APPENDIX D. WATERWAY DELINEATION AND ASSESSMENT REPORT

TDS Telecom
Olinda Last Mile Underserved Broadband Project
Shasta County, California

Waterway Delineation and Assessment Report

Prepared by:
Tim Jordan, Senior Biologist

Prepared for:
TDS Telecommunications Corporation
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Madison, Wisconsin, 53717

Submitted by:
Tierra Right of Way Services, Ltd.
1575 East River Road, Suite 201
Tucson, Arizona 85718
(520) 319-2106

July 21, 2015

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1.0 INTRODUCTION

This report provides regulatory information, methods, and results for a delineation of waterways, including wetlands, potentially affected by the proposed construction of the Olinda Last Mile Underserved Broadband Project. The purpose of the delineation is to assess the limits of potential waters of the United States (WUS) and/or waters of the State of California (WS) within and adjacent to the project area that may be subject to regulation by the U.S. Army Corps of Engineers (USACE), the Regional Water Quality Control Board (RWQCB), and/or the California Department of Fish and Wildlife (CDFW).

2.0 PROJECT LOCATION

The project area is located in southwestern Shasta County, California, west of the City of Anderson and the Sacramento River. Specifically, the project area is located in portions of Sections 27, 34, and 35, Township 31 North, Range 6 West; Sections 1 and 2, Township 30 North, Range 6 West; and Sections 5–11, 14–17, 19–24, 26, and 27, Township 30 North, Range 5 West, Mount Diablo Meridian, as depicted on the Olinda, Ono, and Igo, California, 7.5-minute U.S. Geological Survey (USGS) topographic quadrangle maps (Figures 1 and 2).

3.0 PROJECT DESCRIPTION

The proposed project involves the construction of a second-generation, very-high-bit-rate digital subscriber line (VDSL2) fiber-optic network capable of 25 Mbps/5 Mbps (download/upload) speeds. In total, approximately 24.6 km (15.3 miles) of new fiber-optic cable will be buried within protective conduit along existing roads in the project area. The buried line installation, which consists of the telecommunications cable and its protective conduit, will be performed using plowing and trenching construction techniques, and a directional boring machine will be used to install the line at waterway and road crossings. Ancillary equipment to be installed includes seven new equipment cabinets, which will serve as connecting "nodes" for customers, splice boxes, and line markers. The equipment cabinets will be approximately 0.6 m by 1.0 m by 1.2 m (2.0 by 3.0 by 4.0 feet) in size and will be installed on top of buried concrete vaults within an approximately 6-m-square (20-foot-square) area. Splice boxes are small rectangular metal enclosures that will be installed between lengths of cable. Line markers, which will be installed at intervals of approximately 305 m (1,000 feet), are approximately 1.2 m (4.0 feet) tall and made of flexible fiberglass.

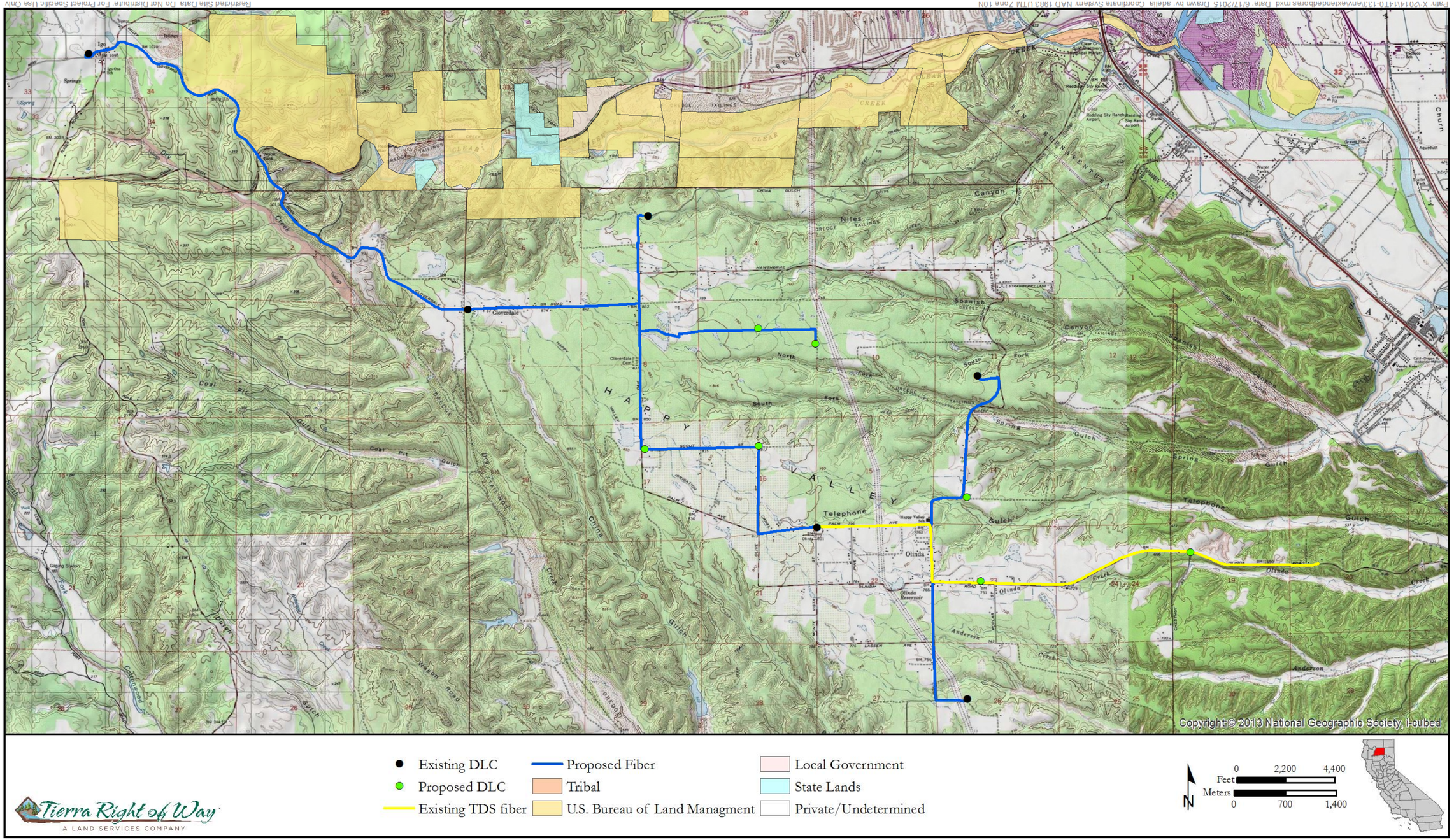


Figure 1. Project location.

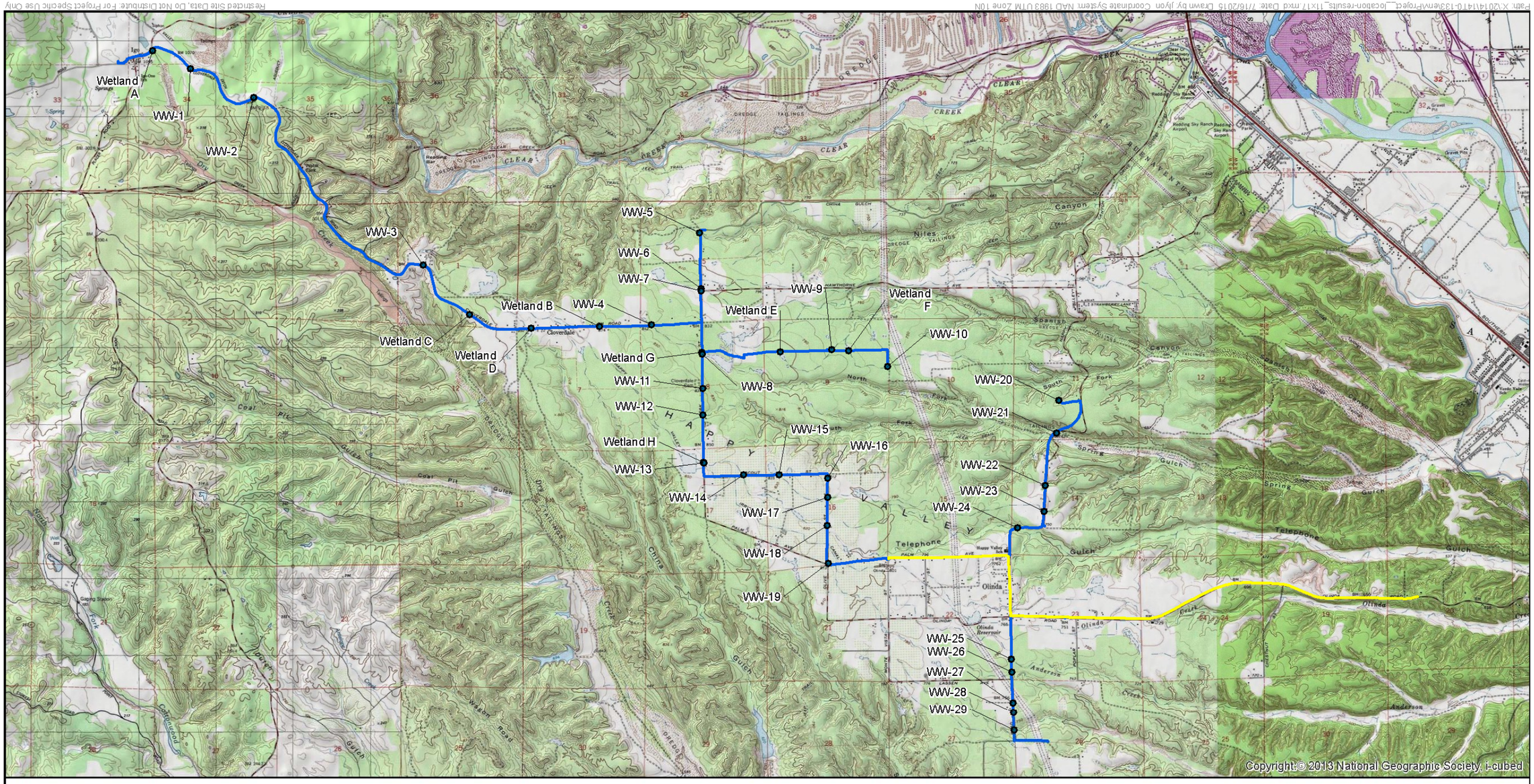


Figure 2. Project area.

The line installation will be performed in two steps. First, a protective conduit for the fiber-optic cable will be installed by either plowing or directional boring construction methods. Second, the fiber-optic cable will be "blown" through the conduit using compressed air. The total combined ground disturbance associated with the project, including the plowed, trenched, and bored installations, would not exceed an area approximately 2.8 ha (6.8 acres) in size.

4.0 PHYSICAL SETTING

The project area is located in north-central California within the northern portion of the Sacramento Valley, where the Valley meets the Cascade Range. The topography in the central portion of the project area is relatively flat, and the western and northern portions are hilly. Land use in most of the project area is rural residential, with denser development present in the vicinity of Olinda located at the intersection of Happy Valley and Palm Roads. Olive orchards are present in the central portion of the project area along Scout and Olive Streets, and relatively open woodland areas are present in the vicinity of Happy Valley Road at Spring Creek and along the western portion of Cloverdale Road to the western end of the study area located in the community of Igo. Elevations in the project area range from approximately 198–335 m (650–1,100 feet) above mean sea level (AMSL).

The Western Regional Climate Center (WRCC) recorded seasonal climatic data from 1986–2013 at the Redding Municipal Airport, located approximately 13 km (8 miles) east of the project area (WRCC 2014). These data include average maximum temperature, average minimum temperature, average total precipitation, and average snowfall. The average annual maximum temperature within the project area is 75.5° F (24.2° C), with the hottest month of the year being July with an average maximum temperature of 98.7° F (37.1° C). The average annual minimum temperature within the project area is 49.4° F (9.7° C), with December having the coldest average temperature of 36.1° F (2.3° C). The project area receives an average of 85.5 cm (33.68 inches) of precipitation annually, with January having the highest average precipitation at 16.1 cm (6.32 inches). The project area receives a snowfall of 10.2 cm (4.0 inches) in the average year.

The dominant type of terrestrial habitat present in the study area, as classified in *A Manual of California Vegetation* (Sawyer 2009), is Blue Oak–Digger Pine Woodland. Other terrestrial habitats present in the study area include ruderal habitat, located in the more developed central portions of the study area, and a small amount of Northern Yellow Pine Forest located in the extreme northwestern portion of the study area in the vicinity of Igo.

5.0 JURISDICTIONS

5.1 U.S. Army Corps of Engineers

Wetlands and other WUS that are subject to Section 404 of the Clean Water Act (CWA) are under the jurisdiction of USACE. Typically, these waters include naturally occurring traditional navigable waters (TNWs), relatively permanent waters (RPWs), and/or ephemeral waters with a significant nexus to a TNW. Agricultural water conveyance systems, which are humanmade and constructed wholly in uplands, are typically only considered jurisdictional if they are RPWs. The most recent guidance on the topic states that "relatively permanent waters typically flow year-round or have continuous flow at least seasonally (e.g., typically three months)" (USACE 2008). Conversely, humanmade drainages constructed solely in uplands that are not RPWs are generally not Federally jurisdictional.

5.2 California Department of Fish and Wildlife

The CDFW generally assumes jurisdiction over all stream features, including drains and canals, as WS. The CDFW's jurisdiction extends from the top of bank to the opposite top of bank on these features, or to the limits of riparian vegetation if this vegetation extends beyond the top of the banks. Wetlands need to meet only one of the three USACE criteria (hydrophytic vegetation, hydric soils, and/or wetland hydrology) to be considered CDFW jurisdictional wetlands.

Under Section 1600 of the California Fish and Game Code, CDFW's jurisdiction includes "…bed, channel, or bank of any river, stream, or lake designated by the department in which there is at any time an existing fish or wildlife resource or from which these resources derive benefit…" Canals, aqueducts, irrigation ditches, and other means of water conveyance can also be considered streams if they support aquatic life, riparian vegetation, or stream-dependent terrestrial benefits (Cylinder 1995).

6.0 METHODOLOGY

The delineation of waterways in the Olinda project area began with a review of aerial imagery and topographic maps to determine the locations of waterways along the project corridors that the proposed installations would intersect. While in the field, all waterways and wetlands intersecting the project corridors, including those not identified prior to the field visit, were recorded using a Trimble GeoXH global positioning system (GPS) handheld unit.

Waterway and wetland delineation fieldwork was conducted concurrently with biological reconnaissance surveys by Tierra biologists Theresa Knoblock and Tim Jordan on February 10–14, 2015. Each wetland identified in February was revisited by the same personnel on May 20, 2015, to gather additional information about the wetlands' hydrology.

The ordinary high water mark (OHWM) of each non-wetland waterway, identified by the presence of a well-defined channel, scour line, debris line, or change in substrate, was documented, and photos were taken at 65 paired data points (see Appendix A). The boundary of each wetland identified, as evidenced by the presence/absence of water and a change in vegetation from wetland to upland plant species, was recorded as a line feature.

Following the field visit, the waterway crossing data points and wetland polygons collected were refined using notes taken in the field, and the final extents of all waterways, including any vegetation associated with the waterways, to be crossed and ultimately avoided during the proposed telecommunications line installation were developed.

7.0 RESULTS

Twenty-nine waterways, two of which have emergent wetland vegetation (Map Nos. 4 and 5), and eight wetlands are present within the study area that will be crossed by the proposed installations (see Figure 2).

All of the wetlands identified in the study area, with the exception of Wetland A, are seasonal. This was determined because at the time of the February surveys, there was heavy rainfall in the previous two weeks and all of the wetlands identified were inundated. When the second survey was

conducted the following May, Wetlands B through H were all dry, and the only one that remained inundated was Wetland A.

A summary of the waterways that would be crossed by the proposed installations, including the names of the waterways, their locations, and corresponding identification numbers as indicated on Figure 2, can be found in Table 1, and a summary of the wetland crossings identified in the study area, including their delineated size, type, and location, can be found in Table 2. The characteristics of each waterway and wetland crossing identified in the project area, including the delineated extent to be avoided during construction and other descriptive information, can be found in Appendix A.

All three of the USACE wetland indicators, wetland hydrology, wetland vegetation, and hydric soils, were determined to be present at each of the eight wetlands during the February 2015 surveys. Formal wetland delineation data sheets were not completed at the time of the surveys because in addition to the planned avoidance during construction, it was obvious that wetland hydrology was present because each wetland was inundated. Because either wetland obligate (OBL) or facultative wetland (FACW) plant species were the dominant vegetation found at each wetland, it was assumed that hydric soils were present (see Table 3).

Table 1. Waterway Crossings in the Project Area

WW No.	Waterway Name	Regime	Location
-	Dry Creek (Wetland A)	perennial	Placer Road east of Igo
1	Happy Valley Ditch	ephemeral ditch	Cloverdale Road
2	Happy Valley Ditch	ephemeral ditch	Cloverdale Road
3	Happy Valley Ditch	ephemeral ditch	Cloverdale Road
4	unnamed tributary to North Fork Spring Gulch	ephemeral/seasonal riverine emergent	Cloverdale Road
5	unnamed tributary to Niles Canyon	ephemeral/seasonal riverine emergent	Oak Street
6	unnamed tributary to Spanish Canyon	ephemeral	Oak Street
7	unnamed tributary to Spanish Canyon	ephemeral	Oak Street
8	unnamed tributary to North Fork Spring Gulch	ephemeral	Oak Street
9	unnamed tributary to Spanish Canyon	ephemeral	Laverne Lane
10	unnamed tributary to South Fork Spanish Canyon	ephemeral	Serendipity Lane
11	unnamed tributary to South Fork Spring Gulch	ephemeral	Oak Street
12	unnamed tributary to South Fork Spring Gulch	ephemeral	Oak Street
13	Happy Valley Irrigation Canal	ephemeral canal	Oak Street
14	unnamed tributary to Telephone Gulch	ephemeral	Scout Street
15	unnamed tributary to Telephone Gulch	ephemeral	Scout Street
16	unnamed tributary to Telephone Gulch	ephemeral	Olive Street

WW No.	Waterway Name	Regime	Location
17	unnamed tributary to Telephone Gulch	ephemeral	Olive Street
18	unnamed tributary to Telephone Gulch	ephemeral	Olive Street
19	Happy Valley Irrigation Canal	ephemeral	Olive Street and Palm Avenue
20	unnamed tributary to South Fork Spanish Canyon	ephemeral	Treat Avenue
21	Spring Gulch	ephemeral	Happy Valley Road
22	unnamed tributary to Spring Gulch	ephemeral	Happy Valley Road
23	unnamed tributary to Spring Gulch	ephemeral	Happy Valley Road
24	Telephone Gulch	ephemeral	Happy Valley Road
25	Anderson Creek	ephemeral	Happy Valley Road
26	unnamed	ephemeral	Happy Valley Road
27	unnamed	ephemeral	Happy Valley Road
28	unnamed	ephemeral	Happy Valley Road
29	unnamed	ephemeral	Happy Valley Road

Table 2. Wetland Crossings in the Project Area

Wetland ID	Delineated Size (acres)	Type	Location	Associated Bore Length
A	0.403	palustrine emergent	Placer Road east of Igo	46 m (150 feet)
B	0.020	seasonal palustrine emergent	Cloverdale Road	552 m (1,812 feet)
C	0.054		Cloverdale Road	214 m (702 feet)
D	0.012		Cloverdale Road	230 m (755 feet)
E	0.062		Laverne Lane	195 m (640 feet)
F	0.035		Laverne Lane	188 m (617 feet)
G	0.038		Oak Street	189 m (620 feet)
H	0.016		Oak Street	168 m (551 feet)

Table 3. Observed Wetland Plant Species

Scientific Name	Common Name	Indicator Status[a]
Wetland A		
Juncus effusus	Common Rush	FACW
Typha latifolia	Common Cattail	OBL
Wetland B		
Juncus acuminatus	Sharp Fruited Rush	OBL
Rubus ursinus	California Blackberry	FACU
Rumex crispus	Curly Dock	FAC

Scientific Name	Common Name	Indicator Status[a]
Wetland C		
Cyperus eragrostis	Umbrella Sedge	FACW
Juncus acuminatus	Sharp Fruited Rush	OBL
Paspalum dilitatum	Dallis Grass	FACU
Plantago lanceolata	Broadleaf Plantain	FACU
Polypogon monspeliensis	Annual Rabbitsfoot Grass	FACW
Rubus ursinus	Californa Blackberry	FACU
Rumex crispus	Curly Dock	FAC
Wetland D		
Cyperus eragrostis	Umbrella Sedge	FACW
Juncus effusus	Common Rush	FACW
Rubus ursinus	Californa Blackberry	FACU
Rumex crispus	Curly Dock	FAC
Typha latifolia	Common Cattail	OBL
Wetland E		
Hypochoeris radicata	False Dandelion	UPL
Juncus acuminatus	Sharp Fruited Rush	OBL
Lolium perenne	Perennial Ryegrass	FAC
Rumex crispus	Curly Dock	FAC
Wetland F		
Cyperus eragrostis	Umbrella Sedge	FACW
Lolium perenne	Perennial Ryegrass	FAC
Rumex crispus	Curly Dock	FAC
Wetland G		
Elymus glaucus	Blue Wild Rye	FACU
Lolium perenne	Perennial Ryegrass	FAC
Ludwigia peploides	Creeping Water-Primrose	OBL
Rumex crispus	Curly Dock	FAC
Veronica americana	American Speedwell	OBL
Wetland H		
Briza maxima	Big Quaking Grass	UPL
Hordeum jubatum	Foxtail Barley	FAC
Juncus acuminatus	Sharp Fruited Rush	OBL
Lemna sp.	Duckweed	OBL
Veronica americana	American Speedwell	OBL

[a] *2012 National Wetland Plant List, USACE Arid West Region.*

8.0. DISCUSSION

8.1 Waters of the U.S.

All of the non-wetland waterway crossings identified in the project area, with the exception of the Happy Valley Ditch (Map Nos. 1–3) and the Happy Valley Canal (Map No. 13), are considered potentially jurisdictional WUS and may be subject to regulation by USACE under Section 404 of the CWA because they may have a significant connection to the Sacramento River, the closest TNW in relation to the project area. The Happy Valley Ditch and the Happy Valley Canal would not likely be considered WUS because both are humanmade water conveyances constructed entirely in uplands and their flow regimes are unlikely to be considered relatively permanent.

All eight of the wetlands in the project area are considered potentially jurisdictional WUS because all three USACE wetland indicators are present, at least seasonally, at each wetland.

8.2 Waters of the State

All of the non-wetland waterways and wetlands identified in the project area, including the Happy Valley Ditch and the Happy Valley Canal, are considered potentially jurisdictional WS and may be subject to regulation by the CDFW under Section 401 of the CWA, Section 1602 of the California Fish and Game Code, and the Porter-Cologne Water Quality Act.

8.0 CONCLUSIONS

No dredge-and-fill operations will occur within the waterways or wetlands in the project area and no subsequent loss of WUS will take place because all will be bored beneath during the proposed installations; therefore, a CWA Section 404 permit from USACE will not be required prior to project implementation. Likewise, no impacts to WS will occur, and a stream alteration permit from CDFW is unnecessary because the waterways and any potential wildlife habitat, either in the waterways themselves or along their margins, will be avoided.

9.0 REFERENCES

Cylinder, P., K. Bogdan, E. Davis, A. Herson
1995 *Wetlands Regulation: A Complete Guide to Federal and California Programs*. Solano Press Books. Point Arena, California.

Sawyer, John O., and Todd Keeler-Wolf
2009 *A Manual of California Vegetation*. California Native Plant Society, Sacramento, California.

U.S. Army Corps of Engineers (USACE)
2008 A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States—A Delineation Manual. Available at: http://www.spk.usace.army.mil/Portals/12/documents/regulatory/pdf/Ordinary_High_Watermark_Manual_Aug_2008.pdf. Accessed on July 20, 2015.

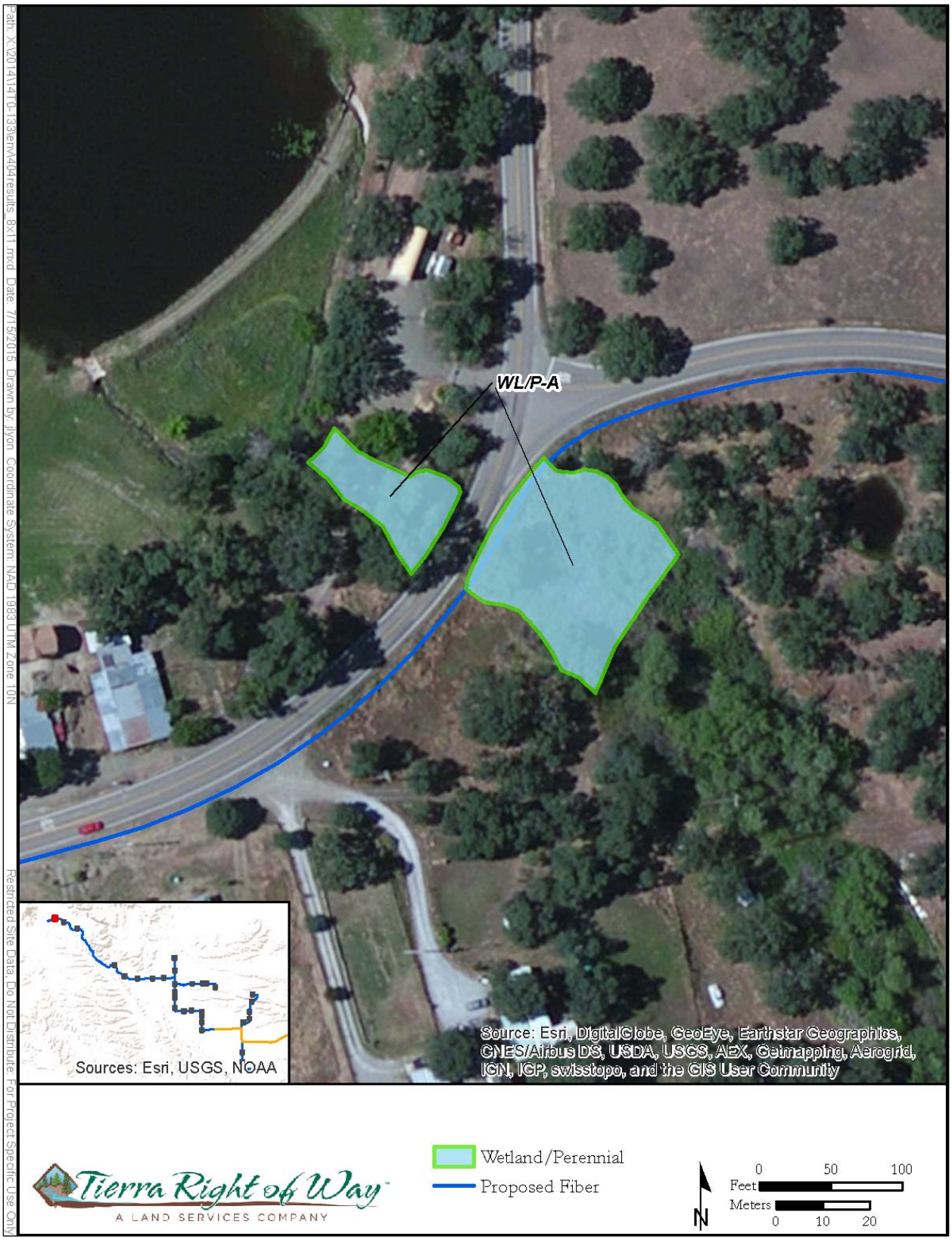
APPENDIX A. WATERWAY AND WETLAND CROSSINGS IDENTIFIED IN THE PROJECT AREA

Tierra Right of Way
A LAND SERVICES COMPANY

- Waterway/Wetland
- Detail Map Index
- Existing TDS Fiber
- Proposed Fiber

E - Ephemeral
EC - Ephemeral Canal
ED - Ephemeral Ditch
ES/REV - Ephemeral/Seasonal with Riverine Emergent Vegetation

N
Feet 0 1,200 2,400
Meters 0 300 600

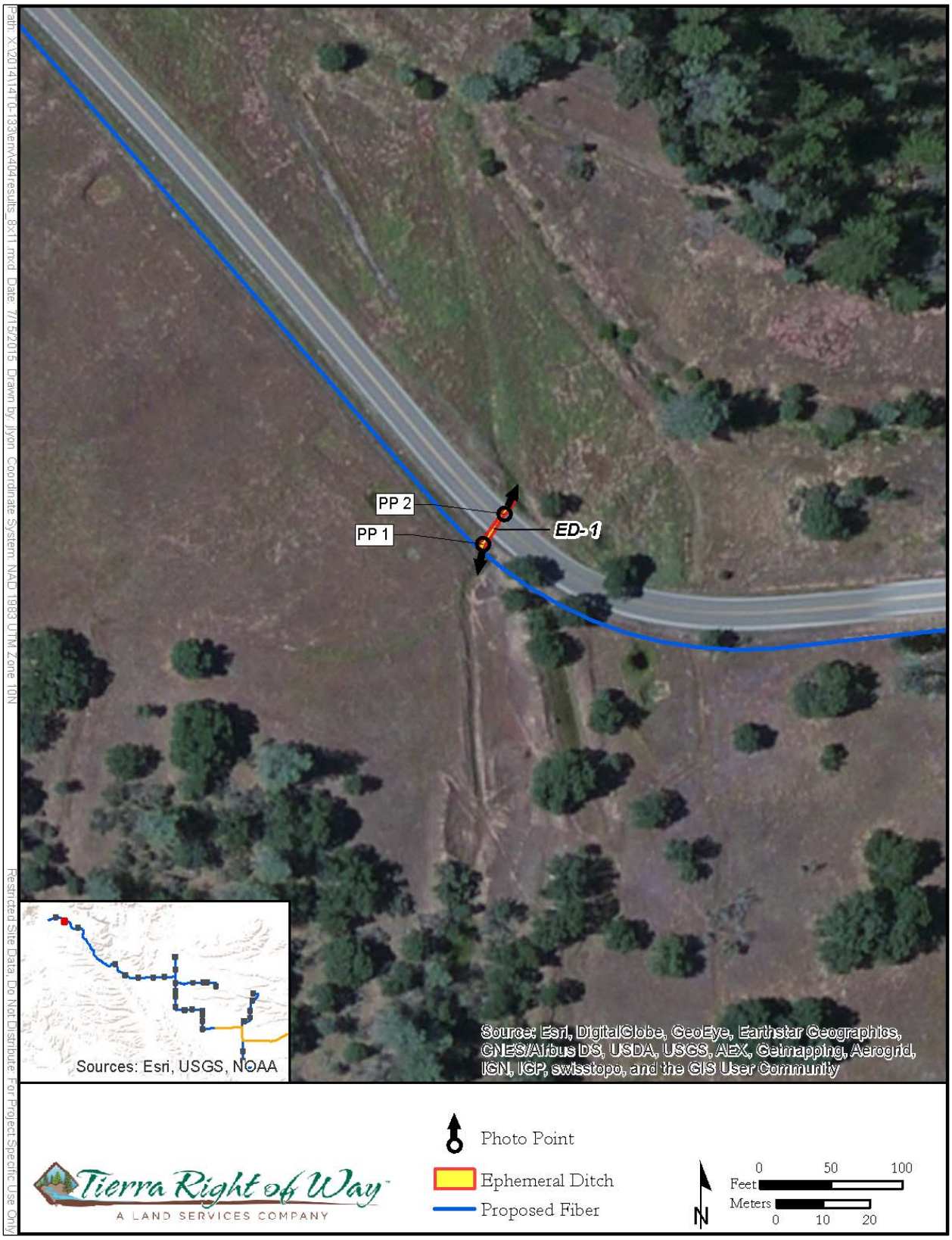


Detail Map 1. Wetland A, Dry Creek.

Photo 1. PP #n/a, Wetland A, Dry Creek, view upstream.

Photo 2. PP #n/a, Wetland A, Dry Creek, view downstream.

Detail Map 1	
Waterway Name	Wetland A / Dry Creek
Waterway Type	Perennial Wetland
Delineated Area	0.163 ha (0.403 acres)
Coordinates (NAD 83)	40.506338, -122.538627

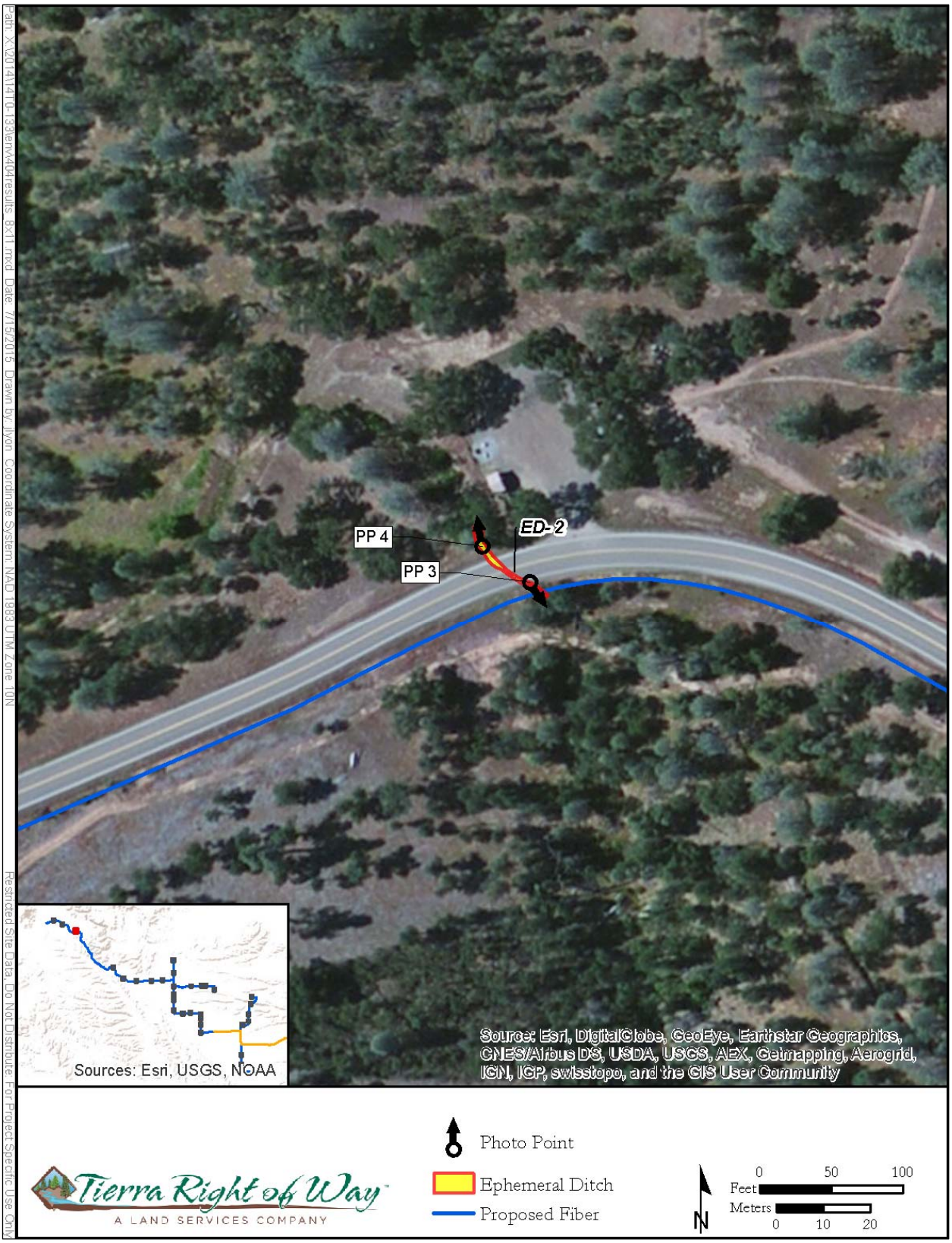


Detail Map 2. Happy Valley Ditch.

Photo 3. PP #1, view downstream.

Photo 4. PP #2, view upstream.

Detail Map 2	
Waterway Name	Happy Valley Ditch
Waterway Type	Ephemeral ditch
Delineated Area	13 m^2 (140 $feet^2$)
OHWM width (feet)	3 (downstream), 4 (upstream)
Coordinates (NAD 83)	40.504212, -122.532864



Detail Map 3. Happy Valley Ditch.

Photo 5. PP #3, downstream

Photo 6. PP #4, upstream.

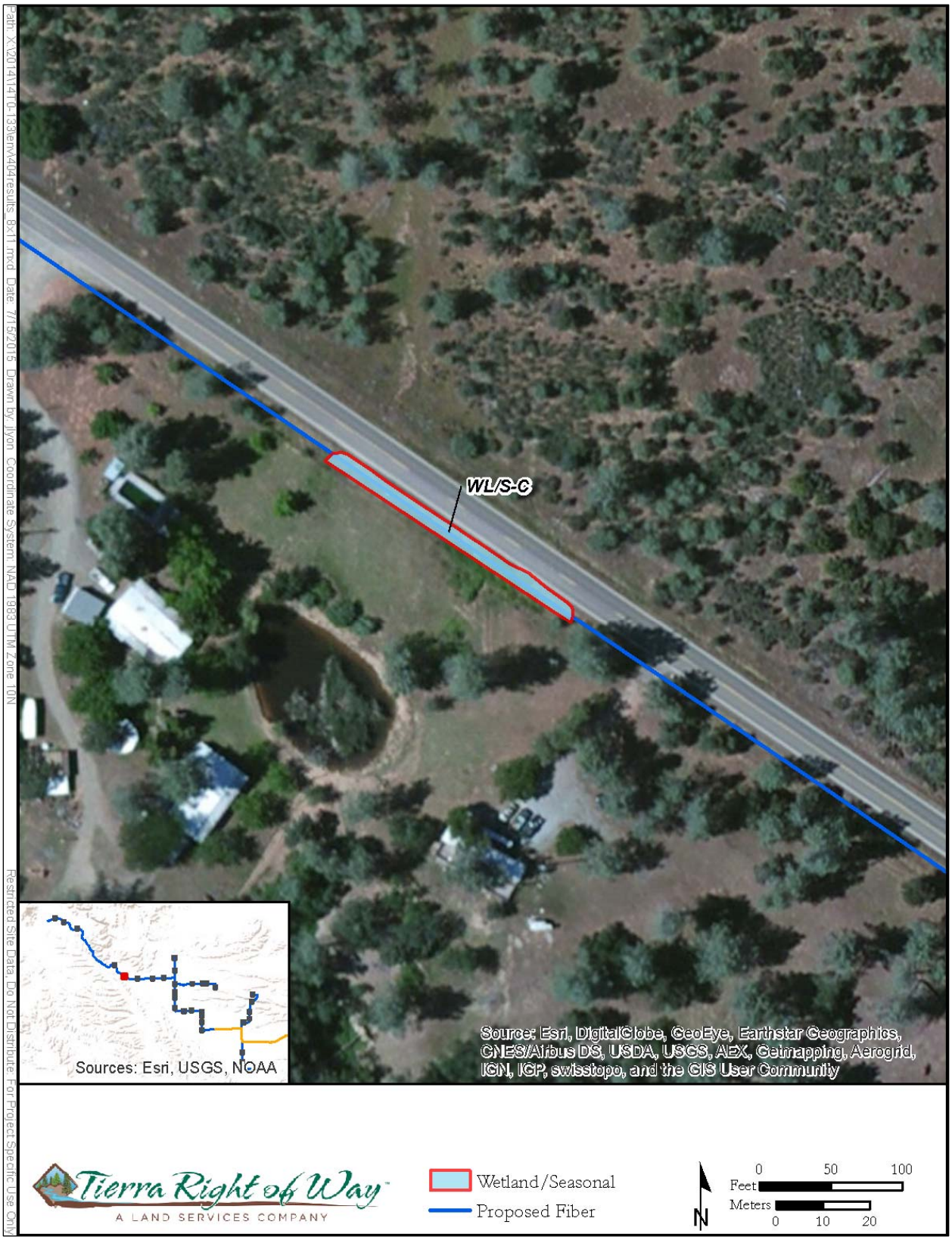
Detail Map 3	
Waterway Name	Happy Valley Ditch
Waterway Type	Ephemeral ditch
Delineated Area	24 m^2 (258 $feet^2$)
OHWM width (feet)	2 (downstream), 5 (upstream)
Coordinates (NAD 83)	40.500782, -122.523151

Detail Map 4. Happy Valley Ditch.

Photo 7. PP #5, view upstream.

Photo 8. PP #6, view downstream.

Detail Map 4	
Waterway Name	Happy Valley Ditch
Waterway Type	Ephemeral ditch
Delineated Area	18 m^2 (194 $feet^2$)
OHWM width (feet)	3 (downstream), 3 (upstream)
Coordinates (NAD 83)	40.481043, -122.497587



Detail Map 5. Wetland C.

Photo 9. PP #n/a, Wetland C, view east.

Photo 10. PP #n/a, Wetland C, view west.

Detail Map 5	
Waterway Name	Wetland C
Waterway Type	Seasonal Wetland
Delineated Area	0.022 ha (0.054 acres)
Coordinates (NAD 83)	40.475181, -122.490246

Detail Map 6. Wetland D.

Photo 11. PP #n/a, Wetland D, view south.

Detail Map 6	
Waterway Name	Wetland D
Waterway Type	Seasonal Wetland
Delineated Area	0.005 ha (0.012 acres)
Coordinates (NAD 83)	40.473517, -122.480795

Detail Map 7. Wetland B.

Photo 12. PP #n/a, Wetland B, view west.

Detail Map 7	
Waterway Name	Wetland B
Waterway Type	Seasonal Wetland
Delineated Area	0.008 ha (0.020 acres)
Coordinates (NAD 83)	40.473695, -122.470317

Detail Map 8. Unnamed tributary to North Fork Spring Gulch.

Photo 13. PP #7, view downstream.

Photo 14. PP #8, view upstream.

Detail Map 8	
Waterway Name	Unnamed Tributary to North Fork Spring Gulch
Waterway Type	Ephemeral/seasonal with riverine emergent vegetation
Delineated Area	33 m^2 (355 $feet^2$)
OHWM width (feet)	6 (downstream), 4 (upstream)
Coordinates (NAD 83)	40.473840, -122.462403

Detail Map 9. Unnamed tributary to Niles Canyon.

Photo 15. PP #9, view upstream.

Photo 16. PP #10, view downstream.

Detail Map 9	
Waterway Name	Unnamed Tributary to Niles Canyon
Waterway Type	Ephemeral/seasonal with riverine emergent vegetation
Delineated Area	50 m^2 (538 $feet^2$)
OHWM width (feet)	8 (downstream), 10 (upstream)
Coordinates (NAD 83)	40.484620, -122.454917

Detail Map 10. Unnamed tributaries to Spanish Canyon.

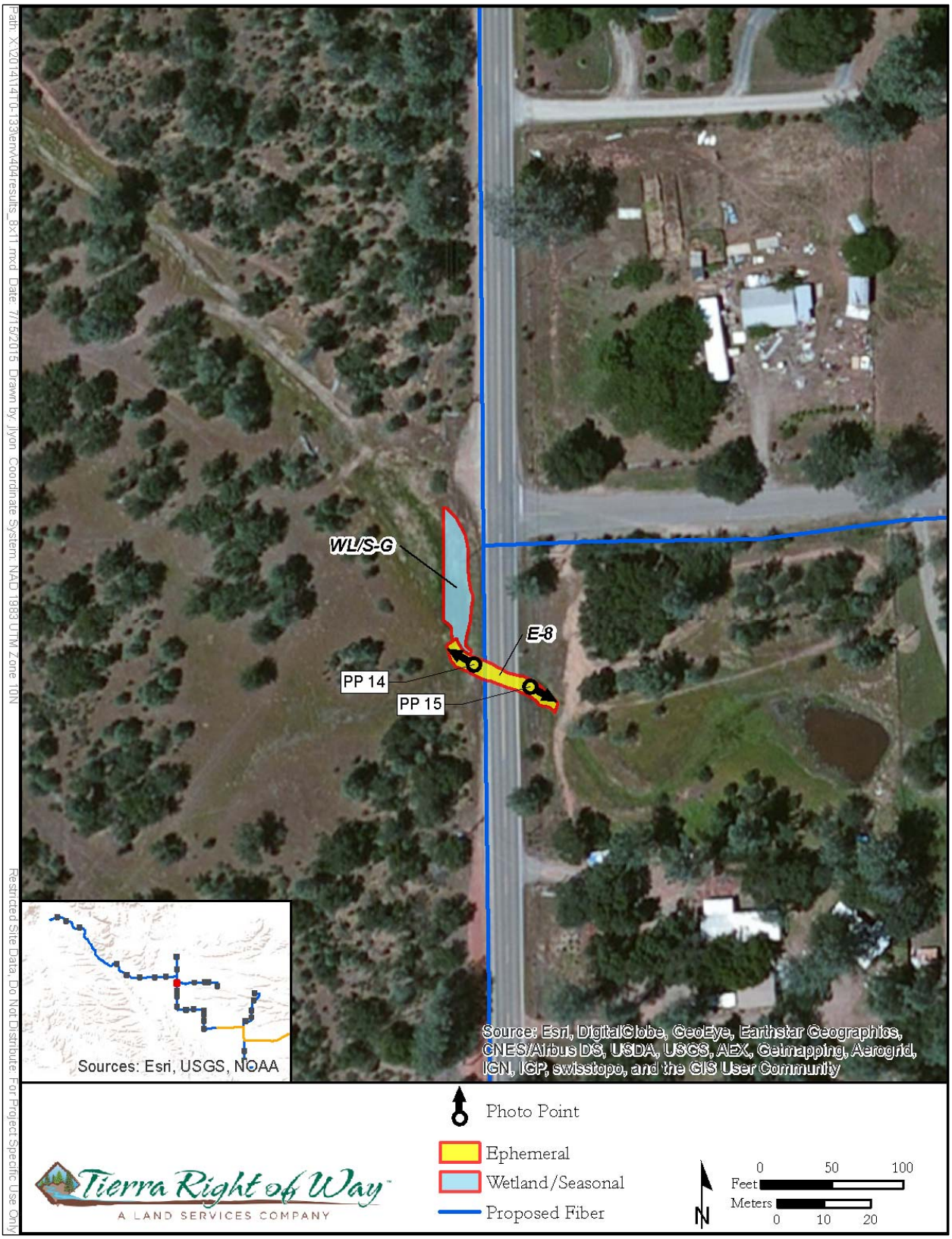
Photo 17. PP #11, view upstream.

Photo 18. PP #12, view downstream.

Photo 19. PP #13, view upstream.

Detail Map 10, E6	
Waterway Name	Unnamed Tributary to Spanish Canyon
Waterway Type	Ephemeral
Delineated Area	18 m^2 (194 $feet^2$)
OHWM width (feet)	4 (downstream), 12 (upstream)
Coordinates (NAD 83)	40.478034, -122.454779

Detail Map 10, E7	
Waterway Name	Unnamed Tributary to Spanish Canyon
Waterway Type	Ephemeral
Delineated Area	19 m^2 (204 $feet^2$)
OHWM width (feet)	6 (upstream)
Coordinates (NAD 83)	40.477778, -122.454761



Detail Map 11. Unnamed tributary to North Fork Spring Gulch and Wetland G.

Photo 20, PP# 14, view upstream.

Photo 21. PP #15, view downstream.

Detail Map 11	
Waterway Name	Unnamed Tributary to North Fork Spring Gulch
Waterway Type	Ephemeral
Delineated Area	86 m^2 (925 $feet^2$)
OHWM width (feet)	12 (downstream), 12 (upstream)
Coordinates (NAD 83)	40.470399, -122.454613

Detail Map 11	
Waterway Name	Wetland G
Waterway Type	Seasonal Wetland
Delineated Area	0.015 ha (0.038 acres)
Coordinates (NAD 83)	40.470570, -122.454718

Detail Map 12. Wetland E.

Photo 22. PP #n/a, Wetland E, view west.

Detail Map 12	
Waterway Name	Wetland E
Waterway Type	Seasonal Wetland
Delineated Area	0.025 ha (0.062 acres)
Coordinates (NAD 83)	40.470604, -122.442649

Detail Map 13. Unnamed tributary to Spanish Canyon.

Photo 23. PP #16, view upstream.

Photo 24. PP #17, view downstream.

Detail Map 13	
Waterway Name	Unnamed Tributary to Spanish Canyon
Waterway Type	Ephemeral
Delineated Area	34 m^2 (366 $feet^2$)
OHWM width (feet)	3 (downstream), 4 (upstream)
Coordinates (NAD 83)	40.470795, -122.434822

Detail Map 14. Wetland F.

Photo 25. PP #n/a, Wetland F, view west.

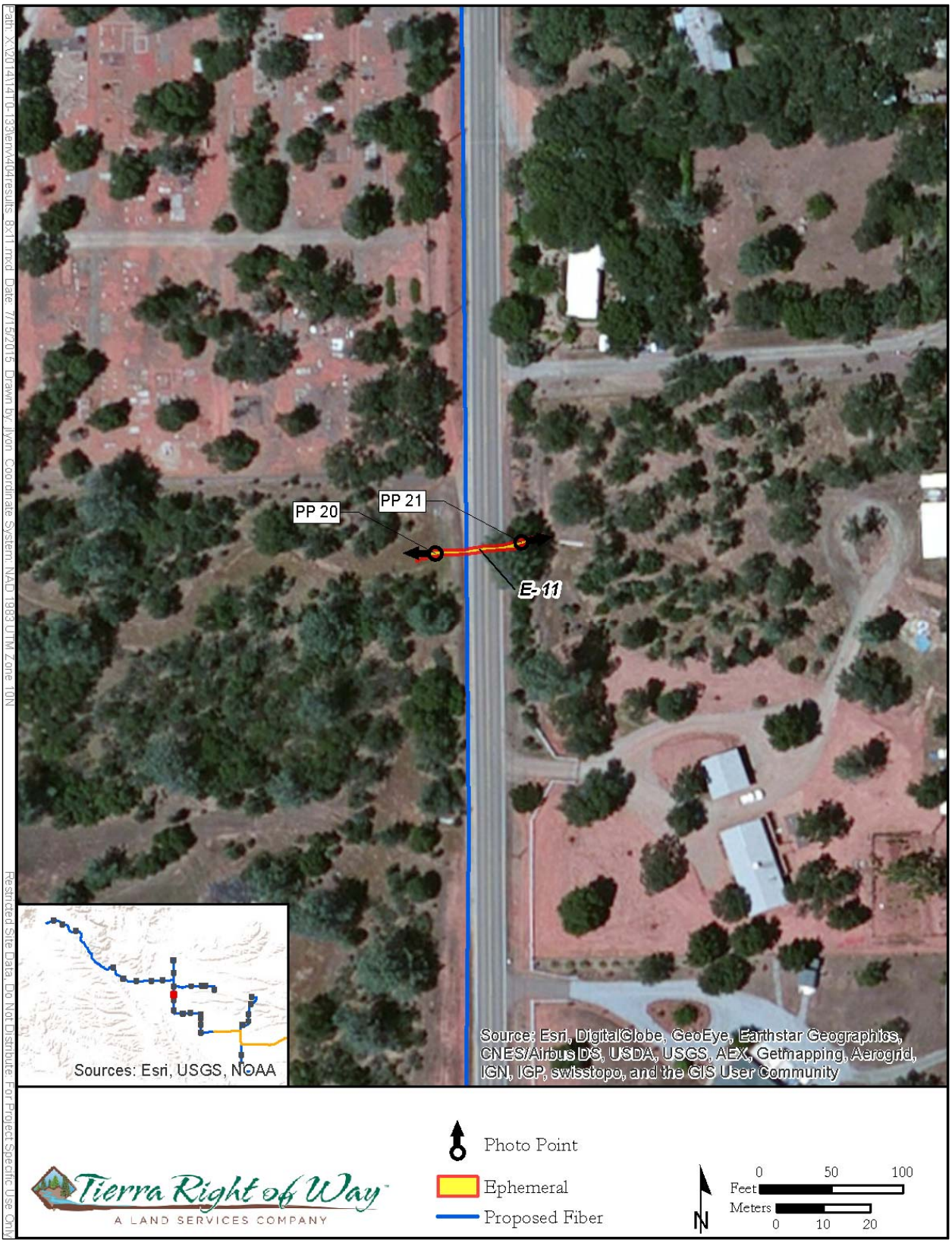
Detail Map 14	
Waterway Name	Wetland F
Waterway Type	Seasonal Wetland
Delineated Area	0.014 ha (0.035 acres)
Coordinates (NAD 83)	40.470680, -122.432210

Detail Map 15. Unnamed tributary to South Fork Spanish Canyon.

Photo 26. PP #18, view upstream.

Photo 27. PP #19, view downstream.

Detail Map 15	
Waterway Name	Unnamed Tributary to South Fork Spanish Canyon
Waterway Type	Ephemeral
Delineated Area	80 m^2 (861 $feet^2$)
OHWM width (feet)	4 (downstream), 12 (upstream)
Coordinates (NAD 83)	40.470795, -122.434822

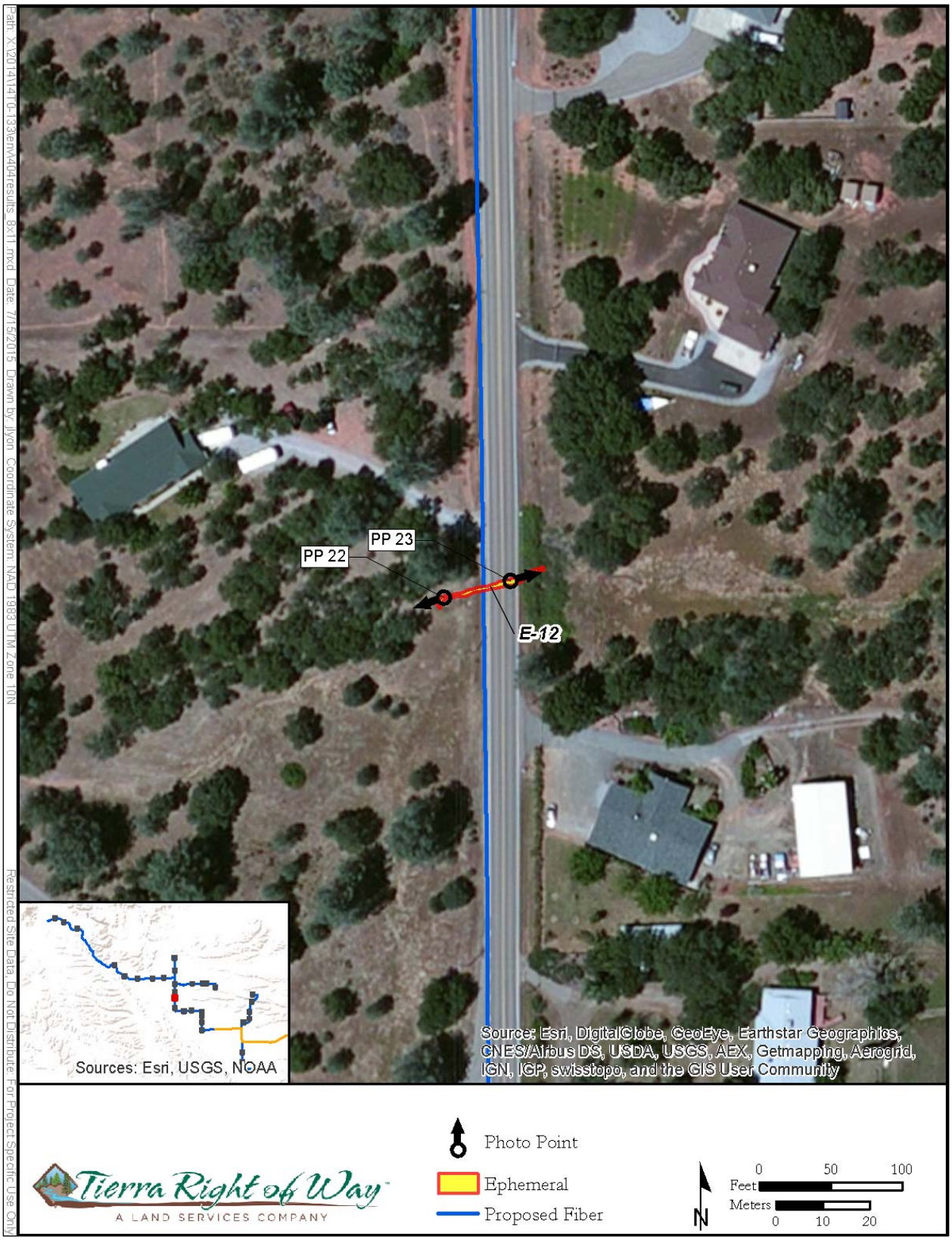


Detail Map 16. Unnamed tributary to South Fork Spring Gulch.

Photo 28. PP #20, view upstream.

Photo 29. PP #21, view downstream.

Detail Map 16	
Waterway Name	Unnamed Tributary to South Fork Spring Gulch
Waterway Type	Ephemeral
Delineated Area	29 m^2 (312 $feet^2$)
OHWM width (feet)	4 (downstream), 4 (upstream)
Coordinates (NAD 83)	40.466348, -122.454593



Detail Map 17. Unnamed tributary to South Fork Spring Gulch.

Photo 30. PP #22, view upstream.

Photo 31. PP #23, view downstream.

Detail Map 17	
Waterway Name	Unnamed Tributary to South Fork Spring Gulch
Waterway Type	Ephemeral
Delineated Area	22 m^2 (237 $feet^2$)
OHWM width (feet)	4 (downstream), 3 (upstream)
Coordinates (NAD 83)	40.463268, -122.454588

Detail Map 18. Happy Valley Irrigation Canal and Wetland H.

Photo 32. PP #24, view upstream.

Photo 33. PP #25, view downstream.

Photo 34. PP #n/a, view north.

Detail Map 18	
Waterway Name	Happy Valley Irrigation Canal
Waterway Type	Ephemeral canal
Delineated Area	37 m^2 (398 $feet^2$)
OHWM width (feet)	4 (downstream), 25 (upstream)
Coordinates (NAD 83)	40.457643, -122.454462

Detail Map 18	
Waterway Name	Wetland H
Waterway Type	Seasonal Wetland
Delineated Area	0.007 ha (0.016 acres)
Coordinates (NAD 83)	40.457676, -122.454599

Detail Map 19. Unnamed tributary to Telephone Gulch.

Photo 35. PP #26, view upstream.

Photo 36. PP #27, view downstream.

Detail Map 19	
Waterway Name	Unnamed Tributary to Telephone Gulch
Waterway Type	Ephemeral
Delineated Area	62 m^2 (667 $feet^2$)
OHWM width (feet)	6 (downstream), 6 (upstream)
Coordinates (NAD 83)	40.456193, -122.448390

Detail Map 20. Unnamed tributary to Telephone Gulch.

Photo 37. PP #28, view upstream.

Photo 38. PP #29, view downstream.

Detail Map 20	
Waterway Name	Unnamed Tributary to Telephone Gulch
Waterway Type	Ephemeral
Delineated Area	30 m^2 (323 $feet^2$)
OHWM width (feet)	5 (downstream), 2 (upstream)
Coordinates (NAD 83)	40.456154, -122.443009

Detail Map 21. Unnamed tributary to Telephone Gulch.

Photo 39. PP #30, view upstream.

Photo 40. PP #31, view downstream.

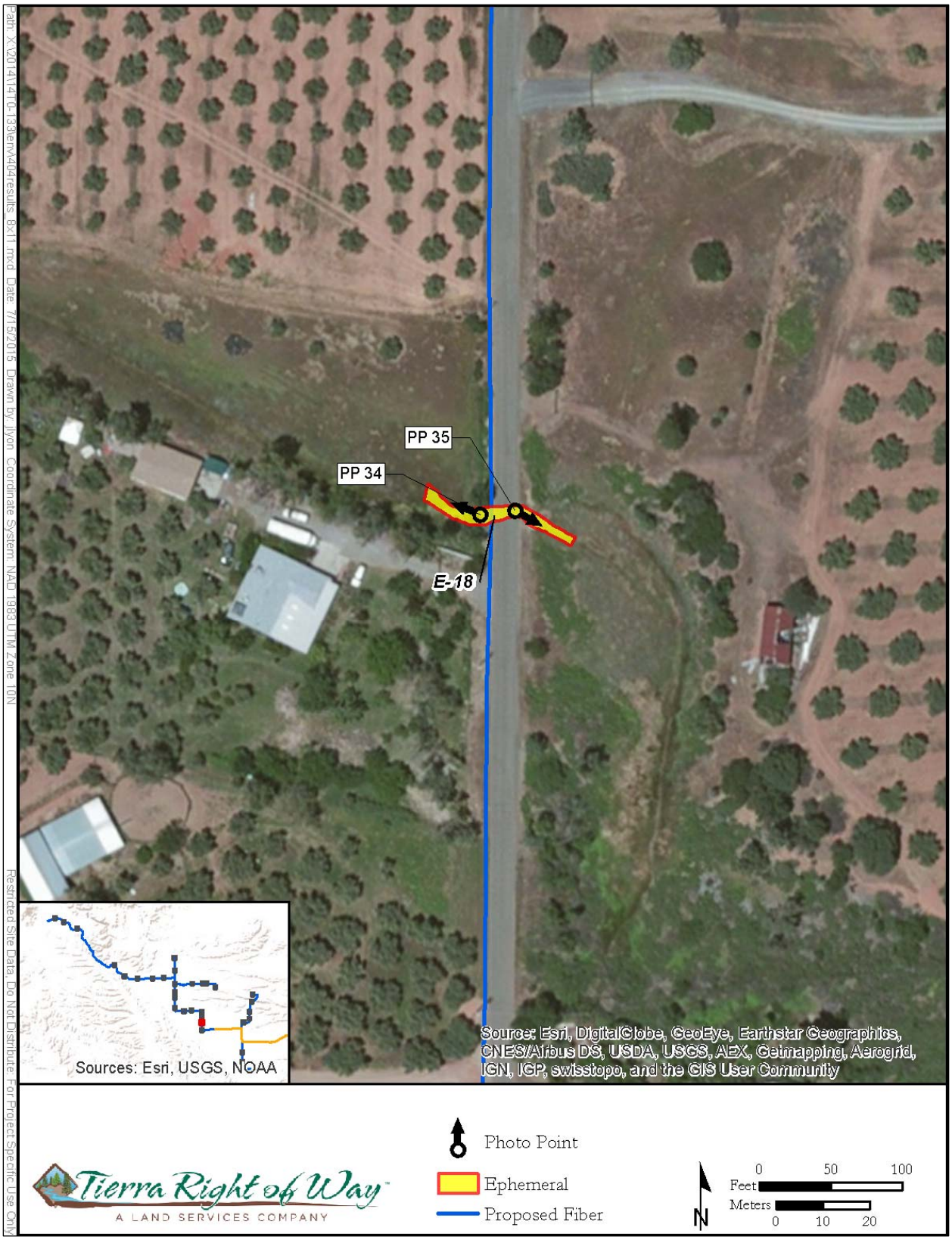
Detail Map 21	
Waterway Name	Unnamed Tributary to Telephone Gulch
Waterway Type	Ephemeral
Delineated Area	10 m^2 (108 $feet^2$)
OHWM width (feet)	3 (downstream), 2 (upstream)
Coordinates (NAD 83)	40.455744, -122.435533

Detail Map 22. Unnamed tributary to Telephone Gulch.

Photo 41. PP #32, view upstream.

Photo 42. PP #33, view downstream.

Detail Map 22	
Waterway Name	Unnamed Tributary to Telephone Gulch
Waterway Type	Ephemeral
Delineated Area	17 m^2 (183 $feet^2$)
OHWM width (feet)	4 (downstream), 4 (upstream)
Coordinates (NAD 83)	40.453472, -122.435579

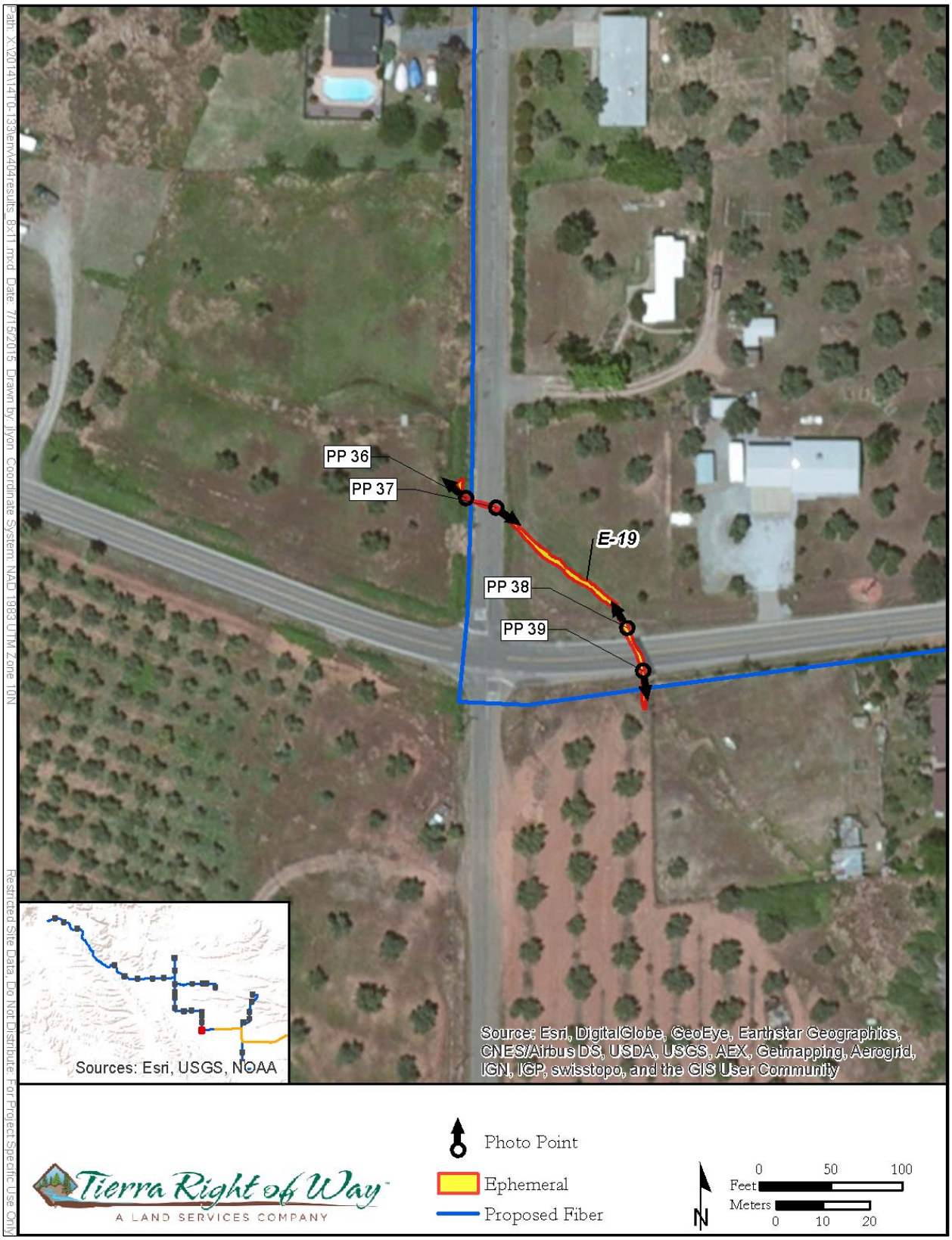


Detail Map 23. Unnamed tributary to Telephone Gulch.

Photo 43. PP #34, view upstream.

Photo 44. PP #35, view downstream.

Detail Map 23	
Waterway Name	Unnamed Tributary to Telephone Gulch
Waterway Type	Ephemeral
Delineated Area	94 m^2 (1,011 $feet^2$)
OHWM width (feet)	10 (downstream), 12 (upstream)
Coordinates (NAD 83)	40.450199, -122.435665



Detail Map 24. Happy Valley Irrigation Canal.

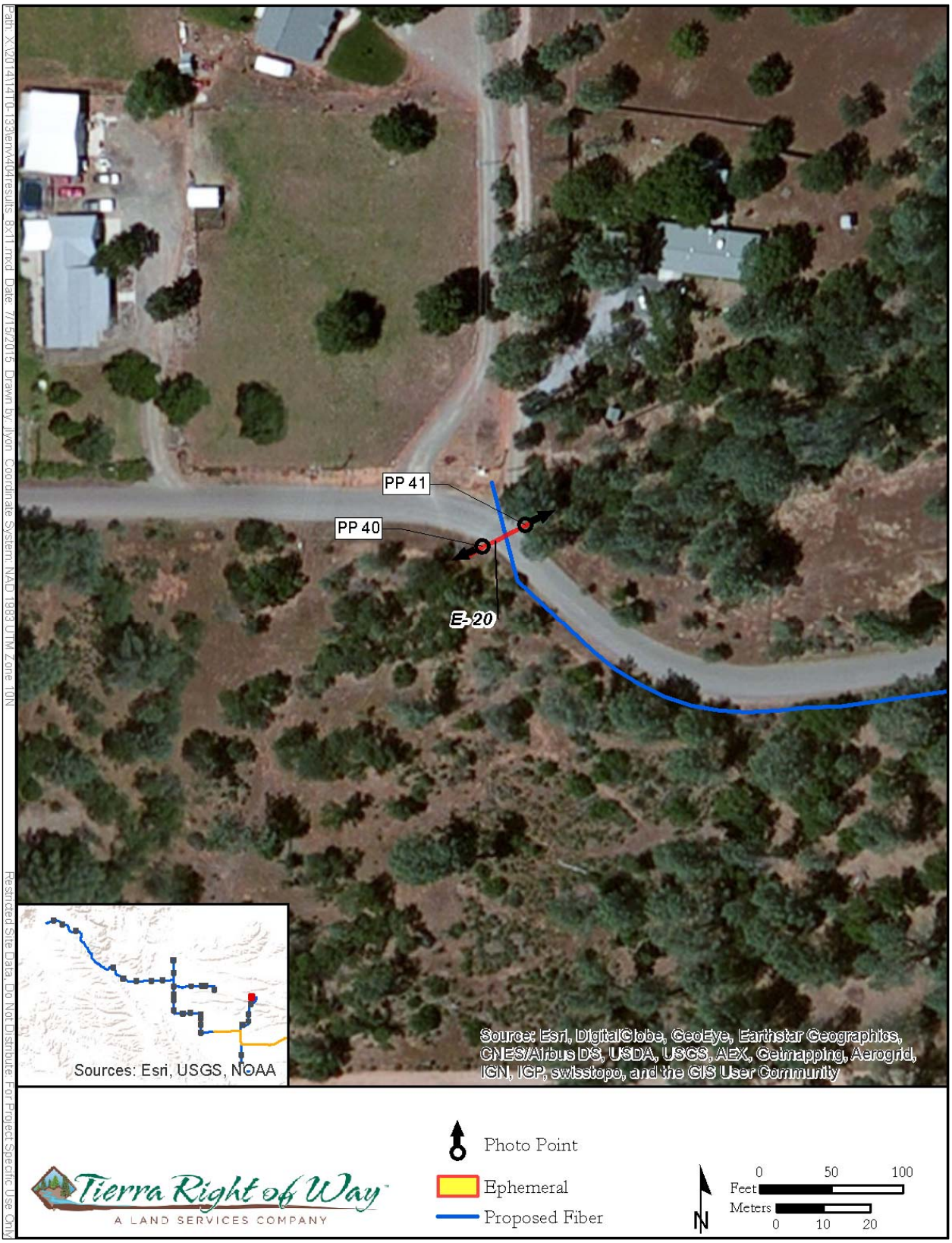
Photo 45. PP #36, view upstream.

Photo 46. PP #37, view downstream.

Photo 47. PP #38, view upstream.

Photo 48. PP #39, view downstream.

Detail Map 24	
Waterway Name	Happy Valley Irrigation Canal
Waterway Type	Ephemeral canal
Delineated Area	66 m^2 (710 $feet^2$)
OHWM width (feet)	4, 2 (PP 37, 39 downstream); 3, 4 (PP 36, 38 upstream)
Coordinates (NAD 83)	40.450199, -122.435665



Detail Map 25. Unnamed tributary to South Fork Spanish Canyon.

Photo 49. PP #40, view upstream.

Photo 50. PP #41, view downstream.

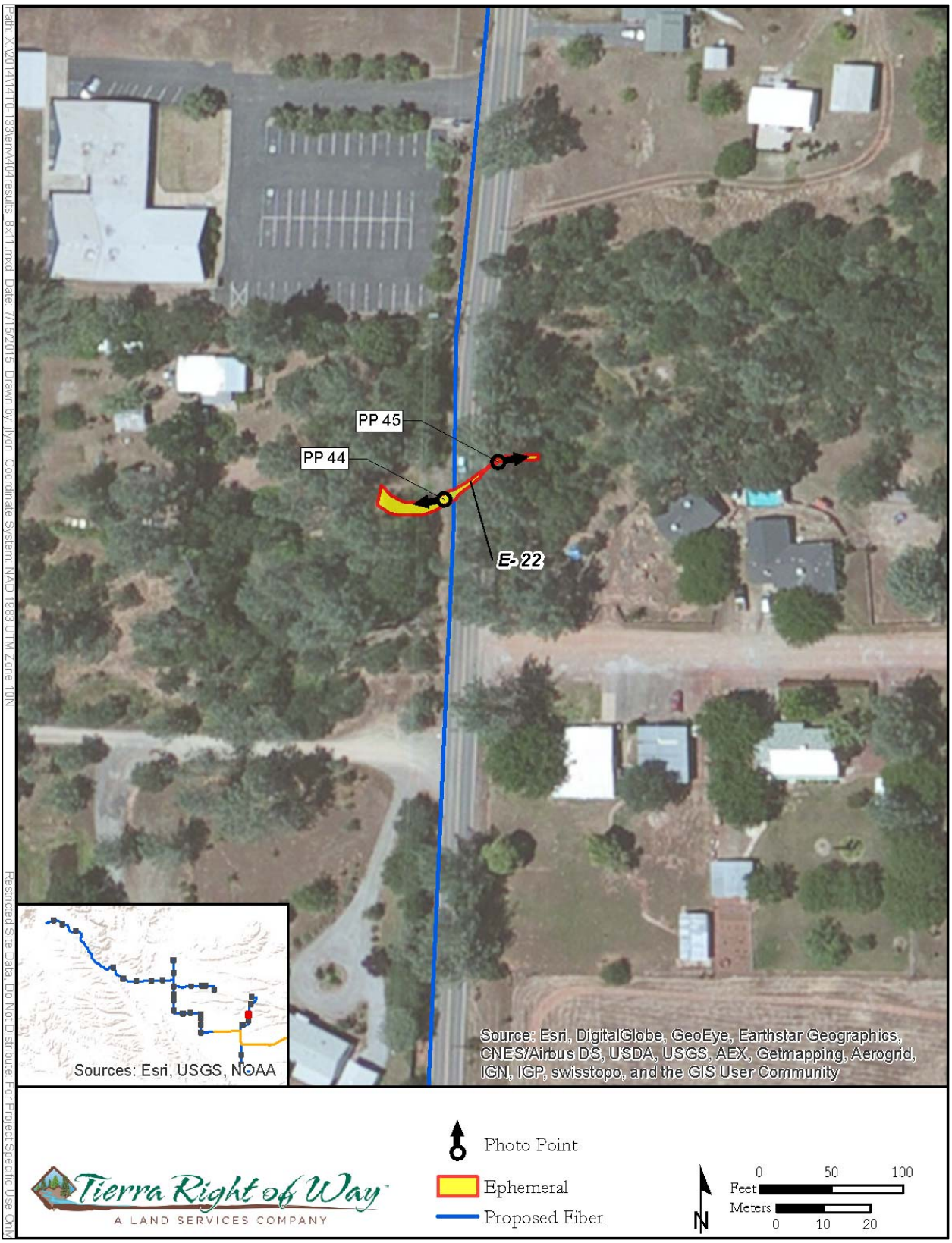
Detail Map 25	
Waterway Name	Unnamed Tributary to South Fork Spanish Canyon
Waterway Type	Ephemeral
Delineated Area	5 m^2 (54 $feet^2$)
OHWM width (feet)	1 (downstream), 1 (upstream)
Coordinates (NAD 83)	40.464714, -122.400039

Detail Map 26. Spring Gulch.

Photo 51. PP #42, view upstream.

Photo 52. PP #43, view downstream.

Detail Map 26	
Waterway Name	Spring Gulch
Waterway Type	Ephemeral
Delineated Area	562 m^2 (6,047 $feet^2$)
OHWM width (feet)	40 (downstream), 25 (upstream)
Coordinates (NAD 83)	40.460848, -122.400464

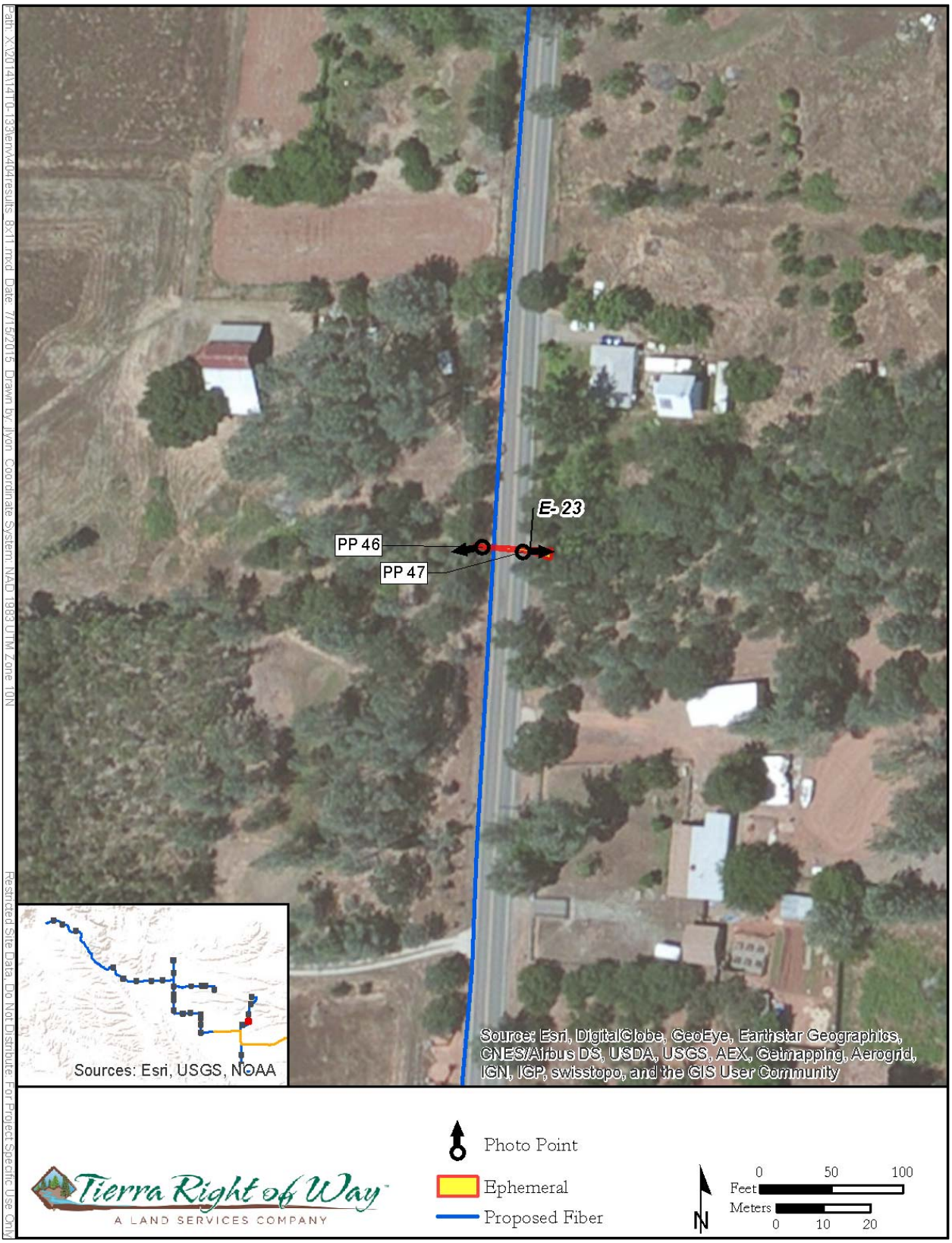


Detail Map 27. Unnamed tributary to Spring Gulch.

Photo 53. PP #44, view upstream.

Photo 54. PP #45, view downstream.

Detail Map 27	
Waterway Name	Unnamed Tributary to Spring Gulch
Waterway Type	Ephemeral
Delineated Area	68 m^2 (732 $feet^2$)
OHWM width (feet)	4 (downstream), 10 (upstream)
Coordinates (NAD 83)	40.454709, -122.402216



Detail Map 28. Unnamed tributary to Spring Gulch.

Photo 55. PP #46, view upstream.

Photo 56. PP #47, view downstream.

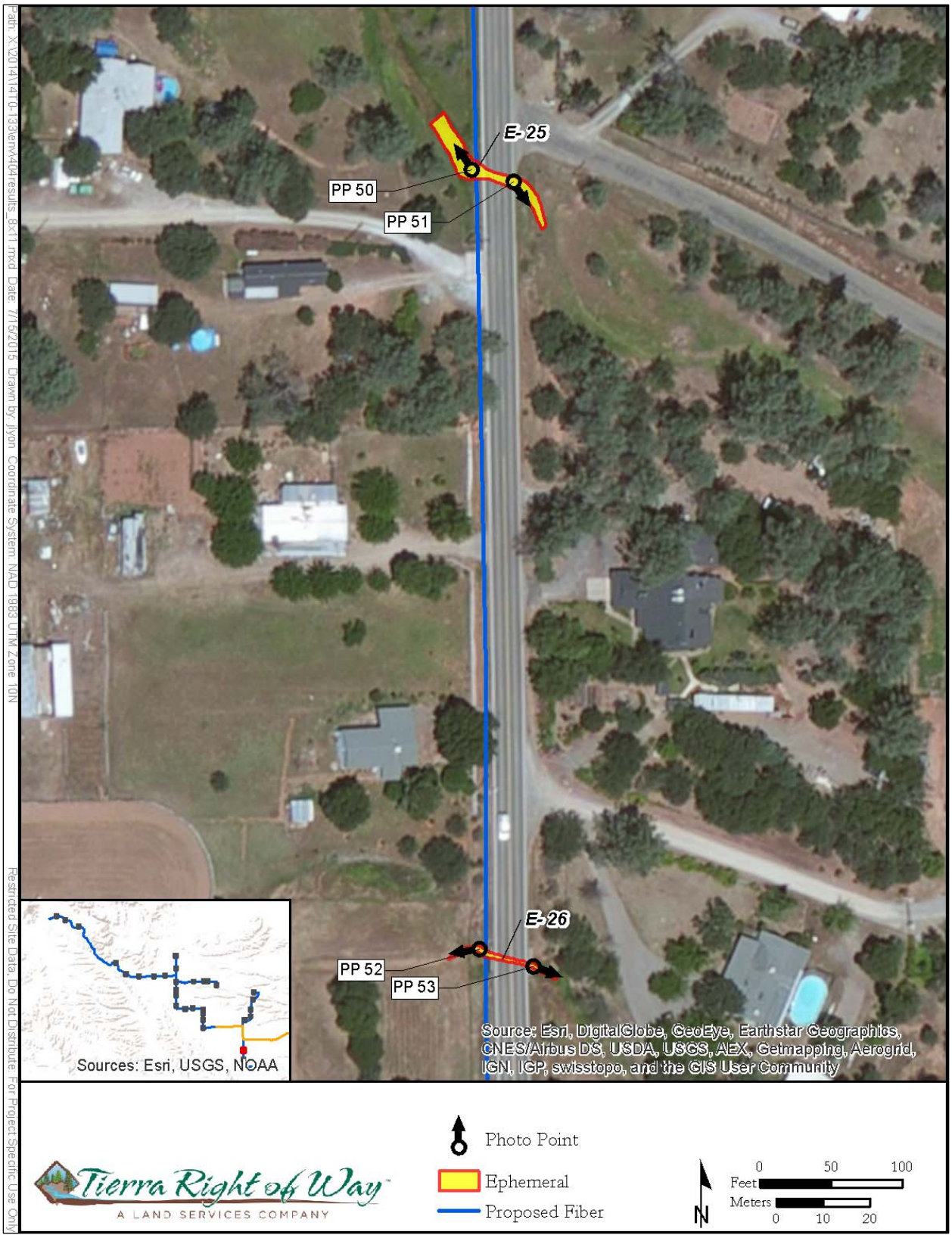
Detail Map 28	
Waterway Name	Unnamed Tributary to Spring Gulch
Waterway Type	Ephemeral
Delineated Area	15 m^2 (161 $feet^2$)
OHWM width (feet)	5 (downstream), 2 (upstream)
Coordinates (NAD 83)	40.451701, -122.402386

Detail Map 29. Telephone Gulch.

Photo 57. PP #48, view upstream.

Photo 58. PP #49, view upstream.

Detail Map 29	
Waterway Name	Telephone Gulch
Waterway Type	Ephemeral
Delineated Area	70 m^2 (753 $feet^2$)
OHWM width (feet)	12 (downstream), 10 (upstream)
Coordinates (NAD 83)	40.449772, -122.406535



Detail Map 30. Anderson Creek and unnamed waterway.

Photo 59. PP #50, view upstream.

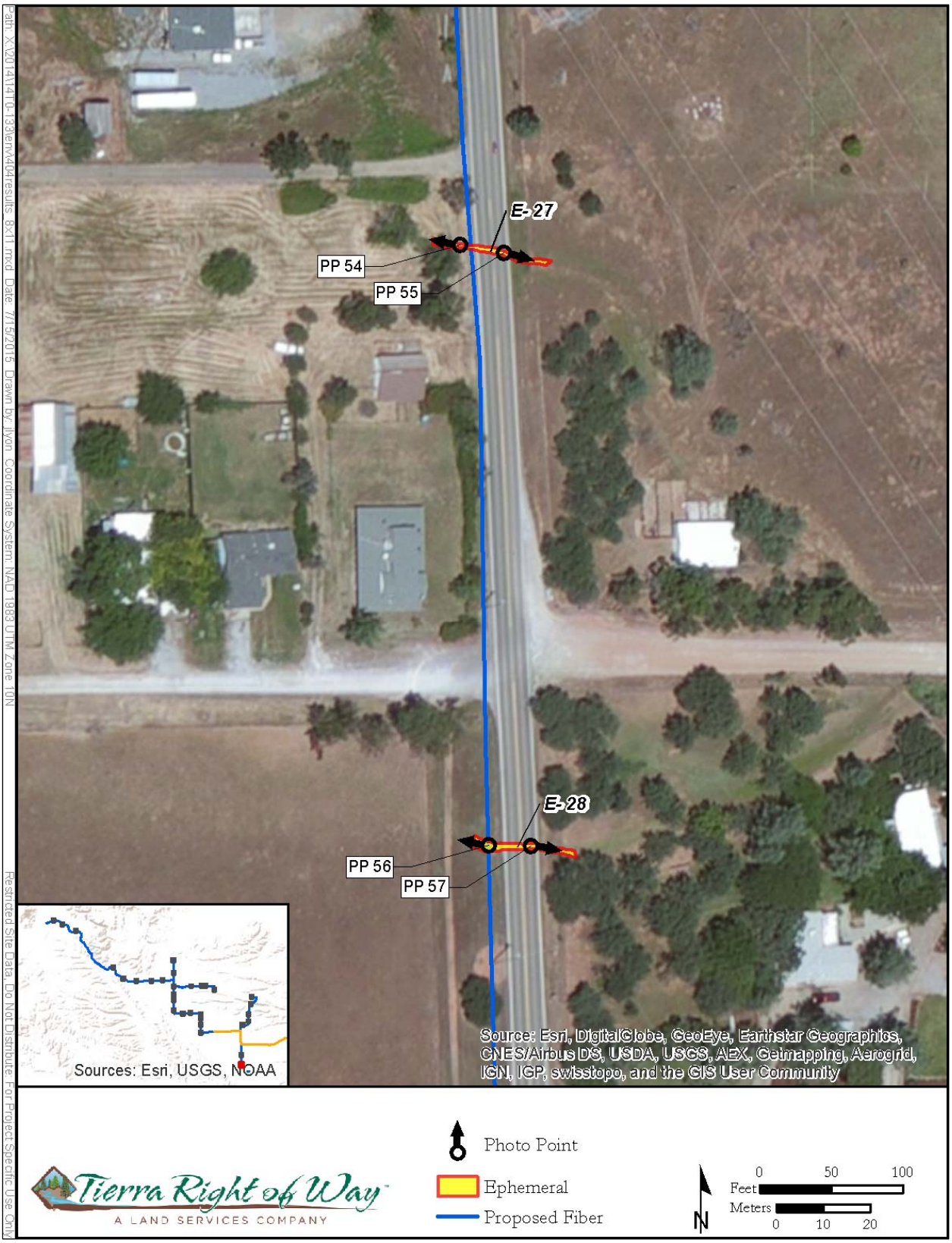
Photo 60. PP #51, view downstream.

Photo 61. PP #52, view upstream.

Photo 62. PP # 53, view downstream.

Detail Map 30, E-25	
Waterway Name	Anderson Creek
Waterway Type	Ephemeral
Delineated Area	100 m^2 (1,076 $feet^2$)
OHWM width (feet)	10 (downstream), 15 (upstream)
Coordinates (NAD 83)	40.434386, -122.407591

Detail Map 30, E-26	
Waterway Name	Unnamed Waterway
Waterway Type	Ephemeral
Delineated Area	25 m^2 (269 $feet^2$)
OHWM width (feet)	5 (downstream), 5 (upstream)
Coordinates (NAD 83)	40.432874, -122.407557



Detail Map 31. Unnamed waterways.

Photo 63. PP #54, view upstream.

Photo 64. PP #55, view downstream.

Photo 65. PP #56, view upstream.

Photo 66. PP #57, view downstream.

Detail Map 31, E-27	
Waterway Name	Unnamed Waterway
Waterway Type	Ephemeral
Delineated Area	25 m^2 (269 $feet^2$)
OHWM width (feet)	5 (downstream), 5 (upstream),
Coordinates (NAD 83)	40.432874, -122.407557

Detail Map 31, E-28	
Waterway Name	Unnamed Waterway
Waterway Type	Ephemeral
Delineated Area	25 m^2 (269 $feet^2$)
OHWM width (feet)	5 (downstream), 5 (upstream),
Coordinates (NAD 83)	40.432874, -122.407557

Detail Map 32. Unnamed waterway.

Photo 67. PP #58, view upstream.

Photo 68. PP #59, view downstream.

Detail Map 32	
Waterway Name	Unnamed Waterway
Waterway Type	Ephemeral
Delineated Area	117 m^2 (1,259 $feet^2$)
OHWM width (feet)	20 (downstream), 8 (upstream),
Coordinates (NAD 83)	40.426070, -122.407223