YAKIMA-TIETON IRRIGATION DISTRICT

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STATE ENVIRONMENTAL POLICY ACT

Determination of NonSignificance

Date of issuance: August 22, 2019

Lead agency: Yakima-Tieton Irrigation District

Agency Contact: Rick Dieker
dieker@ytid.net
509.678.4101

Agency File Number: Not applicable

Description of proposal: The Yakima-Tieton Irrigation District (YTID) proposes to conduct geotechnical field explorations associated with the Tieton River Fisheries Enhancement and Water Reliability project. The geotechnical investigations would occur during up to four phases between 2019 and 2022. Phase I, proposed for October and November 2019, would consist of six geotechnical borings ranging from 120 feet to 400 feet deep with a maximum diameter of 6 inches. The work area around each boring would range from 0.13 acre to 0.98 acre, allowing room for the geotechnical equipment and support vehicles to maneuver and park. Minor modifications to the access roads would be required, such as removal of low-hanging tree limbs, relocation of large rocks and boulders, and culverting of a roadside ditch. All borings would be backfilled once the testing and analysis are complete and disturbed areas would be reseeded with a weed-free, native seed mix.

Location of proposal: The Phase I geotechnical investigation would occur west of the City of Tieton, generally along the North Fork Cowiche Creek between Windy Point and the French Canyon Reservoir. The westernmost geotechnical boring would be located at 46.692572°N, -120.898966°W and the easternmost geotechnical boring would be located at 46.711503°N, -120.811466°W. The cadastral location of the area is Township 14 North, Range 16 East, Sections 10, 15, 16, and 17 and Township 14 North, Range 15 East, Sections 14, 23, and 24.

Project Proponent: Yakima-Tieton Irrigation District
Rick Dieker, SEPA Responsible Official
dieker@ytid.net
509.678.4101

YTID has determined that this proposal will not have a probable significant adverse impact on the environment. An environmental impact statement (EIS) is not required under RCW 43.21C.030(2)(c). YTID has reviewed the SEPA Environmental Checklist, Endangered Species Act "No Effect" letter, and cultural resources findings. This information is available for review during the comment period identified below at the Naches Community Library (303 Naches Avenue, Naches, WA 98937) and online at http://www.yakimatietonirrigation.com/.

This determination is based on the following findings and conclusions:

- The work area around each boring would be identified and marked in the field with temporary fencing or flagging to minimize disturbance.
- The majority of vegetation impacts would occur within small areas of previously disturbed grasses. Disturbed areas would be reseeded with a weed-free, native seed mix.
- Best management practices will be used during the geotechnical work to minimize impacts to the natural environment.
- The geotechnical work would not affect biological or cultural resources.
- The geotechnical work would only require approximately 14 days at each work area.

This DNS is issued under WAC 197-11-340(2). The lead agency will not act on this proposal for 14 days from August 22, 2019. Written comments must be submitted no later than 5:00 p.m. on September 5, 2019 to Yakima-Tieton Irrigation District c/o Rick Dieker, 470 Camp 4 Road, Yakima, WA 98908 or via e-mail to dieker@ytid.net.

Signature Rick Dieker **Date** August 22, 2019
(electronic signature or name of signer is sufficient)

SEPA ENVIRONMENTAL CHECKLIST

A. Background

1. Name of proposed project, if applicable:

Geotechnical Investigations for the Tieton River Fisheries Enhancement and Water Reliability Project

2. Name of applicant: Yakima-Tieton Irrigation District (YTID)

3. Address and phone number of applicant and contact person:

Rick Dieker, Secretary Manager and Justin Wies, Lead Engineer
470 Camp 4 Road
Yakima, WA 98908
(509) 678-4101
dieker@ytid.net and wies@ytid.net

4. Date checklist prepared:

August 12, 2019 (prepared for YTID by Jacobs Engineering Group Inc. [Jacobs])

5. Agencies requesting checklist:

Washington Department of Fish and Wildlife (WDFW)
Washington State Department of Ecology (Ecology)
Washington State Department of Natural Resources (DNR)

6. Proposed timing or schedule (including phasing, if applicable):

YTID plans to conduct up to four phases of geotechnical investigations starting in fall 2019 and continuing through fall 2022 to determine the feasibility of a proposed tunnel alignment between YTID's existing Windy Point Tunnel and the French Canyon Reservoir (Attachment A - Figure 1). Data obtained during each phase of drilling will be used to determine drilling locations during subsequent phases.

Six proposed geotechnical borings have been identified for Phase 1 and can be specifically evaluated in this State Environmental Policy Act (SEPA) Environmental Checklist. However, the future geotechnical investigations are expected to be similar in scope and to have similar environmental impacts. Therefore, YTID would reference this SEPA Environmental Checklist for all tunnel geotechnical investigations as long as environmental impacts and mitigations have not significantly changed. Any avoidance strategies and mitigation measures will be carried forward during future SEPA compliance, or as future geotechnical work is implemented in subsequent phases.

The proposed schedule for the Phase I geotechnical investigation is planned for approximately 6 weeks in October and November 2019 and the schedules for future phases are to be determined later. Drilling each borehole would require approximately 10 days. However, if the lab analysis of rock extracted from the borehole does not yield sufficient information, additional rock may need to be extracted from the borehole. Each borehole would be left open, temporarily covered, and marked for safety for about 2 weeks during the lab analysis, and each borehole would not be backfilled and abandoned until after the lab results are confirmed. This means that the geotechnical work at a given location could last approximately 14 days over a total of approximately 6 weeks.

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.

Yes. As described in Response No. 6, Phase I of the geotechnical investigation is intended to gather engineering information to assess future geotechnical locations and (2) the feasibility of constructing a long tunnel as an alternative for transporting water to existing and proposed storage reservoirs for fisheries enhancement and irrigation. See Response No. 11 for more information on the overall project and the purpose and need. The data gathered during this Phase I investigation would be used to guide future activity, which may include additional investigations, design, and construction.

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.

Table 1. Current and Future Environmental Information Related to this Proposal

Prepared For	Environmental Information	Status
U.S. Forest Service (USFS) Naches Ranger District	• Special Use Permit (SUP) for pedestrian surveys • Supporting SUP pedestrian survey application • Supporting SUP geotechnical application	• Issued June 21, 2019 • Submitted February 4, 2019 • Submitted August 1, 2019
DNR	• Land Use License (LUL) for pedestrian surveys and geotechnical investigations • Supporting Right-of-Way application • Geotechnical Plan of Operations for LT-B2 to comply with the LUL terms and conditions	• Issued April 12, 2019 • Submitted January 28, 2019 • Submitted July 26, 2019 (LUL approval received August 1, 2019; cultural resources approval pending)
WDFW	• Right-of-Entry (ROE) for pedestrian surveys • ROE application for OB-3 and LT-B3	• Issued October 2, 2018; updated May 16, 2019 • Submitted July 26, 2019
USFS, DNR, WDFW, and Department of Archaeology and Historic Preservation (DAHP)	*Cultural Resources Assessment for Geotechnical Investigations for the Tieton River Fisheries Enhancement and Water Reliability Project, Yakima County, Washington* (Jacobs 2019)	• Submitted to USFS July 31, 2019 • Submitted to DNR and WDFW August 7, 2019 • Submit to DAHP in August/September 2019
USFS and U.S. Fish and Wildlife Service (USFWS)	Endangered Species Act (ESA) "No Effect" letter	See Attachment B
USFS	National Environmental Policy Act (NEPA) documentation for LT-B4	To be determined

9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain.

None are known at this time.

10. List any government approvals or permits that will be needed for your proposal, if known.

Table 2. Pending Governmental Approvals and Permits

Agency	Approval/Permit
USFS Naches Ranger District	• SUP for LT-B4 • NEPA compliance for LT-B4 • Approval of the ESA "No Effect" letter
DNR	Cultural resources approval for LT-B2
WDFW	ROE for OB-3 and LT-B3 (includes cultural resources approval)
YTID	SEPA for Phase I–IV geotechnical investigations
DAHP	• Cultural resources compliance for SEPA • National Historic Preservation Act Section 106 consultation for LT-B4

11. Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description.)

The Yakima River Basin Integrated Plan (Integrated Plan) was developed with the intent of restoring ecological functions in the Yakima River system and providing more reliable and sustainable water resources for the health of the riverine environment and for agricultural, municipal, and domestic needs. The same issues that fueled the development of the Integrated Plan in 2012 (and its precursors since 1980) persist today, such as declining fisheries, increasingly frequent droughts, and low storage capacity.

YTID is seeking to address these issues with the Tieton River Fisheries Enhancement and Water Reliability Project, which would provide options to enhance and restore fishery resources in the Tieton River and the Yakima River Basin, increase the volume of water available for existing prorated agricultural water uses, and provide cost-effective, reliable water supplies.

As one of six irrigation divisions in the Yakima Project, a USBR project authorized in 1905 to develop irrigation facilities in the Yakima River Basin, YTID has a water right to divert up to 100,492 acre-feet per year from the Tieton River (96,611 acre-feet during the irrigation season April 1 through October 31 and 3,881 acre-feet November 1 through March 31). The irrigation water is delivered via the 12-mile-long Tieton Canal across a service area of 28,000 acres. Approximately 75 percent of this service area is devoted to orchards, with high-value fruit trees that would be subject to permanent damage from even a temporary interruption in water supply. The existing canal is the backbone of YTID's water supply system and it has served YTID well for more than 100 years, but is currently operating beyond its life expectancy and needs to be replaced or repaired to limit the risk of catastrophic failure and subsequent interruption of water delivery.

The overall fisheries enhancement project would include the replacement of all or a part of the Tieton Canal, and one of the alternatives under consideration is a new tunnel extending approximately 25,000 feet from the exit portal of the Windy Point Tunnel to the French Canyon Reservoir (Attachment A - Figure 1). The geotechnical work evaluated herein would support a feasibility study of the new tunnel, which would replace the most problematic reach (susceptible to landslides) of the existing canal alignment.

Phase I geotechnical work[1] would evaluate subsurface conditions along the proposed tunnel alignment and would consist of geotechnical borings at six sites, identified as long tunnel boring 1 (LT-B1), LT-B2, LT-B3, LT-B4, optional boring 2 (OB-2), and OB-3 on Attachment A - Figure 1. Subsequent geotechnical phases may include additional borings at other locations along the proposed tunnel alignment or along alternate alignments that may be considered.

Borings would be drilled to depths ranging from about 120 to 400 feet. LT-B4, which is located at the western end of the proposed tunnel alignment, would be drilled horizontally. All other borings would be drilled at inclinations between 10 and 20 percent from vertical to intercept high-angle features within the rock mass. Table 3 provides a summary of the proposed borings, ordered geographically from east to west.

A work area around each boring would be identified and marked in the field with temporary fencing or flagging. The work areas would vary from approximately 0.13 acre to 0.98 acre per boring. A track-mounted drill rig, like that shown in Attachment C - Photograph 1, would be used to drill all the boreholes except for LT-B4, where a platform drill rig, similar to that shown in Attachment C - Photograph 2, would be utilized. The borings would be conducted at one site at a time with the anticipated ground disturbance less than 1.00 acre per boring.

Table 3. Summary of Proposed YTID Long-Tunnel Option Phase 1 Borings

Boring [1]	Approximate Depth (feet)	Orientation[2]	Land Ownership	Approximate Work Area (Acres)
OB-2	120	Inclined	Private	0.13
LT-B1	120	Inclined	Private	0.98
LT-B2	200	Inclined	DNR	0.96
OB-3	300	Inclined	WDFW	0.38
LT-B3	400	Inclined	WDFW	0.62
LT-B4	200	Horizontal	USFS[3] Naches Ranger District	0.25

[1] An optional boring location "OB-1" was considered but removed from Phase I due to access issues.

[2] Inclined borings would be drilled at an angle of 10 to 20 percent from vertical.

[3] For LT-B4 the drill rig, drilling activities, and limits of surface disturbance would be located within an existing YTID easement on USFS land. The boring would extend below the ground surface and outside the easement onto USFS-owned property.

Drill rigs would be serviced by a utility pickup with two 500-gallon water tanks, which would travel to and from each work area daily, and a small skid-steer loader (e.g., Bobcat). Unless restricted by landowners, drilling or excavation equipment would be left on-site overnight. The equipment would be left in locations that would not block access roads, paths, or driveways. Tools and equipment would be secured and organized before leaving the work area. Support vehicles would be removed from the work area at the end of each day so that only the drilling equipment would remain overnight.

The geotechnical work would be completed in the presence of a geologist or engineer who would direct the field work, provide continuous observations, maintain a daily summary of activities, and develop a detailed log of the subsurface conditions encountered in each of the boreholes. Soil and rock samples would be collected from the borings for laboratory testing and further classification of subsurface conditions.

[1] The term "geotechnical work" is used throughout this SEPA checklist to refer collectively to all activities proposed as part of the Phase I geotechnical investigation – access, access road modifications, borings, grading, vegetation removal, and equipment maneuvering. The term "work areas" refers to the access road modification areas and geotechnical footprints shown in the figures included in Attachment A. Specific activities are described and evaluated in Section B, Environmental Elements.

Soil samples would be collected from boreholes in the upper soil mantle using a standard 2-inch-outside-diameter split-spoon sampler in accordance with standard procedures outlined in ASTM International's ASTM D1586, "Standard Test Method for Penetration Test (SPT) and Split-Barrel Sampling of Soils." Once bedrock is encountered, rock coring techniques would be used to drill the borings and collect a near-continuous rock core that would be retrieved, logged, photographed, and packaged in rock core boxes for further testing and evaluation. Rock coring would be conducted in general accordance outlined in ASTM D2113, "Standard Practice for Rock Core Drilling and Sampling of Rock for Site Investigation."

Borings would be abandoned in accordance with Ecology's regulations for abandonment of a drill hole.

12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist.

The proposed Phase I geotechnical investigation would be located west of the City of Tieton in Yakima County (County) and would consist of 6 borings, each with a clearly identified work area. The work areas are shown on the figures in Attachment A and their cadastral locations are listed below:

- OB 2 – Section 10, Township 14N, Range 16E
- LT-B1 – Section 15, Township 14N, Range 16E
- LT-B2 – Section 16, Township 14N, Range 16E
- OB-3 – Section 17, Township 14N, Range 16E
- LT-3 – Section 17, Township 14N, Range 16E
- LT-B4 – Section 24, Township 14N, Range 15E

Future geotechnical investigations would be conducted along the vicinity of the long tunnel alignment that is shown in Figure 1 or along alternate alignments that may be considered.

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B. Environmental Elements

1. Earth

a. General description of the site:

(circle one): Flat, rolling, **hilly**, steep slopes, mountainous, other _____

b. What is the steepest slope on the site (approximate percent slope)?

While the region surrounding the work areas is generally hilly, the work areas themselves are relatively flat, with the steepest slopes typically less than 8 percent. The work areas would be accessed by roads that exceed 8 percent in places. The geotechnical contractors have verified that required equipment and vehicles can be transported on the proposed access roads; however, a bulldozer would be required to tow the equipment on portions of the proposed access roads to LT-B4.

c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any agricultural land of long-term commercial significance and whether the proposal results in removing any of these soils.

The U.S. Department of Agriculture Web Soil Survey indicates soils at the work areas are predominately loam and clay loam. Soils are expected to be relatively thin, overlaying basalt bedrock, which outcrops throughout the area.

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.

Most work areas have no indication or history of unstable soils. The LT-B4 work area includes a minor rockfall and some weathering associated with the rock outcrop east of the existing YTID canal. However, the rockfall and weathering do not indicate the potential for significant land movement in the LT-B4 work area.

e. Describe the purpose, type, total area, and approximate quantities and total affected area of any filling, excavation, and grading proposed. Indicate source of fill.

Except for LT-B4, the total area affected by excavation and fill within each work area would be limited to the borehole itself, which would be a maximum of 6 inches in diameter in soil and 4 inches in diameter in rock. At each borehole, soil and/or rock would be excavated, and the remaining hole would be filled with a bentonite or bentonite cement grout to within approximately 18 inches below the ground surface. The top 18 inches would be filled with native soil. Total volume of cut and fill at each work area would be approximately 1 cubic yard or less.

At LT-B4, some grading would be necessary to create a temporary level workpad for the drill rig, which may include up to approximately 200 square feet of cut and/or fill, with a maximum change in grade of approximately 3 feet and a total volume of approximately 20 cubic yards. The grading would remain within the existing YTID easement. No fill material would be imported for this grading—fill would be generated from on-site materials. After the drilling is complete, the work area would be returned to its original grade.

The access routes to some of the work areas would require minor road modifications to allow work vehicles to pass safely. These access road modifications (ARMs) consist of the following:

- ARM 1 (Attachment A - Figure 2A) – To access OB-2, either gravel fill or a culvert and gravel fill would be placed in a short segment (less than 15 feet long and 3 feet wide) of the drainage ditch adjacent to French Road (Attachment C - Photograph 3). This work would be

done in coordination with the landowner and the County. At their preference, the fill would either be removed at the completion of the work at OB-2 or the culvert could remain as a permanent drainage feature. Total fill volume should be less than approximately 10 cubic yards.

- ARM 5 and ARM 6 (Attachment A - Figure 2C) – To access LT-B3, several large rocks on the road at these locations would be moved via hand tools or a small skid-steer to the side of the road (Attachment C - Photographs 4 and 5). The rocks would either be left on the side of the road or moved back into the road, at the preference of WDFW. Other minor road modifications not currently identified may also be needed, such as blading or minor rock removal. Any such work would occur within the footprint of the existing roadway.

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.

The work areas are generally flat with thin soils overlying erosion-resistant bedrock. Erosion potential would be negligible, due to the limited scope of the disturbance, the lack of slope in the work areas, and the limited quantity of soil available to erode.

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?

No new impervious surface(s) would be created by the proposed geotechnical work.

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:

Each work area would be marked with fencing or flagging to minimize the disturbance footprint and vegetation impacts would be limited to small areas of previously disturbed grasses. Disturbed areas would be reseeded with a weed-free, native seed mix. The work area would be inspected daily for erosion, and best management practices (BMPs) such as straw wattles or silt fencing would be implemented if erosion is observed.

2. Air

a. What types of emissions to the air would result from the proposal during construction, operation, and maintenance when the project is completed? If any, generally describe and give approximate quantities if known.

Aerial emissions from the geotechnical work would be limited to exhaust from drill rigs and their support vehicles and some dust, primarily from vehicular access to the work areas via gravel and/or dirt roads. The specific drill rigs have not yet been determined, but one type that may be utilized uses high-pressure air to remove material from the bore hole. If that type of drill rig is used, it would produce additional dust to the air. The contractor will be required to implement BMPs, such as watering to control dust and minimize impacts.

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.

None.

c. Proposed measures to reduce or control emissions or other impacts to air, if any:

Standard BMPs would be used to reduce aerial emissions, including ensuring that equipment is in good running order, limiting idling of vehicles, and following posted speed limits on County gravel roads. Driving on off-County public roads through DNR, WDFW, and USFS land would be slow due to primitive road conditions, which would also decrease dust.

3. Water

a. Surface Water:

1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.

North Fork Cowiche Creek, a tributary to Cowiche Creek and the Naches River, is within 300 feet of the LT-B1, LT-B2, OB-3, and LT-B3 work areas. North Fork Cowiche Creek is an intermittent stream and may be dry during the geotechnical work. LT-B4 is adjacent to the YTID main canal, which conveys water for irrigation and is not considered a jurisdictional water.

2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans.

Access to LT-B2, OB-3, and LT-B3 requires crossing North Fork Cowiche Creek via an established gravel and dirt road. OB-3 and LT-B3 are within 200 feet of the channel; however, the creek is intermittent and may be dry during the geotechnical work.

Work at LT-B4 would require two crossings of the YTID main canal, which is not considered a jurisdictional water: one over an existing bridge along the access route and one within the geotechnical work area. The bridge (Attachment C - Photograph 6), approximately 1,300 feet west of LT-B4, may need to be temporarily reinforced using metal plates or other reinforcing material, which would be removed at the completion of work on LT-B4. Within the work limits, the drill rig would either be lifted over the canal using a crane or would be carried across the canal via a temporary bridge. The crane and the drill rig would remain adjacent to the canal until the boring is complete. The temporary work pad described in the response to question B.1.e. would also be within 200 feet of the canal but would not directly affect the canal.

3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.

No material would be placed in or removed from any surface water or wetlands during the proposed geotechnical work.

4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known.

Water, to be used as drilling fluid, would be withdrawn from the YTID canal or from YTID's French Canyon Reservoir as part of YTID's non-proratable water right. The quantity of water needed would depend on the structure of the rock encountered during drilling. The water may be mixed with bentonite (process water) to help reduce the loss of drilling fluid through fractures in the rock. A pickup with two 500-gallon tanks would be used to transport water to each work area. No water would be removed from the North Fork Cowiche Creek, any of its tributaries, or other jurisdictional waters.

5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.

Most of the LT-B1 work area would be within the 100-year floodplain of North Fork Cowiche Creek, per Federal Emergency Management Agency (FEMA) mapping effective November 18, 2009 (Attachment A - Figure 2A). None of the other work areas would be within a 100-year floodplain.

6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.

No. Process water (water or a water/bentonite mixture) would be contained, hauled off-site, and disposed of in accordance with applicable local, state, and federal regulations.

b. Ground Water:

1) Will groundwater be withdrawn from a well for drinking water or other purposes? If so, give a general description of the well, proposed uses and approximate quantities withdrawn from the well. Will water be discharged to groundwater? Give general description, purpose, and approximate quantities if known.

No groundwater would be withdrawn from a well. Process water injected into the borehole would be recycled during the drilling process (see b.2, below).

2) Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals. . . ; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.

No waste material would be discharged into the ground (see c.2, below).

c. Water runoff (including stormwater):

1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.

Except for LT-B4, the work areas are located in the North Fork Cowiche Creek drainage, which is a tributary to Cowiche Creek, the Naches River, and the Yakima River. LT-B4, is in the Tieton Valley, east of the Cascade Range near the Yakima Valley. Stormwater runoff during the geotechnical work would be managed by using approved BMPs to contain sedimentation and prevent discharges to drainages. After the geotechnical work is complete, disturbed areas would be reseeded to prevent any long-term impacts.

Water would be used as a drilling fluid, and some may spill during drilling. These work areas are generally flat and likely to flow as sheetflow. Runoff from the LT-B4 work area would infiltrate before reaching the Tieton River because of the distance to the river, and the canal serves as a barrier between the boring and the river. Runoff from other work areas would be contained on site with BMPs to avoid discharges to the North Fork Cowiche Creek.

2) Could waste materials enter ground or surface waters? If so, generally describe.

No. Water, fluids, and rock cuttings would be collected, contained to prevent leaks/spills, removed off-site, and disposed of in accordance with applicable local, state, and federal regulations.

3) Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe.

The proposed geotechnical work would not alter the land surface or affect any drainage patterns in the work areas.

d. Proposed measures to reduce or control surface, ground, and runoff water, and drainage pattern impacts, if any:

Drilling would be completed by drillers licensed in Washington following regulated procedures. Geotechnical work areas would be identified with flagging or temporary construction fencing to prevent potential impacts outside of the work limits. Grading would be minor, and the work areas would be returned to their original configuration. Boreholes would be sealed and filled flush with a bentonite and concrete grout after completion to prevent them from serving as a vector for surface contaminants to enter groundwater.

The drill rig would be equipped with a spill kit to contain any spilled fluid. See section B.7.a. for more information.

4. Plants

a. Check the types of vegetation found on the site:

X	deciduous tree: alder, **maple**, aspen, **other**
X	evergreen tree: **fir**, cedar, **pine**, **other**
X	Shrubs
X	Grass
	Pasture
	crop or grain
	Orchards, vineyards or other permanent crops
	wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other
	water plants: water lily, eelgrass, milfoil, other
	other types of vegetation

b. What kind and amount of vegetation will be removed or altered?

WDFW Priority Habitats and Species on the Web indicates the work areas (except LT-B4) occur within shrub-steppe habitat. The work areas are along dirt or gravel roads, and would require minimal ground disturbance. The proposed Phase I work areas are shown in Attachment A - Figures 2A through 2D and range in area from approximately 0.13 acre to 0.98 acre (Table 3). The work areas encompass where drilling equipment and support vehicles would park and maneuver during the duration of the drilling. Other than the borings, impacts would be limited to equipment driving and maneuvering in the work areas. Equipment maneuvering would affect some grasses and small shrubs within the proposed disturbance areas. Trees and large shrubs would be avoided.

Minor trimming of tree limbs may be necessary at six locations along the access routes to LT-B2, LT-B3, OB-3, and LT-B4. These limbs are approximately 8 feet off the ground, and less than 6 inches in diameter. Safe access for the drilling equipment requires approximately 11 feet of clearance. YTID would attempt to prop up the low branches with poles, but if unsuccessful, would trim the branches cleanly with a saw or pruner.

Table 4 provides a summary of the location, route, and type of tree. Locations are illustrated on Attachment A - Figure 1, and Attachment C includes photographs of the limbs that may be trimmed.

Table 4. Tree Limb Trimming Summary

Access Road Modification	Access Route	Tree Type	Photograph No.
ARM 2	OB-3	Oak	7
ARM 3	OB-3	Oak	8
ARM 4	LT-B3	Oak	9
ARM 7	LT-B4	Oak	10
ARM 8	LT-B4	Fir	11
ARM 9	LT-B4	Oak	12

Except for LT-B4, vegetation impacts within the work areas would be limited to driving over previously grazed native and non-native vegetation for vehicles to safely turn around. A few small sagebrush or bitterbrush may potentially be affected. At LT-B4, approximately 10 trees and shrubs less than 6 inches in diameter and less than 10 feet tall may need to be removed within the existing canal easement. Such vegetation management is a permitted activity within YTID's easement.

c. List threatened and endangered species known to be on or near the site.

No federally listed species have been identified within or adjacent to the work areas. LT-B2, OB-3, and LT-B3 are within the Washington Natural Heritage Program buffer for Oregon goldenstar (*Heterotheca oregana*), which is state-listed as a Sensitive species. This perennial plant occurs on sand and gravel bars along rivers and streams. The LT-B2, OB-3, and LT-B3 work areas are near the outer limits of the species buffer centered on the Tieton River, indicating this species has likely been found along the Tieton River. However, these three work areas are in grassy uplands with a minor shrub component and are adjacent to North Fork Cowiche Creek. The U.S. Department of Agriculture Web Soil Survey indicates soils at these work areas are predominately loam and clay loam, and therefore not suitable for Oregon goldenstar. In addition, no individuals of the species were located during pedestrian surveys to evaluate biological resources. Therefore, impacts within the work areas are unlikely to affect Oregon goldenstar.

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:

Disturbed areas would be seeded with weed-free native grass seed mix. Work areas would be marked in the field using high-visibility flagging or temporary construction fencing. No impacts would be allowed to occur outside of the designated work areas.

e. List all noxious weeds and invasive species known to be on or near the site.

Cheatgrass (*Bromus tectorum*) and diffuse knapweed (*Centaurea diffusa*) comprise a minor component of the plant community within most of the work areas.

5. Animals

a. List any birds and other animals which have been observed on or near the site or are known to be on or near the site.

Golden eagles have been documented nesting along the Tieton River 0.5 mile north of OB-2. Other species likely to occur within or near the work areas include hawks, songbirds, deer, elk, and big horn sheep. No invasive, regulated, or prohibited species are known to use any of the work areas.

b. List any threatened and endangered species known to be on or near the site.

No suitable habitat for federal or state-listed species is located within or adjacent to the work areas.

c. Is the site part of a migration route? If so, explain.

WDFW's Priority Habitat and Species mapping does not identify any migration routes in this vicinity. However, OB-3 and LT-B3 are located within the Oak Creek Wildlife Area, and managed, in part, for deer and elk habitat. Except LT-B4, the work areas are identified by the County as Upland Conservation Area. LT-B4 is considered winter range for elk and mule deer.

d. Proposed measures to preserve or enhance wildlife, if any:

No in-water work is required, and the work areas were chosen along established roads to minimize impacts to wildlife habitat. The short duration of this work would also help to minimize impacts to wildlife.

e. List any invasive animal species known to be on or near the site.

No invasive animal species are known to be within or near these work areas.

6. Energy and Natural Resources

a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.

The proposed geotechnical work would use standard gasoline and/or diesel fuel for drilling rigs and associated vehicles, generators, pumps, etc. No additional energy or energy sources would be required once the geotechnical investigation is complete.

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.

No solar energy facilities are located within or adjacent to the work areas and the proposed project would not affect the potential use of solar energy by adjacent properties.

c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any:

The proposed geotechnical work is expected to last approximately 6 weeks and would have no long-term energy use impacts. Equipment would be in good working order, and unnecessary idling would be avoided.

7. Environmental Health

a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so, describe.

No exposure to toxic chemicals is anticipated from the proposed geotechnical work. Vehicles and equipment may pose a potential fire risk from sparks, fuel spills, and hot exhaust systems that may contact dry grasses.

1) Describe any known or possible contamination at the site from present or past uses.

No known sources of contamination have been identified at any of the work areas, and no known previous land uses are likely to have generated contamination.

2) Describe existing hazardous chemicals/conditions that might affect project development and design. This includes underground hazardous liquid and gas transmission pipelines located within the project area and in the vicinity.

The National Pipeline Mapping System does not identify any underground hazardous liquid or gas transmission pipelines within 660 feet of the work areas or access routes. No other known sources of hazardous chemicals or conditions have been identified within or adjacent to any of the work areas, nor it is anticipated that any utility lines or pipes would be affected by the borings or associated work. However, utility locating would occur before any drilling to minimize the risk of affecting any transmission lines or pipelines.

3) Describe any toxic or hazardous chemicals that might be stored, used, or produced during the project's development or construction, or at any time during the operating life of the project.

None.

4) Describe special emergency services that might be required.

None.

5) Proposed measures to reduce or control environmental health hazards, if any:

Drilling rigs would be equipped with spill clean-up kits to contain and absorb oil-based materials that may spill or leak. Spill containment plans would be implemented in the event of a vehicle or equipment leak. Refueling would be done over 100 feet from any surface water and with appropriate care to avoid spills. A Health and Safety Plan would be required to define the appropriate engineering control methods and personal protection equipment for health and safety. Work areas would be identified with flagging or temporary construction fencing to prevent potential impacts outside of the work limits.

DNR fire protection and precautions will be followed, including compliance with the Industrial Fire Precaution Levels (IFPLs). Fire suppression equipment will be readily available (e.g., fire extinguishers, water tanks). Fire prevention will be implemented, such as vehicles avoiding tall dry grasses, restrictions on use of chainsaws, maintaining fire watch services, and following IFPL protective measures.

b. Noise

1) What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)?

None.

2) What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site.

Equipment associated with geotechnical investigations, such as drill rigs, a crane, a bulldozer, a chainsaw, and equipment associated with Standard Penetration Tests, would raise ambient noise levels on a short-term basis, typically from 7:30 a.m. to 5:30 p.m. but may extend longer until 7:00 p.m. in this rural area. Once work is complete within each work area, normal background noise levels would resume. Therefore, no long-term noise impacts would occur.

3) Proposed measures to reduce or control noise impacts, if any:

Noise from equipment would be limited to normal working hours, typically 7:30 a.m. to 5:30 p.m., and would last a total of approximately 14 days at each of the work areas. Drilling equipment and support machinery would have standard mufflers in good repair.

8. Land and Shoreline Use

a. What is the current use of the site and adjacent properties? Will the proposal affect current land uses on nearby or adjacent properties? If so, describe.

See Attachment A - Figure 1 and Table 3 for the land ownership of each work area. Except for LT-B4, the work areas have been and will continue to be periodically used for cattle grazing. In addition, LT-B2, OB-3, and LT-B3 are also subject to recreational use. LT-B4 is within YTID's canal easement and, as such, is part of an existing utility corridor.

OB-3, LT-B3, and the land surrounding them are managed as part of the Oak Creek Wildlife Area to "protect and enhance the ecological integrity and species diversity for wildlife resources, maintain healthy populations of game and non-game species, protect and restore native plan communities, and provide diverse opportunities for the public to encounter, utilize, and appreciate wildlife and wild areas." They are also managed under a Memorandum of Understanding (MOU) between WDFW, Ecology, the Rocky Mountain Elk Foundation, and the Cowiche Canyon Conservancy. This MOU involves a collaborative effort to preserve shrub steppe habitat and to provide continued opportunities for grazing.

Drilling would occur for approximately 14 days within each work area. The geotechnical work may temporarily preclude cattle grazing and recreation within the work area footprint. Geotechnical investigations would not permanently change any of the existing or future land uses in or adjacent to the work areas.

b. Has the project site been used as working farmlands or working forest lands? If so, describe. How much agricultural or forest land of long-term commercial significance will be converted to other uses as a result of the proposal, if any? If resource lands have not been designated, how many acres in farmland or forest land tax status will be converted to nonfarm or nonforest use?

While LT-B4 is in forest land, it is within YTID's canal easement which does not contain working forest lands. The other work areas have been used as rangeland in the past and will continue to be used as such in the future. Therefore, no land use conversion would be associated with the proposed geotechnical work.

1) Will the proposal affect or be affected by surrounding working farm or forest land normal business operations, such as oversize equipment access, the application of pesticides, tilling, and harvesting? If so, how:

No.

c. Describe any structures on the site.

- A barn associated with a homestead is located approximately 200 feet outside of OB-2.
- An abandoned corral is adjacent to OB-3.
- The YTID canal is within the LT-B4 work area.
- Multiple fences, including the elk fence along WDFW's eastern boundary, are located throughout the general vicinity and along the access routes.

d. Will any structures be demolished? If so, what?

No structures would be demolished.

e. What is the current zoning classification of the site?

OB-2, LT-B1, LT-B2, OB-3, and LT-B3 are zoned Agriculture, and LT-B4 is zoned Forest Watershed (Yakima County Land Information Portal).

f. What is the current comprehensive plan designation of the site?

OB-2, LT-B1, LT-B2, OB-3, and LT-B3 are designated as Agricultural Resource, and LT-B4 is designated as Forest Resource (Yakima County Land Information Portal).

g. If applicable, what is the current shoreline master program designation of the site?

Not applicable because no waterbodies under the jurisdiction of the Shoreline Management Act are located within 200 feet of the work areas or unpaved portions of the access routes. At its closest point, the Tieton River is approximately 150 feet away from the beginning of the LT-B4 access route; however, no construction would occur in the vicinity of the Tieton River.

h. Has any part of the site been classified as a critical area by the city or county? If so, specify.

OB-2, LT-B1, LT-B2, OB-3, and LT-B3 would be in a designated Upland Wildlife Habitat Conservation Area. OB-3 would also be in a designated Oversteepened Slopes Intermediate Risk area. LT-B4 would be in both a designated Moderate Critical Aquifer Recharge Area and a designated Oversteepened Slopes High Risk area. (Yakima County Land Information Portal).

i. Approximately how many people would reside or work in the completed project?

None. The proposed geotechnical work would not provide any residence or work opportunities when complete.

j. Approximately how many people would the completed project displace?

None. The proposed geotechnical work would not displace any people.

k. Proposed measures to avoid or reduce displacement impacts, if any:

Not applicable because the proposed geotechnical work would not result in any displacement impacts.

l. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:

The proposed geotechnical work would result in minor land disturbance and minimal impacts and temporary disruptions to land use. As planned, the geotechnical work is compatible with existing and projected land uses and plans.

m. Proposed measures to reduce or control impacts to agricultural and forest lands of long-term commercial significance, if any:

With the exception of LT-B4, the work areas are managed for grazing. There may be a temporary disruption of grazing at each work area while work is ongoing, but any disruption would be limited to the active work area, and other grazing opportunities exist in the vicinity of each work area. Disturbed areas would be re-seeded with weed-free native grass seed mix to ensure no long-term impacts to grazing. The work areas would be identified with flagging or

temporary construction fencing to prevent temporary or long-term impacts outside of the work limits.

While LT-B4 is in forest land, it is within YTID's canal easement which does not contain working forest lands. Therefore, the proposed geotechnical work would not affect forest land.

9. Housing

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.

No housing would be constructed or provided as part of the geotechnical work.

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.

No housing is located within or adjacent to the proposed work areas or access routes and no housing would be eliminated as part of the proposed geotechnical work.

c. Proposed measures to reduce or control housing impacts, if any:

Not applicable because no housing is located within or adjacent to the proposed work areas or access routes and no housing would be constructed, provided, or eliminated as part of the geotechnical work.

10. Aesthetics

a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?

Not applicable because no structures are proposed as part of the geotechnical work.

b. What views in the immediate vicinity would be altered or obstructed?

The drill rigs would have a mast approximately 20 to 30 feet high and 2 to 4 feet wide, constructed of painted steel. Minor and temporary foreground obstruction from the drill rigs and support equipment can be expected at each work area for approximately 14 days. None of the midground or background views would be obstructed, and no long-term aesthetic impacts would occur.

c. Proposed measures to reduce or control aesthetic impacts, if any:

The work areas are remote and seldom visited. Work would be completed as quickly as possible to limit aesthetic impacts to passing recreational visitors and the top 18 inches of the borings would be filled in with native topsoil to avoid scarring or incompatible ground surfaces. Disturbed areas would be re-seeded with a weed-free native grass seed mix. The work areas would be identified with flagging or temporary construction fencing to prevent potential impacts outside of the work limits.

11. Light and Glare

a. What type of light or glare will the proposal produce? What time of day would it mainly occur?

Because the geotechnical work would occur only during daylight hours, no additional source of light would be produced. The primary source of glare would be from vehicle glass on the drill rigs and supporting vehicle(s) while they are at the work areas. The drill rig would be at each work area continuously for approximately 10 days, and may be on-site for up to approximately

14 days if additional testing is needed. Support vehicle(s) would be at the work area during daylight hours, typically from 7:30 a.m. to 5:30 p.m. No glare would remain once the geotechnical work is complete.

b. Could light or glare from the finished project be a safety hazard or interfere with views?

Once the geotechnical work is complete, the drill rig and support vehicles would be removed from the work areas and the surface of the borings would be filled in with native topsoil. Therefore, no light or glare would remain that could be a safety hazard or interfere with views.

c. What existing off-site sources of light or glare may affect your proposal?

Ambient sunlight is the only off-site source of light or glare and it would not affect the geotechnical work.

d. Proposed measures to reduce or control light and glare impacts, if any:

None. Light and glare impacts would be minimized by working only during daylight hours, without the need for additional lighting, and by completing the geotechnical work at each site in approximately 14 days.

12. Recreation

a. What designated and informal recreational opportunities are in the immediate vicinity?

The work areas for LT-B2, LT-B3, OB-3 and LT-B4, and the land surrounding them provide opportunities for a variety of informal recreational activities, including driving off-road vehicles, hiking, mountain biking, hunting, and wildlife viewing. OB-3 and LT-B3 would be within WDFW's Oak Creek Wildlife Area, which is managed, in part, to provide opportunities for the public to "encounter, utilize, and appreciate wildlife and wild areas."

b. Would the proposed project displace any existing recreational uses? If so, describe.

Visitors may experience temporary delays along the access roads as the drill rigs are transported from one work area to the next. Especially on the access road to LT-B4, the drill rig transport would effectively block the road for 2 to 4 hours. Once the equipment reaches each work area, recreational uses may be temporarily displaced within the work area during boring operations, though the roads passing through the work area would remain open and freely passable. No long-term displacement of recreational uses would occur during the proposed geotechnical work.

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:

The geotechnical work would take place as quickly as possible to limit impacts to recreational uses. Geotechnical work areas would be identified with flagging or temporary construction fencing to prevent potential impacts outside of the work limits. Recreational users would be allowed to pass through the work areas; although, they may experience temporary delays if the drill rig is using the access route to maneuver into place.

13. Historic and cultural preservation

Information provided in this section was obtained from Jacobs' 2019 report, *Cultural Resources Assessment for Geotechnical Investigations for the Tieton River Fisheries Enhancement and Water Reliability Project, Yakima County, Washington* (Cultural Resources Assessment).

a. Are there any buildings, structures, or sites, located on or near the site that are over 45 years old listed in or eligible for listing in national, state, or local preservation registers? If so, specifically describe.

The Tieton Canal, a component of the National Register of Historic Places (NRHP)-listed Tieton Division traverses the LT-B4 work area. The Tieton Division was listed on the NRHP in 1982 as a structure and a district with Agricultural and Architectural significance.

A farm building exists near OB-2, but because it is outside the work area and would not be affected by the proposed geotechnical work, it was not included in the Cultural Resources Assessment.

The findings of the Cultural Resources Assessment concluded that the proposed geotechnical work would have no impact to archaeological sites and no adverse effect to historic properties.

b. Are there any landmarks, features, or other evidence of Indian or historic use or occupation? This may include human burials or old cemeteries. Are there any material evidence, artifacts, or areas of cultural importance on or near the site? Please list any professional studies conducted at the site to identify such resources.

No archaeological deposits were observed in the shovel tests conducted at the proposed work areas. However, the pedestrian survey identified two new archaeological sites near the Area of Potential Impact, and the Tieton Canal lies within the proposed Area of Potential Effects. The findings of the Cultural Resources Assessment concluded that the proposed geotechnical work would have no impact to archaeological sites and no adverse effects to historic properties.

c. Describe the methods used to assess the potential impacts to cultural and historic resources on or near the project site. Examples include consultation with tribes and the department of archeology and historic preservation, archaeological surveys, historic maps, GIS data, etc.

Jacobs archaeologists conducted a records search of the proposed work areas and the surrounding areas using the Washington Information System for Architectural and Archaeological Records Database. Jacobs archaeologists reviewed the records search results to contextualize any previously recorded cultural resources and to inform the development of expectations for archaeological and/or ethnographic resources discovered within the Area of Potential Impact for the work areas and access routes except LT-B4, and within the proposed Area of Potential Effects for LT-B4 and its access route. Field methods consisted of a pedestrian survey and the excavation of shovel tests within the work areas, as well as three areas selected in the field for initial archaeological subsurface investigation.

Consultation with tribes is the responsibility of the state agencies. YTID is consulting with DAHP.

d. Proposed measures to avoid, minimize, or compensate for loss, changes to, and disturbance to resources. Please include plans for the above and any permits that may be required.

The work areas would be identified with flagging or temporary construction fencing to prevent potential impacts to any previously unidentified sensitive areas outside of the work limits and to avoid resources identified in the Cultural Resources Assessment. In addition, an Inadvertent Discovery Plan would be implemented for the geotechnical work.

14. Transportation

a. Identify public streets and highways serving the site or affected geographic area and describe proposed access to the existing street system. Show on site plans, if any.

LT-B1, LT-B2, OB-3, and LT-B3 would be accessed via French Road (Attachment A - Figures 2A through 2C). OB-2 is located approximately 900 feet north of French Road and would be accessed via an existing unnamed dirt road (Attachment A - Figure 2D). The driller may use an additional 2,000 feet of this unnamed road to reach a location wide enough to use as a turn-around. LT-B4 would be accessed via US Highway 12 and Forest Service roads NF-415, NF-1302, and NF-512, and then onto an unmarked spur which enters the YTID easement. An existing wooden bridge on NF-512 approximately 1,300 feet southwest of LT-B4 crosses the YTID canal, and may need temporary reinforcement to support the weight of the equipment. Within the work area, the drill rig would cross over the canal via a small temporary bridge or be lifted across the canal with a crane.

b. Is the site or affected geographic area currently served by public transit? If so, generally describe. If not, what is the approximate distance to the nearest transit stop?

The work areas are not served by public transit. The nearest transit stop is approximately 17 miles southeast in Selah, Washington.

c. How many additional parking spaces would the completed project or non-project proposal have? How many would the project or proposal eliminate?

Not applicable because no designated parking lots are located within or adjacent to the proposed work areas and access routes and no parking spaces would be created or eliminated.

d. Will the proposal require any new or improvements to existing roads, streets, pedestrian, bicycle or state transportation facilities, not including driveways? If so, generally describe (indicate whether public or private).

Spot construction along French Road may be required at the intersection with the unnamed road to OB-2. A roadside ditch would either be temporarily filled with gravel, or a permanent culvert and fill would be installed, depending on County and landowner preference. In addition, minor rock relocation or tree limb removal would occur at nine ARMs along the access routes. No new roads or new ingress or egress points would be created during the proposed geotechnical work.

e. Will the project or proposal use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.

Not applicable because no water, rail, or air transportation facilities exist in the proposed work areas or along the proposed access routes.

f. How many vehicular trips per day would be generated by the completed project or proposal? If known, indicate when peak volumes would occur and what percentage of the volume would be trucks (such as commercial and nonpassenger vehicles). What data or transportation models were used to make these estimates?

No trips per day would be generated once the geotechnical work is complete.

g. Will the proposal interfere with, affect or be affected by the movement of agricultural and forest products on roads or streets in the area? If so, generally describe.

The geotechnical work would be conducted off the road surface to prevent any blockage or interference with traffic, including the movement of agricultural and/or forest products.

However, as the drilling equipment is being transported from one work area to the next, traffic may be delayed briefly, as the equipment may move slowly. The primary impact is likely to be along the access route to LT-B4, where a steep grade would require that a bulldozer tow some of the equipment to access the work area. Due to limited turnouts along the narrow forest service roads, it is likely traffic may have to wait until the next available turnout to pass the equipment. A similar wait may occur when the equipment is towed away from the work area at the end of the geotechnical work.

The proposed geotechnical work would not have any permanent impact to the movement of agricultural or forest products.

h. Proposed measures to reduce or control transportation impacts, if any:

The off-County roads that access the drilling locations are very low-traffic roads, and likely used predominately by recreationists. The roads through each work area would remain open and freely passable throughout the boring activity. No long-term traffic impacts would occur during the proposed geotechnical work.

15. Public Services

a. Would the project result in an increased need for public services (for example: fire protection, police protection, public transit, health care, schools, other)? If so, generally describe.

The geotechnical work would occur over approximately 6 weeks in an undeveloped area without public services, and no additional public services would be required to conduct the work. The only exception would be the potential for temporary fire protection services should the IFPLs be insufficient to prevent a fire.

b. Proposed measures to reduce or control direct impacts on public services, if any.

Not applicable because the geotechnical work should not result in an increased need for public services.

16. Utilities

a. Circle utilities currently available at the site:

electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system, other _YTID irrigation canal_

None except that the YTID main irrigation canal is adjacent to LT-B4.

b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed.

No utilities other than potential water withdrawals from YTID's main canal would be needed or developed during the proposed geotechnical work.

C. Signature

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature: Rick Dieker

Name of signee: Rick Dieker

Position and Agency/Organization: Secretary Manager, YTID

Date Submitted: August 22, 2019

Attachment A

Figures

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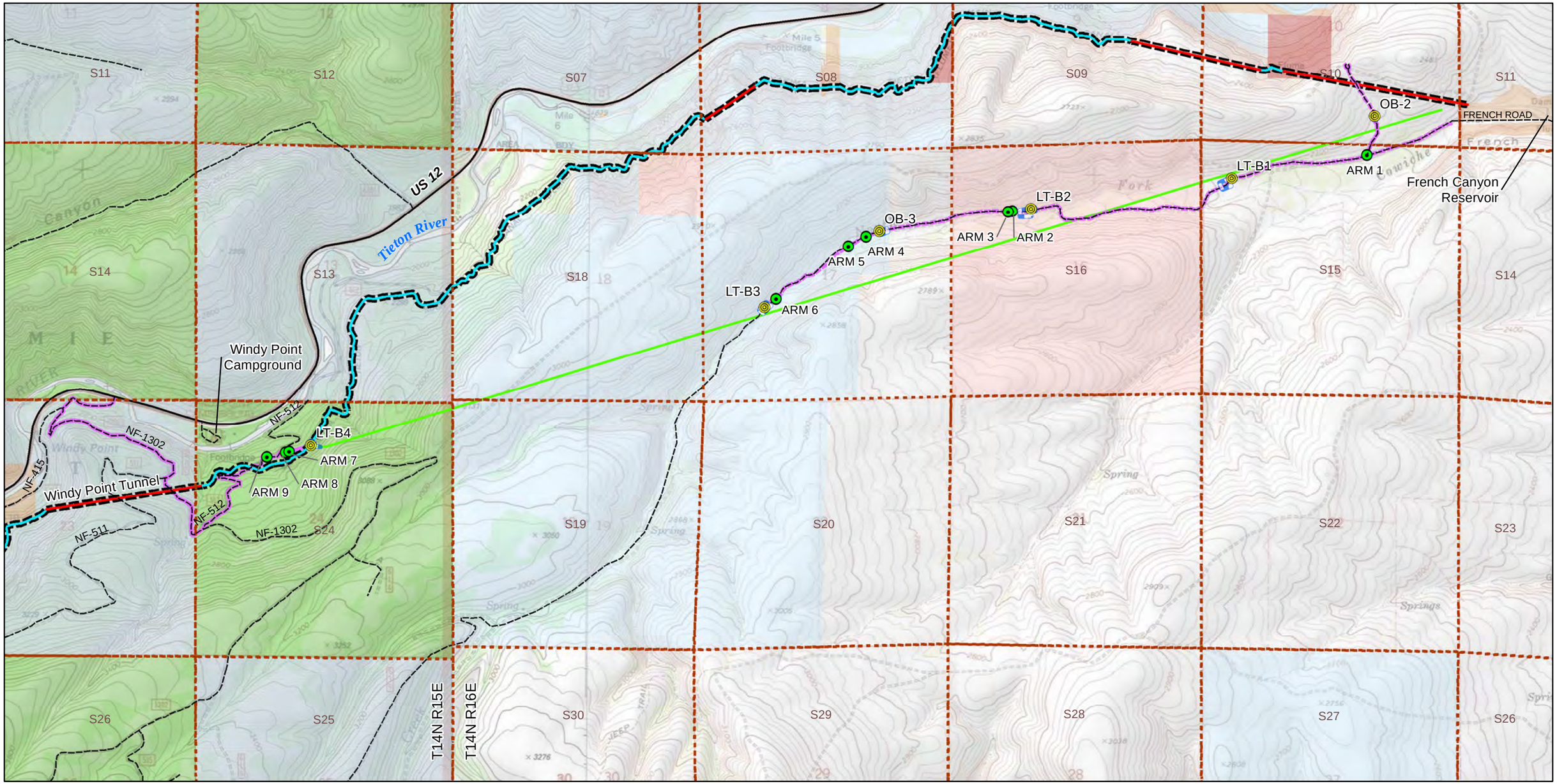

LEGEND

Existing Infrastructure
- Existing Canal
- Existing Tunnel
- State Highway
- Existing Dirt Road or Two-Track

Proposed Geotechnical Work
- Long Tunnel Boring
- Access Road Modification (ARM)
- Geotechnical Footprint
- Access Route

Land Ownership/Jurisdiction
- Private
- Ownership TBD
- US Bureau of Reclamation
- US Forest Service Naches Ranger District
- WA Dept of Fish & Wildlife (Oak Creek Wildlife Area)
- WA Dept of Natural Resources
- YTID Canal Easement
- Section Line

Proposed Tunnel Alternative
- Long Tunnel Alignment

1 inch = 2,000 feet

0 2,000 4,000 Feet

N

Notes:
1. Area of interest subject to change.
2. Service Layer Credits: Copyright:© 2013 National Geographic Society, i-cubed

FIGURE 1
Proposed Phase I Geotechnical Work Areas and Public Land Ownership
Yakima-Tieton Irrigation District

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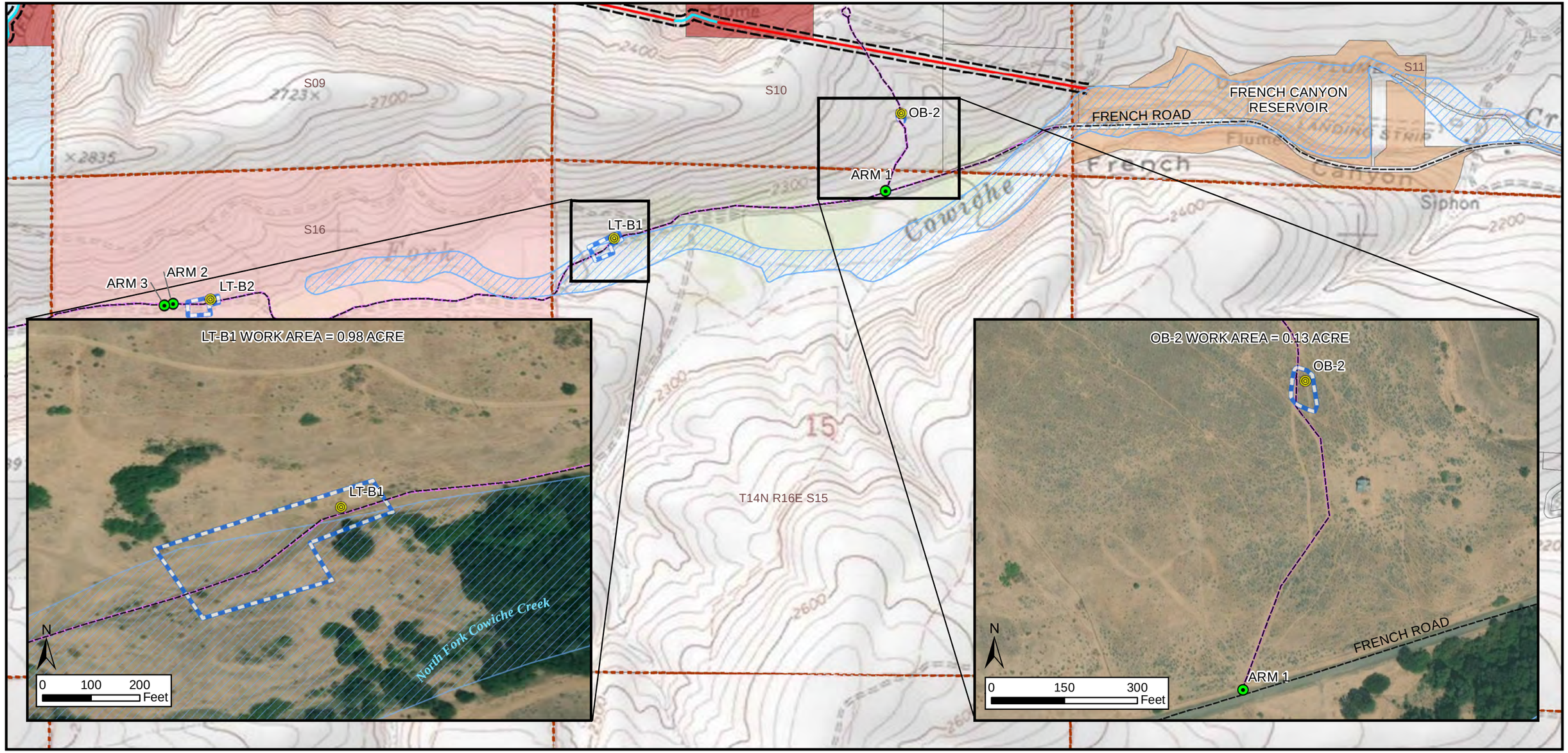

LEGEND

Existing Infrastructure
- Existing Canal
- Existing Tunnel
- Existing Dirt Road or Two-Track

Proposed Geotechnical Work
- Long Tunnel Boring
- Access Road Modification (ARM)
- Geotechnical Footprint
- Access Route

Land Ownership/Jurisdiction
- YTID Canal Easement
- Section Line
- Private
- Ownership TBD
- US Bureau of Reclamation
- WA Dept of Fish & Wildlife (Oak Creek Wildlife Area)
- WA Dept of Natural Resources

FEMA 100 Year Floodplain
- 100 Year Floodplain (Zone A)

Main Map

1 inch = 1,000 feet

N

0 500 1,000 2,000 Feet

Notes:
1. Area of interest subject to change.
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Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

FIGURE 2A
OB-2 and LT-B1 Work Areas
Yakima-Tieton Irrigation District
Yakima County
Township 14 North, Range 16 East, Sections 10 and 15

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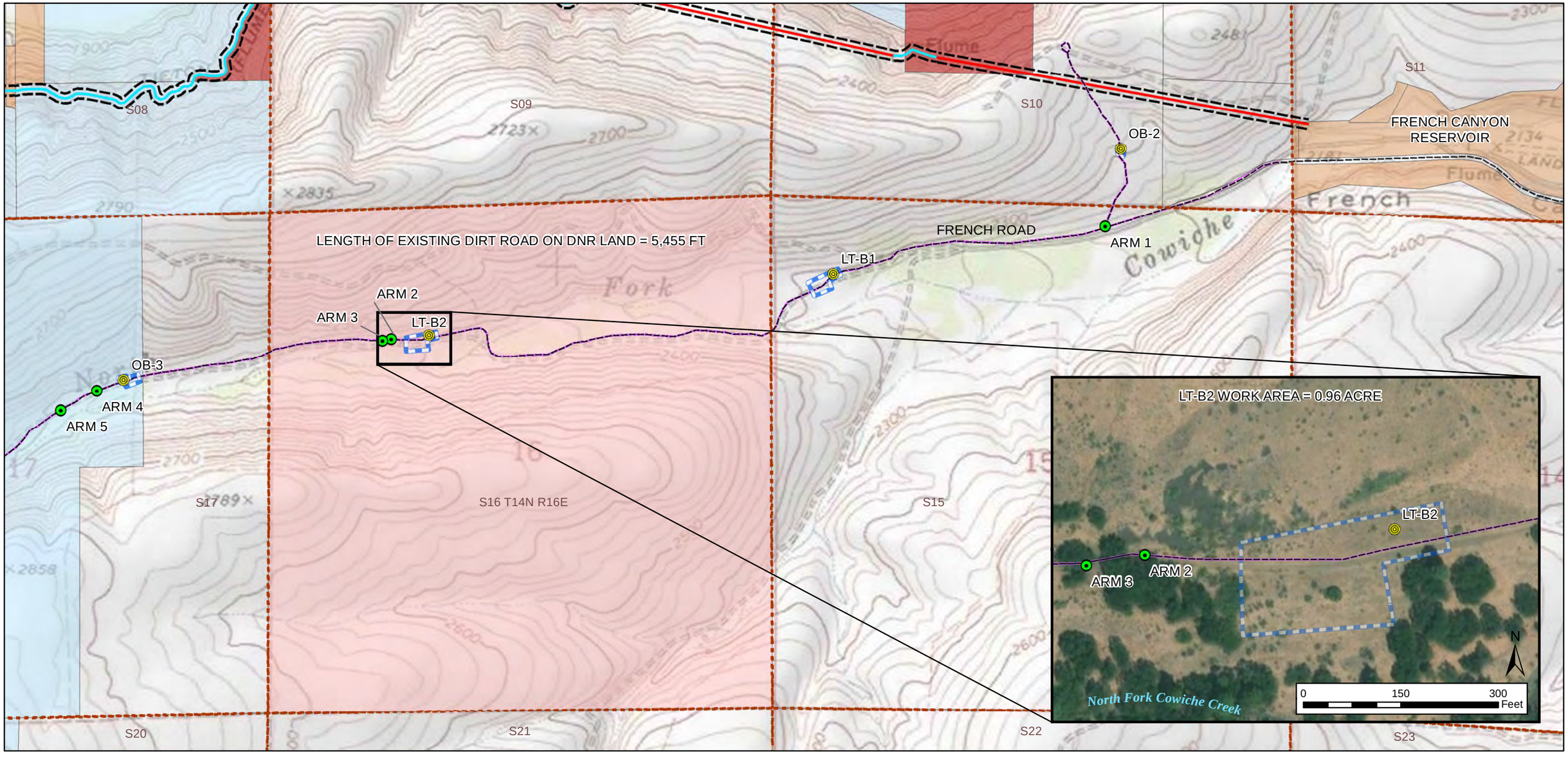

LEGEND

Existing Infrastructure
- Existing Canal
- Existing Tunnel
- Existing Dirt Road or Two-Track

Proposed Geotechnical Work
- Long Tunnel Boring
- Access Road Modification (ARM)
- Geotechnical Footprint
- Access Route

Land Ownership/Jurisdiction
- YTID Canal Easement
- Section Line
- Private
- Ownership TBD
- US Bureau of Reclamation
- WA Dept of Fish & Wildlife (Oak Creek Wildlife Area)
- WA Dept of Natural Resources

Main Map

1 inch = 1,000 feet

N

0 500 1,000 2,000 Feet

Notes:
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FIGURE 2B
LT-B2 Work Area
Yakima-Tieton Irrigation District
Yakima County
Township 14 North, Range 16 East, Section 16

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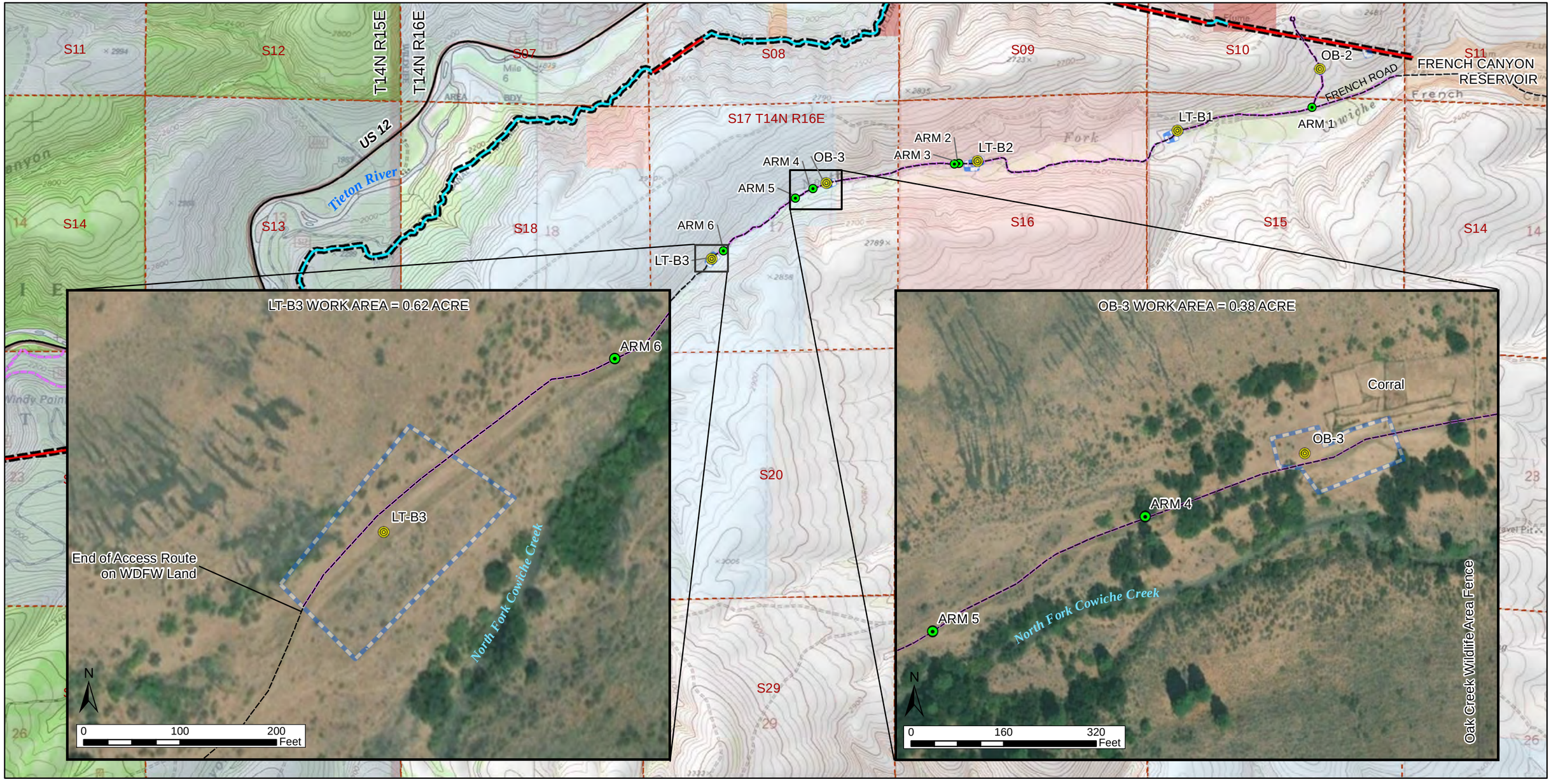

LEGEND

Existing Infrastructure
- Existing Canal
- Existing Tunnel
- State Highway
- Existing Dirt Road or Two-Track

Proposed Geotechnical Work
- Long Tunnel Boring
- Access Road Modification (ARM)
- Geotechnical Footprint
- Access Route

Land Ownership/Jurisdiction
- YTID Canal Easement
- Section Line
- Private
- Ownership TBD
- US Bureau of Reclamation
- WA Dept of Fish & Wildlife (Oak Creek Wildlife Area)
- WA Dept of Natural Resources

Main Map

1 inch = 2,000 feet

N

0 2,000 4,000 Feet

Notes:
1. Area of interest subject to change.
2. Service Layer Credits: Copyright:© 2013 National Geographic Society, i-cubed
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics,

FIGURE 2C
OB-3 and LT-B3 Work Areas
Yakima-Tieton Irrigation District
Yakima County
Township 14 North, Range 16 East, Section 17

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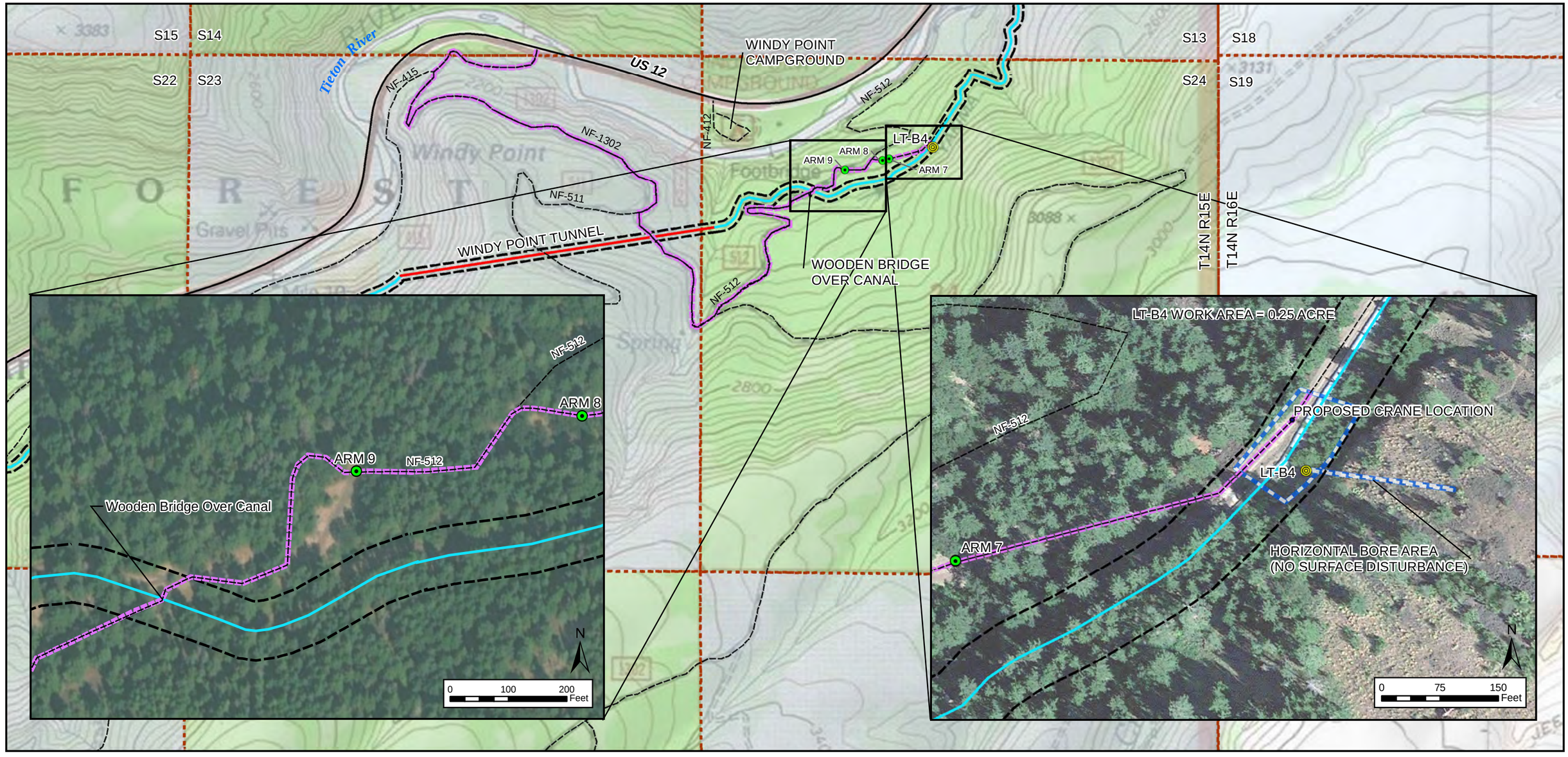

LEGEND

Existing Infrastructure
- Existing Canal
- Existing Tunnel
- State Highway
- Existing Dirt Road or Two-Track

Proposed Geotechnical Work
- Long Tunnel Boring
- Access Road Modification (ARM)
- Access Route
- Geotechnical Footprint

Land Ownership/Jurisdiction
- YTID Canal Easement
- Section Line
- US Forest Service Naches Ranger District
- WA Dept of Fish & Wildlife (Oak Creek Wildlife Area)

Main Map

1 inch = 1,000 feet

0 500 1,000 2,000 Feet

N

Notes:
1. Area of interest subject to change.
2. Service Layer Credits: Copyright:© 2013 National Geographic Society, i-cubed Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
3. Aerial imagery used in Inset Map obtained via Google Earth (imagery dated July 2017) and manually georectified to match existing project features. Accessed January 31, 2019.

FIGURE 2D
LT-B4 Work Area
Yakima-Tieton Irrigation District
Yakima County
Township 14 North, Range 15 East, Sections 14, 23 and 24

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Attachment B

Endangered Species Act No Effect Letter

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32 North 3rd Street
Suite 320
Yakima, WA 98901
www.jacobs.com

August 1, 2019

Subject: Endangered Species Act No Effect Letter
Yakima-Tieton Irrigation District
Tieton River Fisheries Enhancement and Water Reliability Project
Phase I – Geotechnical Investigations

The Yakima-Tieton Irrigation District (YTID) proposes to conduct geotechnical field explorations associated with the Tieton River Fisheries Enhancement and Water Reliability project and, as part of that overall project, evaluate alternatives for replacing a portion of YTID's 12-mile-long Tieton Canal with a new tunnel. The existing canal is the backbone of their water supply system. It has served YTID well for more than 100 years, but is currently operating beyond its normal life expectancy and needs to be replaced or repaired to limit the risk of catastrophic failure of the canal. Subsurface exploration is required to inform the preliminary design of a proposed tunnel option for canal replacement. This assessment covers the Phase I geotechnical investigations at six locations along the proposed tunnel alignment (**Table 1, Attachment A**). Activities at these locations include geotechnical subsurface boring, minor tree limb removal, minimal ground disturbance at bore sites, and select boulder relocation. This Endangered Species Act (ESA) No Effect (NE) letter documents for your files the potential effects to ESA-listed species from geotechnical work planned for October and November 2019, as described herein. The complete Tieton River Fisheries Enhancement and Water Reliability project will undergo separate ESA Section 7 analysis during the National Environmental Policy Act (NEPA) process; the NEPA schedule is unknown at this time.

Table 1. Proposed YTID long-tunnel option Phase 1 borings from east to west.

Boring	Land Ownership	Latitude, Longitude (decimal degrees)
OB-2	Private	46.711503°, -120.811466°
LT-B1	Private	46.707953°, -120.823210°
LT-B2	Department of Natural Resources	46.706175°, -120.839742°
OB-3	Washington Department of Fish and Wildlife	46.704877°, -120.852219°
LT-B3	Washington Department of Fish and Wildlife	46.700536°, -120.861671°
LT-B4	U.S. Forest Service – Naches Ranger	46.692572°, -120.898966°

On behalf of YTID, Jacobs Engineering Group Inc. (Jacobs) has prepared this assessment for the U.S. Forest Service (USFS) to meet the Section 7 requirements of the ESA. U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) ESA-listed species and designated critical habitats are addressed. We also evaluated the presence of Essential Fish Habitat (EFH) as required by the Magnuson Stevens Fishery Conservation and Management Act (Magnuson Stevens Act). The federal nexus for this project is an anticipated USFS Special Use Permit for LT-B4.

The USFWS and NMFS species lists for the proposed Phase I geotechnical work was accessed on their websites on July 22, 2019. These lists indicated the potential presence of the species and critical habitat shown below in Table 2.

Table 2. USFWS listed species and critical habitat potentially present in the action area and in the geotechnical work areas.

Species	Federal Status	Designated Critical Habitat in Action Area[1]	Suitable Habitat in Action Area	Suitable Habitat in Geotechnical Work Areas[2]
Canada lynx	Threatened	No	No	No
Gray wolf	Endangered	No	No	No
North American wolverine	Proposed Threatened	No	No	No
Marbled murrelet	Threatened	No	No	No
Northern spotted owl	Threatened	Yes	No	No
Yellow-billed cuckoo	Threatened	No	No	No
Bull trout – Columbia River Distinct Population Segment (DPS)	Threatened	Yes	Yes	No
Steelhead – Middle Columbia River (MCR) Summer–run DPS	Threatened	Yes	Yes	No

[1] The action area includes all areas that could be affected directly or indirectly by the Phase I geotechnical work and is not limited to the actual work areas. The action area represents the geographic extent of the physical, biological, and chemical impacts of the geotechnical work. See **Attachment A – Figure 2.**

[2] The term "geotechnical work" is used throughout this letter to refer collectively to all activities proposed as part of the Phase I geotechnical investigation – access, access road modifications, borings, grading, and equipment maneuvering. The term "work areas" refers to the access road modification areas and geotechnical footprints shown in **Attachment A – Figure 1**.

Project Description

The proposed YTID canal replacement is part of a larger project for enhancing fisheries in the Yakima Basin. The purpose of the Phase I geotechnical work is to assess the feasibility of one canal replacement alternative under consideration – a long tunnel (**Attachment A - Figure 1**). The tunnel would replace the most problematic reach (susceptible to landslides) of the existing canal alignment, extending approximately 25,000 feet from the exit portal of the Windy Point Tunnel to the French Canyon Reservoir.

This preliminary phase of geotechnical work is proposed to evaluate subsurface conditions along the proposed tunnel alignment and consists of borings at six sites, identified as long tunnel boring 1 (LT-B1), LT-B2, LT-B3, LT-B4, optional boring 2 (OB-2), and OB-3 (**Table 1 and Attachment A - Figure 1**). Subsequent geotechnical phases may include additional borings at other locations along the proposed tunnel alignment or along alternate alignments that may be considered and will be re-assessed for ESA-listed species at that time.

Borings would be drilled to depths ranging from approximately 120 to 400 feet. LT-B4, which is located at the western end of the proposed tunnel alignment, would be drilled horizontally. All other borings would be drilled at inclinations between 10 and 20 percent from vertical to intercept high-angle features within the rock mass. This would allow for a more accurate characterization of rock mass properties. Best management practices (BMPs) would be used to minimize impacts to riparian vegetation, streams, wetlands, and other sensitive areas. See the attached geotechnical Plan of Operations (**Attachment B**) for a detailed description of geotechnical work as well as additional photographs. The planned geotechnical work would occur during late October and early November 2019.

Land Use and Action Area

Land use in the vicinity of the geotechnical work consists of:

- open rangeland on privately owned land (OB-2 and LT-B1);
- open rangeland and recreation on Washington State Department of Natural Resources (DNR) land (LT-B2);
- open rangeland and recreation on Washington Department of Fish and Wildlife (WDFW) land (OB-3 and LT-B3); and
- water transport via the YTID canal and actively managed forest on USFS land (LT-B4).

Noise from construction equipment (drill rig, chainsaw, crane, bulldozer, support and/or water trucks, and skid-steer) would likely be the primary source of disturbance to ESA-listed species. The terrestrial zone of impact was calculated using defined Federal Highway Administration (FHWA) guidance. The loudest equipment expected on-site includes a drill rig (90 dBA), a chainsaw (84 dBA) and a bulldozer (82 dBA) for a combined construction noise of 91 dBA. Existing environmental background noise based on population density is estimated to be 35 dBA. The distance at which construction noise cannot be distinguished from background noise was calculated using a spreading loss model. Based on this model, the distance where construction noise attenuates to expected ambient sound levels equals a radius from work areas of 8,689 feet (1.65 miles). Therefore, the Phase I geotechnical action area is defined as the geotechnical work areas and up to 8,689 ft. (1.65 miles) (**Attachment A – Figure 2**) from those areas, which is the farthest distance that project-related sound would extend. This is a conservative estimate that does not include topography or vegetation effects on sound wave dispersion and assumes the three loudest pieces of construction equipment will operate at the same time. These factors, combined with low levels of background noise present in this rural landscape, produce a large action area. No aquatic zone of impact is associated with the geotechnical work because no in-water work is required in fish-bearing streams.

Species and Habitat Assessment

A field review of the geotechnical work areas was conducted on June 26, 2019, by Jacobs' biologists Jennifer Bader and John Mulligan. The field review was conducted to assess the potential for habitat presence and to assess potential impacts from the geotechnical work. Terrestrial habitat in the vicinity of LT-B4 consists of patchy, open, second- and third-growth timber interspersed with shrub-steppe habitat on USFS land. The terrestrial habitat in the vicinity of OB-2, OB-3, LT-B1, LT-B2, and LT-B3 consists of shrub-steppe habitat disturbed by grazing and non-native vegetation. These boring locations are adjacent to North Fork Cowiche Creek, which is an intermittent, non-fish-bearing stream that drains to French Canyon Reservoir (**Attachment A – Figure 2**). North Fork Cowiche Creek may be dry during

October and November 2019; the only potential impacts anticipated to the creek are at two shallow, narrow, established road crossings where geotechnical equipment would need to cross the creek to access LT-B2, OB-3, and LT-B3.

BMPs for erosion and sediment control would be implemented as needed to minimize potential erosion from the geotechnical work. The action area also contains oak forests and riparian areas along the Tieton River, but these resources would not be affected by the geotechnical work. The proposed geotechnical work does not require in-water work in fish-bearing streams; therefore, it would not affect any fish-bearing waterbodies[1] and would have no effect on EFH.

Gray wolf (*Canis lupis*): Gray wolves are associated with mid- to high-elevation habitat with an abundance of prey species. The geotechnical work would occur within close proximity to existing dirt roads or two-tracks, and habitat in the action area generally includes disturbed shrub-steppe and actively managed forests. The closest confirmed wolf pack, the Teanaway wolf pack, is over 32 miles away from the geotechnical work. In addition, the geotechnical work would occur during the deer and elk hunting season when these prey species are pushed to areas further from road systems. Therefore, the geotechnical work would have **No Effect** on the gray wolf due to lack of suitable habitat in the action area, associated disturbance, and the lack of prey species during October and November 2019.

Canada lynx (*Lynx canadensis*) and North American Wolverine (*Gulo gulo luscus*): Canada lynx and wolverine require relatively undisturbed high-elevation montane forests. The geotechnical work would occur within close proximity to existing dirt roads or two-tracks, and habitat in the action area generally includes disturbed shrub-steppe and low- to mid- elevation forests. Therefore, the geotechnical work would have **No Effect** on the Canada lynx because the action area does not contain suitable habitat for this species. Provisionally, the geotechnical work would not jeopardize the continued existence of the wolverine. Should the wolverine be listed prior to the completion of the geotechnical work, the geotechnical work would have **No Effect** on the wolverine because the action area does not contain suitable wolverine habitat.

Northern spotted owl (*Strix occidentalis caurina*): Northern spotted owls require habitat characteristics associated with older forests for nesting, roosting, and foraging. Nesting substrate requirements include large trees or snags with deformities that have a minimum diameter at breast height (dbh) of 20 inches. These trees and snags typically occur within stands providing greater than 60 percent canopy cover that have at least five contiguous acres of multi-layered coniferous forest. A relatively open understory is also necessary for flight and foraging. The action area does not fall within WDFW northern spotted owl management circles, indicating no nests have been documented in close proximity to the geotechnical work areas. FHWA guidance states that non-blasting projects occurring more than 0.25 mile from northern spotted owl suitable habitat are considered to have No Effect on the species. The only boring site with forested habitat within a 0.25-mile buffer is LT-B4; however, this habitat is comprised of second- and third-growth timber that provides less than 60 percent canopy cover with no suitable nesting trees. Breeding northern spotted owls are not likely to be present near LT-B4 based on current habitat conditions (Joan St. Hilaire, USFS-Naches Ranger District Biologist, personal

[1] The LT-B4 work area is located within YTID's easement for the Tieton Canal. Geotechnical access, preparation, and/or one subsurface boring would occur on both sides of the canal. No ESA-listed species live in or depend on the canal for habitat.

communication, June 10, 2019). Therefore, the geotechnical work would have **No Effect** on northern spotted owls because of the lack of suitable nesting, roosting, and foraging habitat in the action area.

Northern spotted owl designated critical habitat: Northern spotted owl critical habitat is designated within the action area at LT-B4. The primary constituent elements (PCEs) of northern spotted owl critical habitat include: 1) forest types, 2) nesting and roosting habitat, 3) foraging habitat and 4) dispersal habitat that supports the transience and colonization phases of dispersal. PCE 1 must occur in concert with PCEs 2, 3, or 4. Within the action area, PCEs 2, 3 and 4 are lacking. Sufficient canopy cover – defined as multi-layered, multi-species canopies with large overstory trees and a high diversity of varied diameters of trees – is not present (**Attachment C – Photo 6**). Large trees with deformities as well as large snags and large accumulations of fallen trees or other woody debris on the ground are also not present. Vegetation removal at LT-B4 is in an area with low canopy cover adjacent to the YTID canal (**Attachment C - Photo 7**) and is comprised of small trees and shrubs with no overstory. Noise generated by the geotechnical work would have no effect on PCEs because it would not alter physical habitat conditions. In addition, the vegetation that would be removed does not support any PCEs. Therefore, the geotechnical work would have **No Effect** on northern spotted owl critical habitat.

Marbled murrelet (*Brachyramphus marmoratus*): Marbled murrelet require mature forested stands with suitable platforms for nesting, generally within 55 miles of marine environments. The closest marine environment is over 100 miles away from the geotechnical work . Only one site, LT-B4, is in a forested habitat; however, this site does not contain mature or old conifer forests and therefore does not provide suitable nesting habitat for marbled murrelet. All remaining geotechnical work would occur further inland and provide no suitable nesting habitat. Therefore, the geotechnical work would have **No Effect** on marbled murrelet because the action area does not contain suitable habitat for the species.

Yellow-billed cuckoo (*Coccyzus americanus*): Yellow-billed cuckoos prefer open, lowland, deciduous woodlands with clearings and shrubby vegetation in the breeding range. No nesting records exist for eastern Washington, despite the presence of apparently suitable riparian corridors, occasional past sightings during the summer, and documented breeding in eastern Oregon and southern Idaho. Reports of individual cuckoos have been very rare in recent decades, with only 12 records made between 1950 and 2000. Yellow-billed cuckoos require large tracts of willow-cottonwood or mesquite forest or woodland for their nesting habitat. Yellow-billed cuckoos rarely nest at sites less than 50 acres (20 hectares), and sites less than 37 acres (15 hectares) are considered unsuitable habitat. Potential habitat may occur along the Tieton River; however, the geotechnical work would not occur within or of affect these riparian areas. In addition, the geotechnical work would occur in the late fall outside of the breeding season. Therefore, the geotechnical work would have **No Effect** on yellow-billed cuckoos because of their rarity in Washington state, avoidance of the nesting season, and avoidance of riparian habitat.

Bull trout (*Salvelinus confluentus*) and MCR DPS steelhead (*Oncorhynchus mykiss*): No aquatic zone of impact is associated with the geotechnical work because no in-water work is required in fish-bearing streams. Furthermore, BMPs for erosion and sediment control would be implemented as needed to minimize potential erosion from the geotechnical work. Therefore, the geotechnical work would have **No Effect** on either bull trout or MCR DPS steelhead because these species cannot access the geotechnical work areas and would not be exposed to the associated impacts.

Columbia River DPS bull trout and MCR DPS steelhead designated critical habitat: Designated critical habitat for both bull trout and MCR DPS steelhead is located within the action area in the Tieton River. However, no aquatic zone of impact is associated with the geotechnical work because no in-water work is required in fish-bearing streams. Furthermore, BMPs for erosion and sediment control would be implemented as needed to minimize potential erosion from the geotechnical work. Therefore, the geotechnical work would have **No Effect** on either critical habitat because these species cannot access the geotechnical work areas and would not be exposed to the associated impacts.

Summary

Based on the findings above, the Phase I geotechnical work would have **No Effect** on ESA-listed species. This assessment satisfies the USFS responsibilities under Section 7(c) of the Endangered Species Act and the Magnuson-Stevens Act at this time, and this copy of our assessment is for your files. We will continue to monitor of any change in status of these species and will reevaluate potential impacts from the geotechnical work if necessary.

If you require additional information or clarification regarding the Phase I geotechnical work, please contact me at 509-317-8855 or john.mulligan@jacobs.com.

Sincerely,

John Mulligan
Biologist
Jacobs Engineering Group Inc.

Attachments: Vicinity maps (A), Geotechnical Plan of Operations (B), Photographs (C), USFWS and NMFS species lists (D)

c: Rick Dieker, YTID
Justin Wies, YTID
Todd Hunziker, Jacobs
Marlena Guhlke, Jacobs
Jen Bader, Jacobs
Project File

Attachment A

Vicinity Maps

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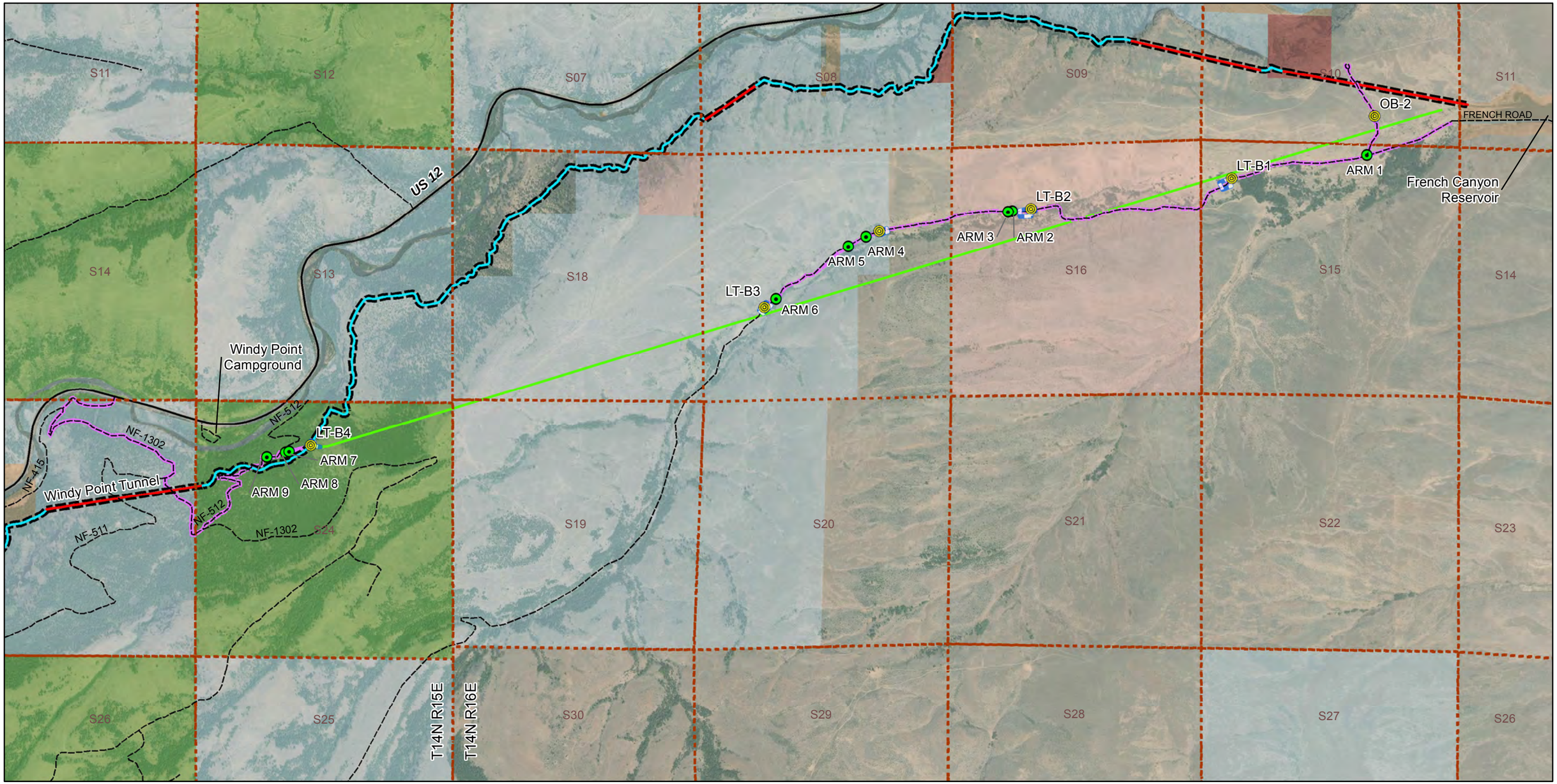

LEGEND

Existing Infrastructure
- Existing Canal
- Existing Tunnel
- State Highway
- Existing Dirt Road or Two-Track

Proposed Geotechnical Work
- Long Tunnel Boring
- Access Road Modification (ARM)
- Geotechnical Footprint
- Access Route

Land Ownership/Jurisdiction
- Private
- Ownership TBD
- US Bureau of Reclamation
- US Forest Service Naches Ranger District
- WA Dept of Fish & Wildlife (Oak Creek Wildlife Area)
- WA Dept of Natural Resources
- YTID Canal Easement
- Section Line

Proposed Tunnel Alternative
- Long Tunnel Alignment

N

1 inch = 2,000 feet

0 2,000 4,000 Feet

Notes:
1. Area of interest subject to change.
2. Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

FIGURE 1 - VICINITY MAP

Yakima-Tieton Irrigation District

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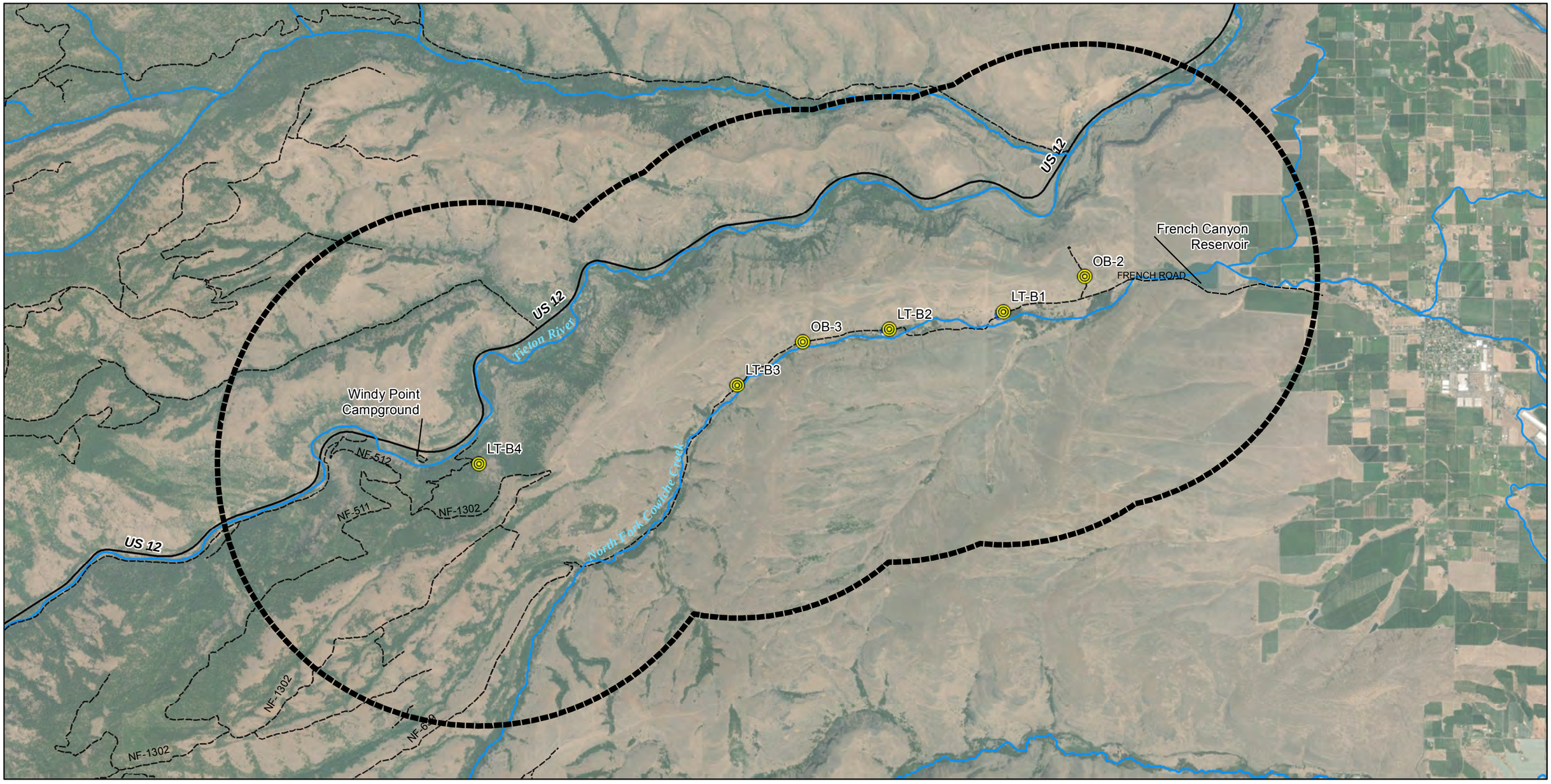

LEGEND

Existing Infrastructure/Waterbodies

- State Highway
- Existing Dirt Road or Two-Track
- River/Creek

Proposed Geotechnical Work

- Long Tunnel Boring
- Action Area (1.65 miles)

N

1 inch = 0.66 mile

0 1 2 Miles

Notes:
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

FIGURE 2 - ACTION AREA

Yakima-Tieton Irrigation District

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Attachment B

Geotechnical Plan of Operations

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Overview

The Yakima-Tieton Irrigation District (YTID) proposes to conduct geotechnical field explorations associated with the Tieton River Fisheries Enhancement and Water Reliability project and, as part of that overall project, evaluate alternatives for replacing a portion of YTID's 12-mile-long Tieton Canal with a new tunnel. The existing canal is the backbone of their water supply system. It has served YTID well for more than 100 years but is currently operating beyond its normal life expectancy and needs to be replaced or repaired to limit the risk of catastrophic failure of the canal.

A new gravity alternative has emerged for consideration that would replace a portion of the Tieton Canal with a long tunnel. The tunnel would replace the most problematic reach (susceptible to landslides) of the existing canal alignment in that it would extend approximately 25,000 feet from the exit portal of Windy Point Tunnel to the French Canyon Reservoir.

Geotechnical investigations would be conducted over 3 to 4 years to evaluate subsurface conditions along the alternative tunnel alignment (see Figure 1 on page 16). Phase I, the first year of geotechnical work, would consist of drilling up to six geotechnical borings at select locations along the proposed tunnel alignment. Subsequent geotechnical phases would include other boring locations along the proposed tunnel alignment and along other alignments being considered for replacement of the existing canal.

Borings would be drilled to depths ranging from about 120 feet to 400 feet. Long tunnel boring 4 (LT-B4), which is located at the western end of the long tunnel alternative alignment, would be drilled horizontally. All other borings would be drilled at inclinations between 10 and 20 percent from vertical in order to intercept high-angle features within the rock mass. This would allow for a more accurate characterization of rock mass properties. Table 1 provides a summary of the proposed borings ordered geographically from east to west.

Table 1. Summary of Proposed YTID Long-Tunnel Option Phase 1 Borings

Boring Number[1]	Approximate Depth (feet)	Orientation[2]	Land Ownership
OB-2	120	Inclined	Private
LT-B1	120	Inclined	Private
LT-B2	200	Inclined	Washington State Department of Natural Resources
OB-3	300	Inclined	Washington Department of Fish and Wildlife
LT-B3	400	Inclined	Washington Department of Fish and Wildlife
LT-B4	200	Horizontal	U.S. Forest Service[3] (USFS) Naches Ranger District

Table Notes:

[1] An optional boring location "OB-1" was considered but removed from Phase I due to access issues.

[2] Inclined borings would be drilled at an angle of 10 to 20 percent from vertical.

[3] At LT-B4 the drill rig, drilling activities, and limits of surface disturbance would be located within an existing YTID easement on USFS land. The boring would extend below the ground surface outside the easement onto USFS-owned property.

Drilling work would be completed in the presence of a Jacobs Engineering Inc. geologist or engineer who would direct the field work, provide continuous observation, maintain a daily summary of activities, and develop a detailed log of the subsurface conditions encountered in each of the boreholes. Soil and rock samples would be collected from the borings for laboratory testing and further classification of subsurface conditions. The work would not involve collection or testing of samples for the presence of contaminants or environmental constituents.

Geotechnical Explorations

It is expected that boring LT-B4 would be drilled by Crux Subsurface Explorations of Spokane, Washington using a platform drill rig, and that Cascade Drilling of Tacoma, Washington would drill all other borings using a track-mounted drill rig. The maximum borehole diameter in soil would be 6 inches and the maximum diameter of the boring in rock would be 4 inches. Photographs 1 and 2 (photographs are provided at the end of the text) show the type of platform drill that would be used to drill LT-B4. Photographs 3 and 4 show the type of tracked drill rig that would be used to drill the other borings, along with the type of vehicle and trailer that would be used to mobilize the drill to the site. The approximate dimensions of the track-mounted drill rig are shown in Figure 2 on page 17. The trailer would be used to move the drill rigs on maintained roads. The drill rig would be offloaded from the trailer and tracked into the boring locations where rough and/or narrow roads prevent the trailer from being used.

Water would be used to flush cuttings from borings and keep the rock core bits cool. A utility pickup truck with two 500-gallon water tanks would be used to haul water to the drilling locations (see Photograph 5). Water would be pulled from the YTID canal above French Canyon Reservoir; no water would be pulled from North Fork Cowiche Creek, any of its tributaries, or other creeks in the area. In some borings, a fluid consisting of bentonite, which is a natural clay mineral, mixed with water may be used as drilling fluid to help keep the borings open and to help reduce the loss of drilling fluid through fractures in the rock. Water, fluid, and rock cuttings would be collected, contained to prevent leaks/spills, removed off-site, and disposed of in accordance with applicable state and federal regulations.

A small, tracked skid-steer would be used by Cascade Drilling to move supplies around the site (see Photograph 6 for type and size of skid-steer to be used).

Unless restricted by landowners, drilling or excavation equipment would be left on-site overnight. The equipment would be left in locations that do not block access roads, paths, or driveways. No equipment would be left or stockpiled within a 100-year floodplain. All the tools and equipment would be secured and organized before leaving the site. Support vehicles would be removed from the site at the end of each day so that only the drilling or excavation equipment remains onsite overnight.

Access

The access routes and proposed modifications to those routes are described below in the discussion of each boring. If any other access road modifications (e.g., minor blading or rock removal) not currently identified in this narrative are needed to gain entry to proposed boring locations, the work would be completed within the existing dirt roads or two-tracks and would not extend outside these limits.

Sampling Procedures

A thin mantel of soil is anticipated to overlay the basalt bedrock that is visible in canyons and road cuts throughout the Tieton River and North Fork Cowiche Creek drainages. Soil samples would be collected from boreholes in the upper soil mantel using a standard 2-inch-outside-diameter split-spoon sampler in accordance with standard procedures outlined in American Society for Testing and Materials (ASTM) D1586, “Standard Test Method for Penetration Test and Split-Barrel Sampling of Soils.” This test is used to characterize the consistency of fine-grained soil or the relative density of coarse-grained soil by measuring penetration resistance expressed as blow counts, or N-value. The blow count is the number of blows required to drill the standard split-spoon sampler 6-inches into the ground with a 140-pound hammer falling 30 inches. The sampler is driven in 6-inch increments for a total of 18 inches and the

blow count is recorded for each 6-inch increment. The sum of the blow counts for the second and third increments is referred to as the N-value in blows per foot. Low N-values indicate soft or loose soil; high N-values are evidence of hard or dense materials. After the sampler is driven and the blow counts are recorded, the sampler is withdrawn from the borehole to recover a disturbed soil sample. Soil samples recovered from the borings would be examined and visually classified in accordance with ASTM D2488, "Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)."

Once bedrock is encountered, rock coring techniques would be used to advance the borings and collect a near-continuous rock core that would be retrieved, logged, photographed, and packaged in rock core boxes for further testing and evaluation. Rock coring would be conducted in general accordance outlined in ASTM D2113, "Standard Practice for Rock Core Drilling and Sampling of Rock for Site Investigation."

Utility Locates

Proposed exploration sites would be located and marked in the field. A utility locate request would be filed with the Washington State Utility Notification Center for each of the proposed exploration locations. The utility notification center would be contacted no less than 48 business hours prior to any ground disturbing operations, as required by law.

Impacts of Drilling

Proposed work limits are provided for each of the borings in the project Google Earth™ kmz file and in project mapping. The work limits include areas where drilling equipment and support vehicles may be parked during the limited duration of the drilling work. Other than the borings, impacts would be limited to equipment driving and maneuvering in the work areas. Equipment maneuvering would affect some grasses and small shrubs within the proposed disturbance areas. Trees and large shrubs would be avoided; however, tree limbs may need to be removed or lifted if they impede access to the drilling sites.

Borehole Abandonment

Borings would be abandoned in accordance with Washington State Department of Ecology's regulations for abandonment of a drill hole. This requires that the boreholes would be filled with bentonite or a cement/bentonite grout to within approximately 18 inches of the ground surface. The upper portion of the hole would be filled with native soil.

Borings on Private Land

OB-2 and **LT-B1** and would be drilled on private property. No cuts, fills, or grading would be required to access or complete the drilling at LT-B1. Impacts to the private property at LT-B1 would be limited to equipment maneuvering and drilling the borehole.

No cuts, fills, or grading would be required at the location of OB-2 to complete the boring. However, minor filling would be required where the unimproved dirt access road to OB-2 intersects with French Road. This area is labeled as Access Road Modification (ARM) 1 on Figure 1 and in the kmz file (subsequent ARMs 2 through 9 are also shown on Figure 1 and in the kmz file). Existing conditions for this location are shown in Photographs 7 and 8. The work required at this location would consist of the following:

- ARM 1. Fill material consisting of gravel would be placed to reduce the depth of the roadside ditch on the north side of French Road. Fill is needed so that the support vehicles and water truck can cross the roadside ditch without dragging or becoming stuck in the ditch. YTID would coordinate with the private land owner and with the Yakima County Roads Department prior to

placing the fill material. Depending on the preference of the property owner and roads department, a culvert may be installed in the roadside ditch and permanent fill placed over the culvert. Otherwise the fill material would be removed after the drilling is complete to re-establish the roadside ditch.

It is anticipated that all equipment maneuvering can be accomplished within the identified geotechnical work area for OB-2. However, if field conditions are not sufficient to turn longer trailers and equipment around, geotechnical equipment may drive on an existing dirt two-track to an open, disturbed area about 0.25 mile north of OB-2 for an optional turn-around area.

Borings on Public Land

Washington State Department of Natural Resources (DNR)

Boring **LT-B2** would be drilled on DNR property just north of North Fork Cowiche Creek about 2 miles west of the French Canyon Reservoir (see Figure 1). French Road and an existing dirt road would be used to access the drill location. The boring would be drilled using a small track rig or platform rig. No cuts, fills, or grading would be required to either (1) cross North Fork Cowiche Creek, (2) access the boring location, or (3) site the drill rig. Impacts to DNR property would be limited to driving on the access road, potential tree limb removal, equipment maneuvering, and drilling the 200-foot-deep borehole (see the Geotechnical Explorations section for backfilling details). The tree limb removal that may be required at ARMs 2 and 3 would consist of the following:

- ARMs 2 and 3. Several low-hanging branches on oak trees are located along the access road to LT-B3 about 160 feet and 260 feet, respectively, west of LT-B2. The tree branches, which have diameters of less than 6 inches, are located about 8 feet off the ground (see Photographs 9 and 10). Other trees and ground slopes in the area make avoiding these trees impractical. YTID would attempt to raise the tree limbs by propping them up using poles to raise them above the height required to allow access of the drill rig and water truck. If the branches cannot be raised to a height of about 11 feet, they may need to be removed. Because oak limbs are relatively inflexible, it is likely they would be removed.

As noted above, any other ARMs on DNR land not currently identified in this narrative would not extend outside the existing dirt road or two-track.

Washington Department of Fish and Wildlife (WDFW)

Borings **OB-3** and **LT-B3** would be drilled within WDFW's Oak Creek Wildlife Area about 2.6 miles and 3.2 miles, respectively, west of the French Canyon Reservoir. French Road and an existing dirt two-track would be used to access the drill locations. The borings would be drilled using a small track rig. No cuts, fills, or grading would be required to (1) cross North Fork Cowiche Creek or (2) site the drill rig at either boring. However, low-hanging branches on an oak tree would need to be raised in one location west of OB-3 to allow the drill equipment and water truck to access LT-B3. In addition, a few large rocks would need to be moved in two locations between OB-3 and LT-B3 to allow the water truck to deliver water to the LT-B3 boring. The work that is required at each of these locations is described in the following paragraphs and the location of each of the areas is identified in Figure 1:

- ARM 4. Two or three low-hanging branches on an oak tree are located along the access road to LT-B3 at a location about 600 feet west of the eastern limit of the WDFW Oak Creek Wildlife Area. The tree branches, which have diameters of less than 6 inches, are located about 8 feet off the ground. Other trees and ground slopes in the area make avoiding this tree impractical (see Photograph 11). YTID would attempt to raise the tree limbs by propping them up using poles to raise them above the height required to allow access of the drill rig and water truck. If the

branches cannot be raised to a height of about 11 feet, they may need to be removed. Because oak limbs are relatively inflexible, it is likely they would be removed.

- ARM 5. Two to three rocks with maximum dimensions less than 1.5 feet in diameter would be moved out of the road at a location approximately 1,000 feet west of the eastern limit of the WDFW Oak Creek Wildlife Area. The rocks are located on top of the road surface (see Photograph 12). The rocks would be left outside of the limits of the road. The rocks can be rolled back into the road after the drilling work is complete if WDFW requests.
- ARM 6. Three larger boulders having dimensions up to 3.0 feet would be moved out of the road at a location that is approximately 3,000 feet west of the eastern limit of the WDFW Oak Creek Wildlife Area and about 300 feet east of LT-B3. The rocks would be moved to allow water truck access (see Photograph 13). Cascade Drilling would likely need to utilize their skid-steer (see Photograph 6) to move these larger rocks.

Impacts to WDFW property at the sites of OB-3 and LT-B3 would include equipment maneuvering and drilling of boreholes to depths of about 300 and 400 feet, respectively. Impacts to WDFW property along the access roads include the tree limb and rock work described in the bullets above. As noted above, any other ARMs on WDFW land not currently identified in this narrative would not extend outside the existing dirt road or two-track.

U.S. Forest Service (USFS) Naches Ranger District

Boring **LT-B4** would be drilled horizontally beneath USFS property from a location within the existing YTID easement where bedrock is exposed just east of the existing YTID Tieton Canal. Forest Roads 415, 1302, and 512, and an unnamed spur off of Forest Road 512 would be used to access the YTID easement.

The YTID easement boundary would be marked in the field to limit surface impacts to within YTID's easement. The boring would be drilled using a platform drill rig (see Photographs 1 and 2) that can be lifted over the existing canal using a crane, or a small bridge would be constructed over the canal to allow access to the drill location. The platform rig would be elevated above the existing grade, but some rock material may need to be moved within the YTID easement to accommodate the platform. The dimensions of this work space would be approximately 10 feet by 20 feet. It is expected that the maximum amount of re-grading would be about 3 feet, either cut or fill. LT-B4 would be drilled horizontally beneath USFS property a distance of up to 200 feet along the approximate alignment of the proposed tunnel. The location of the horizontal boring is approximate and may be adjusted to the north or to the south based on field conditions.

If a crane is used to lift the drill rig over the canal, the existing bridge over YTID's canal about 1,300 feet west of LT-B4 may need to be strengthened using metal plates or other reinforcing materials (see Photograph 14). The potential bridge work is not identified as an ARM because all work on the existing bridge would occur within YTID's easement. In addition, a dozer would be required to tow the crane the 1.95-mile access route between US 12 and LT-B4, including up a steep incline located approximately 200 feet west LT-B4.

Several small branches (less than 6 inches diameter) may need to be removed from trees within the YTID easement to mobilize the crane and place the drill rig. The crane would be positioned in the YTID easement and would likely remain while LT-B4 is completed to limit the potential disturbance to access roads. Additional tree limb removal may be required outside of the YTID easement on USFS property at ARMs 7, 8, and 9 (see, respectively, Photographs 15, 16, and 17) and would consist of the following:

- ARMs 7, 8, and 9. Several low-hanging branches on Douglas fir and oak trees are located along the access road between LT-B4 and the existing wooden bridge, about 400 feet, 460 feet, and 870 feet west of the LT-B4 work area, respectively. The tree branches, which have diameters of less than 6 inches, are located about 8 feet off the ground. Other trees and ground slopes in the area make avoiding these trees impractical. YTID would attempt to raise the tree limbs by propping them up using poles to raise them above the height required to allow access of the crane, dozer, drill rig, and water truck. If the branches cannot be raised to a height of about 11 feet, they may need to be removed. Because oak limbs are relatively inflexible, it is likely they would be removed.

As noted above, any other ARMs on USFS land not currently identified in this narrative would not extend outside the existing dirt road or two-track.

Exhibits

The exhibits below include:

- photographs of geotechnical equipment similar to what would be used to drill the six Phase I borings described herein;
- photographs of some of the ARM locations;
- a map of all Phase I geotechnical work areas; and
- a figure of typical drill rig dimensions.

Photographs

Photograph 1. Platform drill rig similar to what may be used to drill LT-B4.

Photograph 2. Platform drill rig similar to what may be used to drill LT-B4.

Photograph 3. Tracked drill rig similar to what may be used to drill borings other than LT-B4.

Photograph 4. Tracked drill rig and support vehicle similar to what may be used to drill borings other than LT-B4.

Photograph 5. Typical water truck.

Photograph 6. Typical skid-steer, similar to what would be used to support drilling activities.

Photograph 7. ARM 1 - Roadside ditch adjacent to French Road would be filled to allow access to OB-2.

Photograph 8. ARM 1 – Roadside ditch adjacent to French Road would be filled to allow access to OB-2.

Photograph 9. ARM 2 – Low-hanging oak tree branches would be raised or removed to allow access to OB-3.

Photograph 10. ARM 3 – Low-hanging oak tree branches would be raised or removed to allow access to OB-3.

Photograph 11. ARM 4 – Low-hanging oak tree branches would be raised or removed to allow access to LT-B3.

Photograph 12. ARM 5 – Several rocks would be removed (by hand) to allow water truck access to LT-B3.

Photograph 13. ARM 6 – Several rocks would be removed (by hand) to allow water truck access to LT-B3.

Photograph 14. Existing wooden bridge over YTID canal approximately 1,300 feet west of LT-B4. Bridge may need to be strengthened to access LT-B4.

Photograph 15. ARM 7 – Oak tree limb would be removed for crane access to LT-B4.

Photograph 16. ARM 8 – Fir tree limb would be removed for crane access to LT-B4.

Photograph 17. ARM 9 – Oak tree limb would be removed for crane access to LT-B4.

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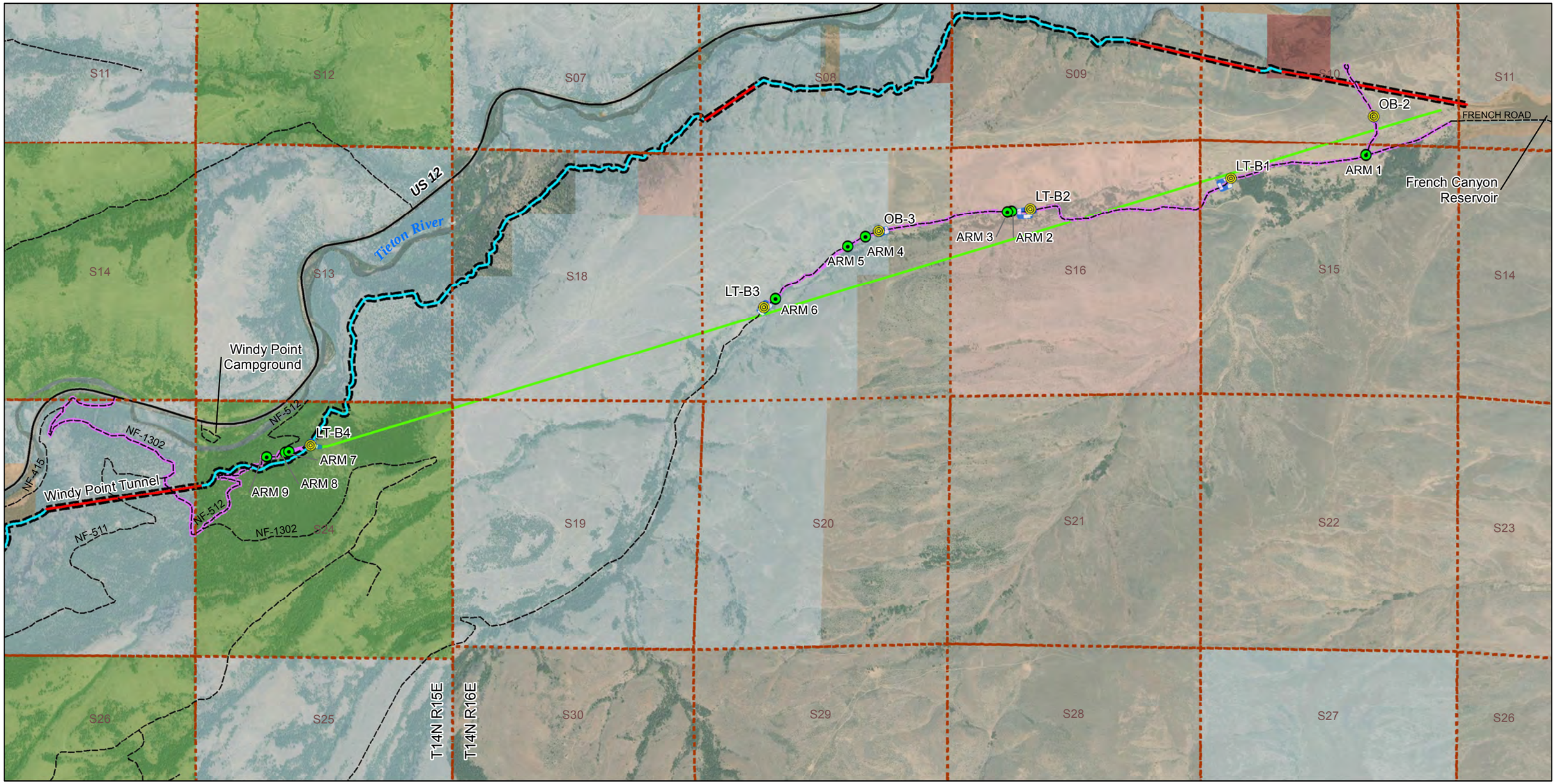

LEGEND

Existing Infrastructure
- Existing Canal
- Existing Tunnel
- State Highway
- Existing Dirt Road or Two-Track

Proposed Geotechnical Work
- Long Tunnel Boring
- Access Road Modification (ARM)
- Geotechnical Footprint
- Access Route

Land Ownership/Jurisdiction
- Private
- Ownership TBD
- US Bureau of Reclamation
- US Forest Service Naches Ranger District
- WA Dept of Fish & Wildlife (Oak Creek Wildlife Area)
- WA Dept of Natural Resources
- YTID Canal Easement
- Section Line

Proposed Tunnel Alternative
- Long Tunnel Alignment

N

1 inch = 2,000 feet

0 2,000 4,000 Feet

Notes:
1. Area of interest subject to change.
2. Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

FIGURE 1
Proposed Phase I Geotechnical Work Areas and Public Land Ownership
Yakima-Tieton Irrigation District

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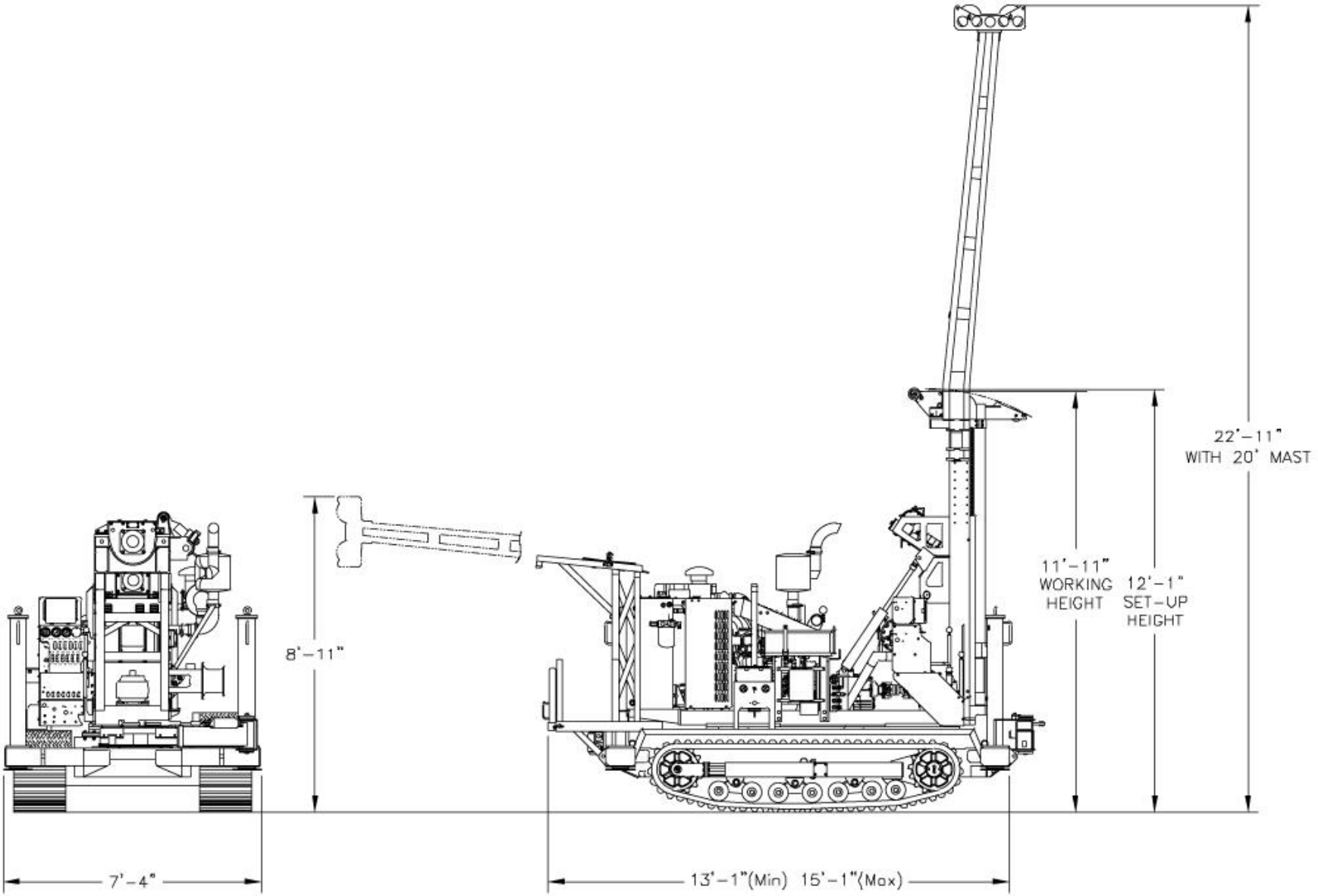

Figure 2. Approximate dimensions of tracked drill rig to be used to drill borings other than LT-B4.

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Attachment C

Photographs

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Photo 1: OB-2 work area and associated habitat.

Photo 2: LT-B1 work area and associated habitat.

Photo 3: LT-B2 work area and associated habitat.

Photo 4: OB-3 work area and associated habitat.

Photo 5: LT-B3 work area and associated habitat.

Photo 6: Habitat adjacent to LT-B4 work area lacks a diversity of varied-diameter trees, high canopy cover, and an accumulation of fallen trees or other woody debris on the ground.

Photo 7: LT-B4 work area and associated habitat.

Attachment D

USFWS and NMFS Species Lists

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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
http://www.fws.gov/wafwo/

In Reply Refer To:
Consultation Code: 01EWFW00-2019-SLI-1388
Event Code: 01EWFW00-2019-E-02803
Project Name: YTID Geotechnical Investigation

July 22, 2019

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

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, and proposed species, designated and proposed critical habitat, and candidate species 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. The species list is currently compiled at the county level. Additional information is available from the Washington Department of Fish and Wildlife, Priority Habitats and Species website: http://wdfw.wa.gov/mapping/phs/ or at our office website: http://www.fws.gov/wafwo/species_new.html. 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 ECOS-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 ECOS-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 or not 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:
http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq.). You may visit our website at http://www.fws.gov/pacific/eagle/for information on disturbance or take of the species and information on how to get a permit and what current guidelines and regulations are. Some projects affecting these species may require development of an eagle conservation plan: (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Also be aware that all marine mammals are protected under the Marine Mammal Protection Act (MMPA). The MMPA prohibits, with certain exceptions, the "take" of marine mammals in U.S. waters and by U.S. citizens on the high seas. The importation of marine mammals and marine mammal products into the U.S. is also prohibited. More information can be found on the MMPA website: http://www.nmfs.noaa.gov/pr/laws/mmpa/.

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 Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Related website:
National Marine Fisheries Service: http://www.nwr.noaa.gov/protected_species/species_list/species_lists.html

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

Consultation Code: 01EWFW00-2019-SLI-1388

Event Code: 01EWFW00-2019-E-02803

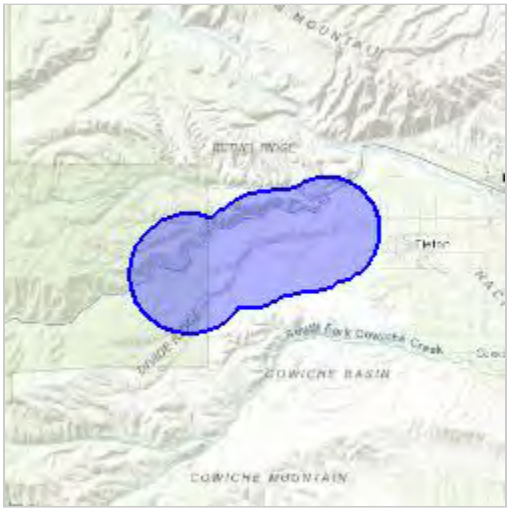
Project Name: YTID Geotechnical Investigation

Project Type: WATER SUPPLY / DELIVERY

Project Description: The Yakima−Tieton Irrigation District (YTID) proposes to conduct geotechnical field explorations associated with the Tieton River Fisheries Enhancement and Water Reliability project, and as part of that overall project, evaluate alternatives for replacing a portion of YTID's 12−mile−long Tieton Canal with a new tunnel. The existing canal is the backbone of their water supply system. It has served YTID well for more than 100 years but is currently operating beyond its normal life expectancy and needs to be replaced or repaired to limit the risk of catastrophic failure of the canal.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/46.700589985239674N120.85838595311438W



Counties: Yakima, WA

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 is outside 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. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/4488	Endangered
Gray Wolf *Canis lupus* Population: Western Distinct Population Segment No critical habitat has been designated for this species.	Proposed 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
Marbled Murrelet *Brachyramphus marmoratus* Population: U.S.A. (CA, OR, WA) There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/4467	Threatened
Northern Spotted Owl *Strix occidentalis caurina* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1123	Threatened
Yellow-billed Cuckoo *Coccyzus americanus* Population: Western U.S. DPS There is **proposed** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

Fishes

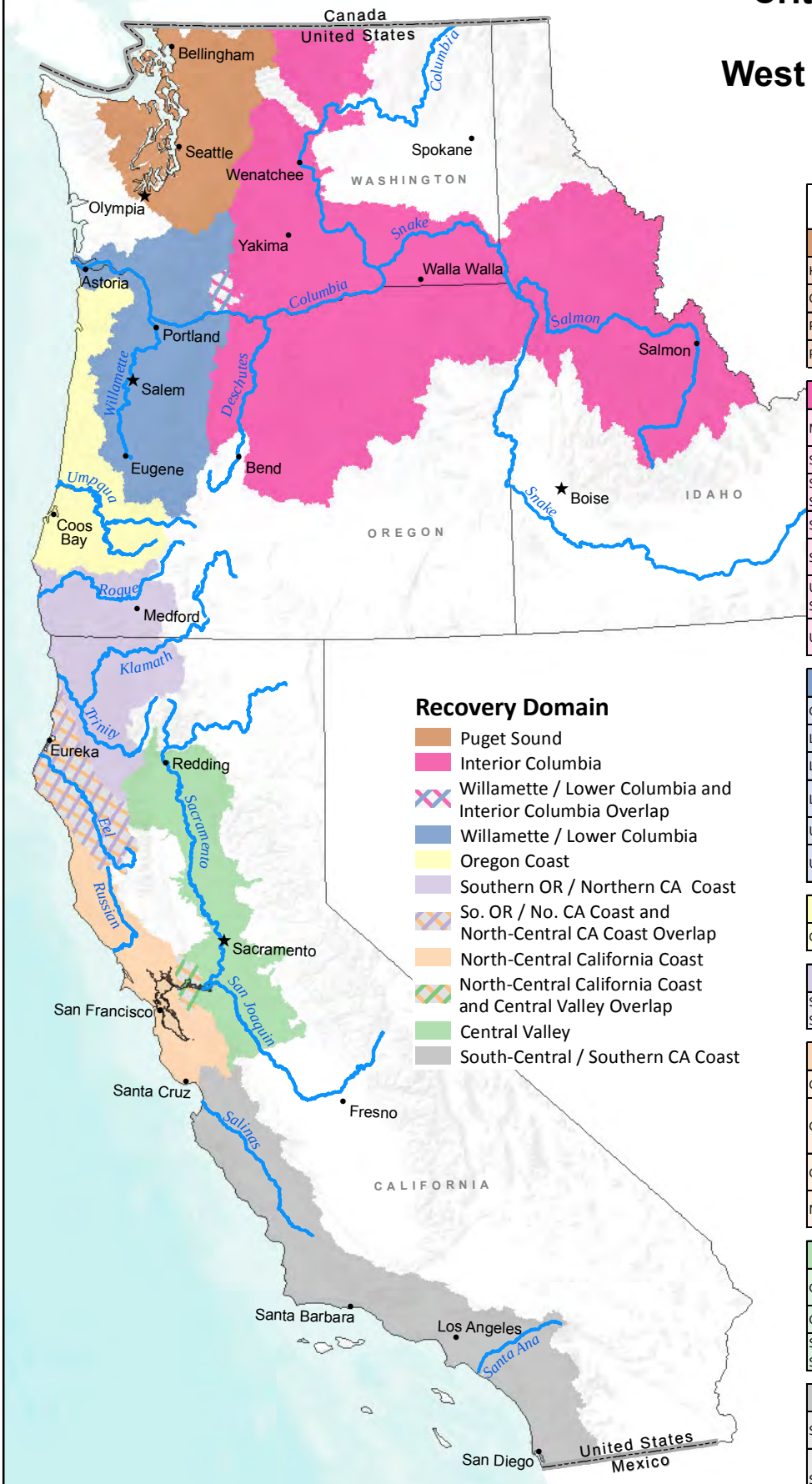
NAME	STATUS
Bull Trout *Salvelinus confluentus* Population: U.S.A., conterminous, lower 48 states There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8212	Threatened

Critical habitats

There are 2 critical habitats wholly or partially within your project area under this office's jurisdiction.

NAME	STATUS
Bull Trout *Salvelinus confluentus* https://ecos.fws.gov/ecp/species/8212#crithab	Final
Northern Spotted Owl *Strix occidentalis caurina* https://ecos.fws.gov/ecp/species/1123#crithab	Final

Status of ESA Listings & Critical Habitat Designations for West Coast Salmon & Steelhead



Updated July 2016

Evolutionarily Significant Unit / Distinct Population Segment	ESA Status	Date of ESA Listing	Date of CH Designation
Puget Sound Recovery Domain			
Hood Canal Summer-run Chum Salmon	T	3/25/1999	9/2/2005
Ozette Lake Sockeye Salmon	T	3/25/1999	9/2/2005
Puget Sound Chinook Salmon	T	3/24/1999	9/2/2005
Puget Sound Steelhead	T	5/11/2007	2/24/2016
Interior Columbia Recovery Domain			
Middle Columbia River Steelhead	T	3/25/1999 1/5/2006	9/2/2005
Snake River Fall-run Chinook Salmon	T	4/22/1992	12/28/1993
Snake River Spring / Summer-run Chinook Salmon	T	4/22/1992	10/25/1999
Snake River Sockeye Salmon	E	11/20/1991	12/28/1993
Snake River Steelhead	T	8/18/1997 1/5/2006	9/2/2005
Upper Columbia River Spring-run Chinook Salmon	E	3/24/1999	9/2/2005
Upper Columbia River Steelhead	T	8/18/1997 1/5/2006	9/2/2005
Willamette / Lower Columbia Recovery Domain			
Columbia River Chum Salmon	T	3/25/1999	9/2/2005
Lower Columbia River Chinook Salmon	T	3/24/1999	9/2/2005
Lower Columbia River Coho Salmon	T	6/28/2005	2/24/2016
Lower Columbia River Steelhead	T	3/19/1998 1/5/2006	9/2/2005
Upper Willamette River Chinook Salmon	T	3/24/1999	9/2/2005
Upper Willamette River Steelhead	T	3/25/1999 1/5/2006	9/2/2005
Oregon Coast Recovery Domain			
Oregon Coast Coho Salmon	T	2/11/2008	2/11/2008
Southern Oregon / Northern California Coast Recovery Domain			
Southern OR / Northern CA Coasts Coho Salmon	T	5/6/1997	5/5/1999
North-Central California Coast Recovery Domain			
California Coastal Chinook Salmon	T	9/16/1999	9/2/2005
Central California Coast Coho Salmon	E	10/31/1996 (T) 6/28/2005 (E) 4/2/2012 (RE)	5/5/1999
Central California Coast Steelhead	T	8/18/1997 1/5/2006	9/2/2005
Northern California Steelhead	T	6/7/2000 1/5/2006	9/2/2005
Central Valley Recovery Domain			
California Central Valley Steelhead	T	3/19/1998 1/5/2006	9/2/2005
Central Valley Spring-run Chinook Salmon	T	9/16/1999	9/2/2005
Sacramento River Winter-run Chinook Salmon	E	11/5/1990 (T) 1/4/1994 (E)	6/16/1993
South-Central / Southern California Coast Recovery Domain			
South-Central California Coast Steelhead	T	8/18/1997 1/5/2006	9/2/2005
Southern California Steelhead	E	8/18/1997 5/1/2002 (RE) 1/5/2006	9/2/2005

ESA = Endangered Species Act, CH = Critical Habitat, RE = Range Extension
E = Endangered, T = Threatened,

Critical Habitat Rules Cited

- 2/24/2016 (81 FR 9252) Final Critical Habitat Designation for Puget Sound Steelhead and Lower Columbia River Coho Salmon
- 2/11/2008 (73 FR 7816) Final Critical Habitat Designation for Oregon Coast Coho Salmon
- 9/2/2005 (70 FR 52630) Final Critical Habitat Designation for 12 ESU's of Salmon and Steelhead in WA, OR, and ID
- 9/2/2005 (70 FR 52488) Final Critical Habitat Designation for 7 ESU's of Salmon and Steelhead in CA
- 10/25/1999 (64 FR 57399) Revised Critical Habitat Designation for Snake River Spring/Summer-run Chinook Salmon
- 5/5/1999 (64 FR 24049) Final Critical Habitat Designation for Central CA Coast and Southern OR/Northern CA Coast Coho Salmon
- 12/28/1993 (58 FR 68543) Final Critical Habitat Designation for Snake River Chinook and Sockeye Salmon
- 6/16/1993 (58 FR 33212) Final Critical Habitat Designation for Sacramento River Winter-run Chinook Salmon

ESA Listing Rules Cited

- 4/2/2012 (77 FR 19552) Final Range Extension for Endangered Central California Coast Coho Salmon
- 2/11/2008 (73 FR 7816) Final ESA Listing for Oregon Coast Coho Salmon
- 5/11/2007 (72 FR 26722) Final ESA Listing for Puget Sound Steelhead
- 1/5/2006 (71 FR 5248) Final Listing Determinations for 10 Distinct Population Segments of West Coast Steelhead
- 6/28/2005 (70 FR 37160) Final ESA Listing for 16 ESU's of West Coast Salmon
- 5/1/2002 (67 FR 21586) Range Extension for Endangered Steelhead in Southern California
- 6/7/2000 (65 FR 36074) Final ESA Listing for Northern California Steelhead
- 9/16/1999 (64 FR 50394) Final ESA Listing for Two Chinook Salmon ESUs in California
- 3/25/1999 (64 FR 14508) Final ESA Listing for Hood River Canal Summer-run and Columbia River Chum Salmon
- 3/25/1999 (64 FR 14517) Final ESA Listing for Middle Columbia River and Upper Willamette River Steelhead
- 3/25/1999 (64 FR 14528) Final ESA Listing for Ozette Lake Sockeye Salmon
- 3/24/1999 (64 FR 14308) Final ESA Listing for 4 ESU's of Chinook Salmon
- 3/19/1998 (63 FR 13347) Final ESA Listing for Lower Columbia River and Central Valley Steelhead
- 8/18/1997 (62 FR 43937) Final ESA Listing for 5 ESU's of Steelhead
- 5/6/1997 (62 FR 24588) Final ESA Listing for Southern Oregon / Northern California Coast Coho Salmon
- 10/31/1996 (61 FR 56138) Final ESA Listing for Central California Coast Coho Salmon
- 1/4/1994 (59 FR 222) Final ESA Listing for Sacramento River Winter-run Chinook Salmon
- 4/22/1992 (57 FR 14653) Final ESA Listing for Snake River Spring/summer-run and Snake River Fall Chinook Salmon
- 11/20/1991 (56 FR 58619) Final ESA Listing for Snake River Sockeye Salmon
- 11/5/1990 (55 FR 46515) Final ESA Listing for Sacramento River Winter-run Chinook Salmon

Attachment C

Photographs

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Photograph 1. Tracked drill rig similar to what may be used to drill borings other than LT-B4.

Photograph 2. Platform drill rig similar to what may be used to drill LT-B4.

Photograph 3. At Access Road Modification (ARM) 1, the roadside ditch adjacent to French Road would be filled to allow access to OB-2.

Photograph 4. At ARM 5, several large rocks would be moved by hand to allow water truck access to LT-B3.

Photograph 5. At ARM 6, several large rocks would be moved by hand to allow water truck access to LT-B3.

Photograph 6. The existing wooden bridge over the YTID canal may need to be strengthened to access LT-B4 (1,300 feet west of bridge).

Photograph 7. At ARM 2, low-hanging oak tree branches would be raised or removed to allow access to OB-3.

Photograph 8. At ARM 3, low-hanging oak tree branches would be raised or removed to allow access to OB-3.

Photograph 9. At ARM 4, low-hanging oak tree branches would be raised or removed to allow access to LT-B3.

Photograph 10. At ARM 7, an oak tree limb would be removed for crane access to LT-B4.

Photograph 11. At ARM 8, a fir tree limb would be removed for crane access to LT-B4.

Photograph 12. At ARM 9, an oak tree limb would be removed for crane access to LT-B4.