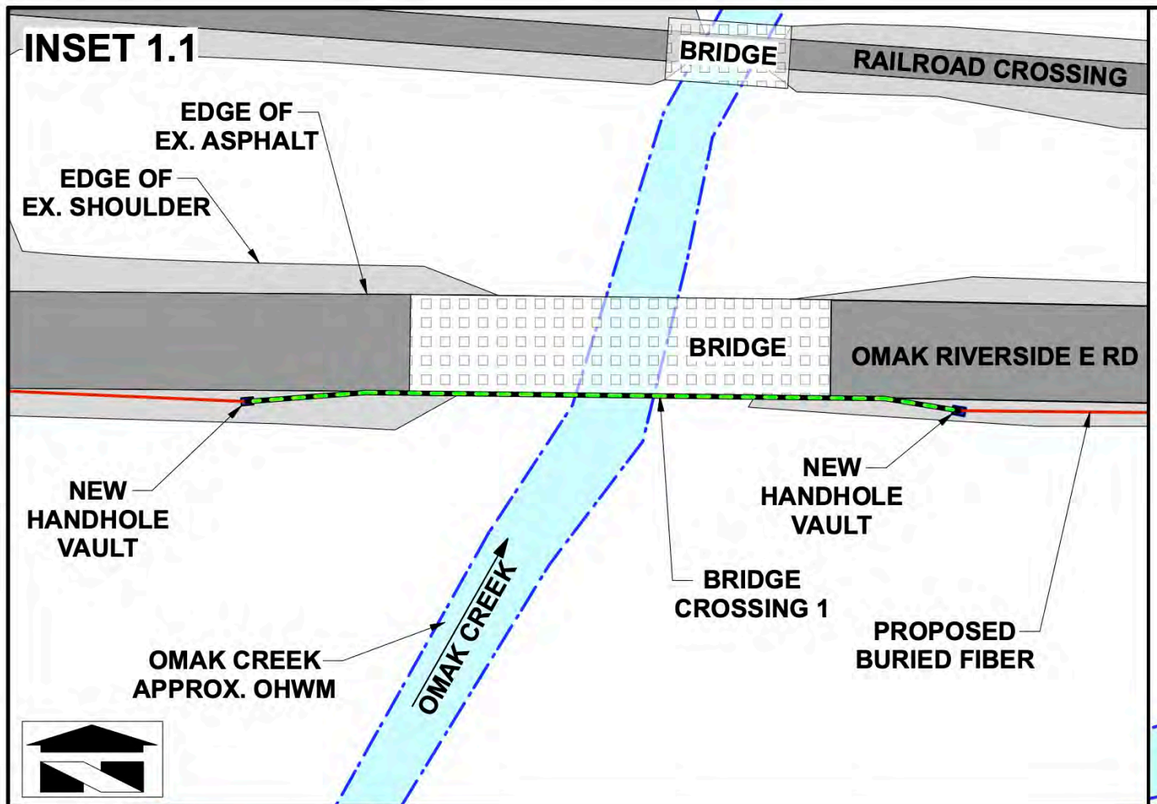
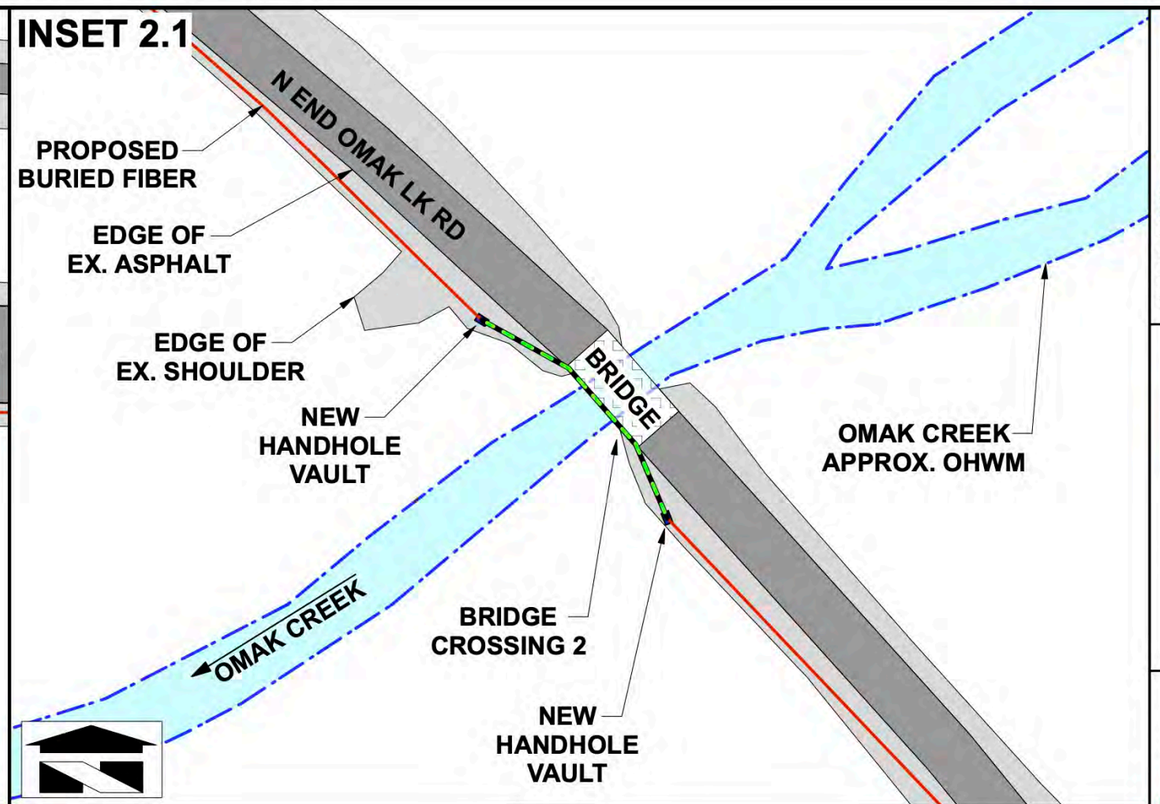
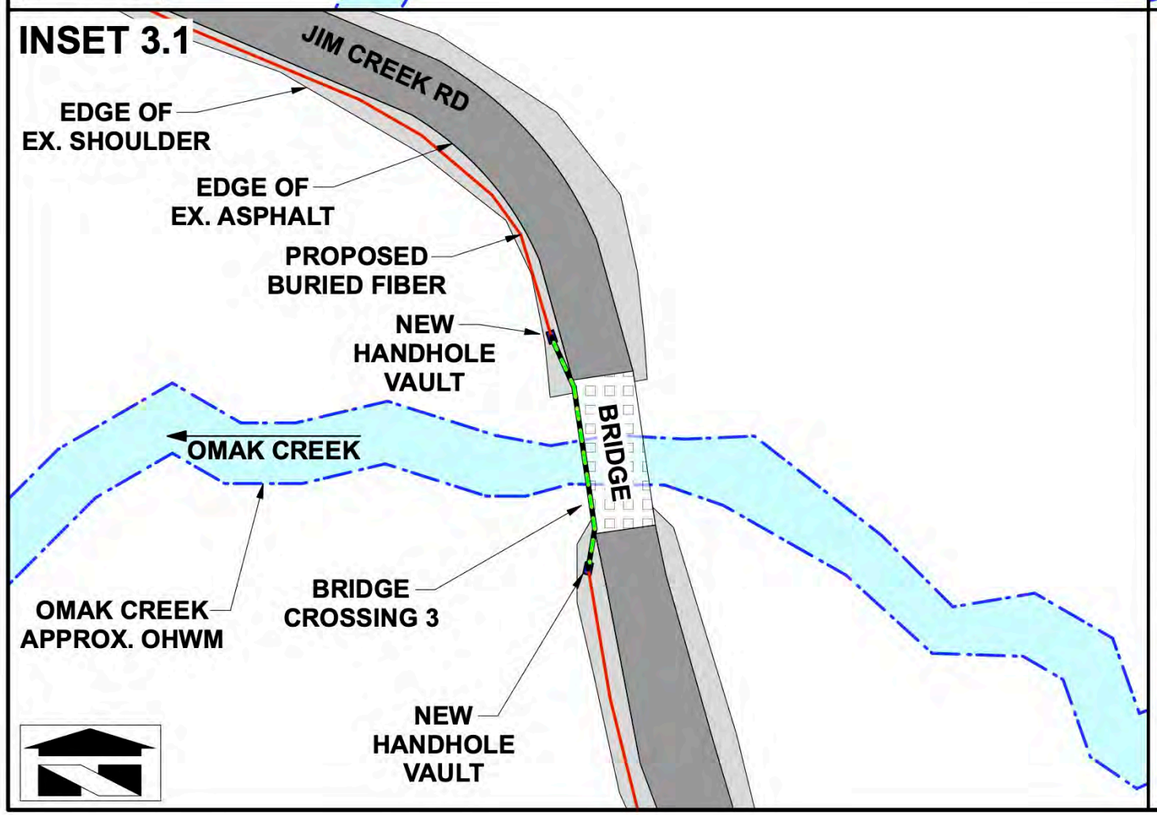
OKANOGAN RIVER TRIBUTARY CROSSINGS
CULVERT CROSSINGS - OVERVIEW

SHEET 3/7







LEGEND

NEW FIBER (BURIED)	EXISTING ROAD SURFACE	MAJOR OKANOGAN RIVER TRIBUTARIES
NEW CONDUIT	EXISTING EDGE OF GRAVEL	
NEW HANDHOLE VAULT	EXISTING BRIDGE	

PROJECT NOTES

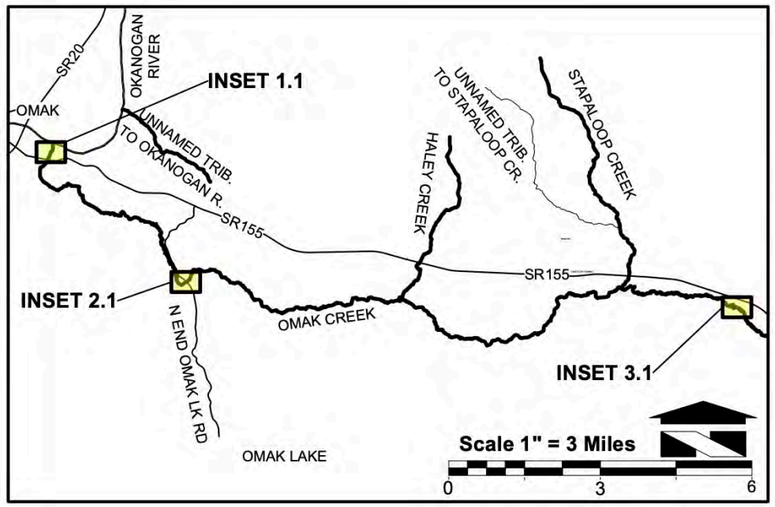
-HANDHOLE VAULTS PRECAST OR POLYMER CONCRETE (30" W X 48" L)

-ALL EXISTING BRIDGE STRUCTURES SURVEYED BY LICENSED PE

-SUITABLE CONDUIT ATTACHMENT POINTS DETERMINED BY PE

-BMPs TO BE PLACED BY LICENSED CESCL

-GIRDLE LOAD TESTING AS REQUIRED BY WSDOT



WRI Job #23093

SCALE 1" = 50'

Drawn By: Niels Pedersen

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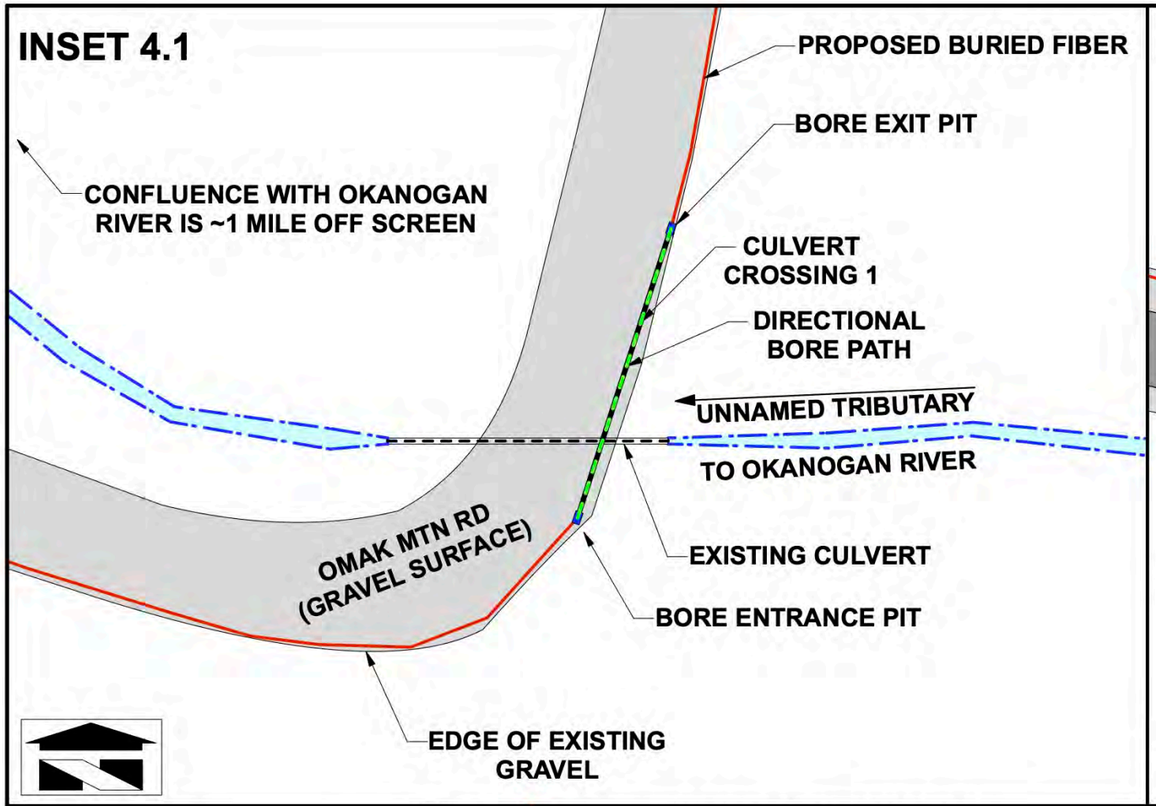
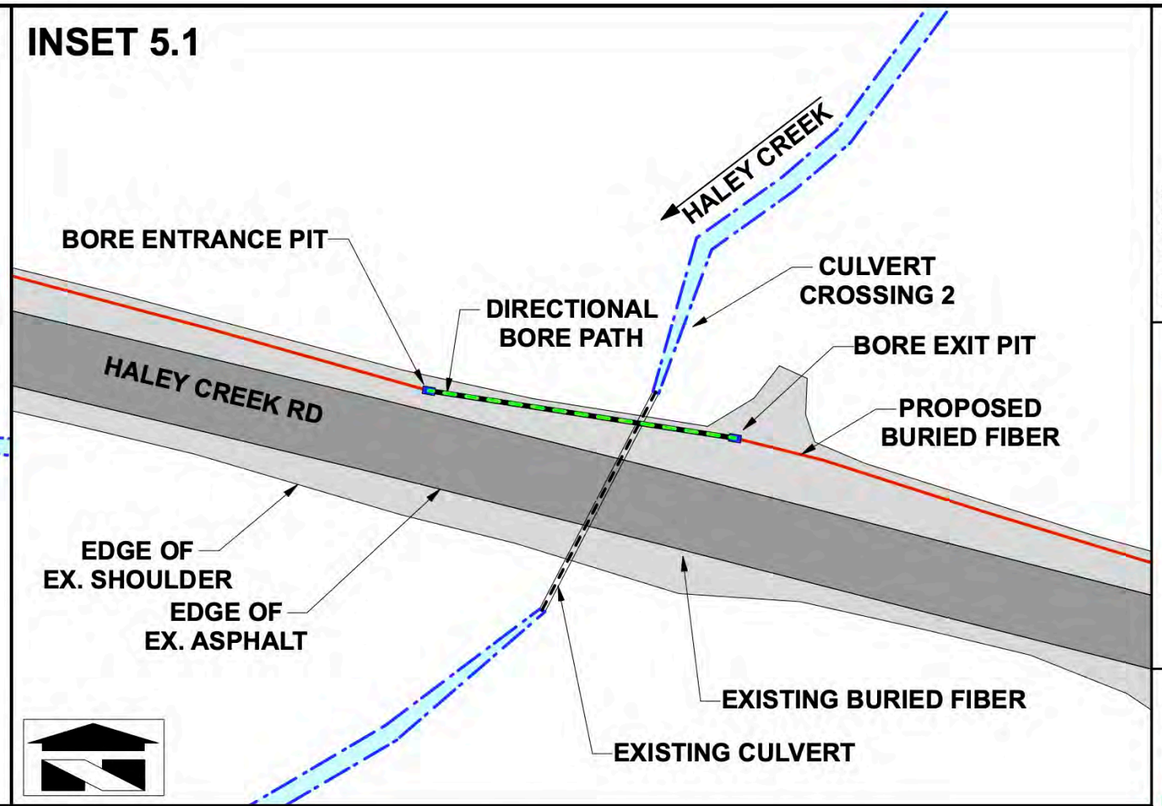
OKANOGAN RIVER TRIBUTARY CROSSINGS
BRIDGE CROSSINGS - DETAIL

SHEET 4/7

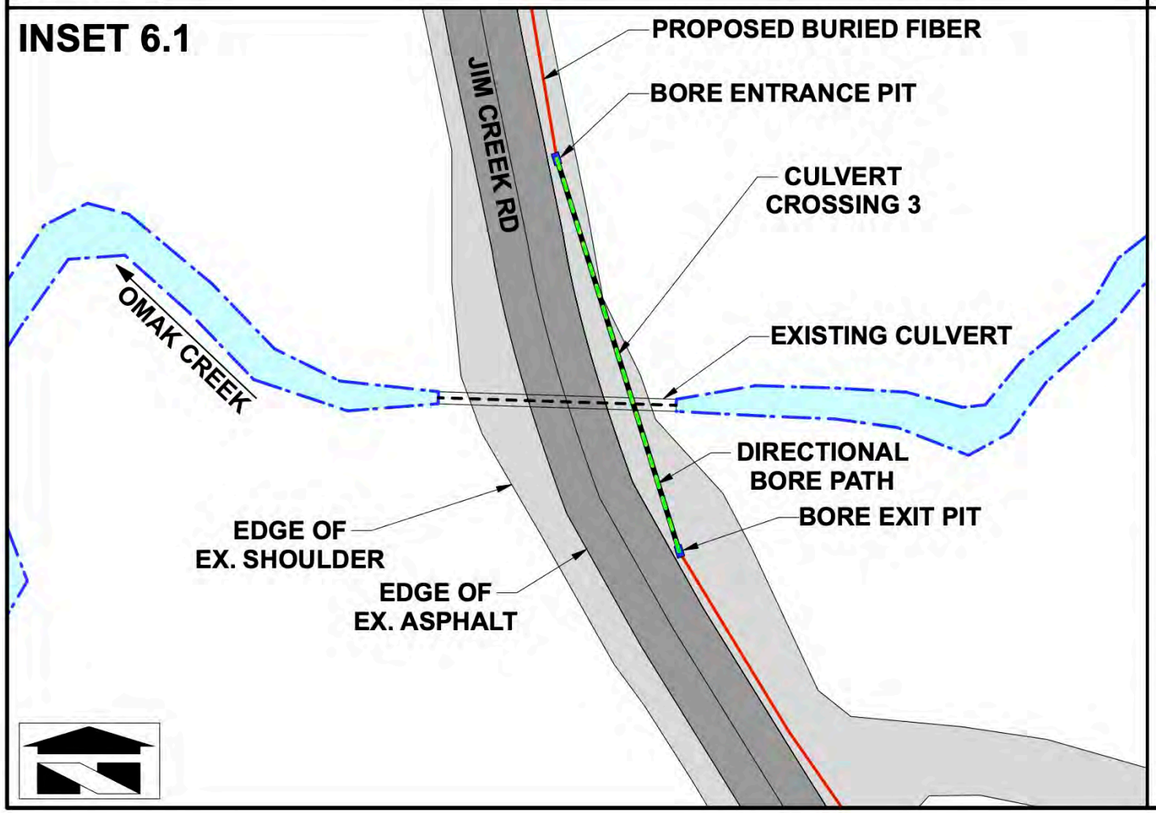
INSET 4.1



INSET 5.1



INSET 6.1



LEGEND

- NEW FIBER (BURIED)
- NEW CONDUIT
- BORE PIT (2'X4')
- EXISTING ROAD SURFACE
- EXISTING EDGE OF GRAVEL
- MAJOR OKANOGAN RIVER TRIBUTARIES
- EXISTING CULVERT

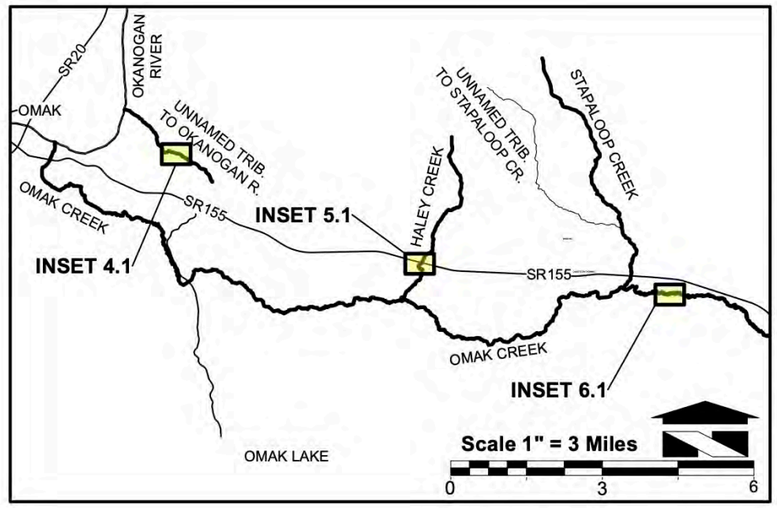
PROJECT NOTES

-BORE PITS APPROX. 2'X4'

-MIN. 42" CLEARANCE BENEATH CULVERT INVERT

-BMPs BETWEEN BORE PITS AND STREAM TO BE PLACED BY LICENSED CESCL

-GROUND DISTURBANCE IMMEDIATELY RESTORED IN KIND



WRI Job #23093
SCALE 1" = 50'
Drawn By: Niels Pedersen
Revision 2 Date: June 13, 2024
Rev. 0: 10.13.23
Rev.1: 5.9.24

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OKANOGAN RIVER TRIBUTARY CROSSINGS
CULVERT CROSSINGS - DETAIL

INSET 7

EXISTING ACCESS ROADS - NO PROPOSED MODIFICATIONS

INSET 7.1 (SHT 7/7)

UNNAMED TRIB. TO STAPALOOP CREEK

DISAUTEL MTN. MONOPOLE SITE

EXISTING ROAD SURFACE TO BE WIDENED TO 12 FEET (1/3 MILE)

~1 MI NEW ROAD SURFACE TO ACCESS MONOPOLE SITE (PROPOSED 12' WIDTH)

PROPOSED POWER FEED (1 MILE OF CABLE, 30 NEW 40' POLES)

PROPOSED 40' POLE AND MICROWAVE CABINET

EXISTING OVERHEAD DISTRIBUTION POLE

STAPALOOP CREEK

EXISTING ACCESS ROAD - NO PROPOSED MODIFICATIONS

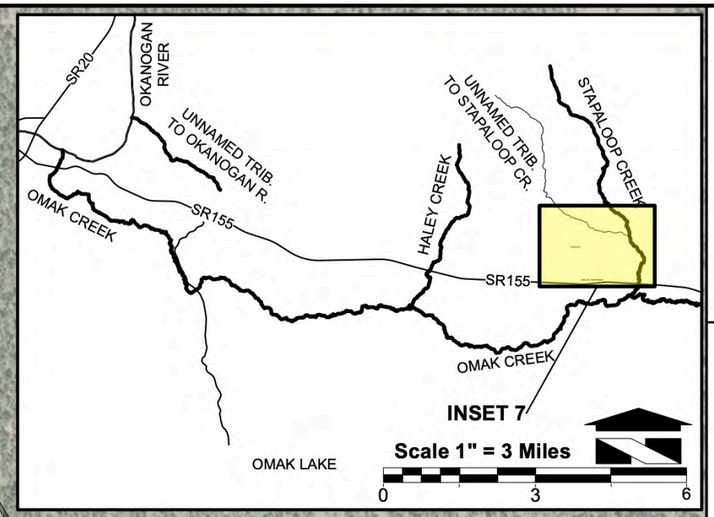
BIA 71

SR155

SR155

Scale 1" = 800'

0 800 1,600



LEGEND

- NEW TOWER SITE
- PROPOSED MICROWAVE
- PROPOSED NEW ACCESS ROAD
- WIDEN EXISTING ROAD
- MAJOR OKANOGAN RIVER TRIBUTARIES
- MINOR OKANOGAN RIVER TRIBUTARIES
- EXISTING ROAD
- PROPOSED POWER

WRI Job #23093

SCALE 1" = 800'

Drawn By: Niels Pedersen

Revision 2 Date: June 13, 2024

Rev. 0: 10.13.23
Rev.1: 5.9.24

PREPARED FOR:
The Confederated Tribes of the Colville Reservation
21 Colville St
Nespelem, WA 99155

PREPARED BY:
NOANET

IN PARTNERSHIP WITH:
WETLAND RESOURCES, INC.
3905 19th AVENUE SE, SUITE 106
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425.337.3174 mailbox@wetlandresources.com

CCT NTIA 2.5GHz Wireless, Middle Mile, and Fiber to the Home Project

OKANOGAN RIVER TRIBUTARY CROSSINGS
EX. FORD CROSSING - **OVERVIEW**

SHEET 6/7

INSET 7.1

PROJECT NOTES

-EXISTING DRIVING SURFACE IS DIRT, ~10-12 FEET IN WIDTH

-PROPOSED DRIVING SURFACE WILL BE 3" MINUS CRUSHED GRAVEL OVER CROWNED NATIVE SOILS, AND WIDENED TO 12 FEET

-CTCR PUBLIC WORKS TO MAINTAIN EXISTING FORD CROSSING

-NO WIDENING OR OTHER CONSTRUCTION IS PROPOSED WITHIN ~15 FEET OF THE STREAM BED

EDGE OF DIRT ROAD (EXISTING)

EDGE OF SHOULDER/ CLEARING (EXISTING)

EXISTING FORD CROSSING

UNNAMED TRIBUTARY TO STAPALOOP CREEK

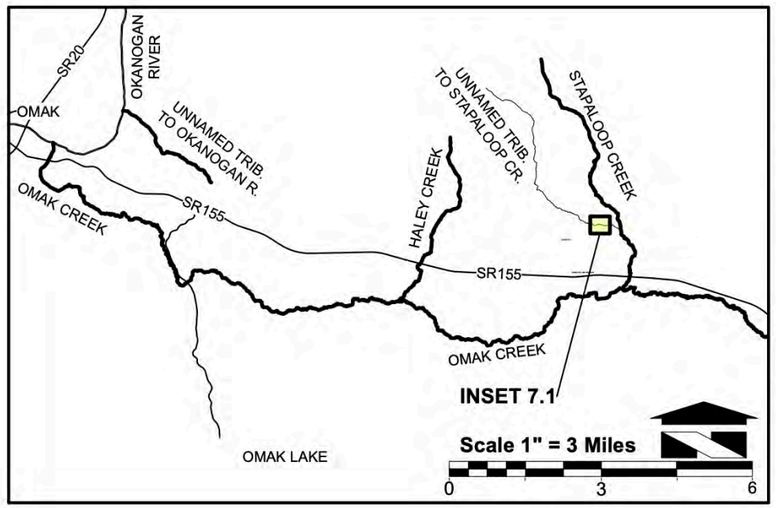
CONFLUENCE WITH STAPALOOP CREEK IS APPROXIMATELY 1/3 MILE OFF-SCREEN

LEGEND

- EXISTING FORD CROSSING
- UNNAMED TRIB TO STAPALOOP CREEK
- EXISTING DIRT ROAD
- EDGE OF CLEARING

Scale 1" = 40'

0 40 80



WRI Job #23093

SCALE 1" = 40'

Drawn By: Niels Pedersen

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OKANOGAN RIVER TRIBUTARY CROSSINGS
EX. FORD CROSSING - DETAIL

SHEET 7/7

Appendix F

Columbia River Tributary Crossings

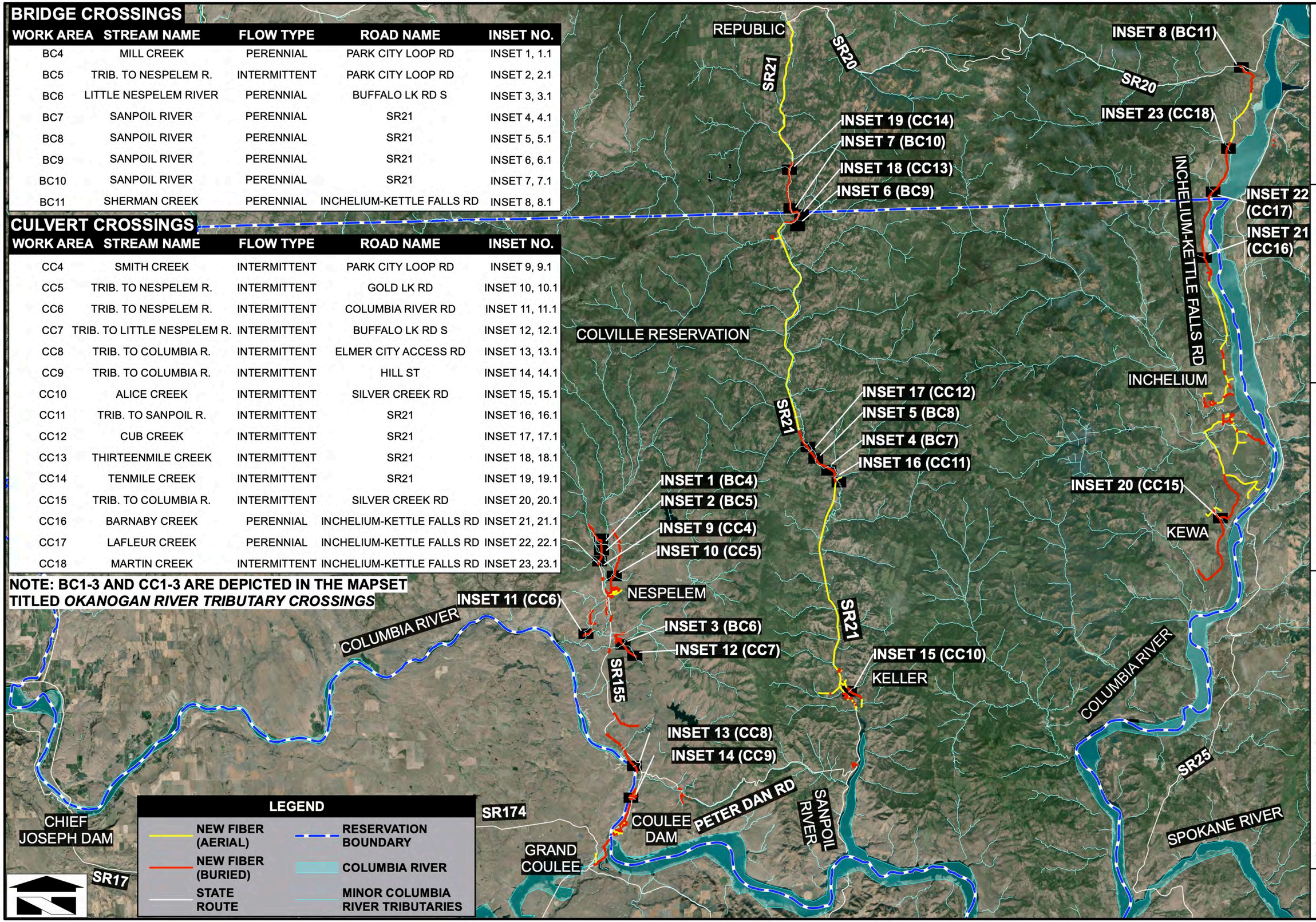
BRIDGE CROSSINGS

WORK AREA	STREAM NAME	FLOW TYPE	ROAD NAME	INSET NO.
BC4	MILL CREEK	PERENNIAL	PARK CITY LOOP RD	INSET 1, 1.1
BC5	TRIB. TO NESPELEM R.	INTERMITTENT	PARK CITY LOOP RD	INSET 2, 2.1
BC6	LITTLE NESPELEM RIVER	PERENNIAL	BUFFALO LK RD S	INSET 3, 3.1
BC7	SANPOIL RIVER	PERENNIAL	SR21	INSET 4, 4.1
BC8	SANPOIL RIVER	PERENNIAL	SR21	INSET 5, 5.1
BC9	SANPOIL RIVER	PERENNIAL	SR21	INSET 6, 6.1
BC10	SANPOIL RIVER	PERENNIAL	SR21	INSET 7, 7.1
BC11	SHERMAN CREEK	PERENNIAL	INCHELIUM-KETTLE FALLS RD	INSET 8, 8.1

CULVERT CROSSINGS

WORK AREA	STREAM NAME	FLOW TYPE	ROAD NAME	INSET NO.
CC4	SMITH CREEK	INTERMITTENT	PARK CITY LOOP RD	INSET 9, 9.1
CC5	TRIB. TO NESPELEM R.	INTERMITTENT	GOLD LK RD	INSET 10, 10.1
CC6	TRIB. TO NESPELEM R.	INTERMITTENT	COLUMBIA RIVER RD	INSET 11, 11.1
CC7	TRIB. TO LITTLE NESPELEM R.	INTERMITTENT	BUFFALO LK RD S	INSET 12, 12.1
CC8	TRIB. TO COLUMBIA R.	INTERMITTENT	ELMER CITY ACCESS RD	INSET 13, 13.1
CC9	TRIB. TO COLUMBIA R.	INTERMITTENT	HILL ST	INSET 14, 14.1
CC10	ALICE CREEK	INTERMITTENT	SILVER CREEK RD	INSET 15, 15.1
CC11	TRIB. TO SANPOIL R.	INTERMITTENT	SR21	INSET 16, 16.1
CC12	CUB CREEK	INTERMITTENT	SR21	INSET 17, 17.1
CC13	THIRTEENMILE CREEK	INTERMITTENT	SR21	INSET 18, 18.1
CC14	TENMILE CREEK	INTERMITTENT	SR21	INSET 19, 19.1
CC15	TRIB. TO COLUMBIA R.	INTERMITTENT	SILVER CREEK RD	INSET 20, 20.1
CC16	BARNABY CREEK	PERENNIAL	INCHELIUM-KETTLE FALLS RD	INSET 21, 21.1
CC17	LAFLEUR CREEK	PERENNIAL	INCHELIUM-KETTLE FALLS RD	INSET 22, 22.1
CC18	MARTIN CREEK	INTERMITTENT	INCHELIUM-KETTLE FALLS RD	INSET 23, 23.1

NOTE: BC1-3 AND CC1-3 ARE DEPICTED IN THE MAPSET TITLED *OKANOGAN RIVER TRIBUTARY CROSSINGS*



WRI Job #23093

SCALE 1" = 5 MILES

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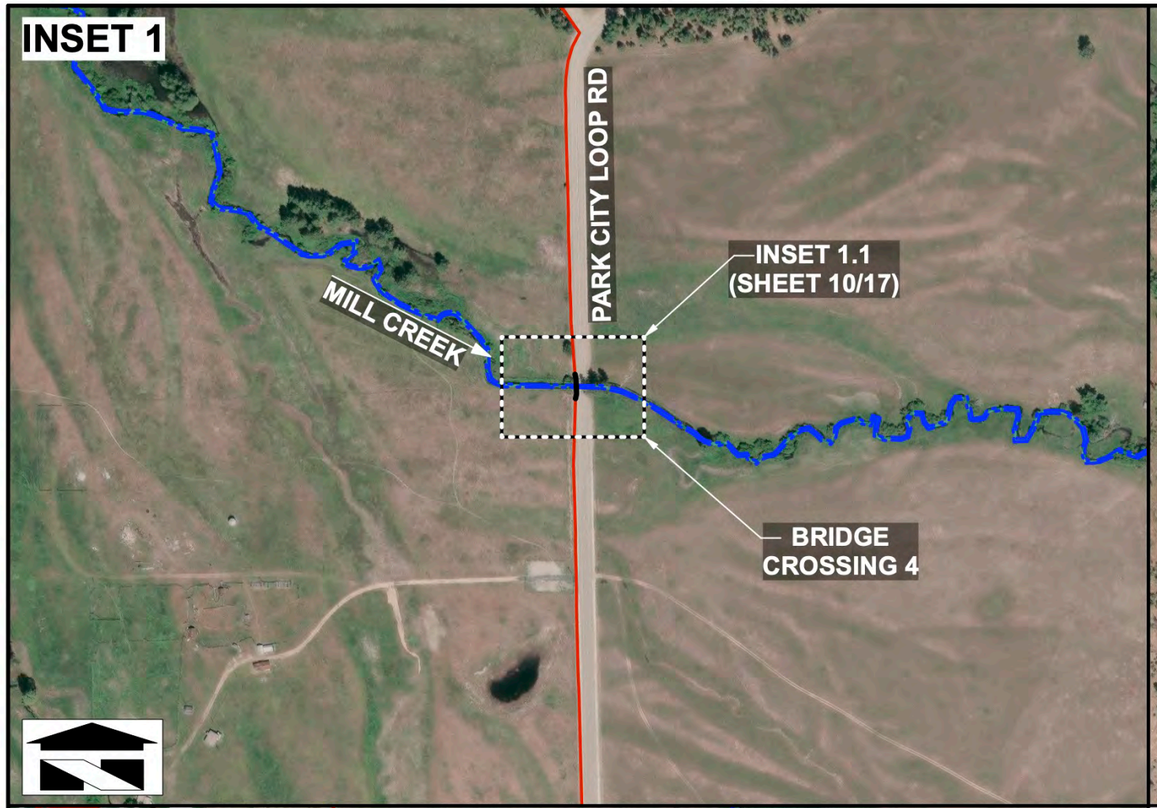
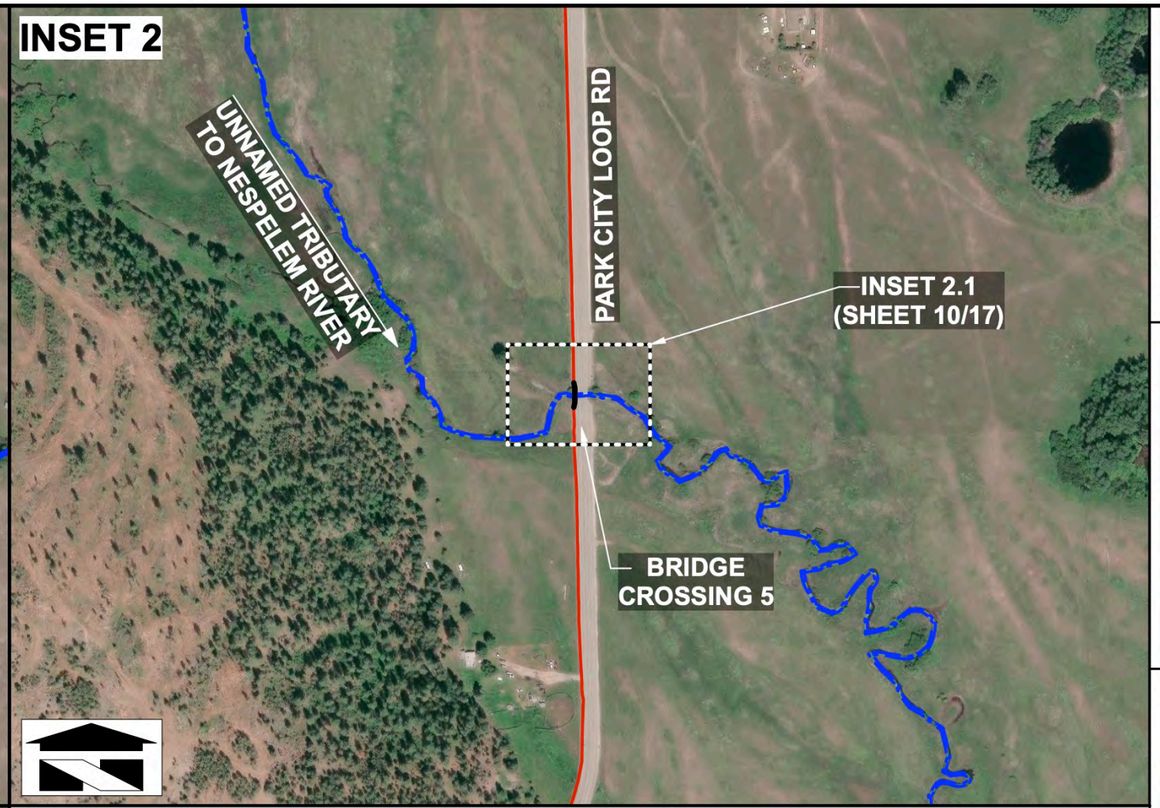
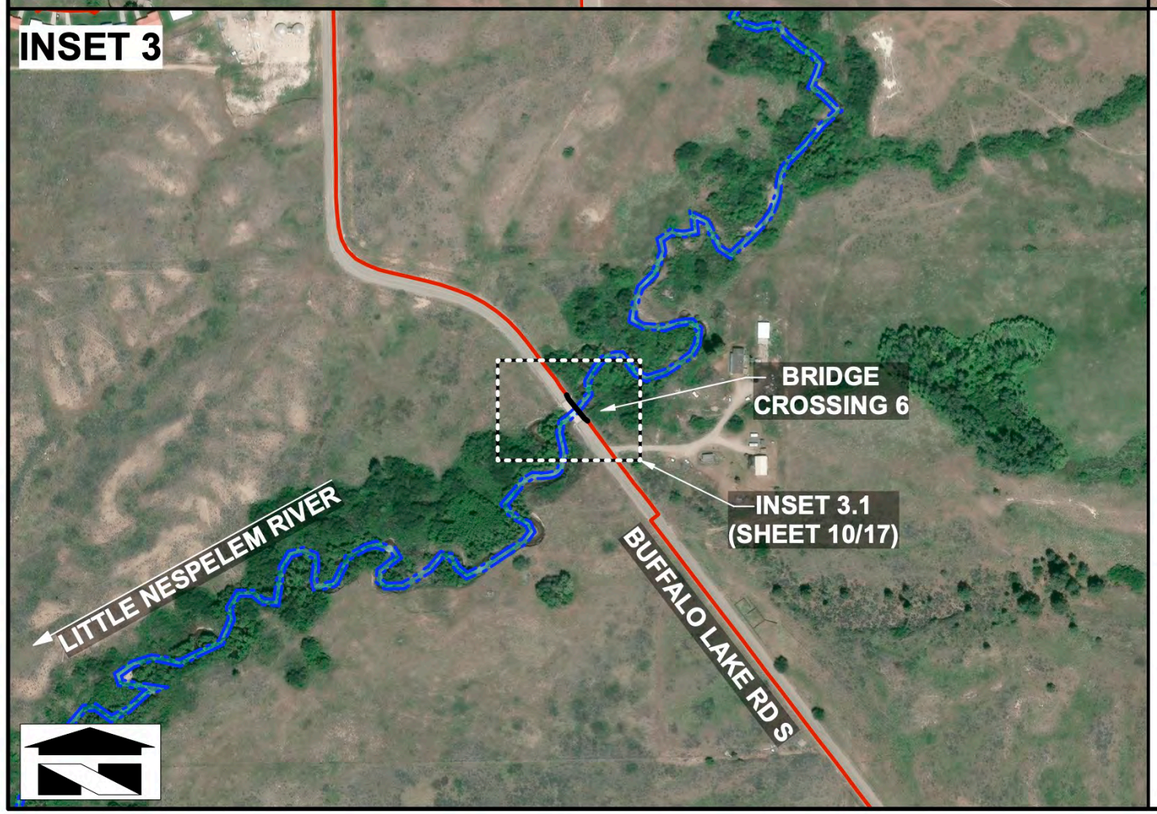
COLUMBIA RIVER TRIBUTARY CROSSINGS ABOVE CHIEF JOSEPH DAM
OVERVIEW

SHEET 1/17

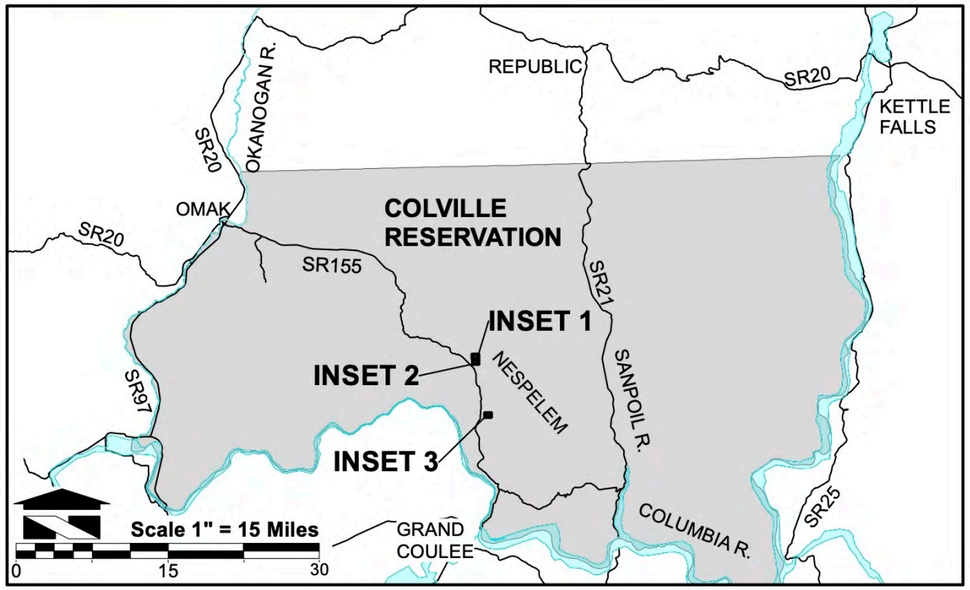






LEGEND

- NEW FIBER (BURIED)
- NEW FIBER (AERIAL)
- MAJOR COLUMBIA RIVER TRIBUTARIES
- EXISTING FIBER (BURIED)
- NEW BRIDGE CROSSING



WRI Job #23093

SCALE 1" = 400 FEET

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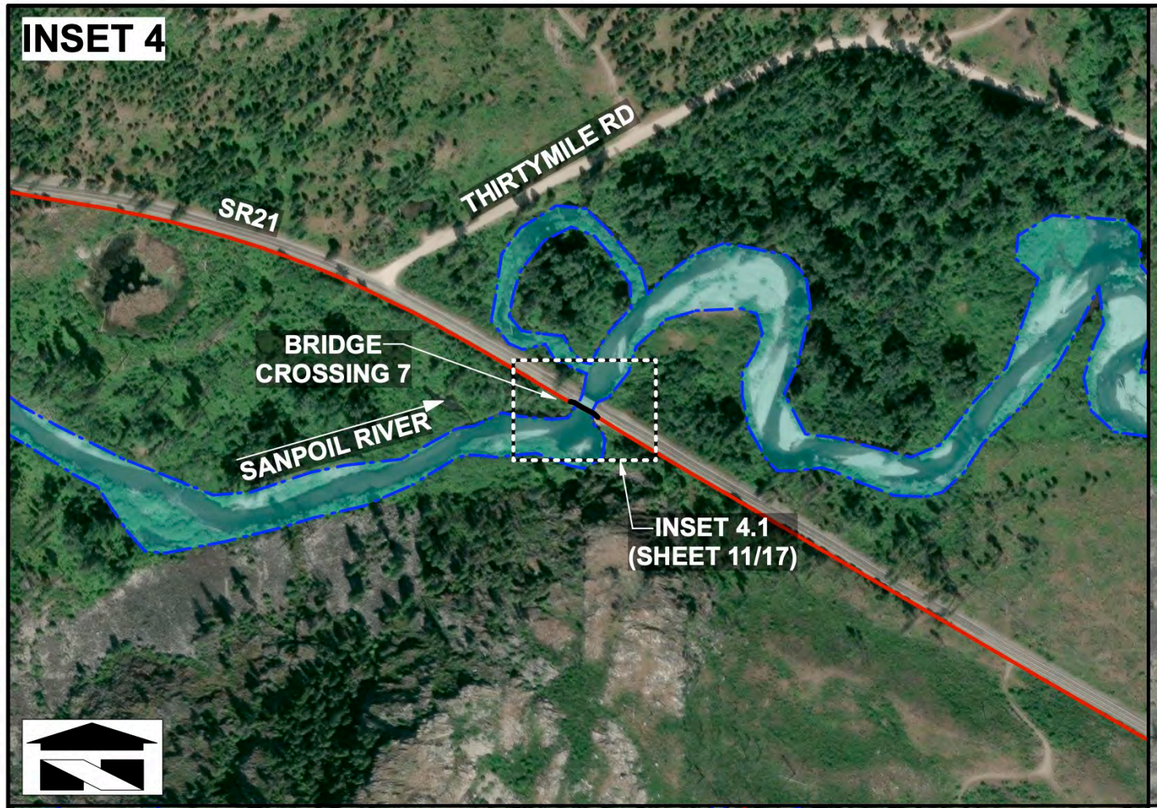
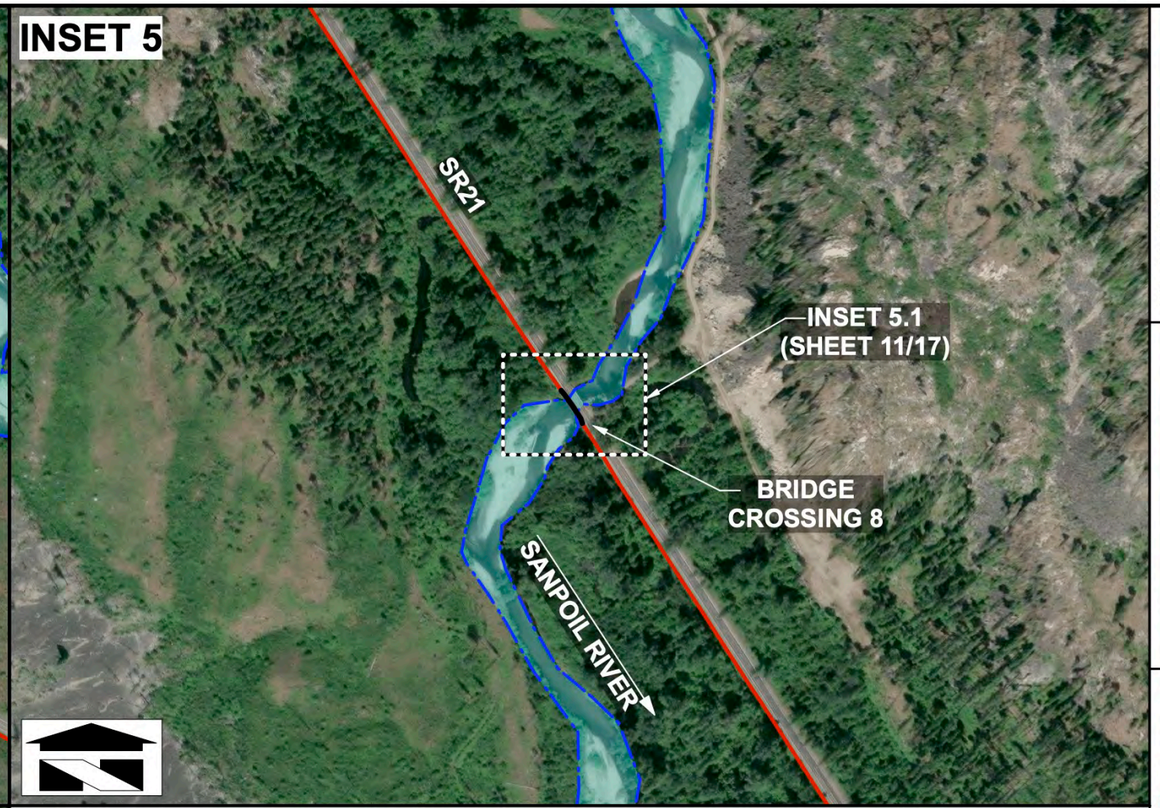
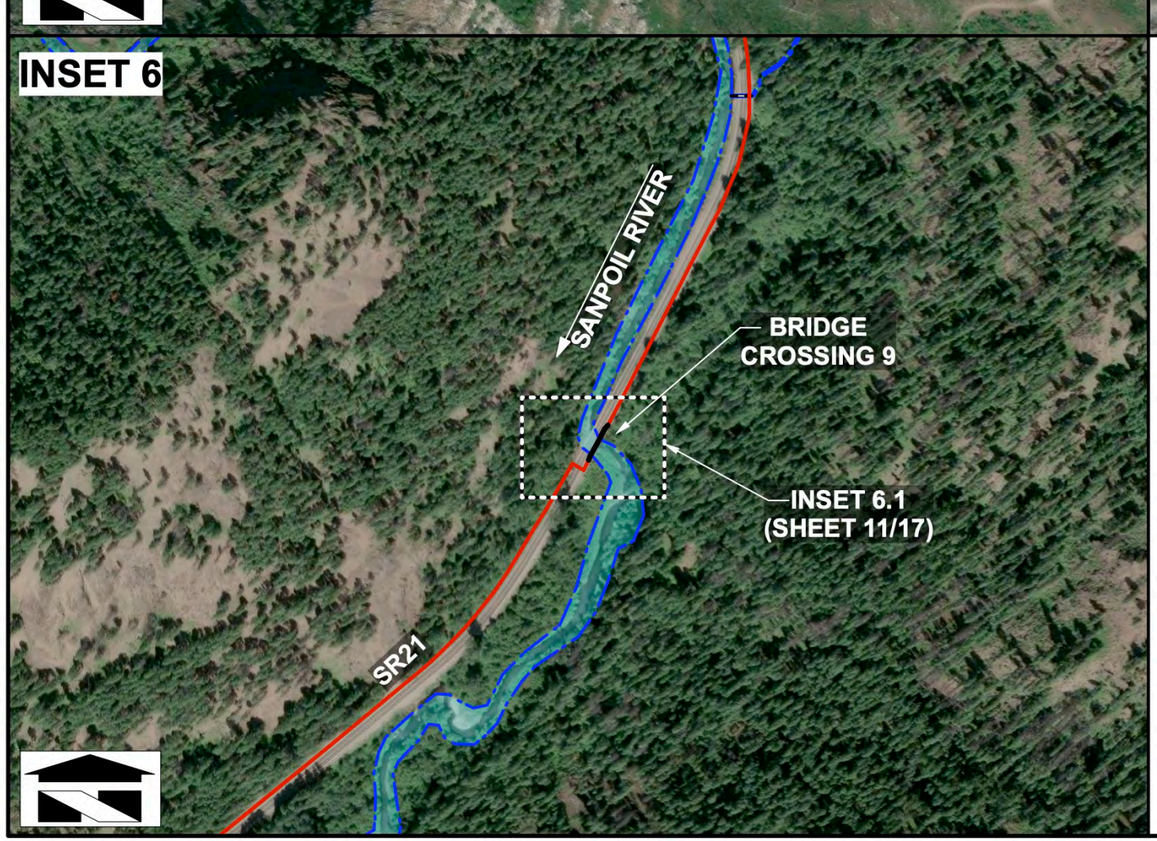
SHEET 2/17

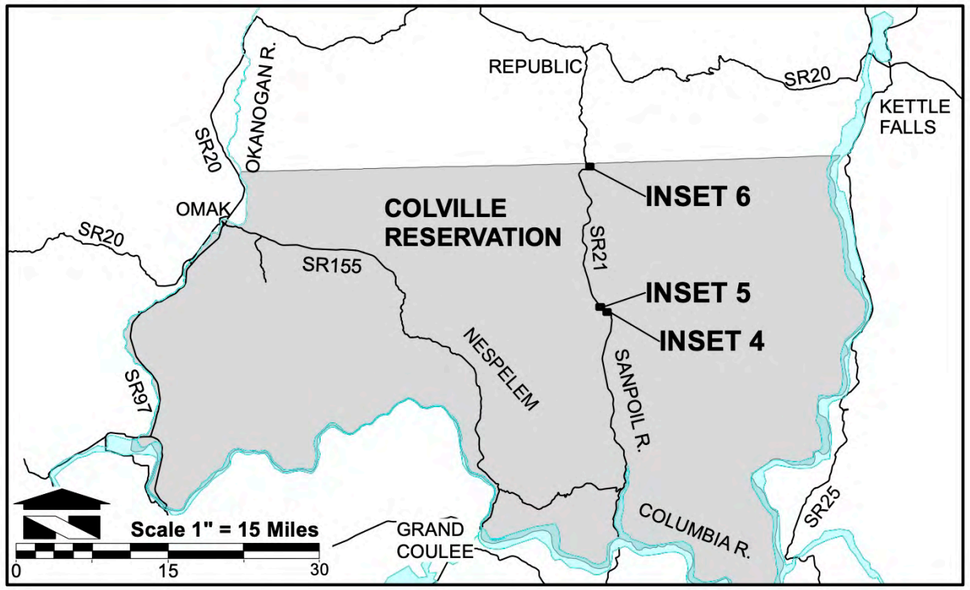






LEGEND

- NEW FIBER (BURIED)
- NEW FIBER (AERIAL)
- MAJOR COLUMBIA RIVER TRIBUTARIES
- EXISTING FIBER (BURIED)
- NEW BRIDGE CROSSING



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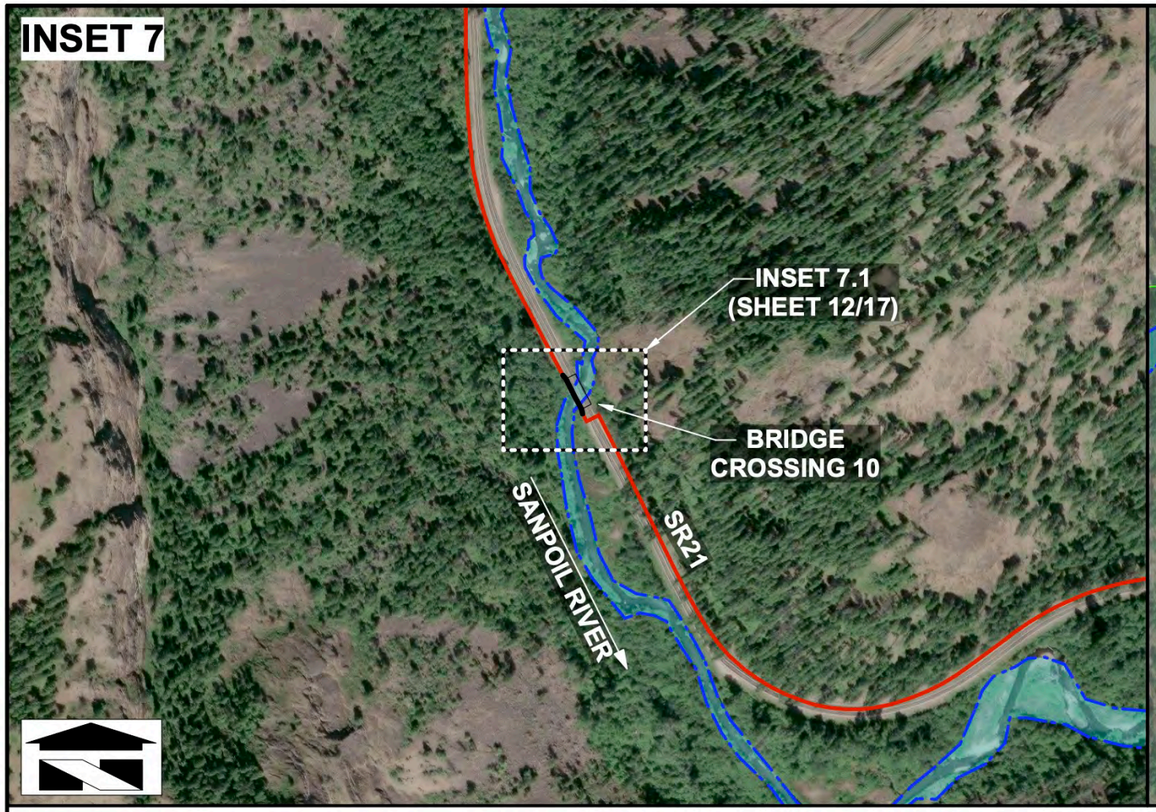
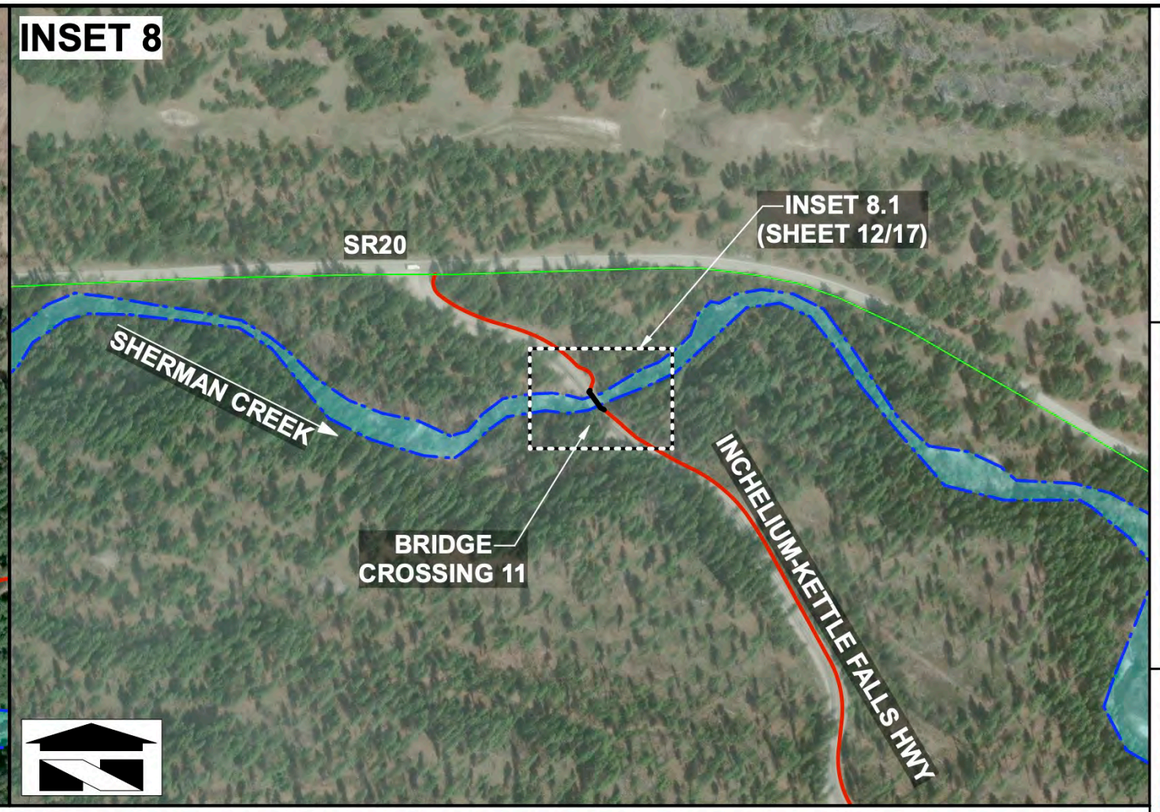
COLUMBIA RIVER TRIBUTARY CROSSINGS
BRIDGE CROSSINGS 7-9
OVERVIEW MAPS

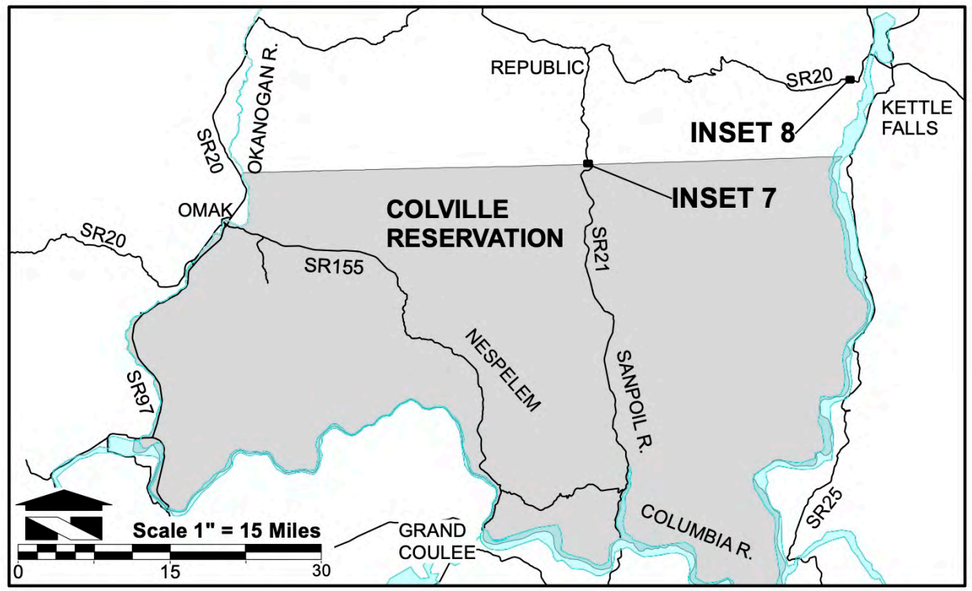
SHEET 3/17





LEGEND

- NEW FIBER (BURIED)
- NEW FIBER (AERIAL)
- MAJOR COLUMBIA RIVER TRIBUTARIES
- EXISTING FIBER (BURIED)
- NEW BRIDGE CROSSING



WRI Job #23093

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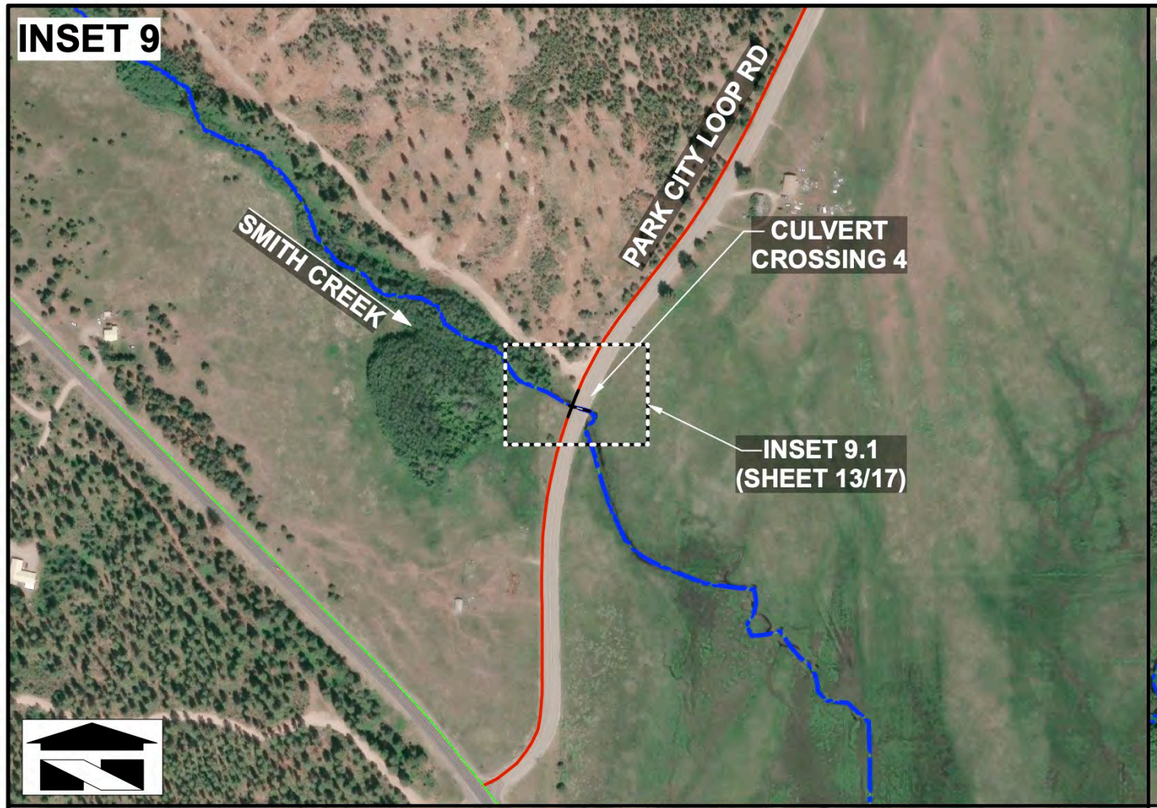
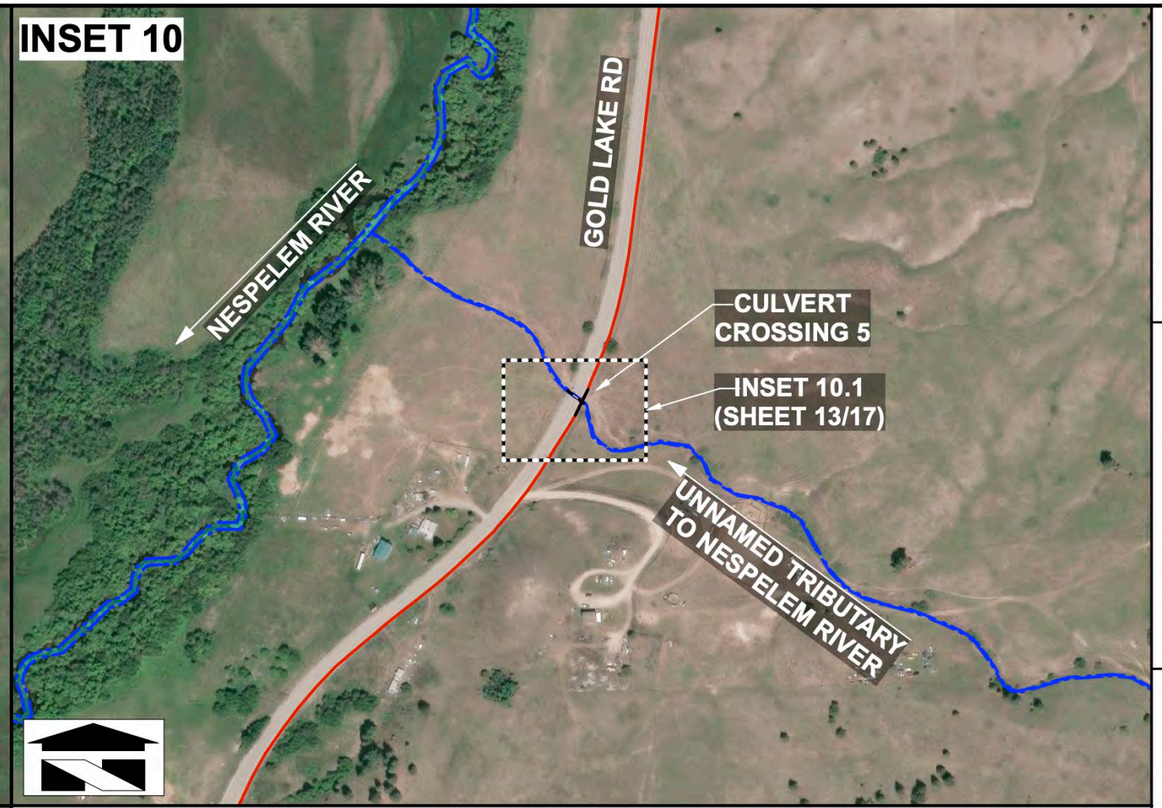
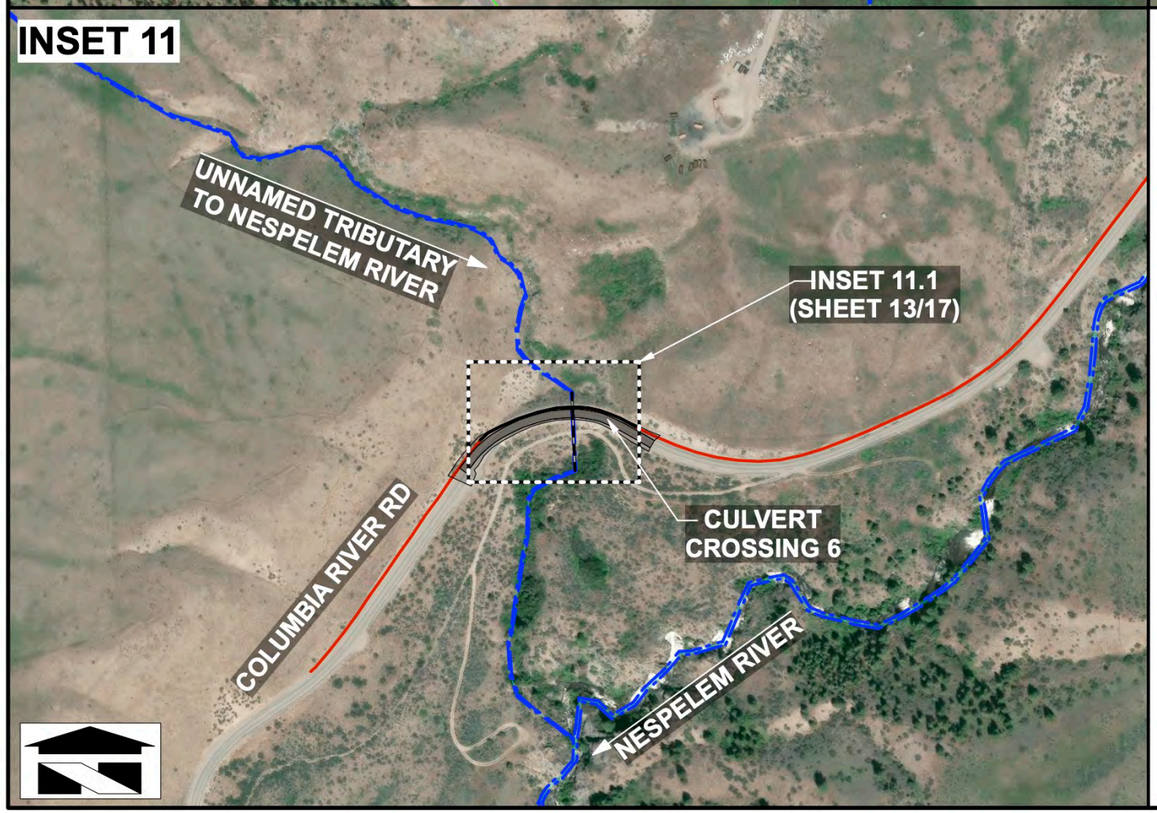
COLUMBIA RIVER TRIBUTARY CROSSINGS
BRIDGE CROSSINGS 10-12
OVERVIEW MAPS

SHEET 4/17

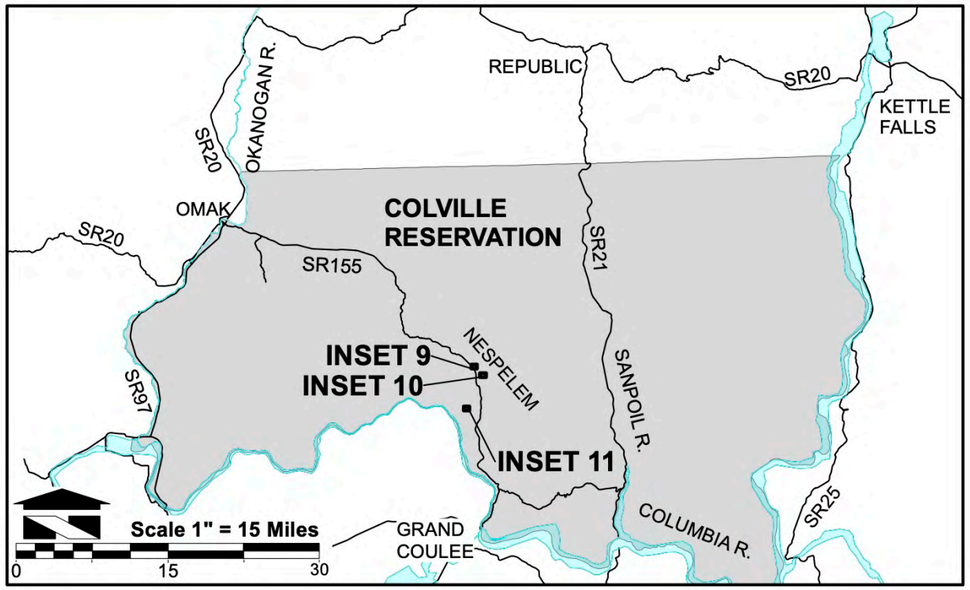






LEGEND

- NEW FIBER (BURIED)
- NEW FIBER (AERIAL)
- MAJOR COLUMBIA RIVER TRIBUTARIES
- EXISTING FIBER (BURIED)
- NEW BRIDGE CROSSING



WRI Job #23093

SCALE 1" = 400 FEET

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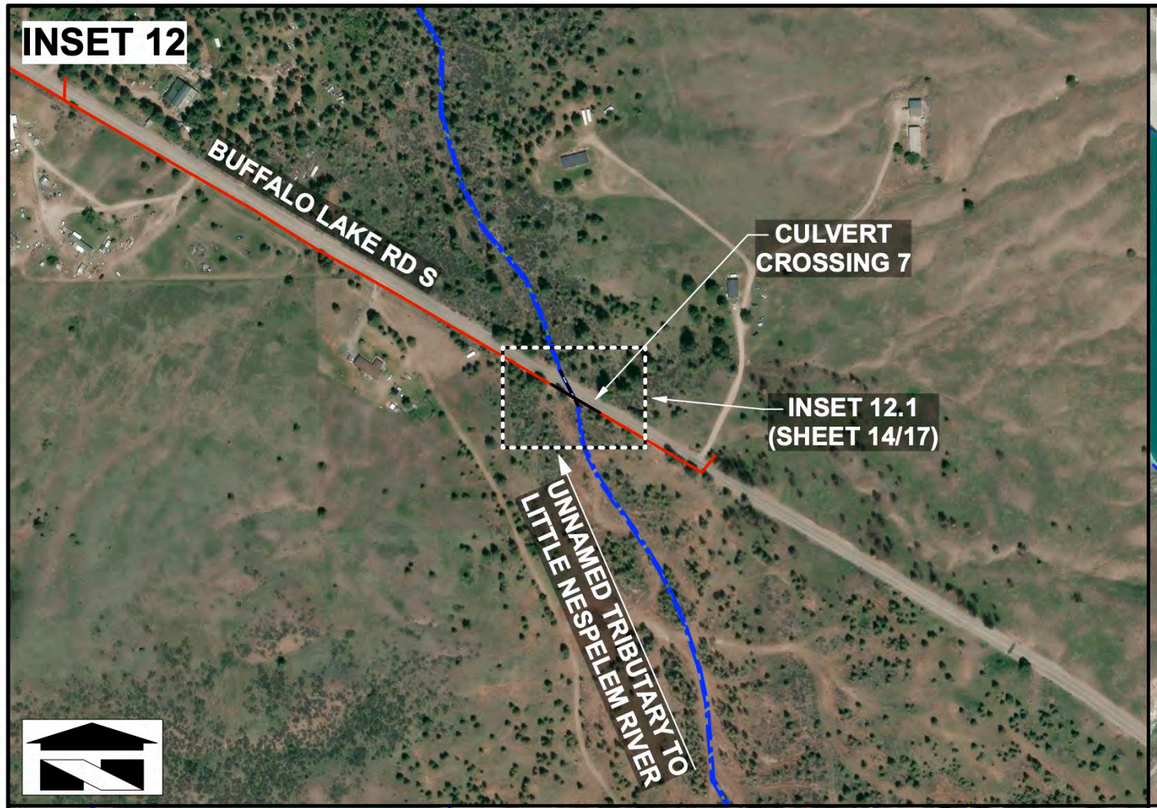
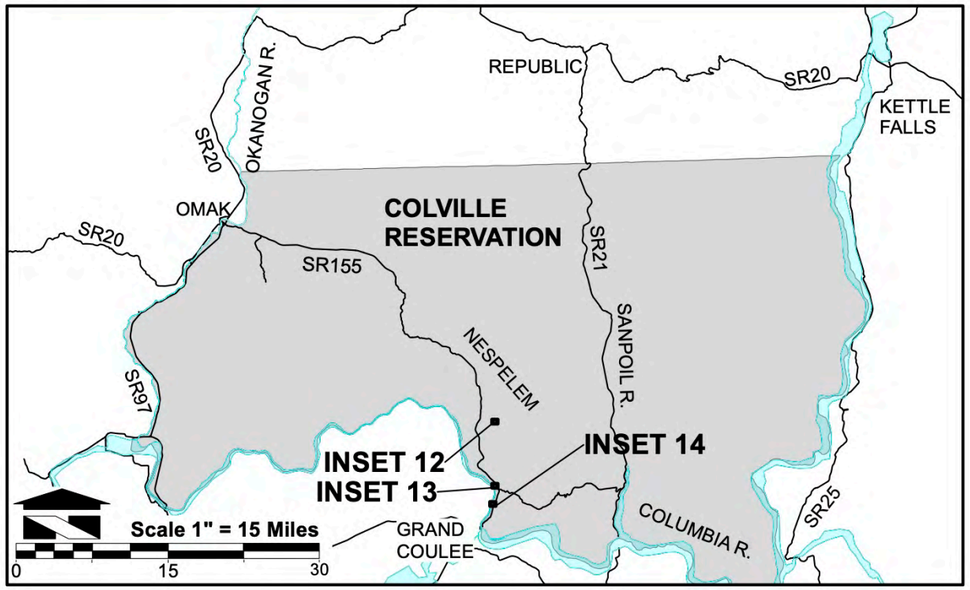
COLUMBIA RIVER TRIBUTARY CROSSINGS
CULVERT CROSSINGS 4-6
OVERVIEW MAPS

SHEET 5/17



LEGEND

- NEW FIBER (BURIED)
- NEW FIBER (AERIAL)
- MAJOR COLUMBIA RIVER TRIBUTARIES
- EXISTING FIBER (BURIED)
- NEW BRIDGE CROSSING



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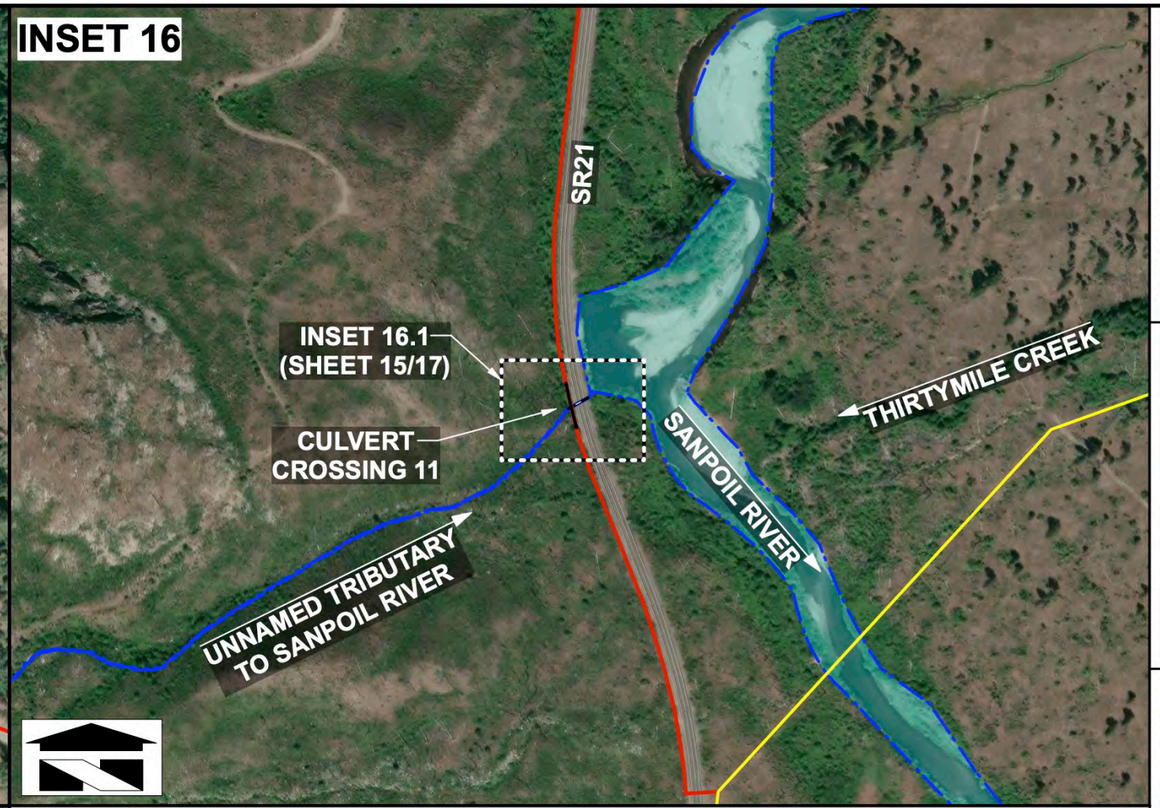
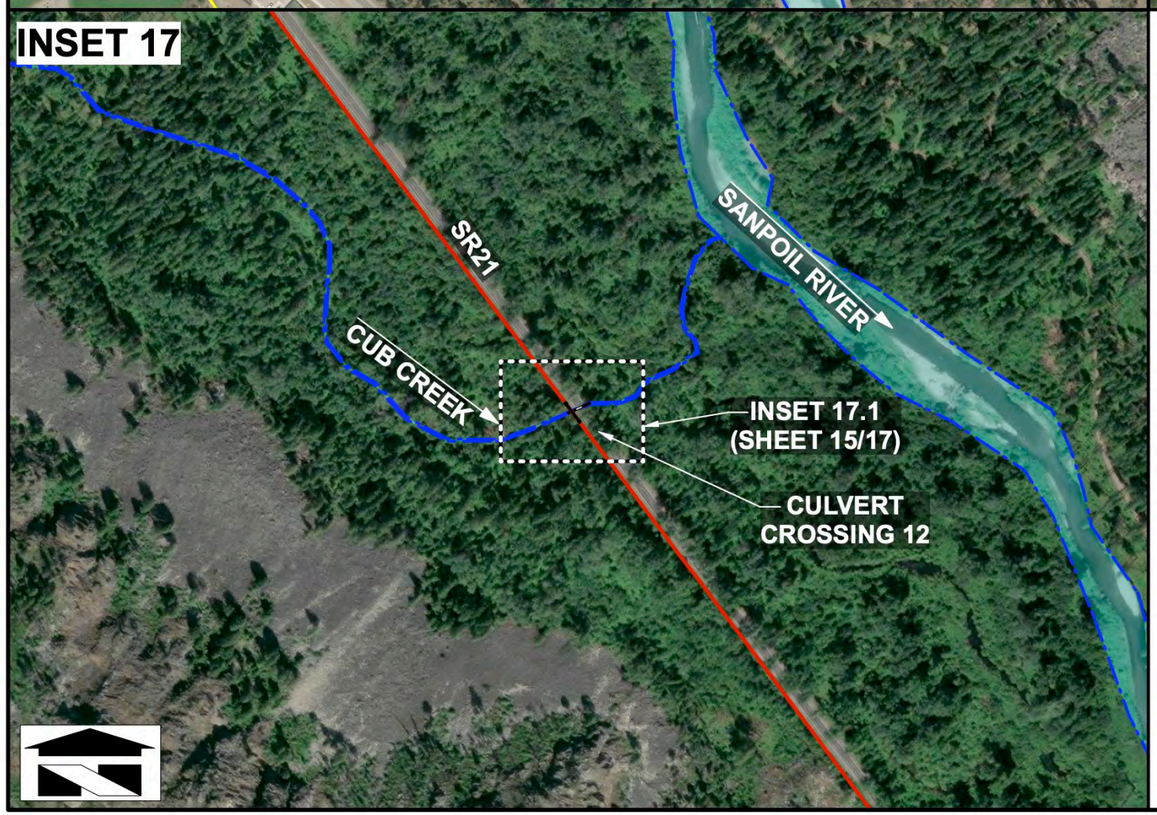
COLUMBIA RIVER TRIBUTARY CROSSINGS
CULVERT CROSSINGS 7-9
OVERVIEW MAPS

SHEET 6/17





LEGEND

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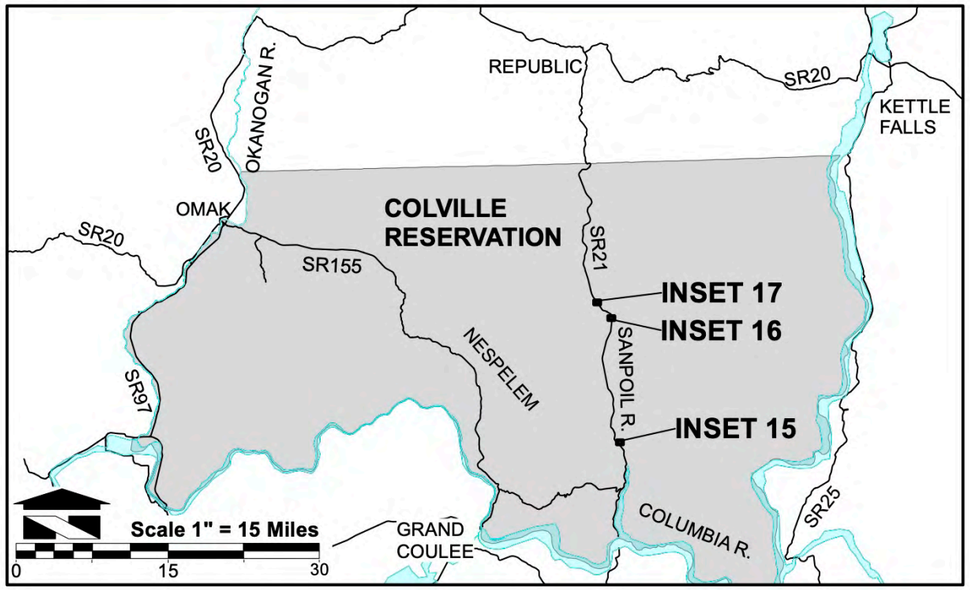
- NEW FIBER (AERIAL)
- MAJOR COLUMBIA RIVER TRIBUTARIES
- EXISTING FIBER (BURIED)
- NEW BRIDGE CROSSING



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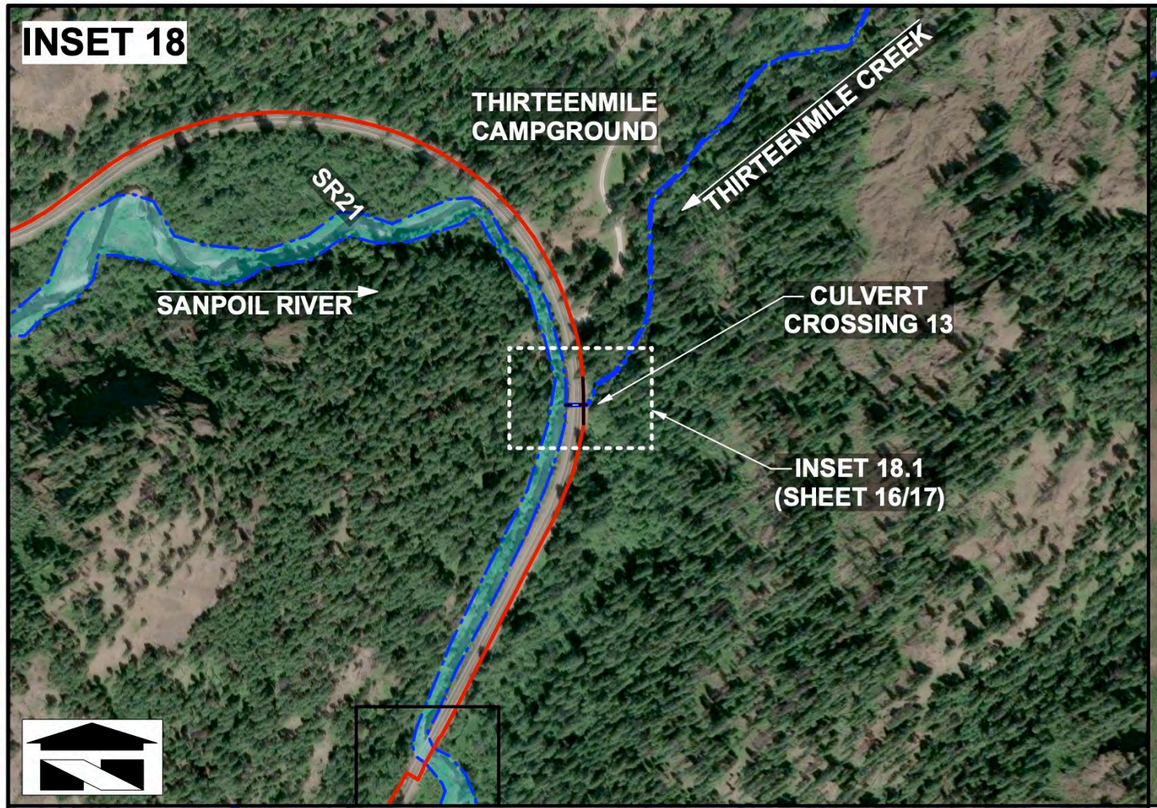
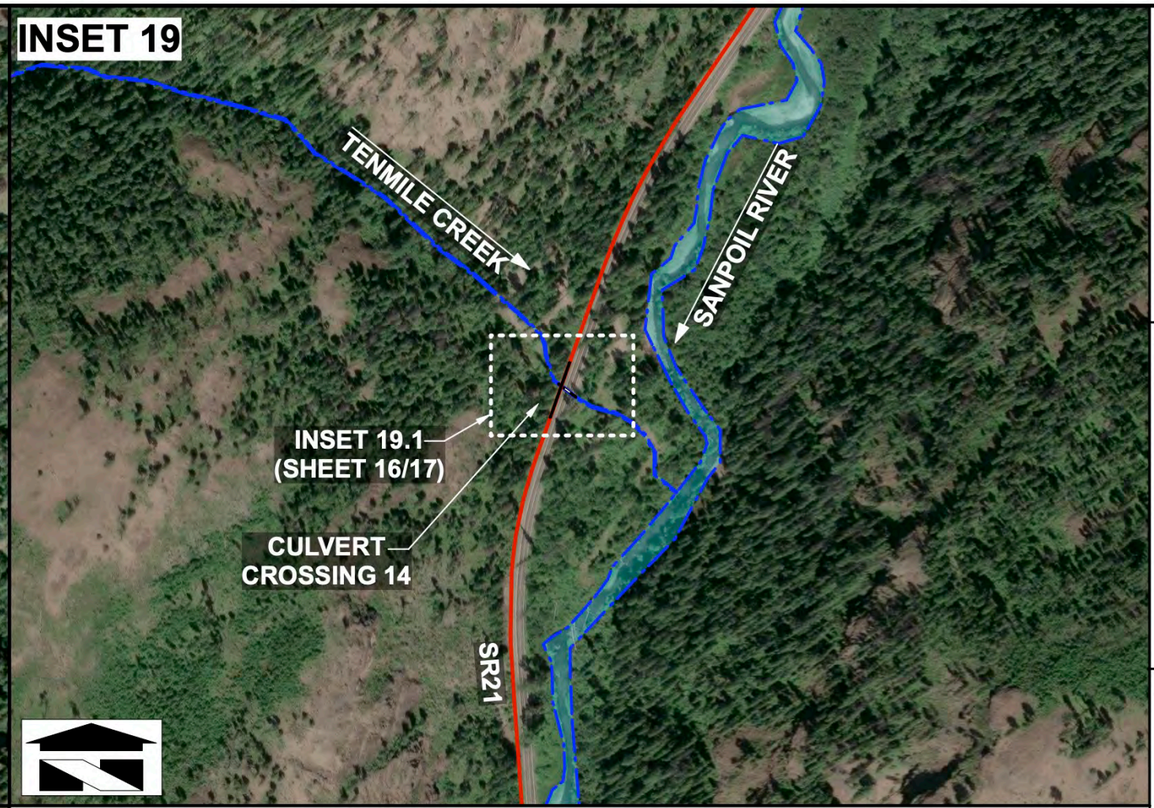
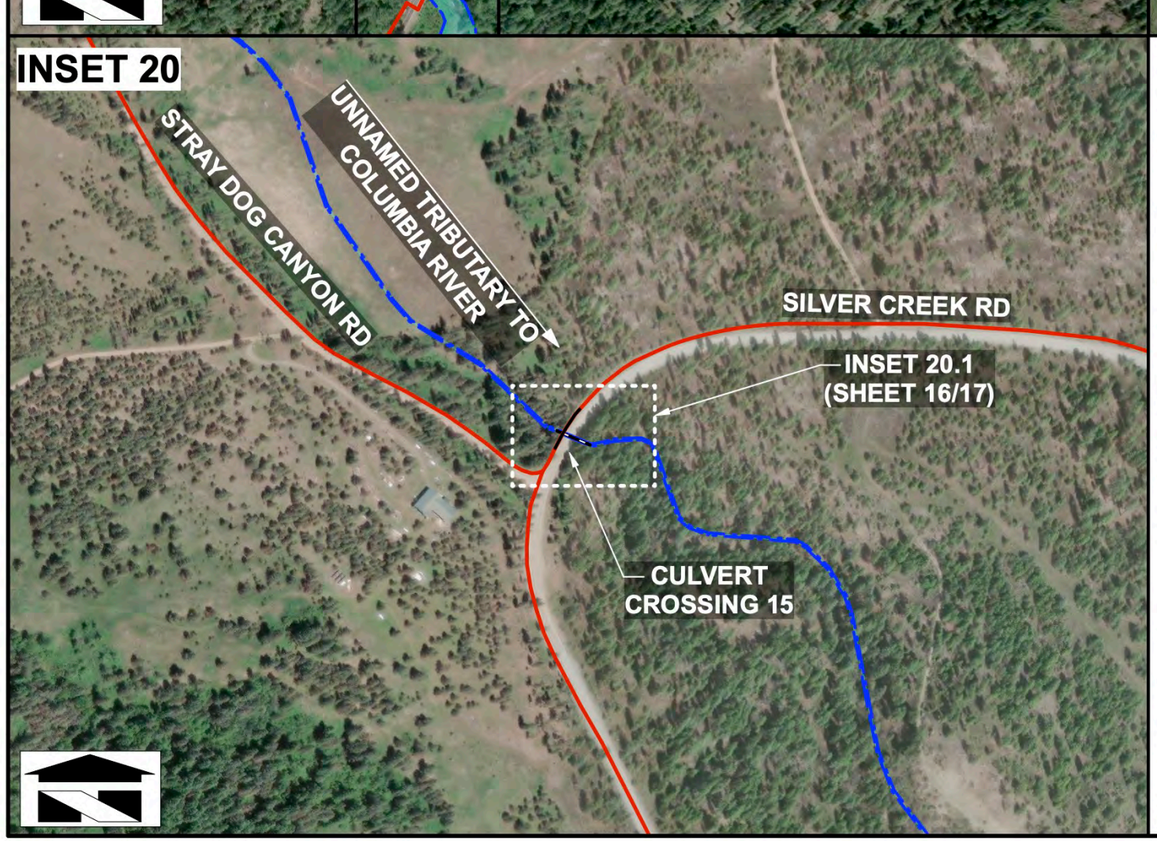
COLUMBIA RIVER TRIBUTARY CROSSINGS
CULVERT CROSSINGS 10-12
OVERVIEW MAPS

SHEET 7/17

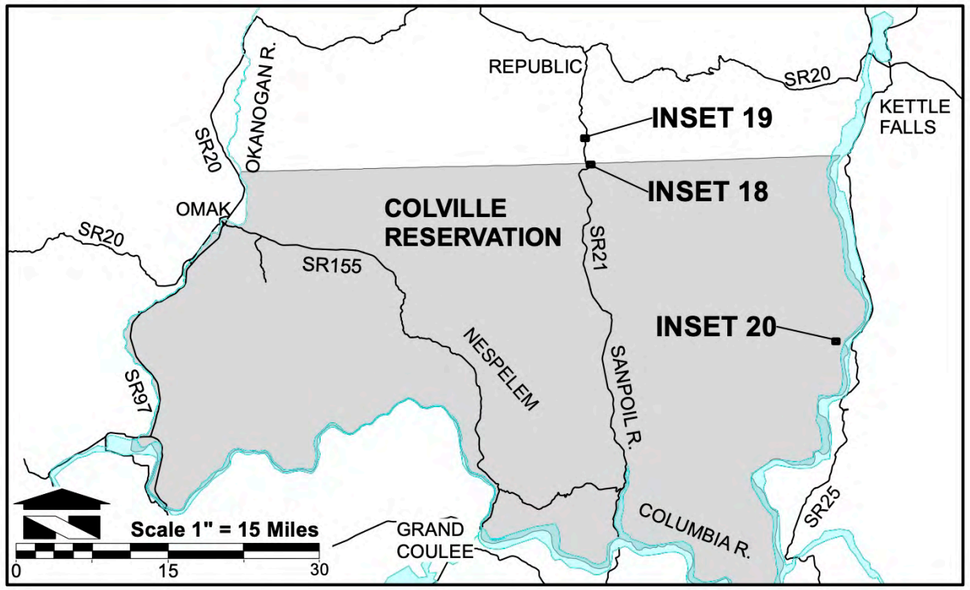






LEGEND

- NEW FIBER (BURIED)
- NEW FIBER (AERIAL)
- MAJOR COLUMBIA RIVER TRIBUTARIES
- EXISTING FIBER (BURIED)
- NEW BRIDGE CROSSING



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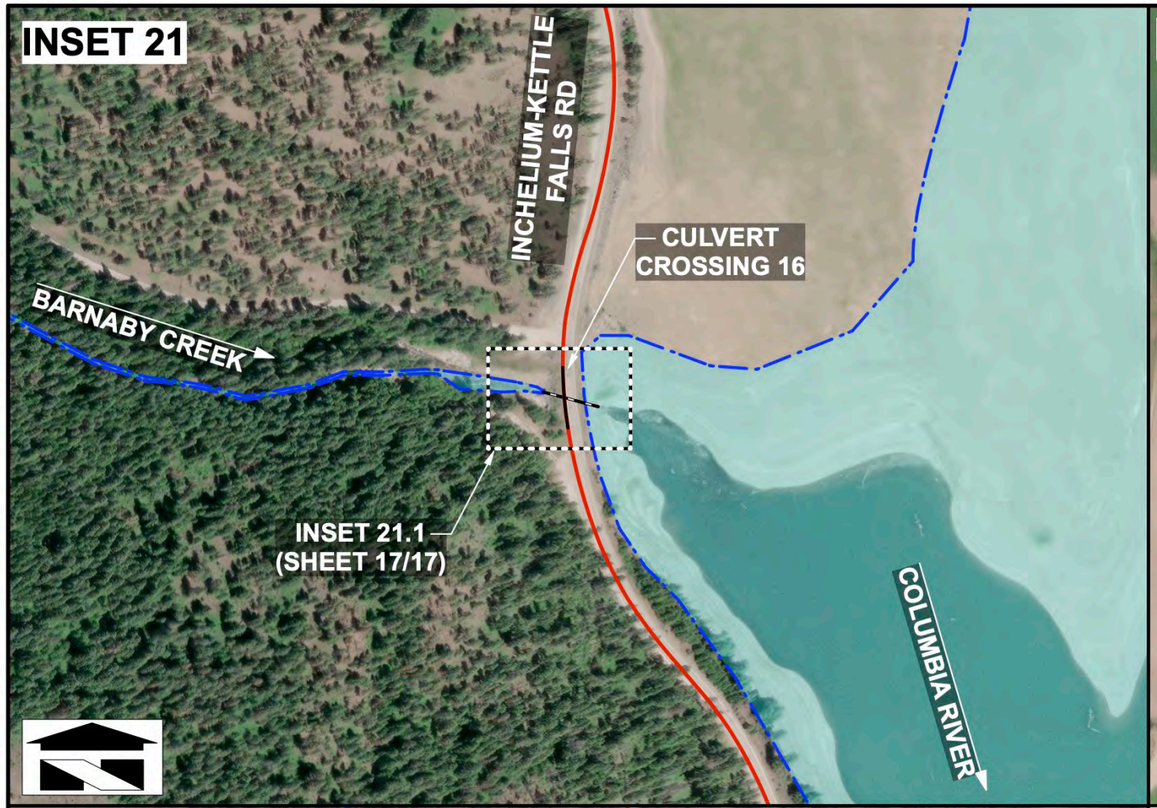
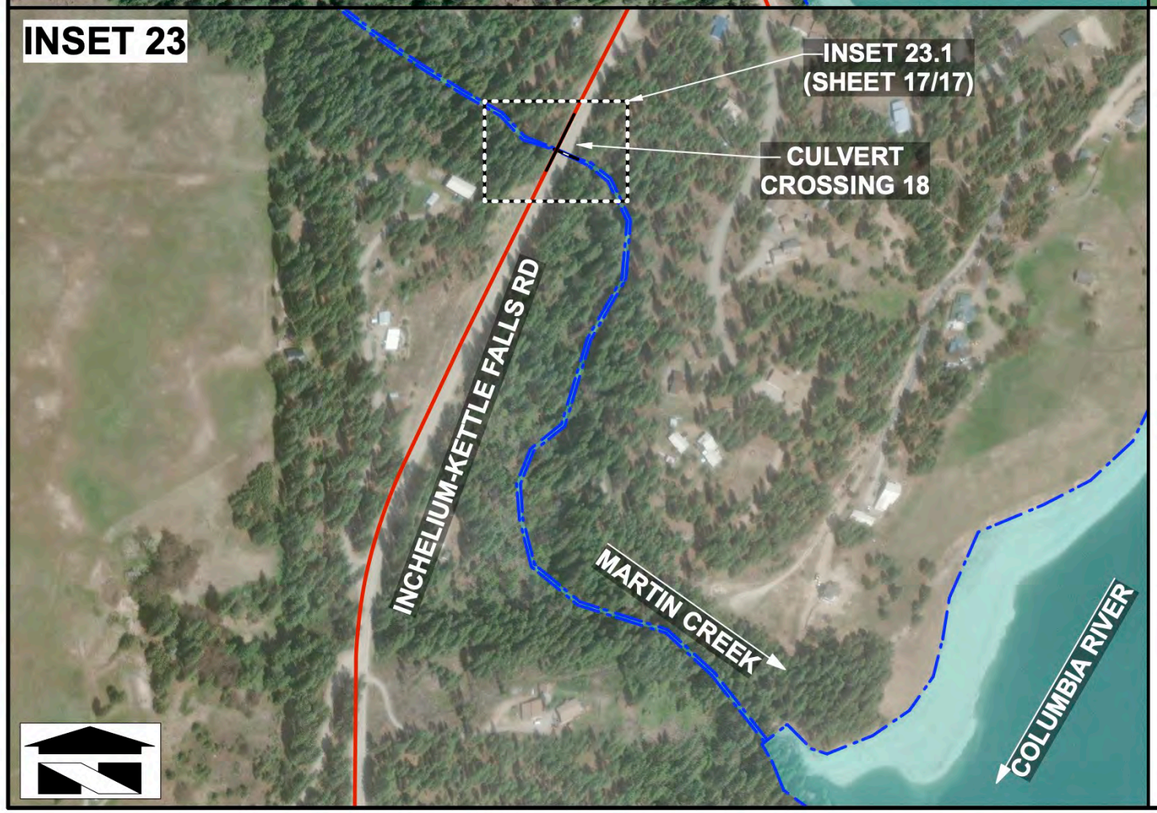
COLUMBIA RIVER TRIBUTARY CROSSINGS
CULVERT CROSSINGS 13-15
OVERVIEW MAPS

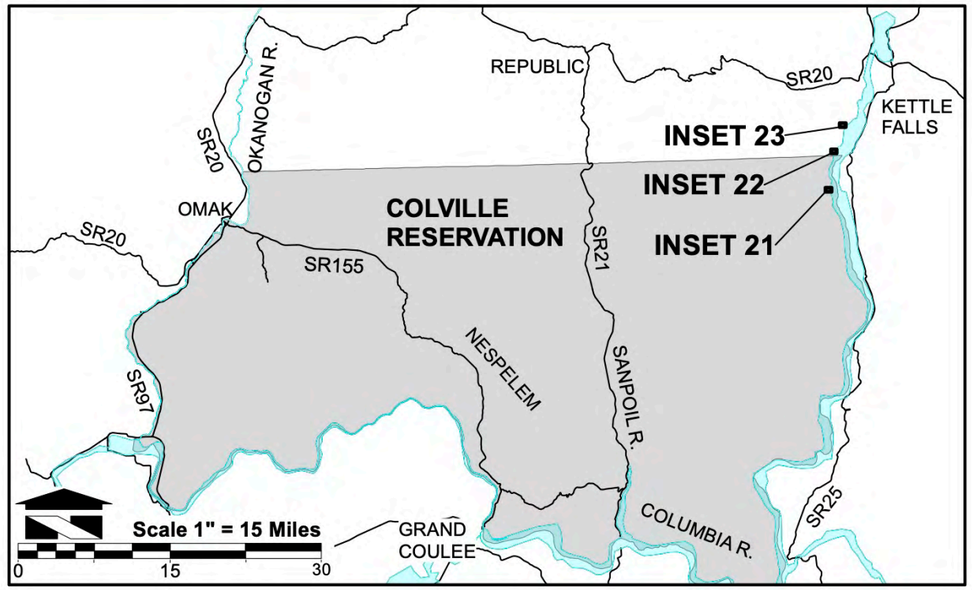
SHEET 8/17





LEGEND

- NEW FIBER (BURIED)
- NEW FIBER (AERIAL)
- MAJOR COLUMBIA RIVER TRIBUTARIES
- EXISTING FIBER (BURIED)
- NEW BRIDGE CROSSING



WRI Job #23093

SCALE 1" = 400 FEET

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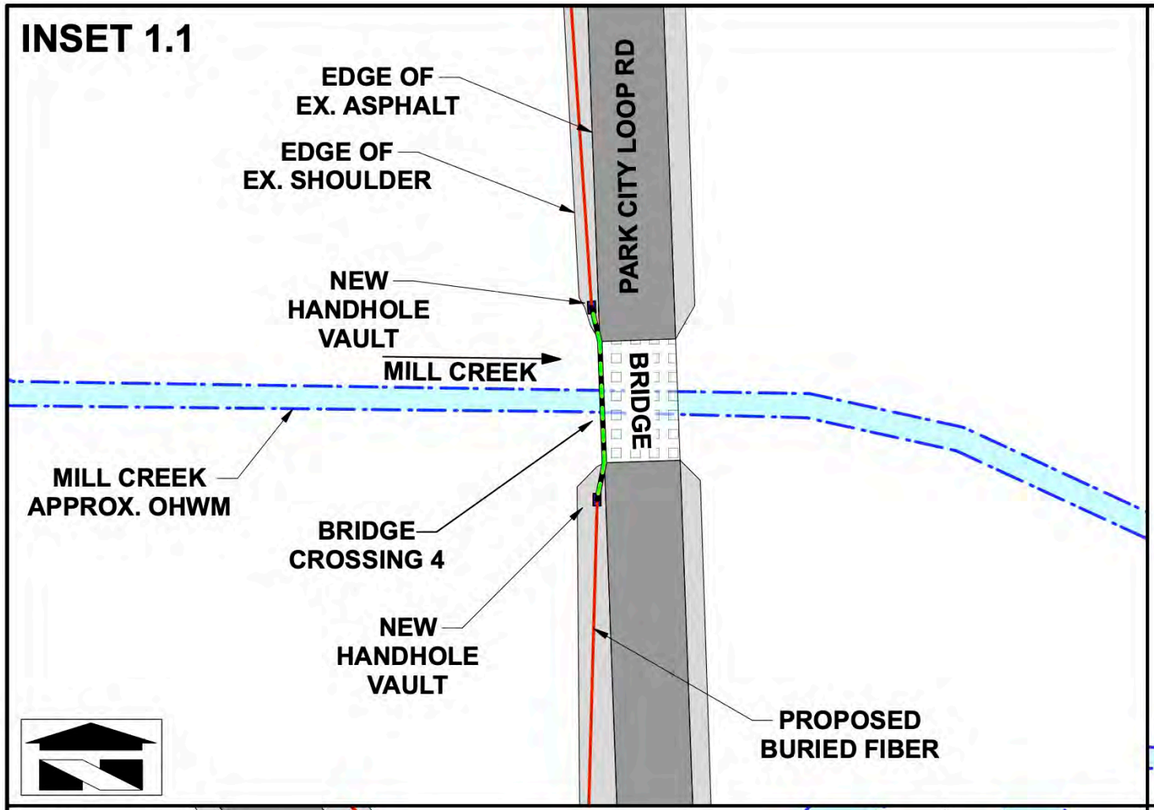
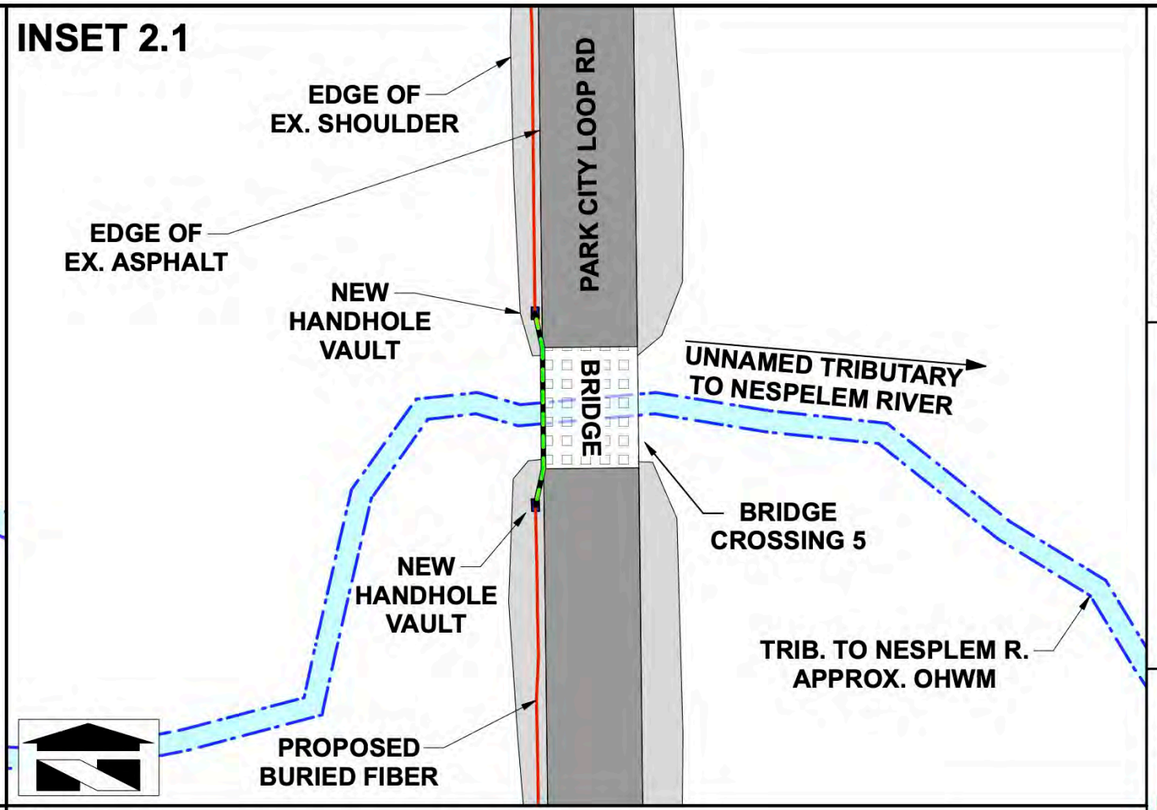
COLUMBIA RIVER TRIBUTARY CROSSINGS
CULVERT CROSSINGS 16-17
OVERVIEW MAPS

SHEET 9/17

INSET 1.1



INSET 2.1



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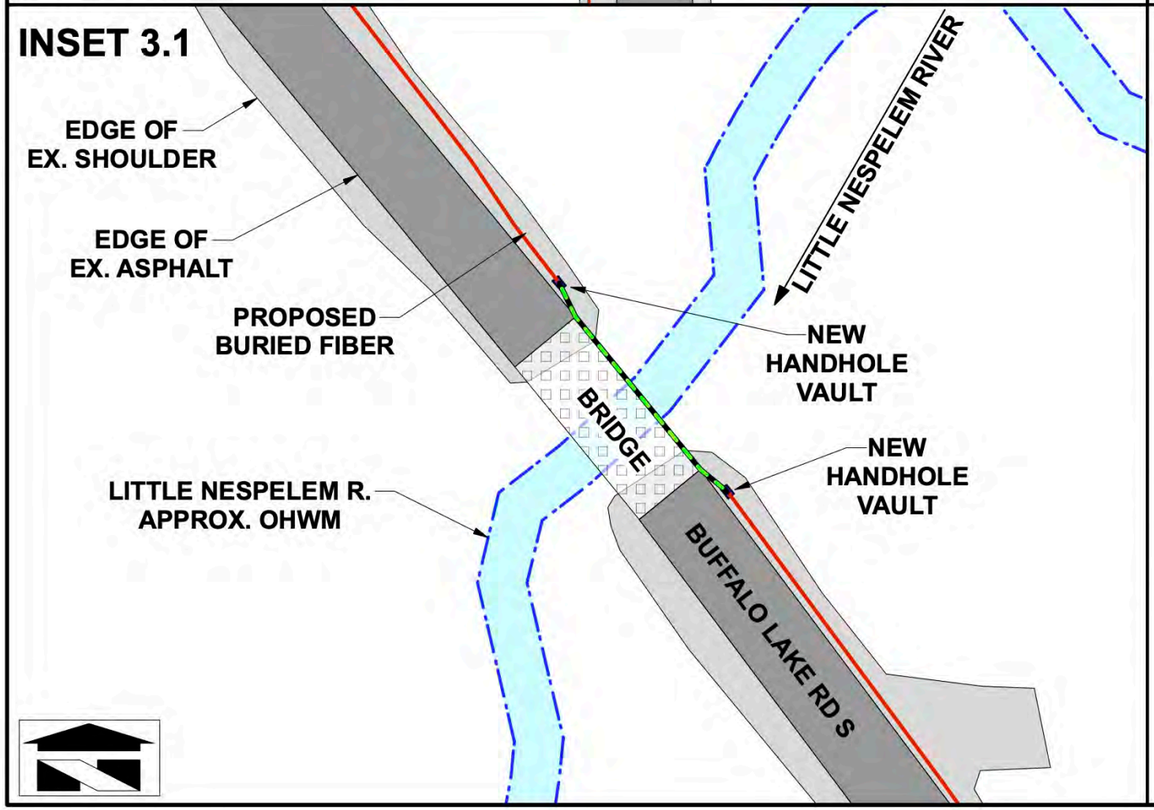


LEGEND

- NEW FIBER (BURIED)
- NEW CONDUIT
- NEW HANDHOLE VAULT
- EXISTING ROAD SURFACE
- EXISTING EDGE OF GRAVEL
- EXISTING BRIDGE
- MAJOR COLUMBIA RIVER TRIBUTARIES

PROJECT NOTES

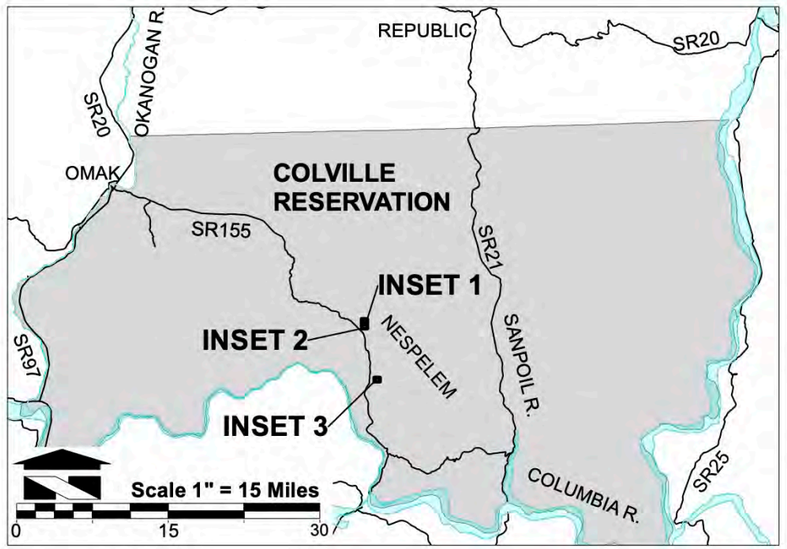
-HANDHOLE VAULTS PRECAST OR POLYMER CONCRETE (30" W X 48" L)

-ALL EXISTING BRIDGE STRUCTURES SURVEYED BY LICENSED PE

-SUITABLE CONDUIT ATTACHMENT POINTS DETERMINED BY PE

-BMPs TO BE PLACED BY LICENSED CESCL

-GIRDLE LOAD TESTING AS REQUIRED BY WSDOT



WRI Job #23093

SCALE 1" = 50 FEET

Drawn By: Niels Pedersen

Revision 2 Date: June 13, 2024

Rev. 0: 10.13.23
Rev.1: 5.9.24

PREPARED FOR:
The Confederated
Tribes of the
Colville Reservation
21 Colville St
Nespelem, WA
99155

PREPARED BY:
NOANET
IN PARTNERSHIP WITH:
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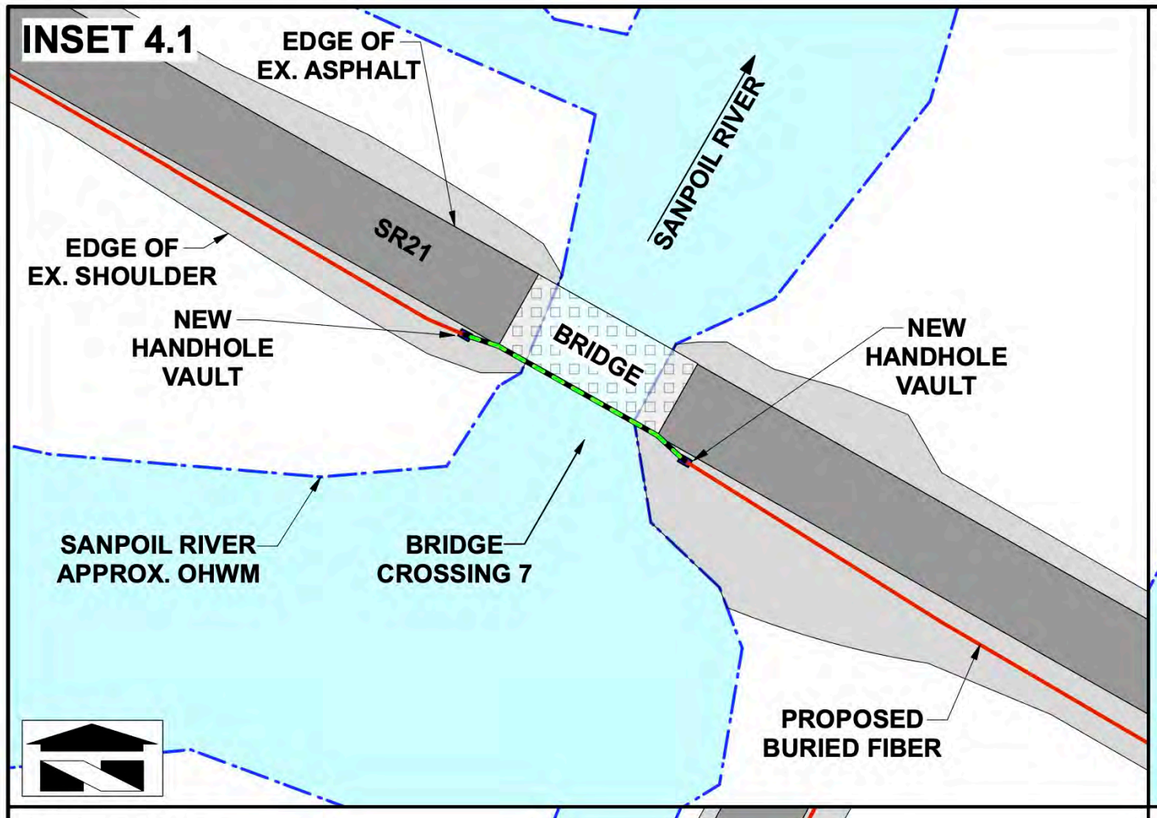
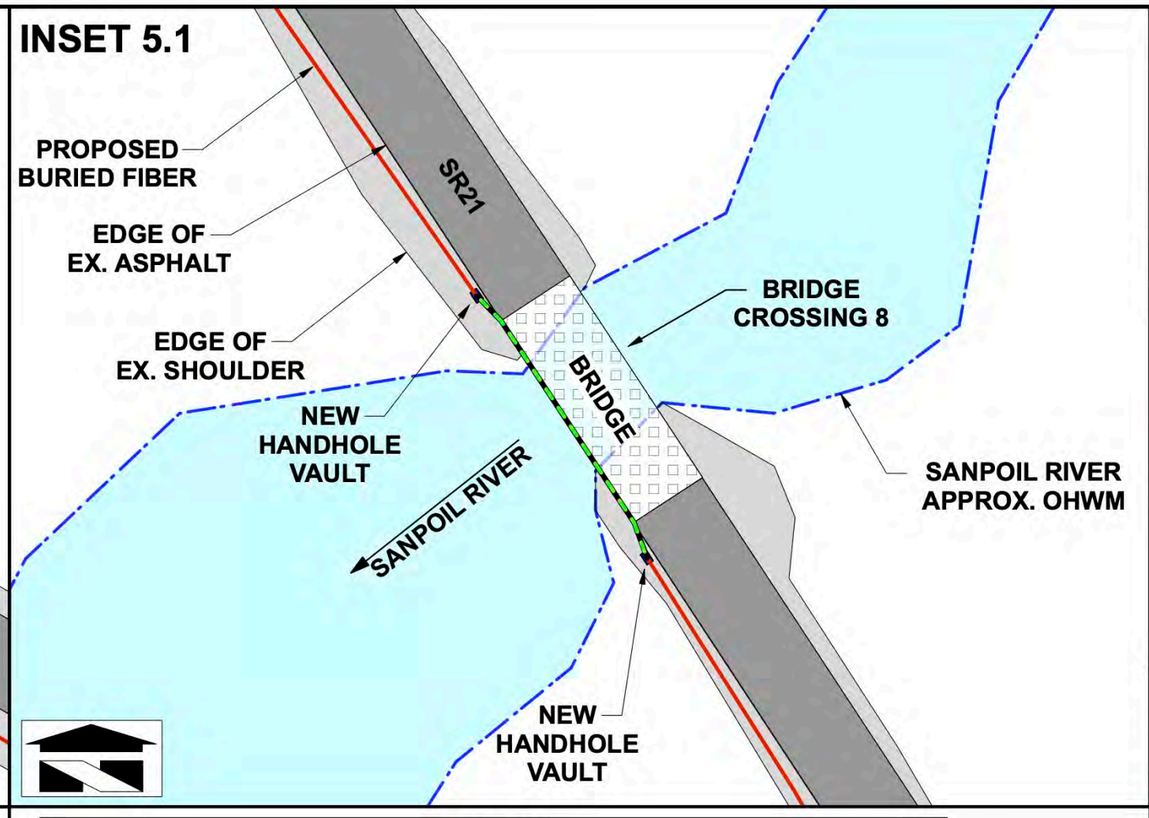
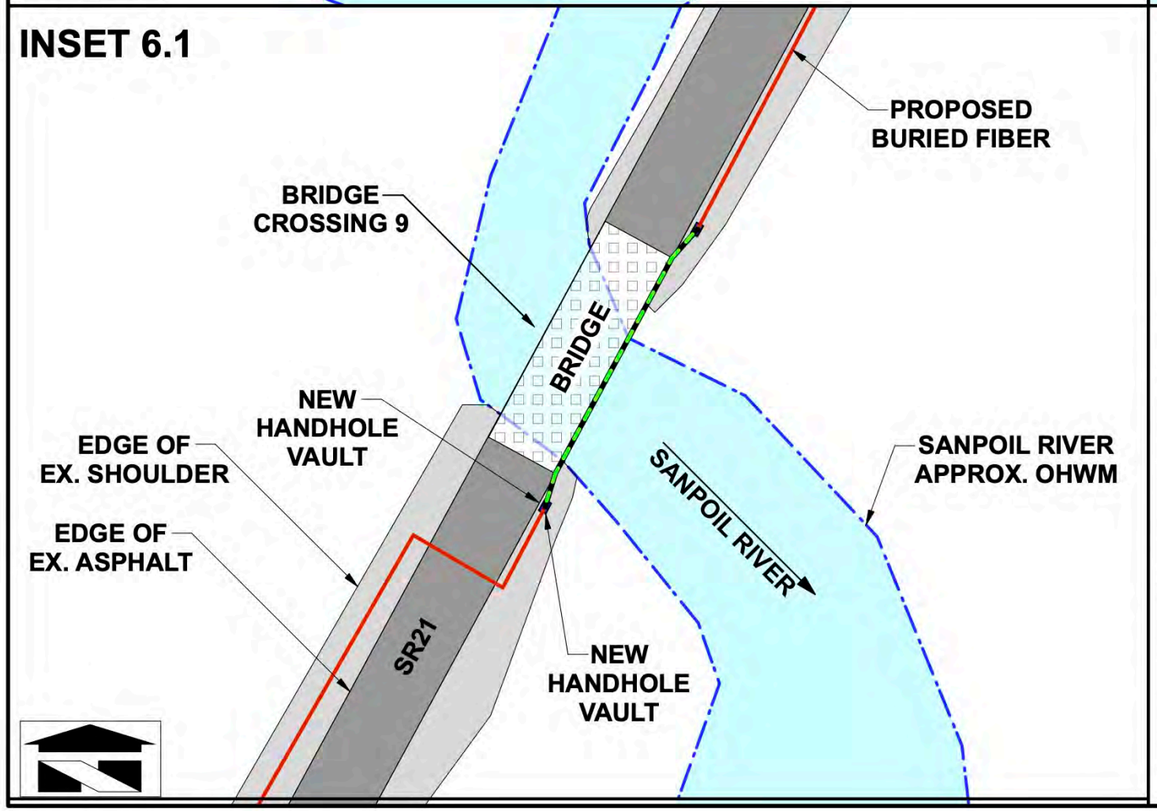
COLUMBIA RIVER TRIBUTARY CROSSINGS
BRIDGE CROSSINGS 4-6
DETAIL MAPS

SHEET 10/17







LEGEND

NEW FIBER (BURIED)	EXISTING ROAD SURFACE	MAJOR COLUMBIA RIVER TRIBUTARIES
NEW CONDUIT	EXISTING EDGE OF GRAVEL	
NEW HANDHOLE VAULT	EXISTING BRIDGE	

PROJECT NOTES

-HANDHOLE VAULTS PRECAST OR POLYMER CONCRETE (30" W X 48" L)

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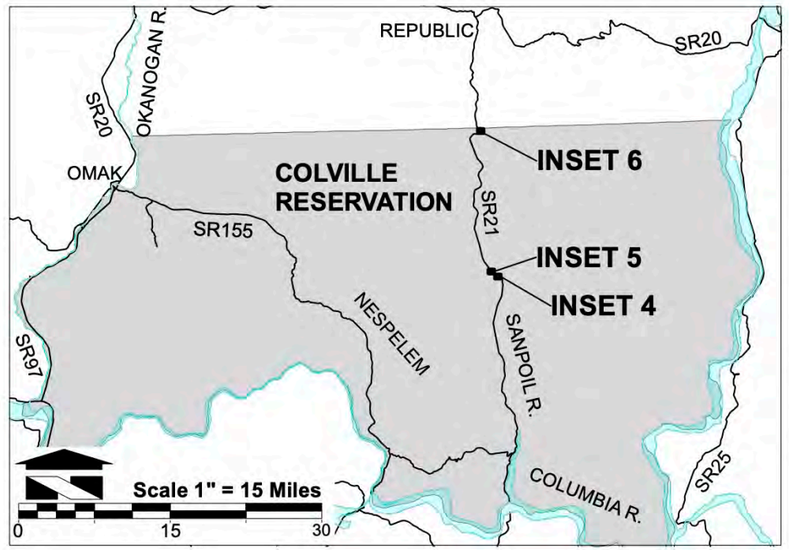

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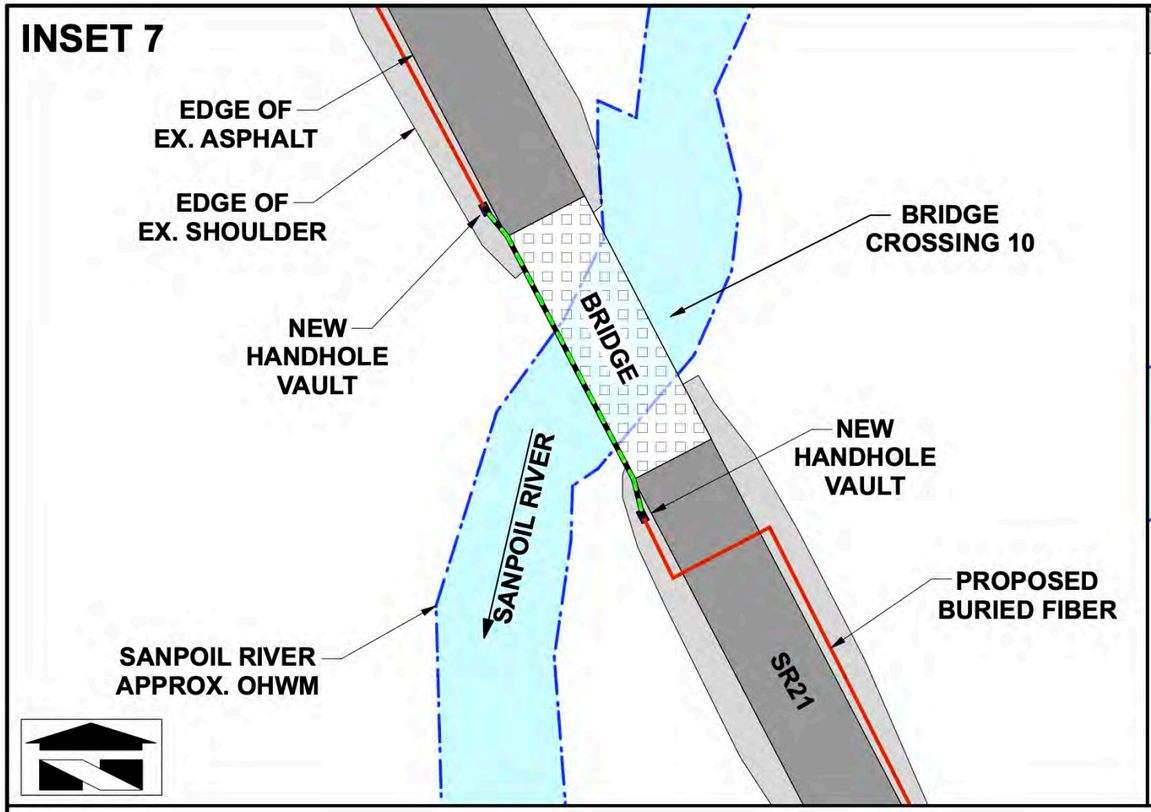
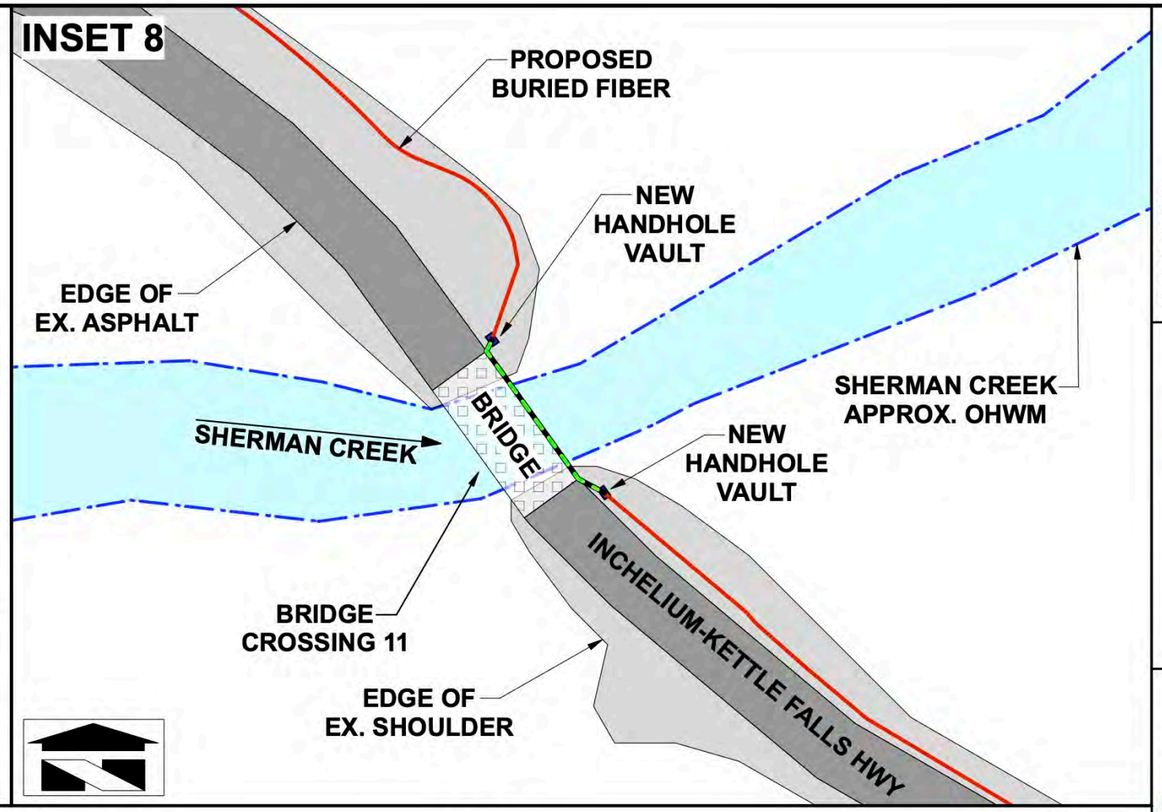
COLUMBIA RIVER TRIBUTARY CROSSINGS
BRIDGE CROSSINGS 7-9
DETAIL MAPS

SHEET 11/17

INSET 7



INSET 8



LEGEND

- NEW FIBER (BURIED)
- NEW CONDUIT
- NEW HANDHOLE VAULT
- EXISTING ROAD SURFACE
- EXISTING EDGE OF GRAVEL
- EXISTING BRIDGE
- MAJOR COLUMBIA RIVER TRIBUTARIES

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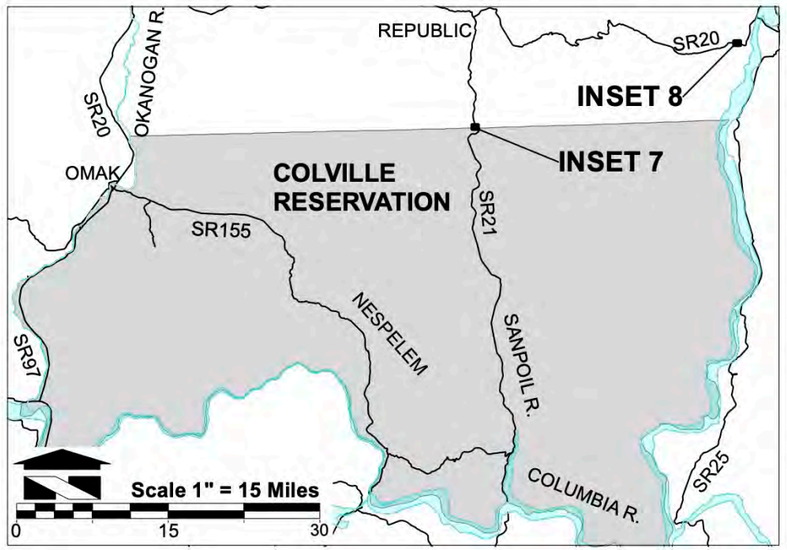

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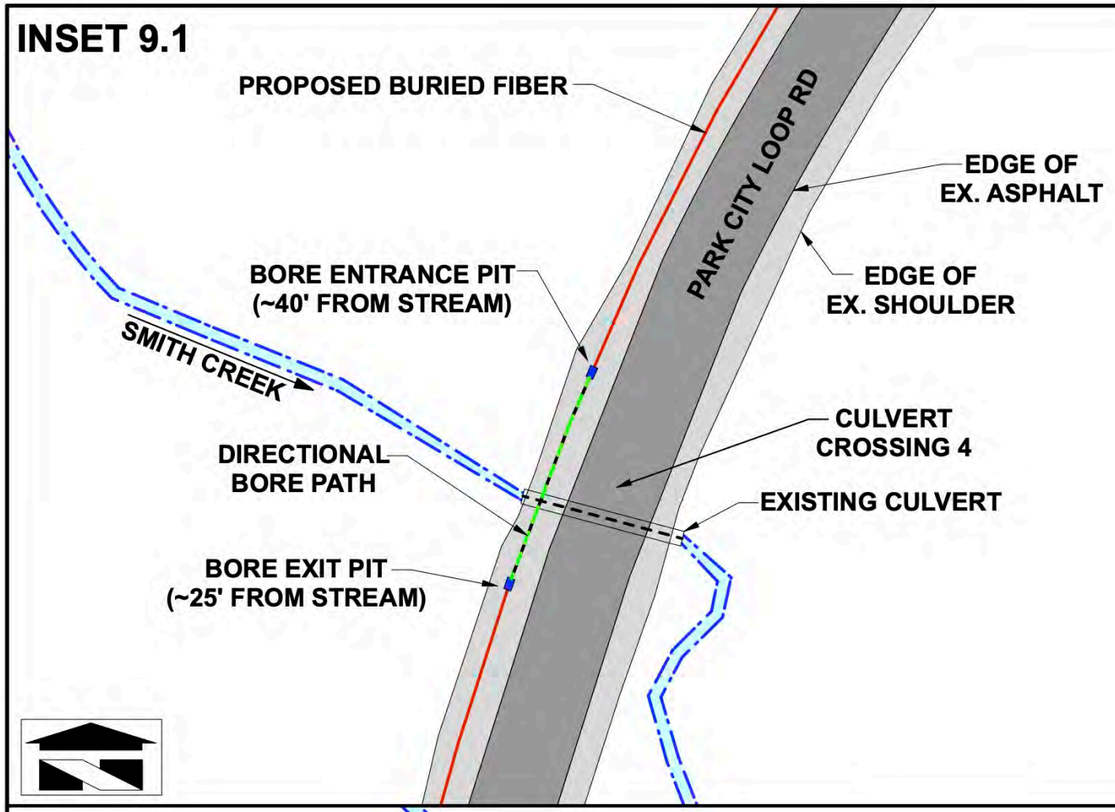
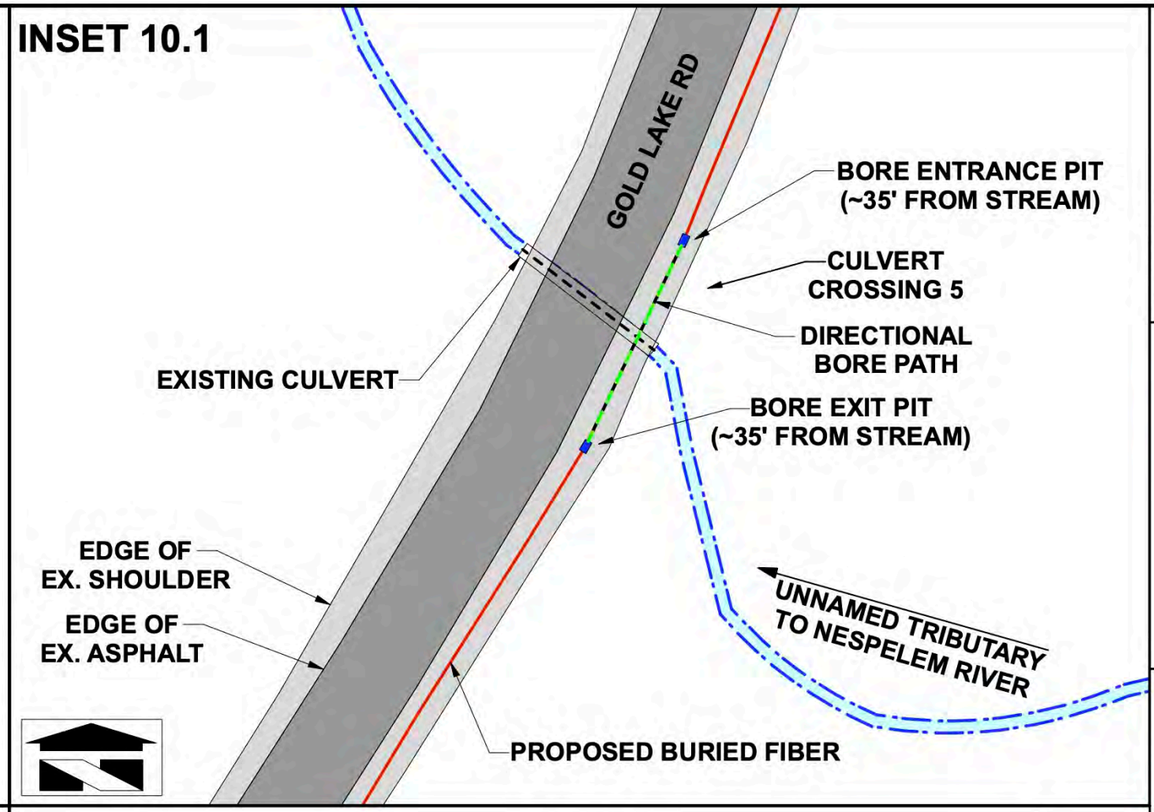
COLUMBIA RIVER TRIBUTARY CROSSINGS
BRIDGE CROSSINGS 10-12
DETAIL MAPS

SHEET 12/17

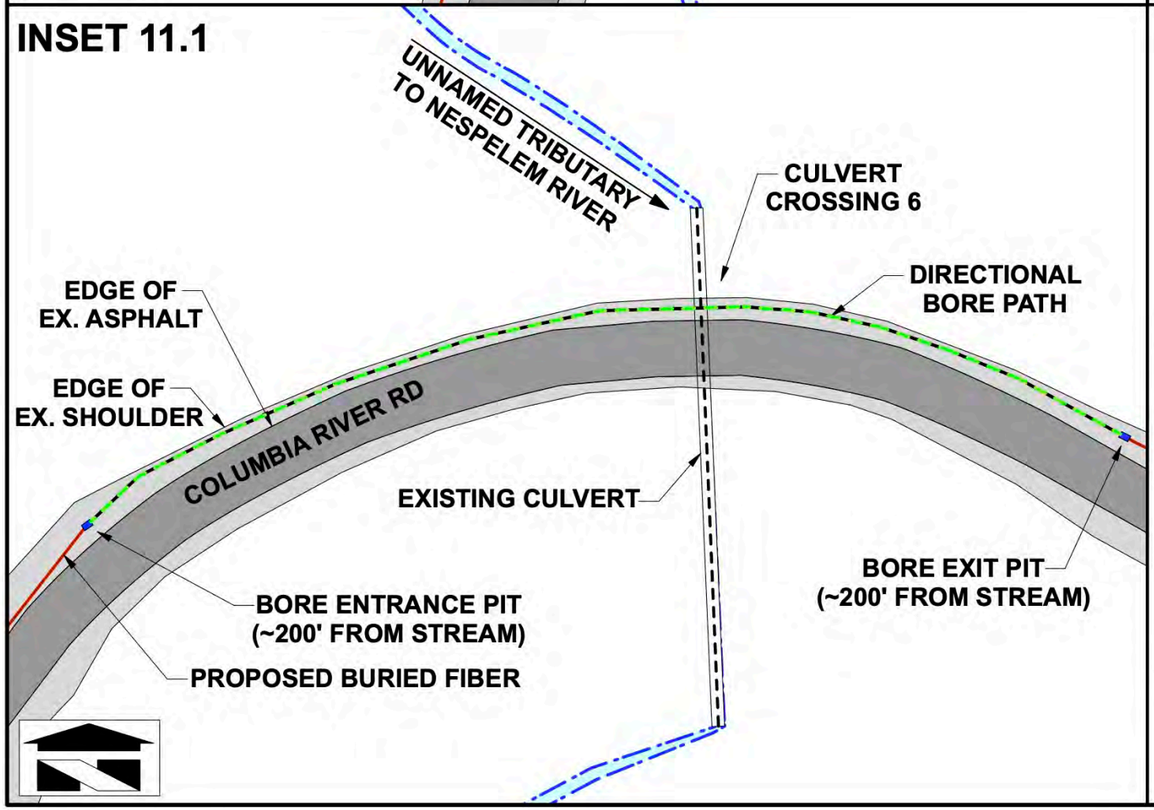
INSET 9.1



INSET 10.1



INSET 11.1



LEGEND

- NEW FIBER (BURIED)
- NEW CONDUIT
- BORE PIT (2'X4')
- EXISTING ROAD SURFACE
- EXISTING EDGE OF GRAVEL
- MAJOR COLUMBIA RIVER TRIBUTARIES
- EXISTING CULVERT

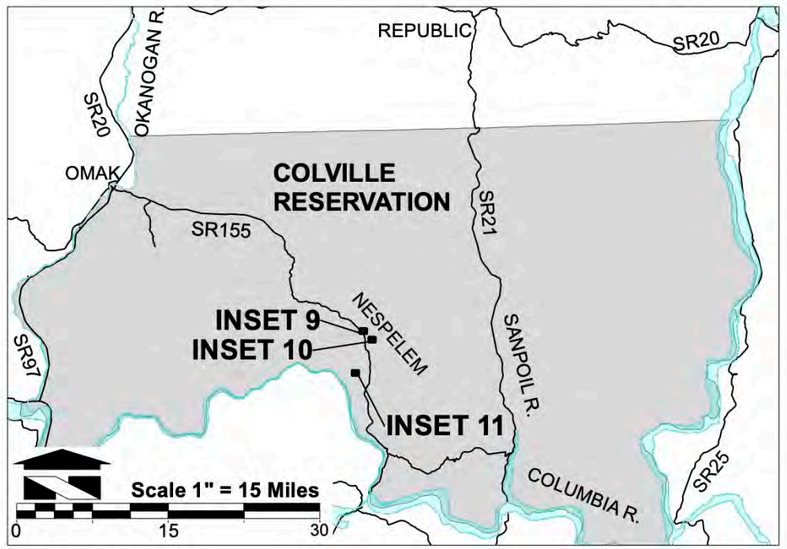
PROJECT NOTES

-BORE PITS APPROX. 2'X4'

-MIN. 42" CLEARANCE BENEATH CULVERT INVERT

-BMPs BETWEEN BORE PITS AND STREAM TO BE PLACED BY LICENSED CESCL

-GROUND DISTURBANCE IMMEDIATELY RESTORED IN KIND



WRI Job #23093

SCALE 1" = 50 FEET

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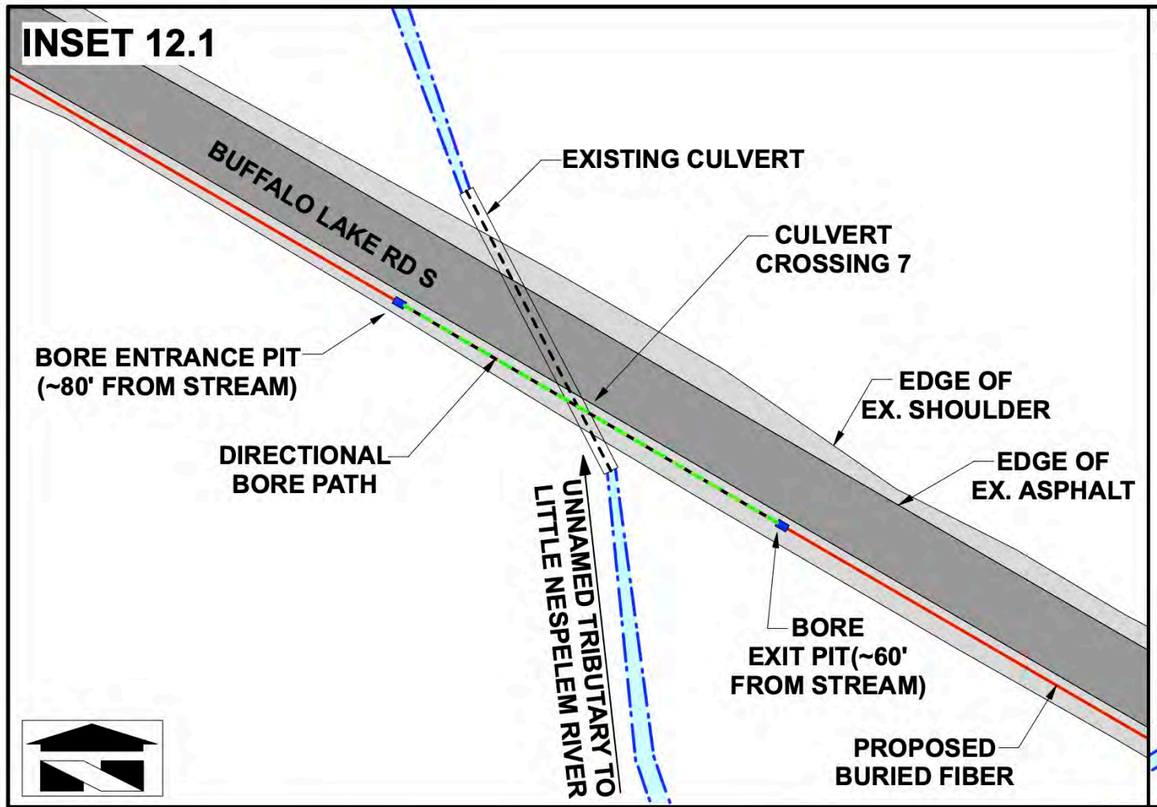
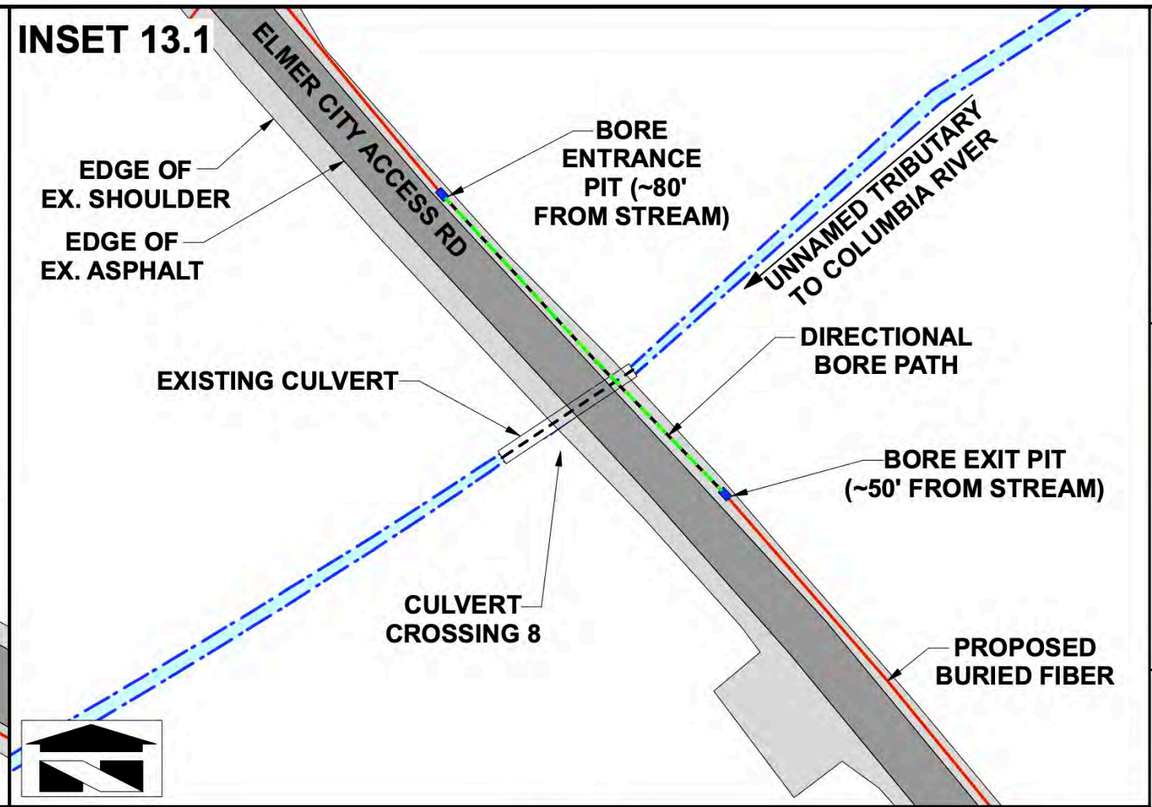
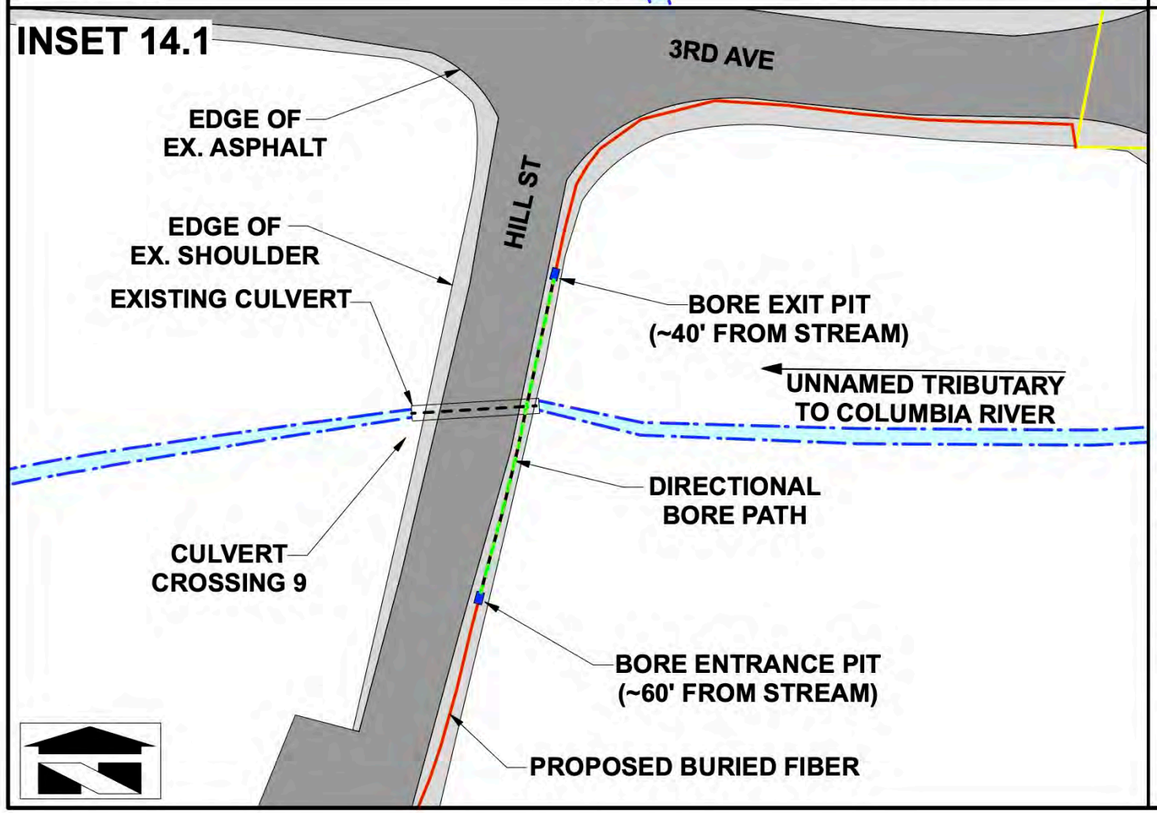
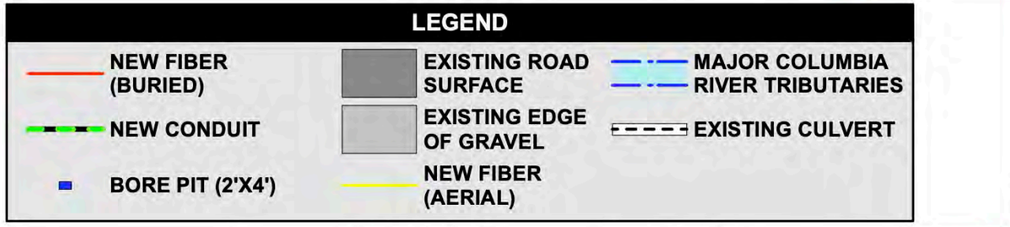
COLUMBIA RIVER TRIBUTARY CROSSINGS
CULVERT CROSSINGS 4-6
DETAIL MAPS

SHEET 13/17









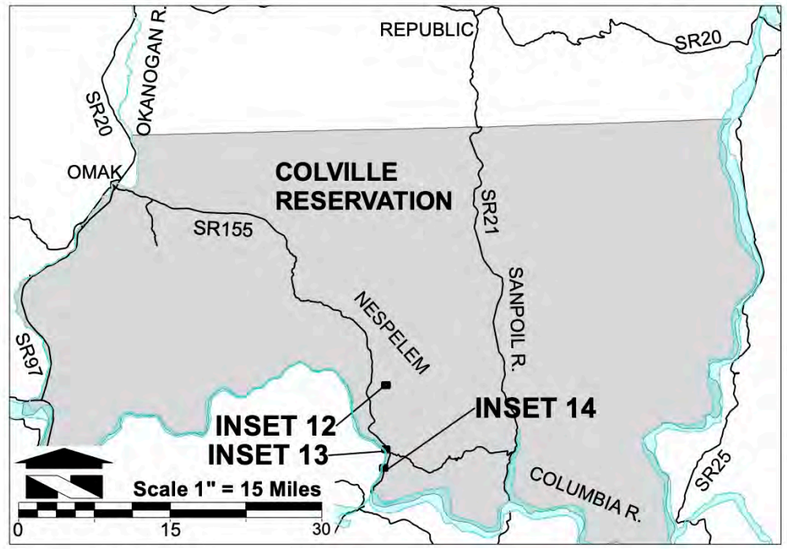
PROJECT NOTES

-BORE PITS APPROX. 2'X4'

-MIN. 42" CLEARANCE BENEATH CULVERT INVERT

-BMPs BETWEEN BORE PITS AND STREAM TO BE PLACED BY LICENSED CESCL

-GROUND DISTURBANCE IMMEDIATELY RESTORED IN KIND



WRI Job #23093

SCALE 1" = 50 FEET

Drawn By: Niels Pedersen

Revision 2 Date: June 13, 2024

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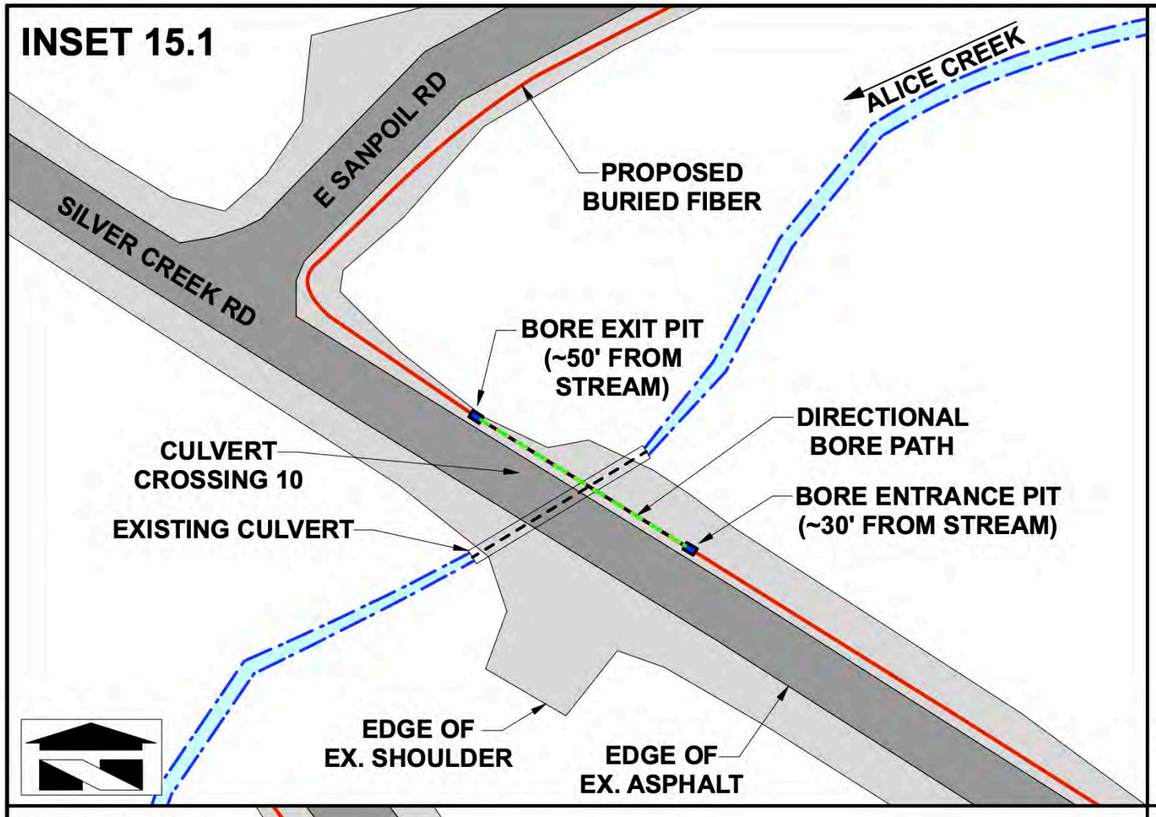
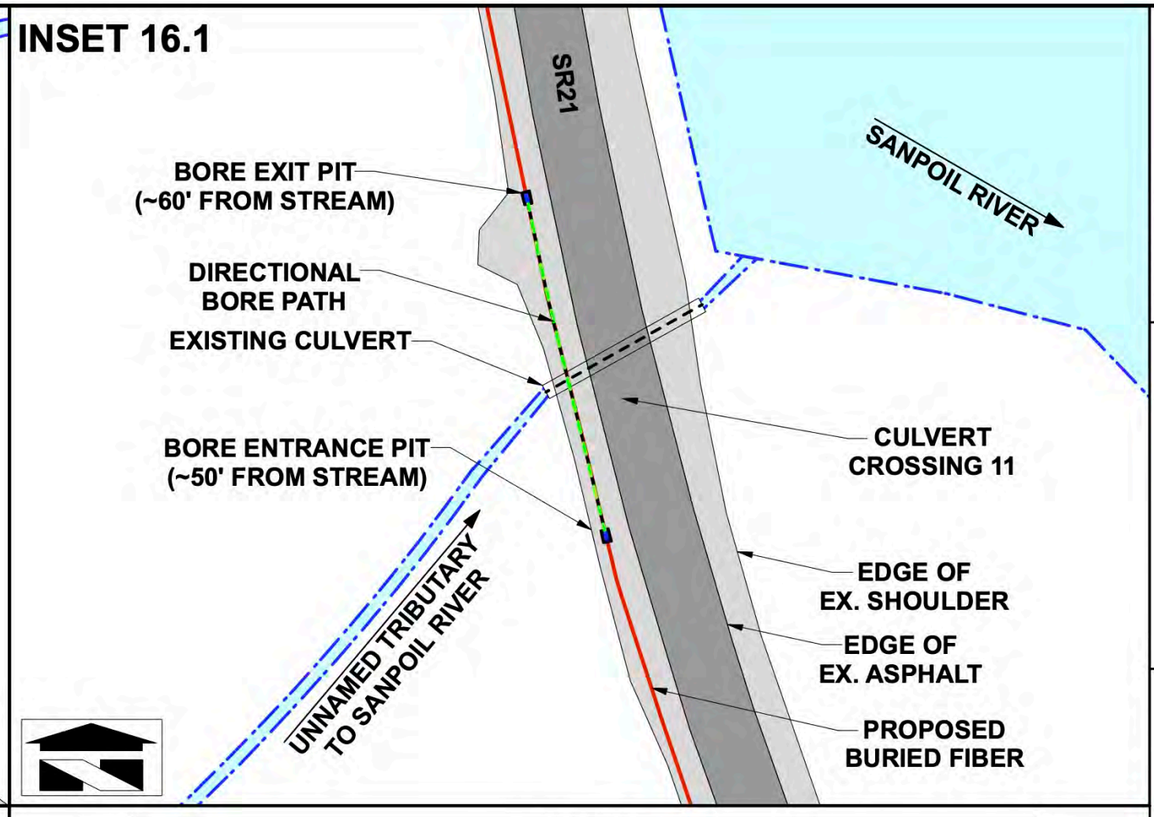
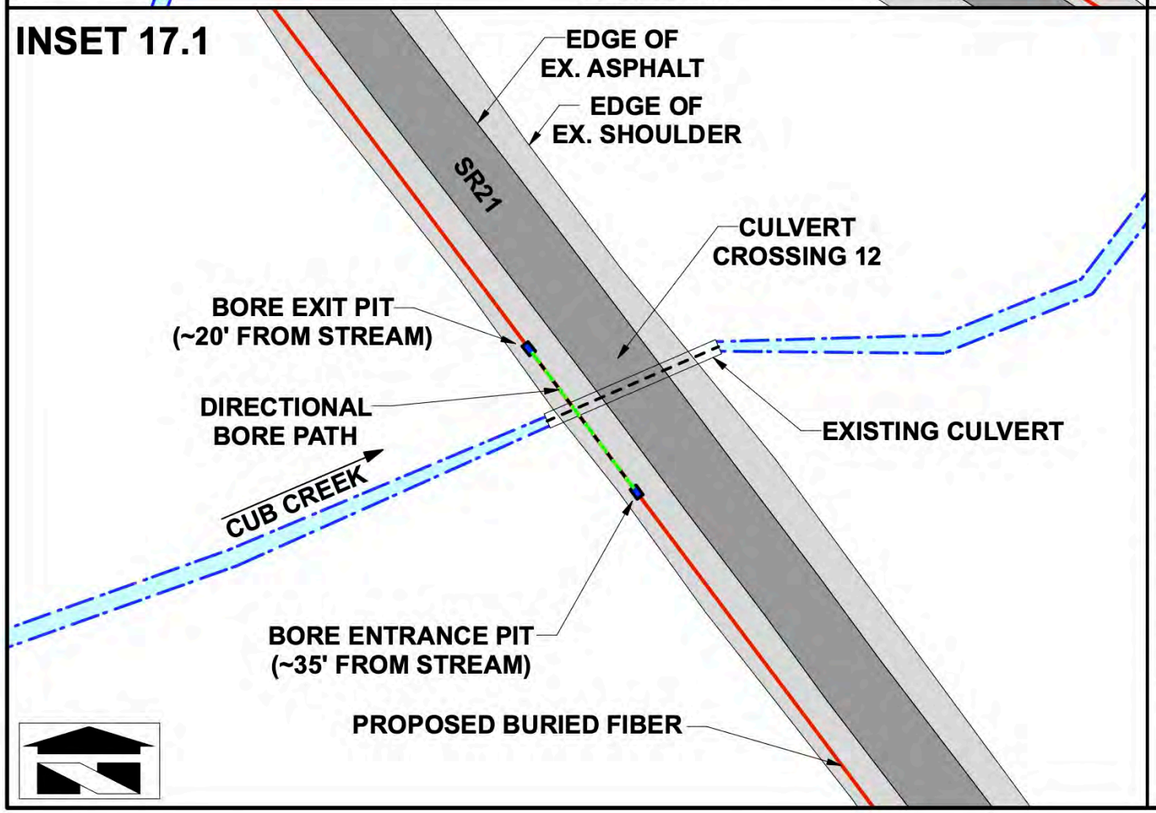
COLUMBIA RIVER TRIBUTARY CROSSINGS
CULVERT CROSSINGS 7-9
DETAIL MAPS

SHEET 14/17







LEGEND

- NEW FIBER (BURIED)
- NEW CONDUIT
- BORE PIT (2'X4')
- EXISTING ROAD SURFACE
- EXISTING EDGE OF GRAVEL
- MAJOR COLUMBIA RIVER TRIBUTARIES
- EXISTING CULVERT

PROJECT NOTES

-BORE PITS APPROX. 2'X4'

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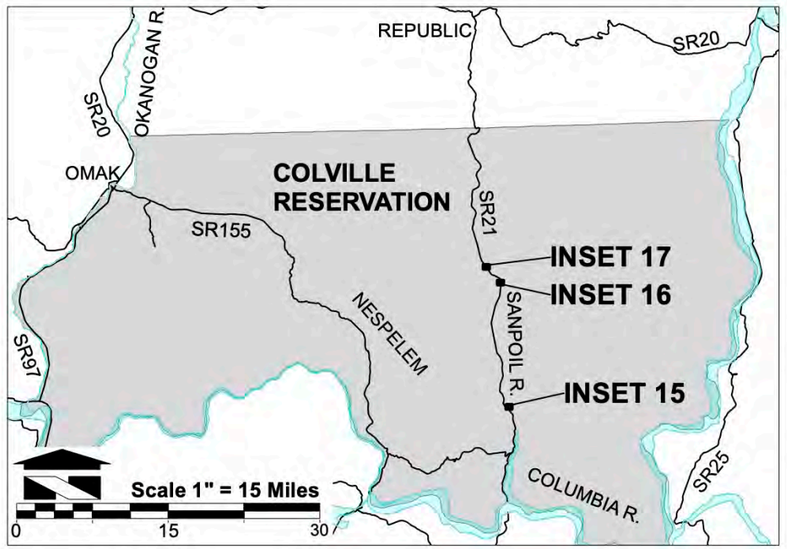
-BMPs BETWEEN BORE PITS AND STREAM TO BE PLACED BY LICENSED CESCL

-GROUND DISTURBANCE IMMEDIATELY RESTORED IN KIND



WRI Job #23093

SCALE 1" = 50 FEET

Drawn By: Niels Pedersen

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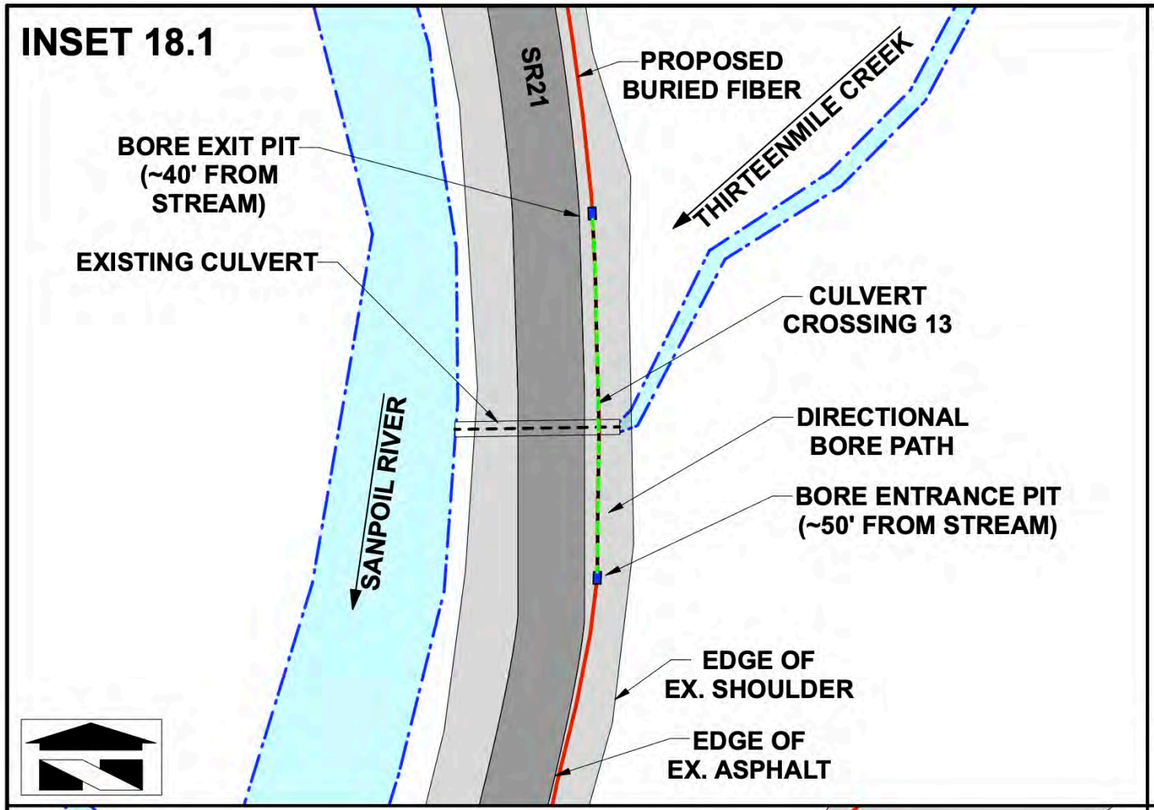
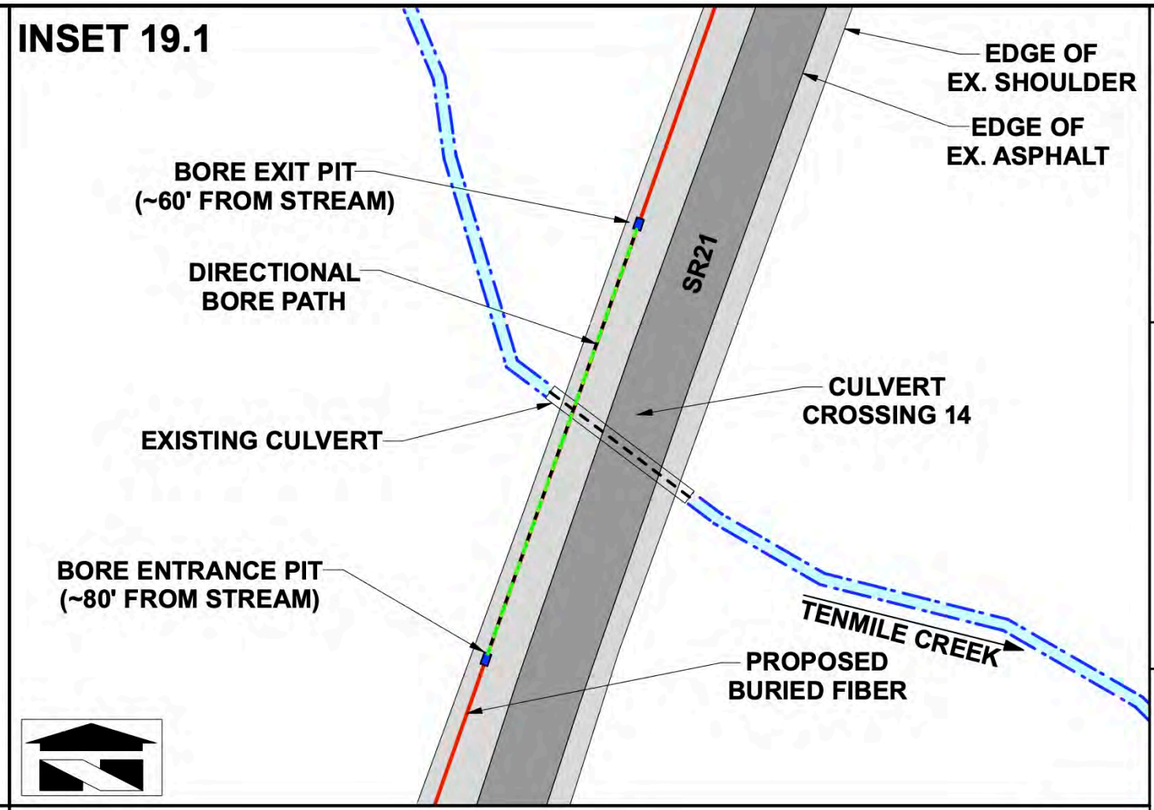
COLUMBIA RIVER TRIBUTARY CROSSINGS
CULVERT CROSSINGS 10-12
DETAIL MAPS

SHEET 15/17

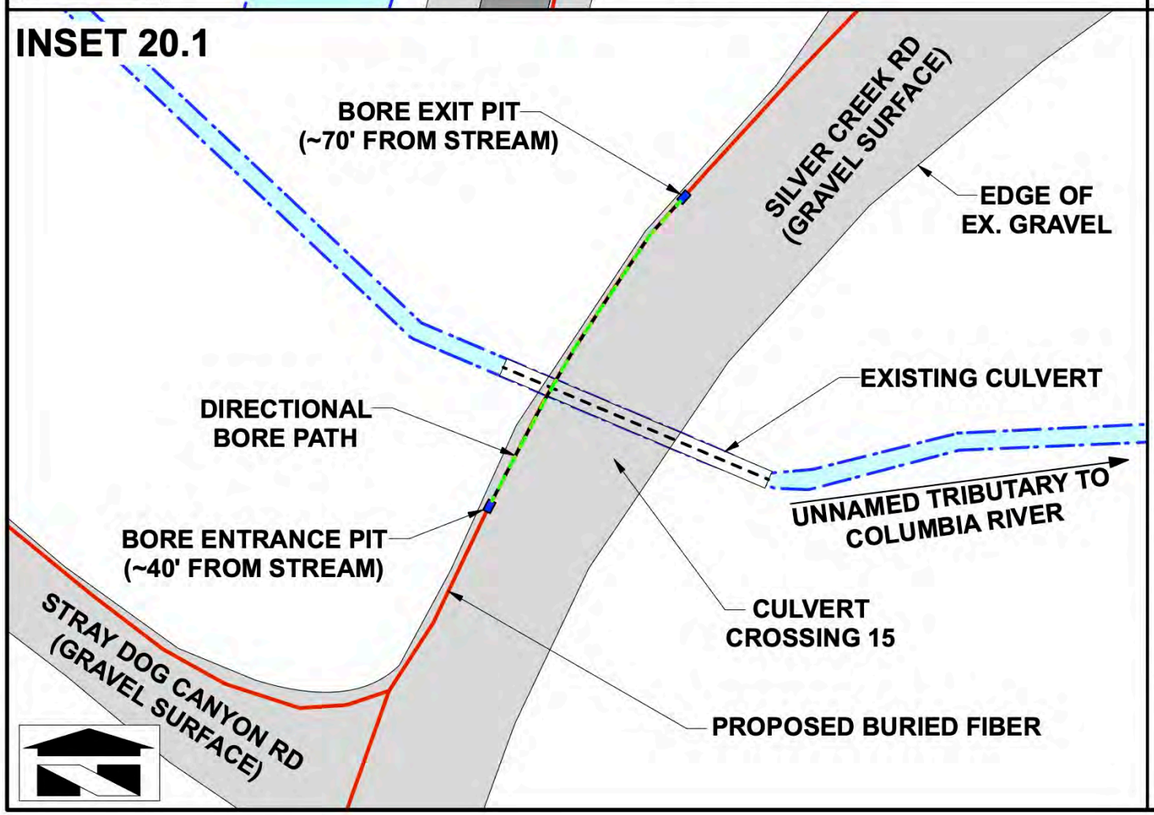
INSET 18.1



INSET 19.1



INSET 20.1



LEGEND

- NEW FIBER (BURIED)
- NEW CONDUIT
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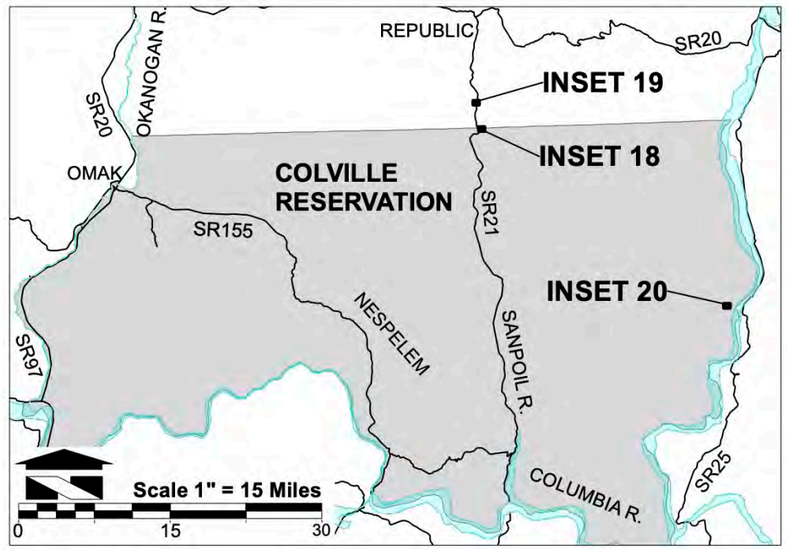

WRI Job #23093

SCALE 1" = 50 FEET

Drawn By: Niels Pedersen

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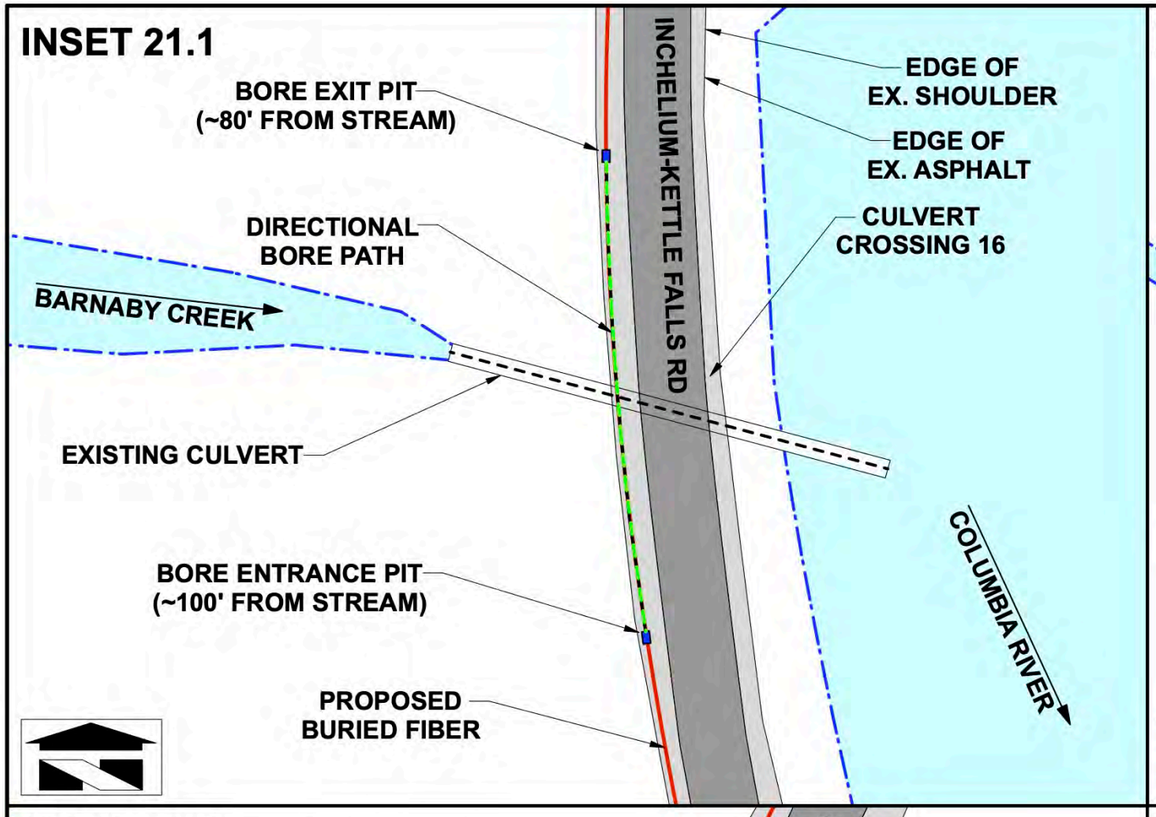
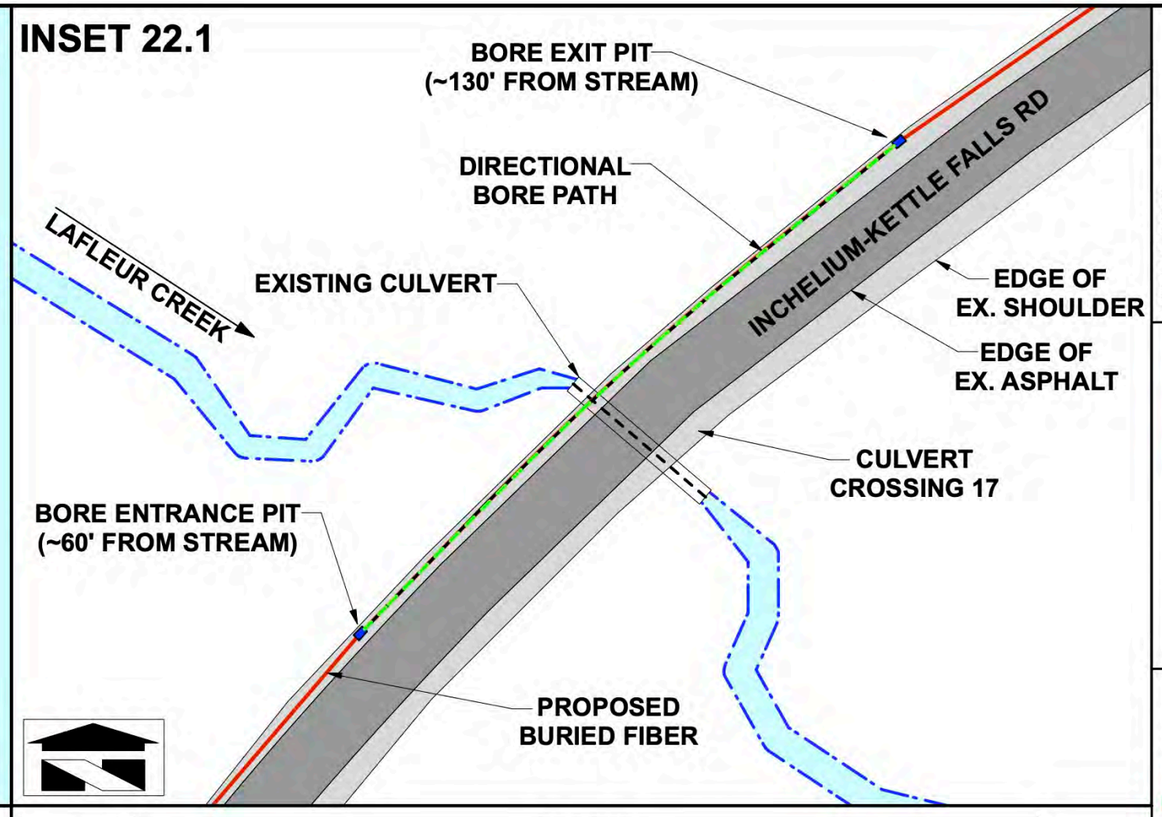
COLUMBIA RIVER TRIBUTARY CROSSINGS
CULVERT CROSSINGS 13-15
DETAIL MAPS

SHEET 16/17

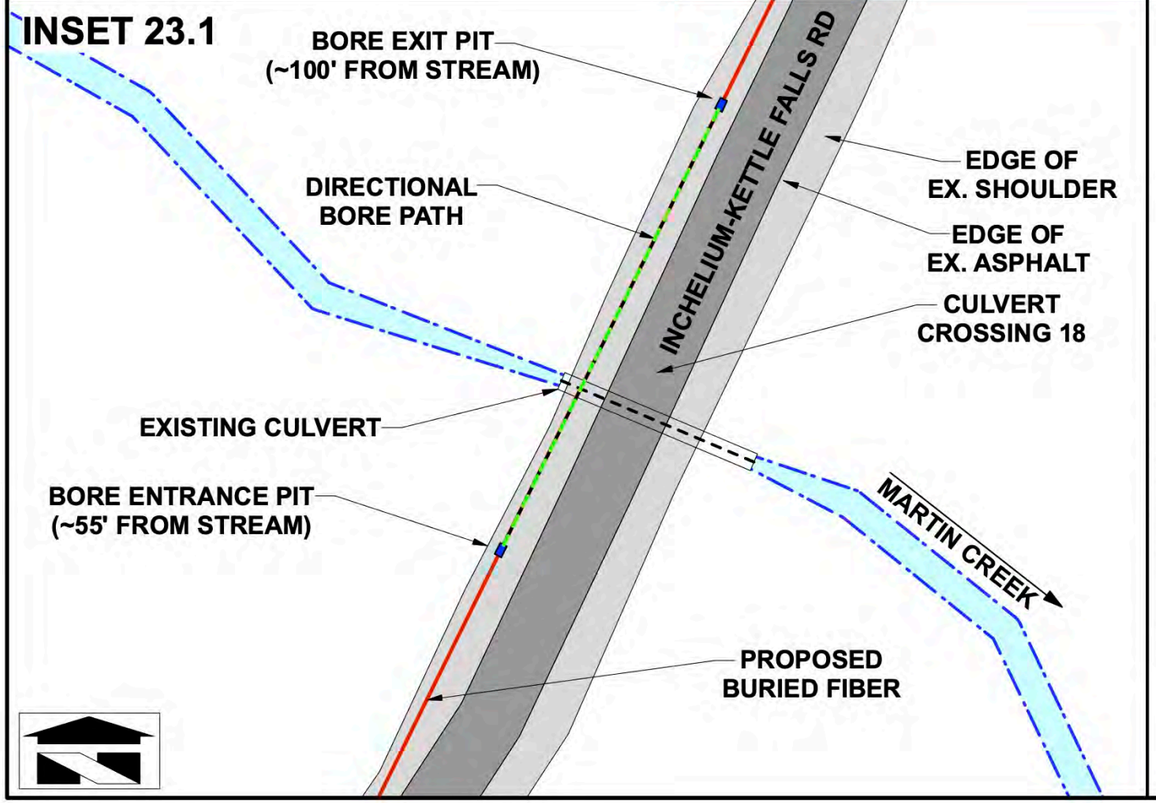
INSET 21.1



INSET 22.1



INSET 23.1



LEGEND

- NEW FIBER (BURIED)
- NEW CONDUIT
- BORE PIT (2'X4')
- EXISTING ROAD SURFACE
- EXISTING EDGE OF GRAVEL
- MAJOR COLUMBIA RIVER TRIBUTARIES
- EXISTING CULVERT

PROJECT NOTES

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-MIN. 42" CLEARANCE BENEATH CULVERT INVERT

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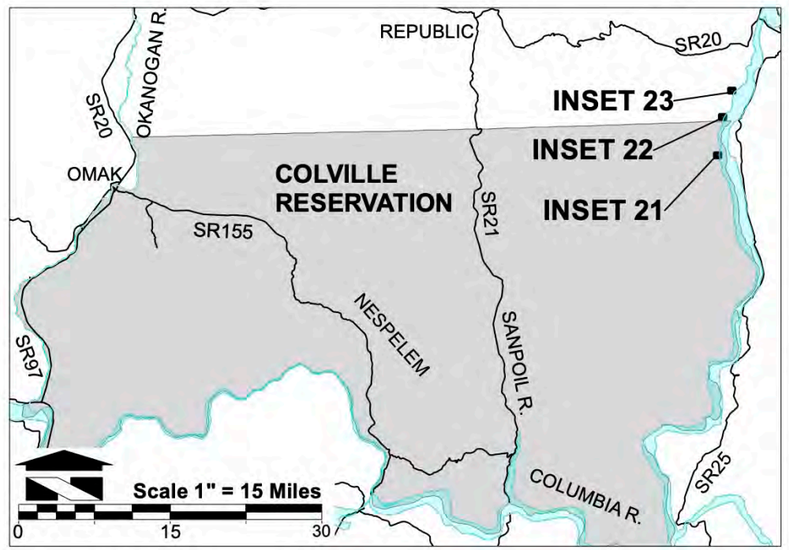
-GROUND DISTURBANCE IMMEDIATELY RESTORED IN KIND



WRI Job #23093

SCALE 1" = 50 FEET

Drawn By: Niels Pedersen

Revision 2 Date: June 13, 2024

Rev. 0: 10.13.23
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COLUMBIA RIVER TRIBUTARY CROSSINGS
CULVERT CROSSINGS 16-17
DETAIL MAPS

SHEET 17/17

Appendix G

Project Overview

DEVELOPMENT SUMMARY

Fiber - Aerial Cable	Fiber - Buried Cable	Electric - Aerial Cable	Electric - Buried Cable	New Road	195' Poles	40'/50'/ 100' Poles	Tower Upgrade
98.5 miles	73.3 miles	1 mile	2.5 miles	3.4 miles	3	50	1

SR20
REPUBLIC
SR20
SR20
INSET 8 (F-E, SHEET 6/10)
SR20
OKANOGAN RIVER
INSET 5 (F-W, SHEET 4/10)
SR21
INCHELIUM-KETTLE FALLS RD
COLVILLE RESERVATION
WORK AREA FERRY-WEST
OMAK
DISAUTEL MTN.
INSET 10
NEW DISAUTEL MONOPOLE SITE (O-W, SHEET 7/10)
WORK AREA FERRY-EAST
INSET 1 (O-W, SHEET 2/10)
INSET 12
NEW INCHELIUM POLE SITE (F-E, SHEET 8/10)
SR155
INCHELIUM
SR20
INSET 2 (O-W, SHEET 2/10)
WORK AREA OKANOGAN-CENTRAL
INSET 6 (F-W, SHEET 4/10)
SR21
OKANOGAN
WORK AREA OKANOGAN-WEST
INSET 3 (O-C, SHEET 3/10)
INSET 14
MOON MTN.
TOWER UPGRADE
(F-E, SHEET 10/10)
OMAK LAKE
SR155
INSET 13
NEW KEWA MONOPOLE SITE (F-E, SHEET 9/10)
KEWA
INSET 9 (F-E, SHEET 6/10)
US97
NESPELEM
INSET 7 (F-W, SHEET 5/10)
SR21
COLUMBIA RIVER
SR155
KELLER
COLUMBIA RIVER
WORK AREA OKANOGAN-SOUTH
INSET 4 (O-S, SHEET 3/10)
INSET 11
SR21 TEMP. COW
(F-W, SHEET 5/10)
SR25
SR174
PETER DAN RD
SANPOIL RIVER
COULEE DAM
SPOKANE RIVER
CHIEF JOSEPH DAM
GRAND COULEE
SR17

LEGEND

- NEW FIBER AERIAL
- NEW FIBER BURIED
- 40'/50'/100' POLE
- NEW 195' POLE OR EX. 195' TOWER SITE
- MAJOR RIVER
- RESERVATION BOUNDARY
- STATE ROUTE

WRI Job #23093
SCALE 1" = 5 MILES
Drawn By: Niels Pedersen
Revision 2 Date: June 13, 2024
Rev. 0: 10.13.23
Rev.1: 5.9.24

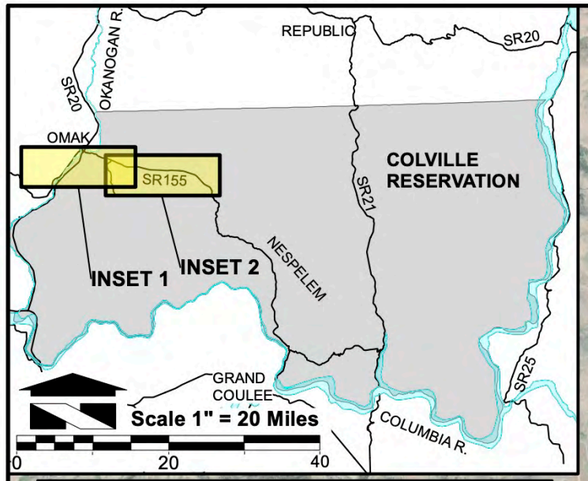
PREPARED FOR:
The Confederated Tribes of the Colville Reservation
21 Colville St
Nespelem, WA
99155

PREPARED BY: NOANET
IN PARTNERSHIP WITH:
WETLAND RESOURCES, INC.
9505 19th AVENUE SE, SUITE 106
EVERETT, WASHINGTON 98208
425.337.3174 mailbox@wetlandresources.com

CCT NTIA 2.5GHz Wireless, Middle Mile, and Fiber to the Home Project

PROJECT OVERVIEW
ALL PROPOSED DEVELOPMENT

SHEET 1/10



LEGEND

- DISAUTEL MTN. MONOPOLE
- NEW 40' POLE (MICROWAVE)
- NEW FIBER AERIAL
- NEW FIBER BURIED
- POWER FEED
- RESERVATION BOUNDARY
- STATE ROUTE
- TOWER ACCESS ROAD
- OMAK CITY LIMITS

CITY OF OMAK

RESERVATION BOUNDARY

OMAK MTN. RD

MOOMAW RD

SR215

SR97

OKANOGAN RIVER

COLVILLE RESERVATION

OKANOGAN

MATCH LINE - SEE INSET 2

SR155

INSET 2 BOUNDARY

N END LAKE OMAK RD

INSET 1

INSET 2

MATCH LINE SEE INSET 1

SR155

N END LAKE OMAK RD

INSET 1 BOUNDARY

INSET 10 (SHEET 7/10)

DISAUTEL MTN MONOPOLE SITE

POWER FEED (30 NEW 40' POLES)

BIA-71

HALEY CREEK RD

40' POLE/ MICROWAVE CABINET

SR155

OMAK CREEK

BIA-56

OMAK LAKE

WRI Job #23093

SCALE 1" = 1 MILE

Drawn By: Niels Pedersen

Revision 2 Date: June 13, 2024

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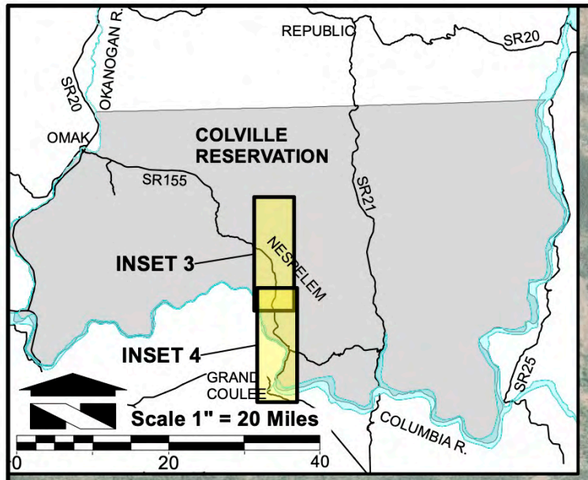
PROJECT OVERVIEW
OKANOGAN WEST (O-W)

SHEET 2/10



LEGEND

- NEW FIBER AERIAL
- NEW FIBER BURIED
- BOR PROPERTY
- RESERVATION BOUNDARY
- STATE ROUTE
- CITY LIMITS

NESPELEM
GOLD LAKE RD
NESPELEM RIVER
N STAR RD
SR155
INSET 4
BUFFALO LK RD S
COLUMBIA RIVER RD
SR155
MATCH LINE - SEE INSET 4
COLUMBIA RIVER
INSET 3

INSET 3
BUFFALO LK RD S
MATCH LINE - SEE INSET 3
NESPELEM
SR155
RIVER RD
INSET 3
BUFFALO LK RD
PETER DAN RD
ELMER CITY
COLUMBIA RIVER
COULEE DAM
COULEE DAM
BUREAU OF RECLAMATION PROPERTY
GRAND COULEE DAM
SR174
GRAND COULEE
SR174
SR155
AERIAL CROSSING OVER BANKS LAKE DIVERSION
BANKS LAKE
INSET 4

WRI Job #23093
SCALE 1" = 1 MILE
Drawn By: Niels Pedersen
Revision 2 Date: June 13, 2024
Rev. 0: 10.13.23
Rev.1: 5.9.24

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CCT NTIA 2.5GHz Wireless, Middle Mile, and Fiber to the Home Project

PROJECT OVERVIEW
OKANOGAN CENTRAL (O-C) AND OKANOGAN SOUTH (O-S)

SHEET 3/10

SR20

CITY OF REPUBLIC

SANPOIL RIVER

SR21

NF-53

TENMILE TRAILHEAD

NEW 50' POLE

THIRTEENMILE CAMPGROUND

FERRY COUNTY

RESERVATION BOUNDARY

WEST GOLD CREEK RD

SANPOIL RIVER

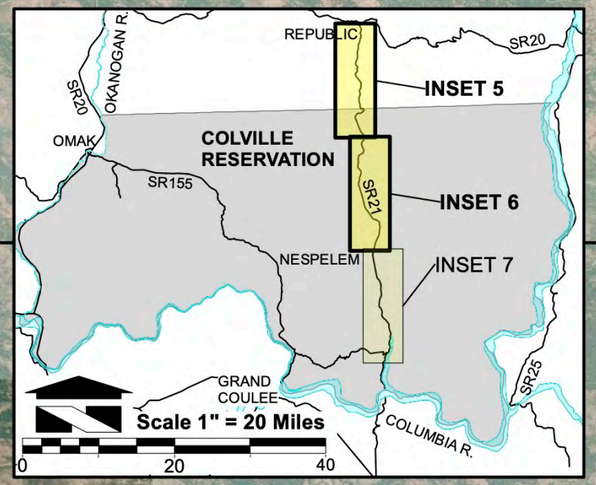
SR21

NEW 100' POLE

MATCH LINE - SEE INSET 6

INSET 5

INSET 6



LEGEND

- NEW 50'/100' POLE
- NEW FIBER AERIAL
- NEW FIBER BURIED
- RESERVATION BOUNDARY
- STATE ROUTE
- REPUBLIC CITY LIMITS

SANPOIL RIVER AERIAL CROSSING

SANPOIL RIVER

THIRTYMILE RD

NEW 50' POLE

BRIDGE CREEK RD

SR21

NEW 100' POLE

MATCH LINE - SEE INSET 5

MATCH LINE - SEE INSET 7

SANPOIL RIVER

NEW 50' POLE

NEW 50' POLE

SR21

SR21

NANAMKIN CREEK RD

NEW 50' POLE

TWENTYONE MILE CAMPGROUND

BEAR CREEK CAMPGROUND

WRI Job #23093

SCALE 1" = 1 MILE

Drawn By: Niels Pedersen

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PROJECT OVERVIEW
FERRY WEST (F-W)

SHEET 4/10

MATCH LINE - SEE INSET 6

SANPOIL RIVER

SR21

CACHE CREEK RD

NEW 100' POLE

EMPIRE CREEK RD

BRUSH CREEK RD

SANPOIL RIVER AERIAL CROSSING

NEW 50' POLE

SILVER CREEK RD

KELLER

JACK CREEK RD

SR21

NEW 50' POLE

INSET 11

SANPOIL RIVER ARM

INSET 11

SR21 COW SITE (NEW 100' POLE)

NEW 50' POLE

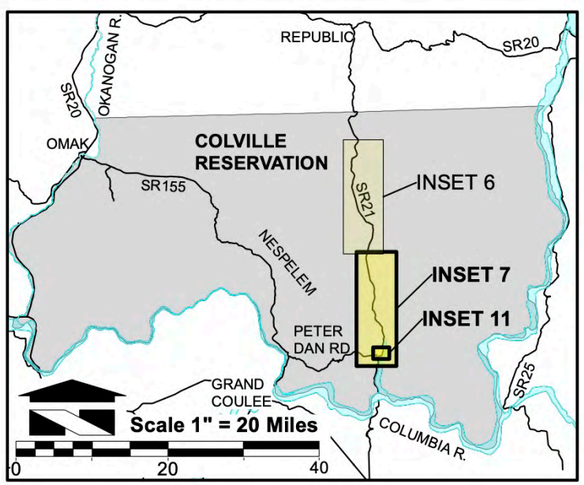
MANILLA CREEK RD

NEW 50' POLE

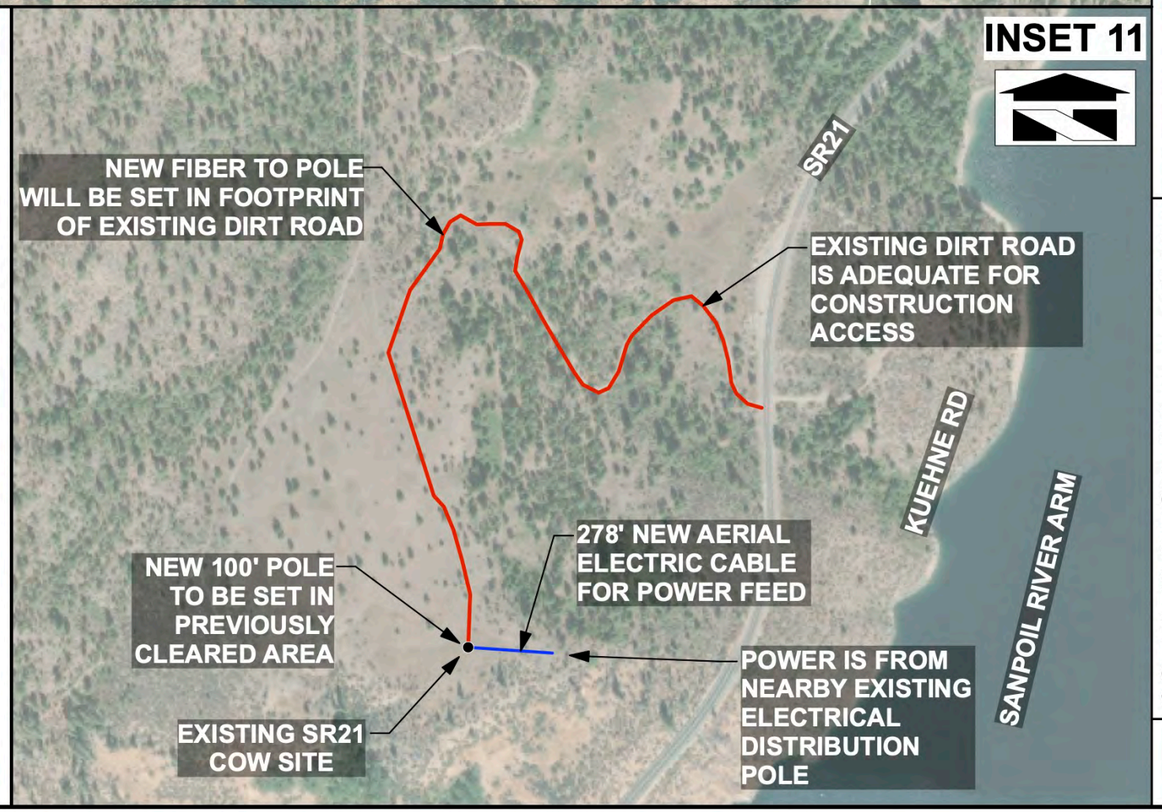
INSET 7

LEGEND

- NEW 50'/100 POLE
- NEW FIBER AERIAL
- NEW FIBER BURIED
- PROPOSED POWER
- STATE ROUTE



INSET 11



WRI Job #23093

INSET 7 SCALE 1" = 1 MILE
INSET 11 SCALE 1" = 500 FEET

Drawn By: Niels Pedersen

Revision 2 Date: June 13, 2024

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CCT NTIA 2.5GHz Wireless, Middle Mile, and Fiber to the Home Project

PROJECT OVERVIEW
FERRY WEST (F-W) AND SR21 COW TOWER SITE

SHEET 5/10

HAAG RD

INCHELIUM-KETTLE FALLS RD

COLUMBIA RIVER

MARTIN CREEK DR

SR20

FRENCH POINT

NEW 50' POLE

SR25

MATCH LINE - SEE INSET 9

STEVENS COUNTY

INCHELIUM-KETTLE FALLS RD

HAVEN WY

(2) NEW 50' POLES

VIOLA RD

FERRY COUNTY

RESERVATION BOUNDARY

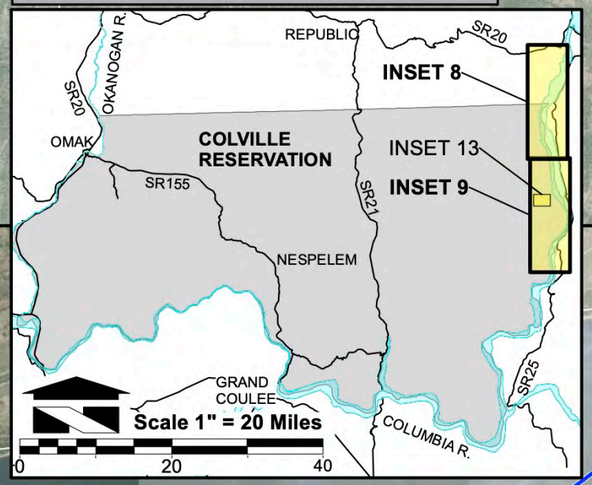
BARNABY CREEK RD

INSET 8

INSET 9

LEGEND

- NEW 195' POLE SITE
- NEW 50'/ 100' POLE
- NEW FIBER AERIAL
- NEW FIBER BURIED
- MAJOR RIVER
- RESERVATION BOUNDARY
- STATE ROUTE



MATCH LINE - SEE INSET 8

STEVENS COUNTY RESERVATION BOUNDARY

GIFFORD FERRY RD

COLUMBIA RIVER

NEW 50' POLE

HEMMING RD

INCHELIUM-KETTLE FALLS RD

INCHELIUM

COVADA RD

SILVER CREEK RD

COLUMBIA RIVER

(2) NEW 50' POLES

INCHELIUM MONOPOLE SITE

INSET 13 (SHEET 7/10)

HALL CREEK RD

BRIDGE CREEK RD

STRAY DOG CANYON RD

SILVER CREEK RD

KEWA RD

WRI Job #23093

SCALE 1" = 1 MILE

Drawn By: Niels Pedersen

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CCT NTIA 2.5GHz Wireless, Middle Mile, and Fiber to the Home Project

PROJECT OVERVIEW
FERRY EAST (F-E)

SHEET 6/10

INSET 10

EXISTING ACCESS ROADS - NO PROPOSED MODIFICATIONS

UNNAMED TRIB. TO STAPALOOP CREEK

DISAUTEL MTN. MONOPOLE SITE

EXISTING ROAD SURFACE TO BE WIDENED TO 12 FEET (1/3 MILE)

EXISTING ACCESS ROAD - NO PROPOSED MODIFICATIONS

STAPALOOP CREEK

~1 MI NEW ROAD SURFACE TO ACCESS POLE SITE (PROPOSED 12' WIDTH)

PROPOSED POWER FEED (1 MILE OF CABLE, 30 NEW 40' POLES)

PROPOSED 40' POLE AND MICROWAVE CABINET

EXISTING OVERHEAD DISTRIBUTION POLE

SR155

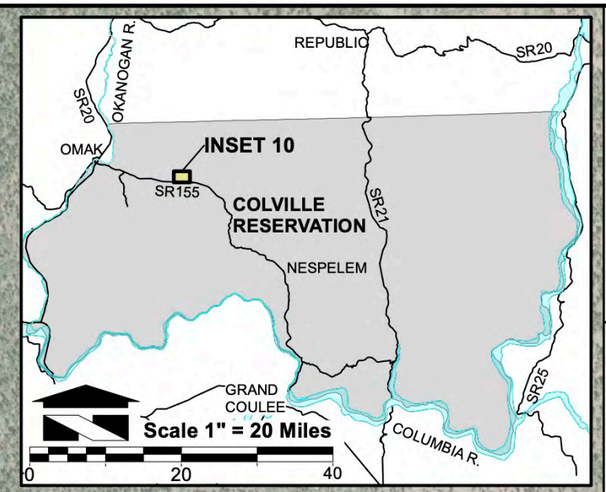
BIA 71

LEGEND

- MONOPOLE SITE CLEARING AREA
- NEW 40' POLE (MICROWAVE)
- PROPOSED POWER
- PERENNIAL OKANOGAN R. TRIBUTARY
- NEW ROAD
- WIDEN EX. ROAD
- EXISTING ROAD (NO MODIFICATIONS)
- INTERMITTENT OKANOGAN R. TRIBUTARY

Scale 1" = 1,000'

0 1,000 2,000



WRI Job #23093

SCALE 1" = 1,000 FEET

Drawn By: Niels Pedersen

Revision 2 Date: June 13, 2024

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CCT NTIA 2.5GHz Wireless, Middle Mile, and Fiber to the Home Project

PROJECT OVERVIEW
DISAUTEL MOUNTAIN NEW TOWER SITE

SHEET 7/10

INSET 12

~0.75 MI NEW ROAD TO ACCESS POLE SITE (12' WIDTH)

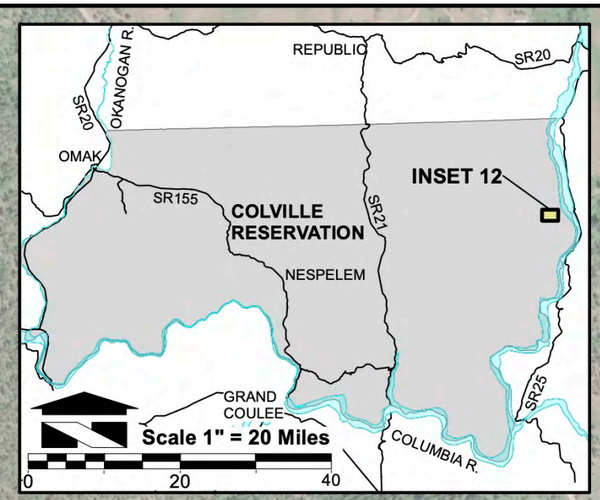
KEWA MOUNTAIN MONOPOLE SITE (~10,000 SF CLEARING)

PROPOSED POWER FEED (2 MILES NEW CABLE, BURIED ALONG EAST SIDE OF STAR RD)

EXISTING ROAD ACCESS TO POLE SITE (STAR RD, NO PROPOSED ROAD MODIFICATIONS)

STAR RD

KEWA-METEOR RD



Scale 1" = 1,000'
0
1,000
2,000

LEGEND

- POLE SITE CLEARING AREA
- NEW ROAD
- PROPOSED POWER
- EXISTING ROAD (NO MODIFICATIONS)

WRI Job #23093

SCALE 1" = 1,000 FEET

Drawn By: Niels Pedersen

Revision 2 Date: June 13, 2024

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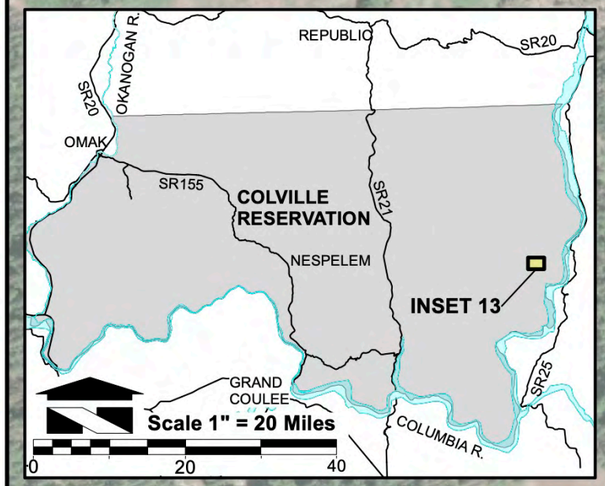
CCT NTIA 2.5GHz Wireless, Middle Mile, and Fiber to the Home Project

PROJECT OVERVIEW
KEWA MOUNTAIN NEW TOWER SITE

SHEET 8/10

INSET 13



INCHELIUM MONOPOLE SITE (~10,000 SF CLEARING)

INCHELIUM-KETTLE FALLS RD

BOSIE HAUL RD

INCHELIUM

~0.75 MI NEW ROAD TO ACCESS POLE SITE (12' WIDTH)

PROPOSED POWER FEED (0.5 MILES, BURIED ALONG EAST EDGE OF WIDENED ROAD/NEW ROAD)

EXISTING ROAD ACCESS TO BE WIDENED TO 12'

BRIDGE CREEK RD

EXISTING OVERHEAD DISTRIBUTION POLE

Scale 1" = 500'

0 500 1,000

LEGEND

- 195' POLE SITE CLEARING AREA
- PROPOSED POWER
- WIDEN EX. ROAD
- NEW ROAD
- EXISTING ROAD (NO MODIFICATIONS)

WRI Job #23093

SCALE 1" = 500 FEET

Drawn By: Niels Pedersen

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PROJECT OVERVIEW
INCHELIUM HILL NEW TOWER SITE

SHEET 9/10

INSET 14

NEW WIRELESS HARDWARE AFFIXED TO EXISTING TOWER

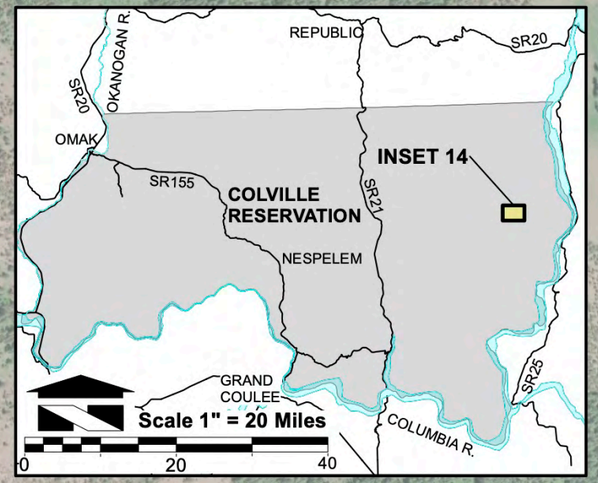
MOON MOUNTAIN TOWER SITE (EXISTING)

EXISTING ROAD ACCESS TO TOWER SITE (NO PROPOSED MODIFICATIONS)

METEOR RD

MOON MOUNTAIN RD

METEOR RD



Scale 1" = 1,000'

0 1,000 2,000

LEGEND

- EXISTING TOWER SITE
- EXISTING ROAD

WRI Job #23093

SCALE 1" = 1,000 FEET

Drawn By: Niels Pedersen

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PROJECT OVERVIEW
MOON MOUNTAIN TOWER UPGRADE

SHEET 10/10

Appendix H

Cultural Resources and Threatened/Endangered Species Consultation

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
West Coast Region
304 S. Water Street, Suite 201
Ellensburg, Washington 98926-3617

Refer to NMFS No: WCRO-2024-00791

May 31, 2024

Josh Fitzpatrick
National Telecommunications & Information Administration
Office Internet Connectivity and Growth
1401 Constitution Avenue NW
Washington, DC 20230

Re: Endangered Species Act Section 7(a)(2) Concurrence Letter and Magnuson–Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for the Colville Confederated Tribes NTIA 2.5 GHZ Wireless, Middle Mile and Fiber to the Home Project

Dear Mr. Fitzpatrick:

On March 8, 2024, NOAA's National Marine Fisheries Service (NMFS) received your request for a written concurrence that Department of Commerce National Telecommunications & Information Administration's (NTIA) Colville Confederated tribes NTIA 2.5 GHZ Wireless, Middle Mile and Fiber to the Home Project under Section 7(a)(2) of the Endangered Species Act is not likely to adversely affect (NLAA) species listed as threatened or endangered or critical habitats designated under the Endangered Species Act (ESA).

This response to your request was prepared by NMFS pursuant to section 7(a)(2) of the ESA and implementing regulations at 50 CFR 402. Updates to the regulations governing interagency consultation (50 CFR part 402) were effective on May 6, 2024 (89 Fed. Reg. 24268). We are applying the updated regulations to this consultation. The 2024 regulatory changes, like those from 2019, were intended to improve and clarify the consultation process, and, with one exception from 2024 (offsetting reasonable and prudent measures), were not intended to result in changes to the Services' existing practice in implementing section 7(a)(2) of the Act. 84 Fed. Reg. at 45015; 89 Fed. Reg. at 24268. We have considered the prior rules and affirm that the substantive analysis and conclusions articulated in this letter of concurrence would not have been any different under the 2019 regulations or pre-2019 regulations.

Thank you also for your request for consultation pursuant to the essential fish habitat (EFH) provisions in Section 305(b) of the Magnuson–Stevens Fishery Conservation and Management Act (16 U.S.C. 1855(b)) for this action. However, after reviewing the proposed action, we concluded that there are no adverse effects on EFH. Therefore, we are hereby concluding EFH consultation.

This letter underwent pre-dissemination review using standards for utility, integrity, and objectivity in compliance with applicable guidelines issued under the Data Quality Act (section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001, Public Law 106-554). The document will be available within two weeks at the Environmental Consultation Organizer (https://www.fisheries.noaa.gov/resource/tool-app/environmental-consultation-organizer-eco). A complete record of this consultation is on file at NMFS Ellensburg Office, Ellensburg, Washington.

Consultation History

On March 8, 2024, a request for consultation initiation and biological assessment (BA) was received from the Department of Commerce's NTIA designated authority, and NMFS requested additional information on April 24, 2024. A BA addendum was submitted and the consultation was initiated on April 26, 2024.

Proposed Action and Action Area

The majority of the project is located on the Colville Reservation. Portions outside the reservation are located within Grant and Ferry counties. The project occurs within four major sub-basins as defined by the United States Geological Survey (USGS), hydrologic unit codes (HUCs) 17002001, 17002004, 17002005, and 17002006.

The proposed fiber extension project consists of approximately 171.8 miles of new fiber network, three new 200-foot wireless towers (including new access and power delivery), three new 100-foot wireless towers, sixteen new 50-foot poles, new power/fiber delivery to an existing cell-on-wheels (COW) site, and a hardware upgrade at an existing 200-foot tower site. The project extends fiber optic services to businesses, institutions, and residents located on tribal land.

Project activities within the Okanogan West route segment will occur near the Okanogan River and its tributaries. While no project activities occur in or cross the Okanogan River, there are activities adjacent to it as well as activities that cross tributaries of the Okanogan River. All other route segments for the project are in areas where steelhead are not present, above Chief Joseph Dam.

Project activities within the Okanogan West route segment include 37 stream crossings for aerial fiber, 29 stream crossings for buried fiber, and one existing road crossing. Only two stream crossings occur in designated critical habitat for Upper Columbia River (UCR) steelhead, Omak Creek, where fiber optic cable will be girdled to existing bridge crossings. At the Disautel Mountain Tower Site, construction crews will use the existing stream ford road crossing in Stapaloop Creek, an ephemeral tributary of Omak Creek, to access work sites. The proposed action also includes vegetation management, but this occurs along roadways and disturbed areas and not near streams. Four culvert crossings will result in the removal of dogwood (*Cornus* sp.) and hawthorn (*Crataegus* sp.) at bore entrance and exit pits located at least 28 feet from the streams. Permanent removal of vegetation greater than 6 inches diameter at breast height from riparian areas is not proposed.

The proposed action also includes conservation measures such as the use of silt fences and straw waddles to minimize sediment movement.

Background and Action Agency's Effects Determination

Upper Columbia River steelhead DPS was listed as endangered on August 18, 1997 (62 FR 43937), and their status was upgraded to threatened on January 5, 2006 (71 FR 834).

NMFS designated critical habitat for UCR steelhead on September 2, 2005 (70 FR 52630). Critical habitat includes the stream channels within the proposed stream reaches, and includes a lateral extent as defined by the ordinary high water mark (OHWM) (33 CFR 319.11). Because the project will occur in freshwater habitat, applicable physical and biological features (PBFs) for the critical habitat of UCR steelhead are those associated with freshwater spawning, rearing sites, and migration corridors.

The NTIA determined the proposed action may affect, but is not likely to adversely affect UCR steelhead and their designated critical habitat. This determination was based on adequate physical separation between ground-disturbing activities and streams, construction during the dry season, and implementation of best management practices.

ENDANGERED SPECIES ACT

Effects of the Action

Under the ESA, "effects of the action" are all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action (50 CFR 402.02). When evaluating whether the proposed action is not likely to adversely affect listed species or critical habitat, NMFS considers whether the effects are expected to be completely beneficial, insignificant, or discountable. Completely beneficial effects are contemporaneous positive effects without any adverse effects to the species or critical habitat. Insignificant effects relate to the size of the impact and should never reach the scale where take occurs. Effects are considered discountable if they are extremely unlikely to occur.

Effects to Species

The proposed action has the potential to affect UCR steelhead through increased turbidity in streams. The action includes directional boring near fish-accessible streams and utilization of an existing road crossing. Directional boring will likely disturb sediment at the entrance and exit bore pits, as well as the utilization of the road crossing. However, all entrance and exit bore pits are located greater than 28 feet from the streams, and best management practices such as silt fences will be used to minimize potential movement of sediment. The road crossing occurs at an existing ford and will only be utilized during the project work window when adult UCR will not be present; therefore, only juvenile UCR steelhead are anticipated to be present in the action area.

Any Juvenile steelhead present may experience minor changes in behavior and feeding from exposure to increased fine sediment. High levels of fine sediment have the potential to injure and kill juvenile fish, as well as interfere with feeding. Behavioral effects on fish, such as gill flaring and feeding changes, have been observed in response to pulses of suspended sediment.

The distance from ground-disturbing activities and streams and implementation of best management practices are expected to minimize any increases in fine sediments. For these reasons, increased turbidity to Omak Creek are expected to have nothing more than insignificant effects to juvenile UCR steelhead.

Effects to Critical Habitat

The action area includes designated critical habitat for UCR steelhead containing PBFs for freshwater spawning, migration, and rearing that is located within Omak Creek, a tributary to the Okanogan River. The essential feature in the action area that will be affected by the proposed action is degraded water quality (turbidity). The effects of the proposed action on this feature is summarized below.

The project includes utilization of an existing stream ford road crossing and the construction of several aerial/buried fiber crossings across Omak Creek and its tributaries, two of which occur in UCR steelhead critical habitat. The proposed aerial and buried fiber crossings across Omak Creek and its tributaries will potentially result in a few instances of fine sediment introduction. However, only two crossings occur in UCR steelhead critical habitat and most construction activities will occur greater than 28 feet from the streams. Vegetation removal for fiber installation will not directly impact steelhead since it occurs along the roadway shoulder, away from streams, and will primarily consist of removal of herbaceous plants. Therefore, we expect the proximity of work coupled with the proposed design and conservation measures, will minimize increased sediment to have nothing but insignificant effects on UCR steelhead critical habitat.

Conclusion

NMFS expects that the effects from the proposed action will be discountable and/or insignificant. Therefore, NMFS concludes that all effects of the proposed action are NLAA for the subject ESA-listed and ESA designated critical habitats. Concurrence is based on the information in the BA and is contingent upon full implementation of all the design criteria and minimization measures.

Reinitiation of Consultation

Reinitiation of consultation is required and shall be requested by NTIA where discretionary Federal involvement or control over the action has been retained or is authorized by law and (1) the proposed action causes take; (2) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered; (3) the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the written concurrence; or (4) a new species is

listed or critical habitat designated that may be affected by the identified action (50 CFR 402.16). This concludes the ESA consultation.

Please direct questions regarding this letter to Robin Henderson, at robin.henderson@noaa.gov or 509-426-4586.

Sincerely,

Justin Yeager

Justin Yeager
Columbia Basin Branch Chief
Interior Columbia Basin Office

cc: Tiffany Circle, Confederated Tribes of the Colville Reservation
Niels Pedersen, Wetland Resources

PLACEHOLDER

United States Fish and Wildlife Service

Endangered Species Act Section 7 Consultation Findings

(consultation is ongoing as of the date of this report)

Allyson Brooks Ph.D., Director
State Historic Preservation Officer

April 23, 2024

Josh Fitzpatrick
National Telecommunications and Information Administration
1401 Constitution Avenue, N.W.
Washington, D.C. 20230

RE: Colville Confederated Tribes 2.5GHz Wireless, Middle Mile and Fiber to the Home Project
Log No: 2023-07-04569-COMM

Dear Josh Fitzpatrick;

Thank you for contacting our department. We have reviewed the information and professional cultural resources survey report you provided for the proposed *Colville Confederated Tribes 2.5GHz Wireless, Middle Mile and Fiber to the Home Project* exterior to the CCT boundaries in Ferry, Okanogan, Douglas, and Grant Counties, Washington.

We concur with your Determination of No Adverse Effect with the stipulations for site avoidance, professional archaeological monitoring and for an unanticipated find plan. Please provide the monitoring report when available.

In the event archaeological or historic materials are encountered during project activities, work in the immediate vicinity must stop, the area secured, and the concerned tribe's cultural staff and cultural committee and this department notified.

We would also appreciate receiving any correspondence or comments from concerned tribes or other parties that you receive as you consult under the requirements of 36CFR800.4(a)(4).

These comments are based on the information available at the time of this review and on behalf of the State Historic Preservation Officer in compliance with the Section 106 of the National Historic Preservation Act, as amended, and its implementing regulations 36CFR800.4. Should additional information become available, our assessment may be revised. Thank you for the opportunity to comment.

Sincerely,

Robert G. Whitlam, Ph.D.
State Archaeologist
(360) 890-2615

email: *rob.whitlam@dahp.wa.gov*

The Confederated Tribes of the Colville Reservation

M E M O R A N D U M

Thursday, June 15, 2023

TO: Chasity Swan

FROM: Elizabeth Odell

SUBJECT: PPF #23pp94

Hi Chasity,

After reviewing the PPF related to the CCT NTIA Broadband Wireless project, there are no projected impacts that would directly or indirectly affect any of the threatened/endangered species or their critical habitats at the project area location. These species include Canada Lynx (Lynx Canadensis), Grizzly Bear (Ursus arctos horribilis), Yellow-billed Cuckoo (Coccyzus americanus), and Bull Trout
(Salvelinus confluentus).

Thank you,

Elizabeth Odell 9/7/23

Elizabeth Odell
Wildlife Biologist
Cell: 509-634-1198
Office: 509-722-7660

PLACEHOLDER

Confederated Tribes of the Colville Reservation

National Historic Preservation Act Section 106 Consultation Findings

Tribal Historic Preservation Officer

(consultation is ongoing as of the date of this report)