Waters of the U.S. Survey Summary Report for the Proposed Holden Canyon Connector Road and Decommissioned Road Segments Santa Cruz and Pima Counties, Arizona

TO: 70B01C20F00000993 WA02 and TO: 70B01C22F00001380 WA06

Prepared for
Department of Homeland Security
Customs and Border Protection
U.S. Border Patrol Headquarters
1300 Pennsylvania Avenue, 6.5E Mailstop 1039
Washington, DC 20229-1100

Prepared by
RECON Environmental, Inc.
3111 Camino del Rio North, Suite 600
San Diego, CA 92108-5726

RECON Number 9740-2/10217-6
January 3, 2024

TABLE OF CONTENTS

TABLE

APPENDICES

Acronyms and Abbreviations

CNF	Coronado National Forest
FR	Forest Road
OHWM	ordinary high water mark
proposed project	Proposed Holden Canyon Connector Road and Decommissioned Road Segments
USFS	U.S. Forest Service
WUS	Waters of the U.S.

1.0 Introduction

1.1 Proposed Project Summary

The Tucson Sector of U.S. Customs and Border Protection under the U.S. Department of Homeland Security, in cooperation with the U.S. Forest Service (USFS) under the U.S. Department of Agriculture, is proposing to improve, repair, and construct approximately 12.62 miles of unpaved road within the Coronado National Forest (CNF) Nogales Ranger District located in Santa Cruz and Pima counties, Arizona (proposed project; Figures 1a–1d and Figures 2a–2d, Appendix A). Approximately 8.90 miles of the proposed Holden Canyon Connector Road consists of Mojonera Canyon Road (Forest Road [FR] 216A), Saucito Tank Road (FR4169), Sentinel Peak Road (FR4167), and closed road and trail segments that would require significant improvement. Approximately 3.72 miles of the proposed road consist of an undeveloped area that would require new road construction (see Figures 1a–1d and Figures 2a–2d, Appendix A). U.S. Customs and Border Protection would fund the proposed project and the USFS would be responsible for the final design and construction of the road. Mojonera Canyon Road and Saucito Tank Road to the west of Holden Canyon and Sentinel Peak Road to the east of Holden Canyon average approximately 10 feet in width and contain numerous road switchbacks and tight bends.

The proposed project also includes the decommissioning of 20 CNF road segments, approximately 3.94 miles, that are no longer needed for patrol or access. Decommissioning of these roads would compensate for the development of the approximately 3.72 miles of new road construction in order for there to be no overall net increase of road miles within the Nogales Ranger District.

1.2 Project Location

The proposed Holden Canyon Connector Road is located within the CNF Nogales Ranger District in Pima and Santa Cruz counties, Arizona. The project area is located south of Arivaca, Arizona, north of the U.S./Mexico international border, west of Interstate 19 and east of the U.S. Fish and Wildlife Service Buenos Aires National Wildlife Refuge. The proposed decommissioned road segments are located primarily within Santa Cruz County, with five segments located within Pima County to the west (see Figures 1a–1d and Figures 2a–2d, Appendix A).

The proposed project is in Sections 5 and 11–14 of Township 23 South, Range 9 East; Sections 3–5, 7–10, 15, 16, 18, and 22–25 of Township 23 South, Range 10 East; Sections 29–32 of Township 23 South, Range 11 East; Sections 13 and 24 of Township 24 South, Range 12 East; and Sections 16 and 21 of Township 24 South, Range 13 East, Gila and Salt River Baseline and Meridian, on the Bartlett Mountain, Cumero Mountain, Pajarito Park, and Ruby, Arizona (2021), 7.5-minute U.S. Geological Survey quadrangles (Figures 2a–2d). The project midpoint is 31.384152°N, -111.238905°W, NAD 83.

1.3 Project Survey Area

The proposed Holden Canyon Connector Road Waters of the U.S. (WUS) resources survey area consisted of existing and proposed road segments (Aerial Sheets 1–28, Appendix A). Within existing road segments (approximately 8.90 miles), the survey area consisted of 50 feet off the centerline of each side of the road (100 feet wide total; see Aerial Sheets 1–28, Appendix A). Within the undeveloped portion requiring new road construction (approximately 3.72 miles), the survey area consisted of a minimum of 50 feet off the proposed centerline of each side of the road; however, within portions that would require switchbacks and/or wider road and construction areas due to topography, the survey area consisted of 75 feet to 100 feet off the road centerline on each side of the proposed road (see Aerial Sheets 1–28, Appendix A). The survey area for existing and undeveloped portions of the proposed Holden Canyon Connector Road was approximately 158.01 acres.

Within proposed decommissioned road segments, the survey area consisted of 50 feet off the centerline of each side of the existing USFS numbered or named roads (see Aerial Sheets 1–28, Appendix A). The survey area for the proposed decommissioned road segments was approximately 49.11 acres.

2.0 Survey Methods

A review of the Federal Emergency Management Agency map for the project area indicates that this project falls within the following three areas: a special flood hazard area where no base elevation is provided, a 500-year floodplain, and an undetermined but possible flood hazard area (Figures 3a–3g, Appendix A).

A review of the U.S. Fish and Wildlife Service National Wetland Inventory were examined to aid in the determination of potential WUS within the survey area (Figures 4a–4g, Appendix A).

A ground survey was conducted to identify potential WUS within the survey area on April 19 and 20, May 3 and 4, and May 9–11, 2023, by Kelsey Crawford, Karla Reeve-Wise, and Brent Martin of Tierra Right of Way Services, Ltd.

3.0 Survey Findings

The ephemeral desert channels within the survey area occur in various sizes and contain a wide range of characteristics. For each channel, the active floodplain was delineated at the ordinary high water mark (OHWM), which was determined using OHWM geomorphic indicators. The locations of these channels are depicted Aerial Sheets 1–28 (Appendix A).

Geomorphic indicators observed during the survey include bed and bank structures, mud cracks, drift deposits, sediment deposits, crested ripples, cobble bars, levees and narrow berms, knickpoints, benches, the lack of soil development, and the lack of vegetation. Fifty-six drainages were recorded, with thirty-three identified as potential WUS (Appendix B). Table 1 below summarizes survey results found in Appendix B by proposed Holden Canyon Road segments and decommissioned road segments. Photograph examples of the indicators observed can be found in

Appendix C. Some channels contain conspicuous and abundant OHWM geomorphic indicators throughout the channel. Other channels contain conspicuous indicators only within certain portions of the channel and some, such as those channels that may be highly dynamic over time, contain inconspicuous and few or no indicators.

Drainage 18 is outside the project limits and was not delineated but was evaluated to determine that flow does not enter Drainage 19 to the south where erosion occurs along the roadside (see Aerial Sheet 8, Appendix A, and Appendix B). A total of 5.51 acres may be considered WUS within the survey area. The total area surveyed consisted of 208.09 acres. Of the 33 drainages identified as potential WUS, 14 may exceed the 0.10-acre threshold for potential notification under Nationwide Permit 14–Linear Transportation Projects. Two areas may require a cumulative approach because branches merge within the project limits: Monument Tank (Drainages 53 and 54; see Aerial Sheet 26, Appendix A) and Potrero Canyon (Drainages 55 and 56; see Aerial Sheet 27, Appendix A).

Drainages generally flow from north to south, some meandering before heading south into Mexico. However, three of four drainages near Nogales flow from south to north from Mexico into Arizona (Drainages 53, 54, and 55; see Aerial Sheets 26 and 27, Appendix A). Drainage 56 appears to start north of the border and merges with Drainage 55 downstream to the north (see Aerial Sheet 27, Appendix A). Drainages 53–56 are listed in Appendix B with a bold "Yes" because these four drainages continue north downstream and eventually enter the Santa Cruz River. A portion of the Santa Cruz River is identified as a Traditionally Navigable River between Tubac and Continental, Arizona.

Table 1
Summary of Waters of the U.S. Survey Area Results

Drainage Number	Drainage Area/ Potential Waters of the U.S. (acres)	Identified as Waters of the U.S.	Aerial Sheet Number
Proposed Holden Canyon Road Segments			
13	0.081	Yes	6
14	0.044	Yes	6
15	0.017	Yes	6
16	0.028	Yes	7
17	n/a	No	7
18	n/a	Yes	8
19	0.055	Yes	8
20	0.124	Yes	8
21	n/a	No	8
22	n/a	No	8
23	0.433	Yes	8
24	0.087	Yes	8
25	n/a	No	9
26	0.092	Yes	11
27	n/a	No	11
28	n/a	No	11
29	1.204	Yes	12-13
30	n/a	No	13
31	n/a	No	13
32	0.172	Yes	15
33	0.025	Yes	15

Table 1 Summary of Waters of the U.S. Survey Area Results			
Drainage Number	Drainage Area/ Potential Waters of the U.S. (acres)	Identified as Waters of the U.S.	Aerial Sheet Number
34	0.037	Yes	15
35	0.031	Yes	16
36	0.025	Yes	17
37	n/a	No	18
38	n/a	No	19
39	n/a	No	19
40	n/a	No	19
41	0.102	Yes	20
42	0.219	Yes	20-21
43	0.024	Yes	21
44	n/a	No	23
45	0.041	Yes	23
46	0.127	Yes	23
Proposed Decommissioned Road Segments			
1	0.092	Yes	2
2	0.130	Yes	3
3	0.593	Yes	3
4	0.025	Yes	3
5	n/a	No	4
6	n/a	No	4
7	n/a	No	4
8	n/a	No	5
9	n/a	No	5
10	n/a	No	5
11	n/a	No	5
12	n/a	No	5
47	0.247	Yes	24
48	0.10	Yes	25
49	0.060	Yes	25
50	0.070	Yes	25
51	n/a	No	25
52	0.153	Yes	25
53	0.722	Yes*	26
54	0.034	Yes*	26
55	0.289	Yes*	27
56	0.023	Yes*	27

n/a = not applicable
Yes* = Drainages continue north downstream and eventually enter the Santa Cruz River; a portion of the Santa Cruz River is identified as a Traditionally Navigable River between Tubac and Continental, Arizona.

APPENDICES

APPENDIX A

Figures

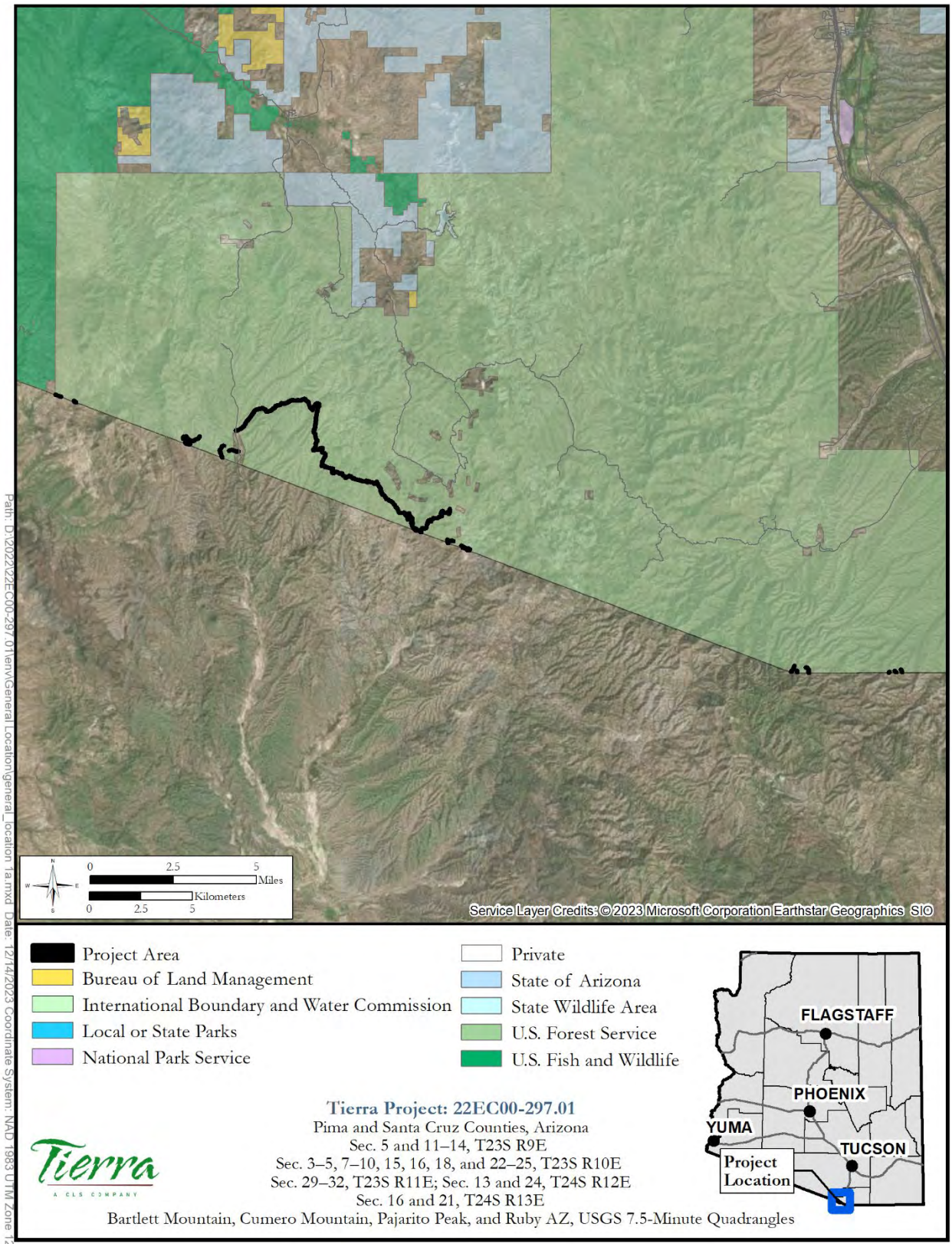


Figure 1a. Aerial project location.

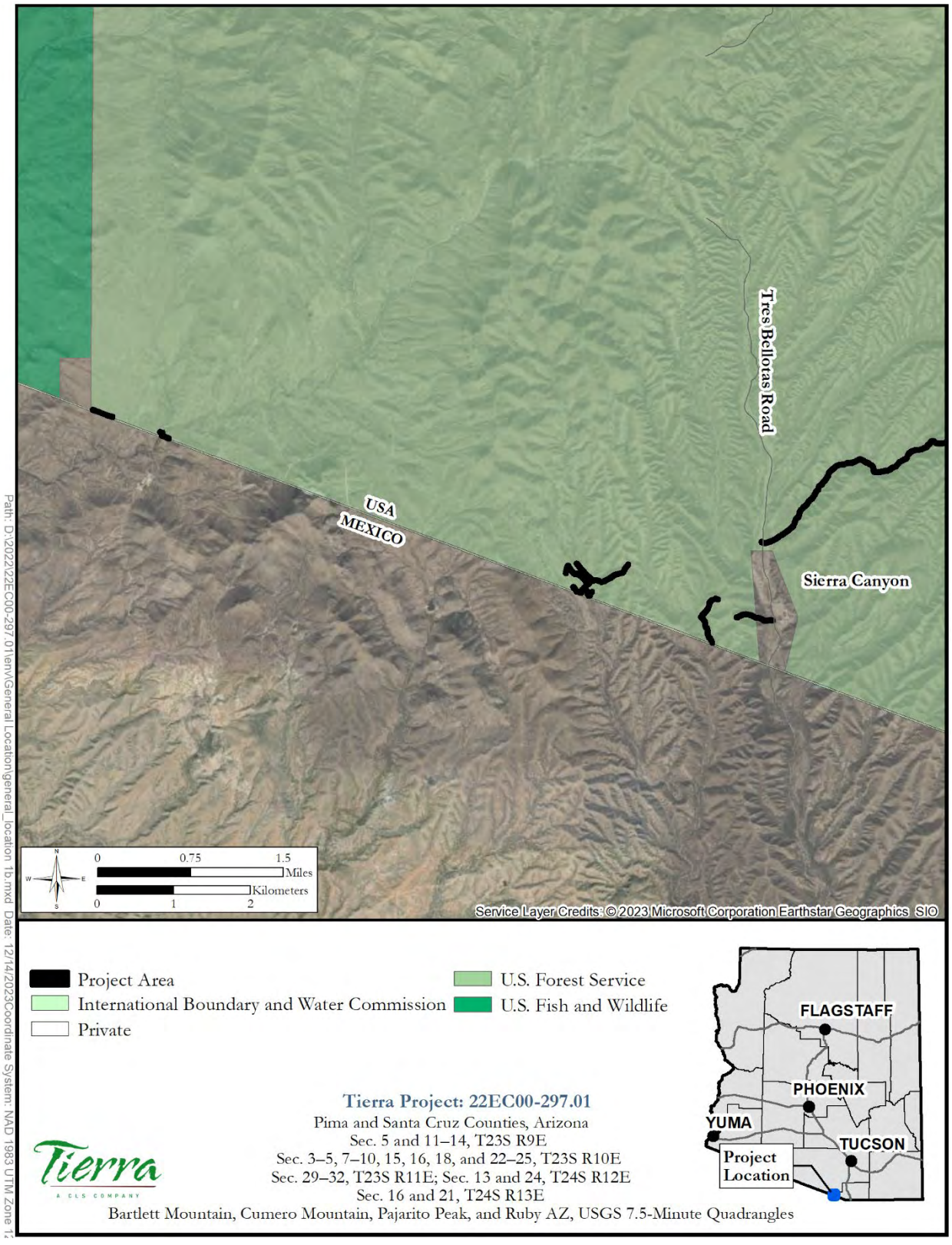
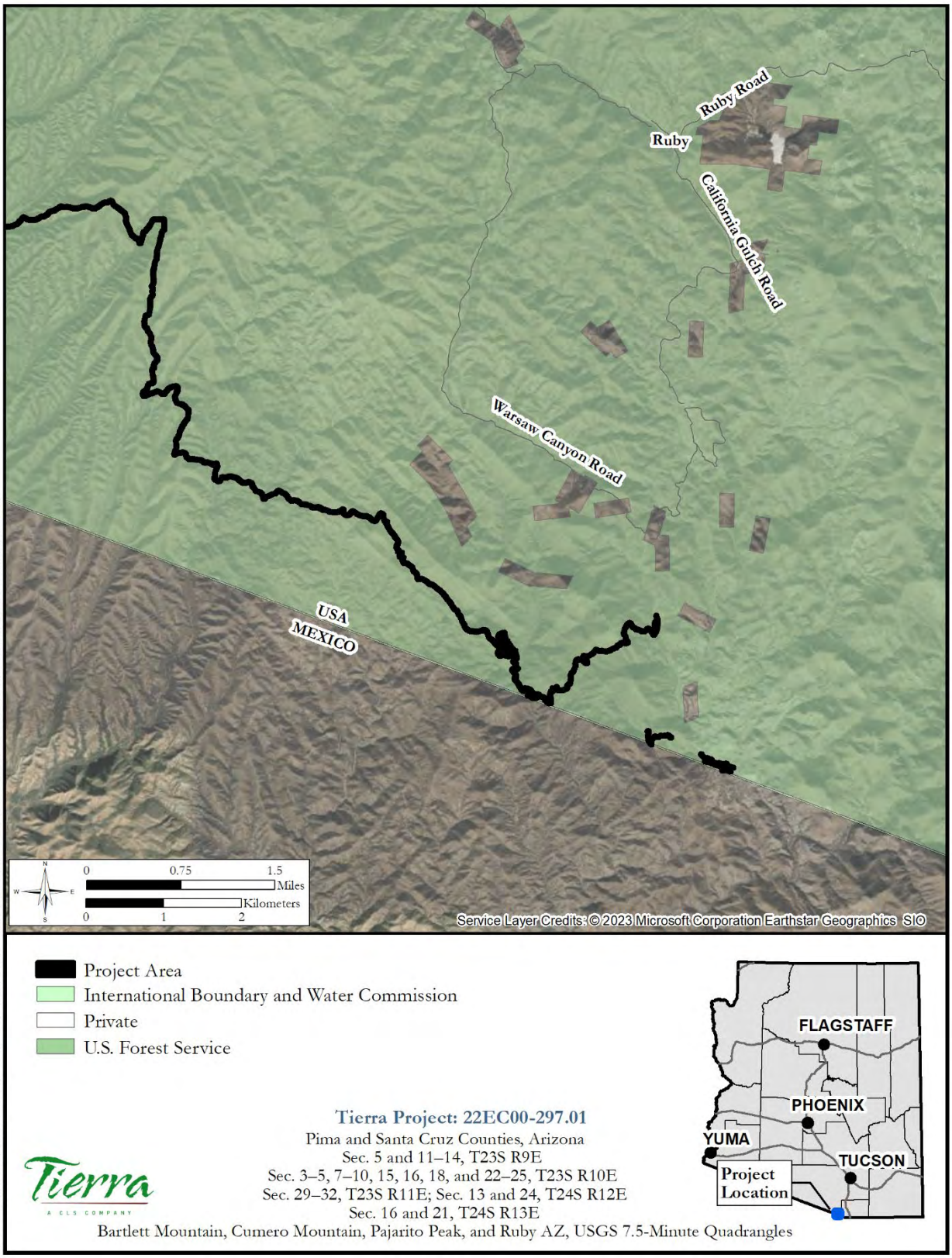
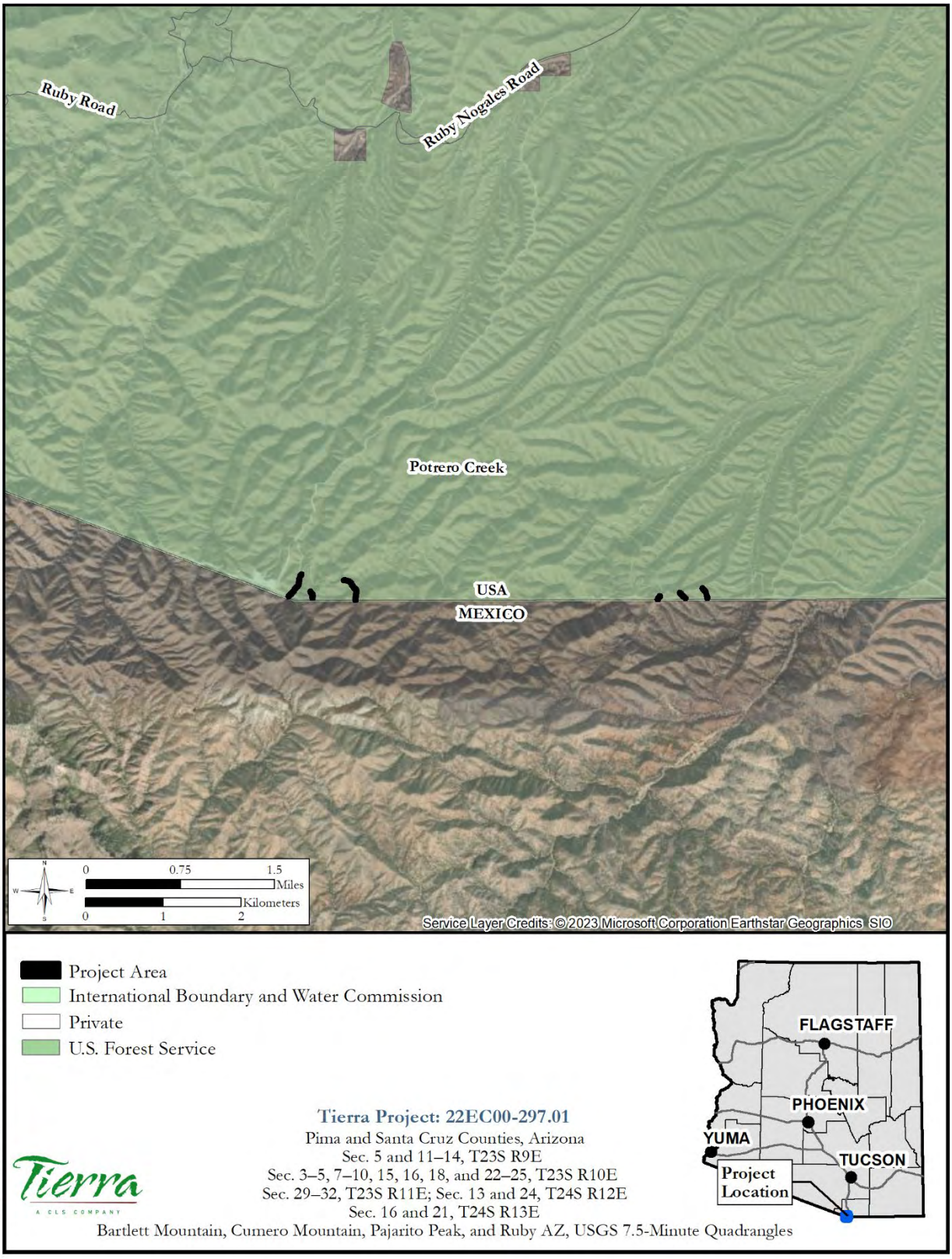


Figure 1b. Aerial project location.



Path: D:\2022\22EC00-297.01\env\General Location\general_location 1c.mxd Date: 12/14/2023 Coordinate System: NAD 1983 UTM Zone 12

Figure 1c. Aerial project location.



Path: D:\2022\22EC00-297.01\env\General Location\general_location 1d.mxd Date: 12/14/2023 Coordinate System: NAD 1983 UTM Zone 12

Figure 1d. Aerial project location.

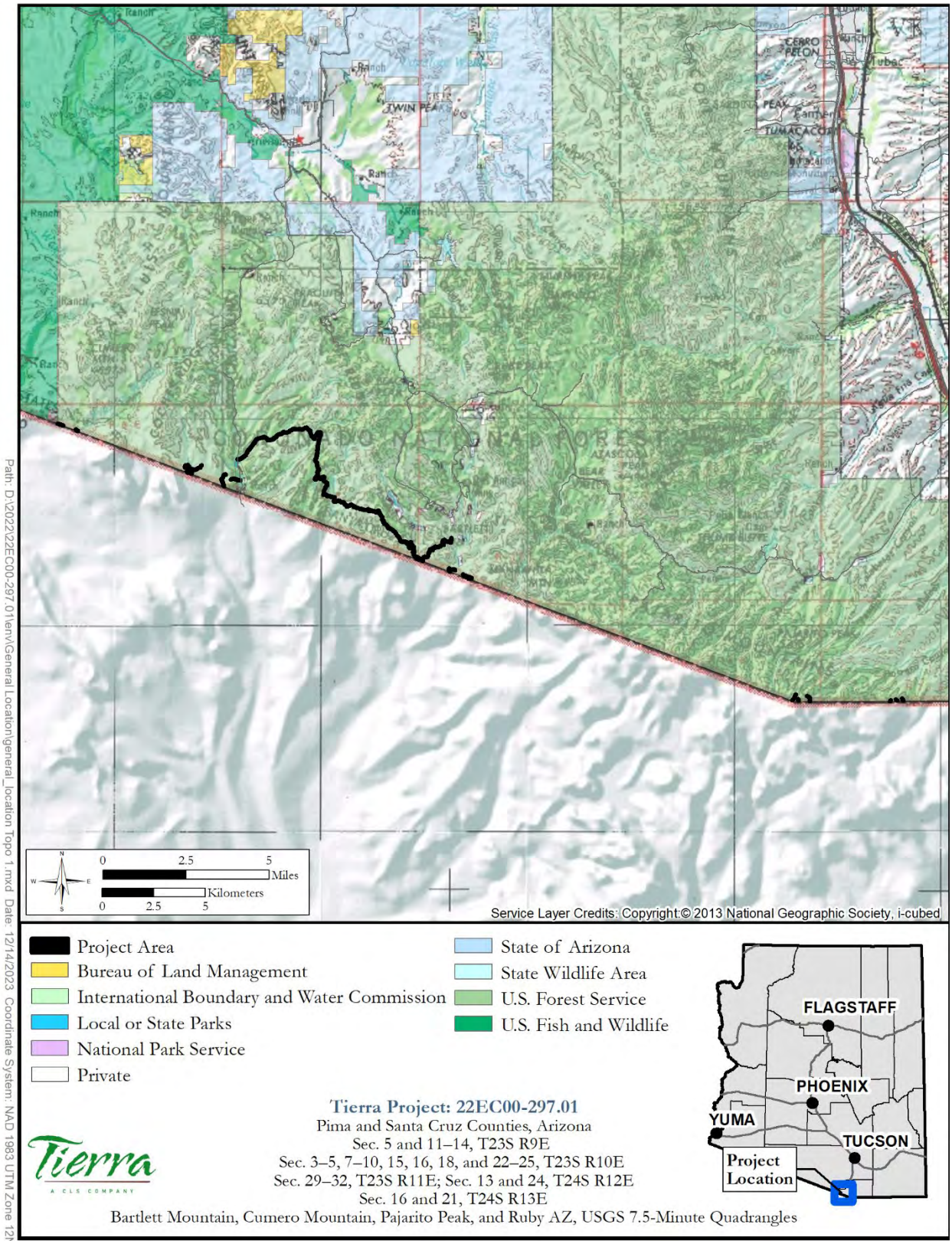


Figure 2a. Topographic project location.

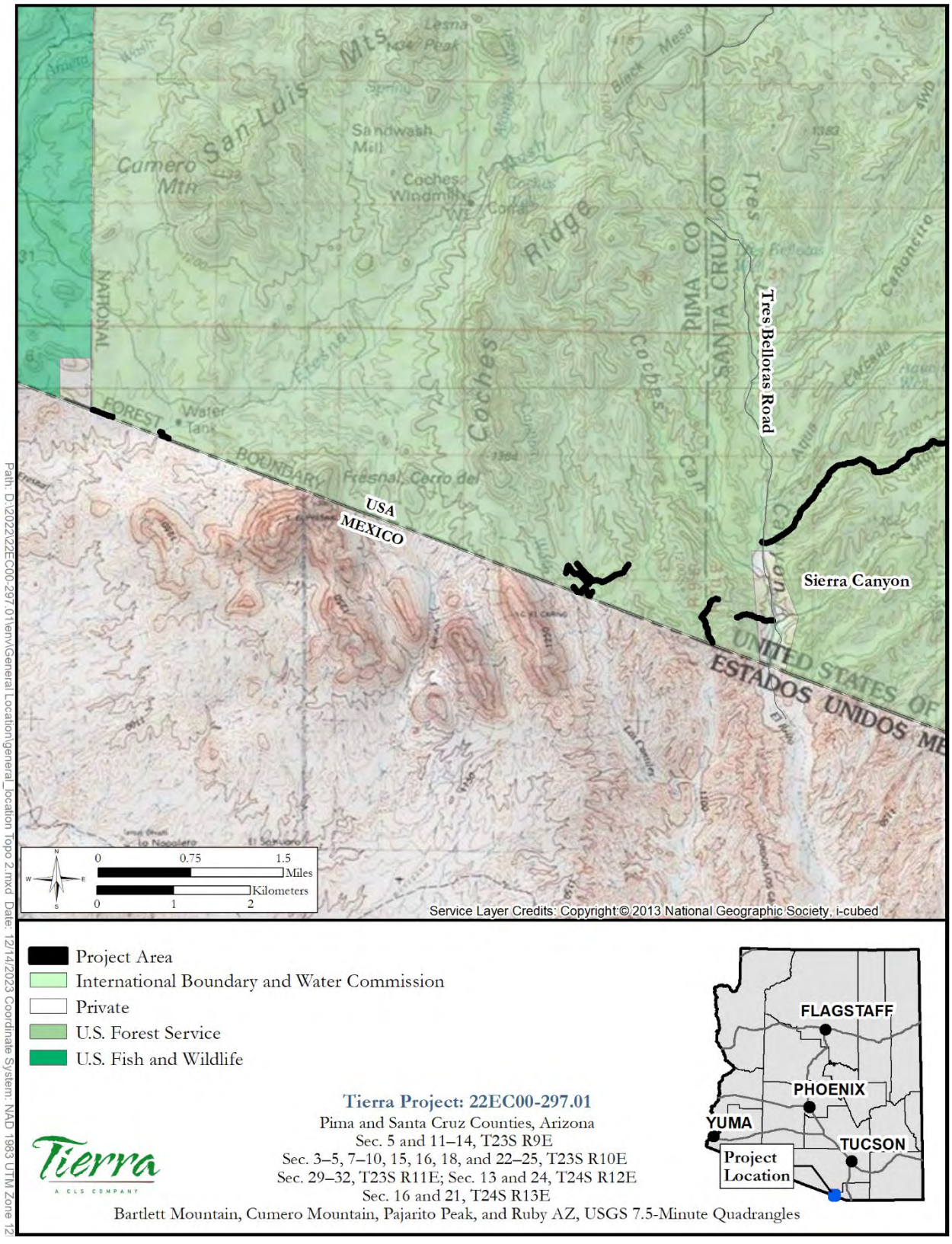


Figure 2b. Topographic project location.

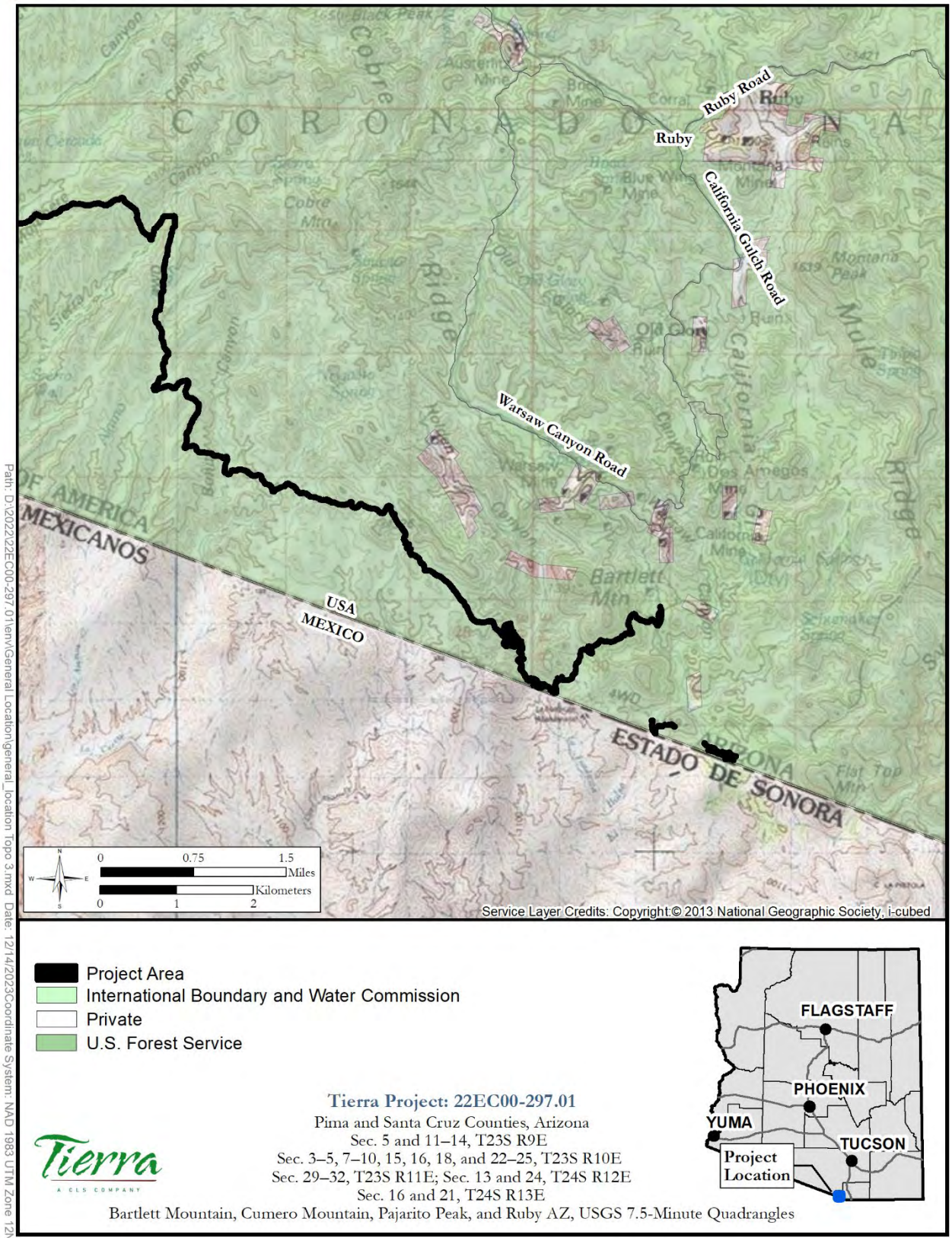
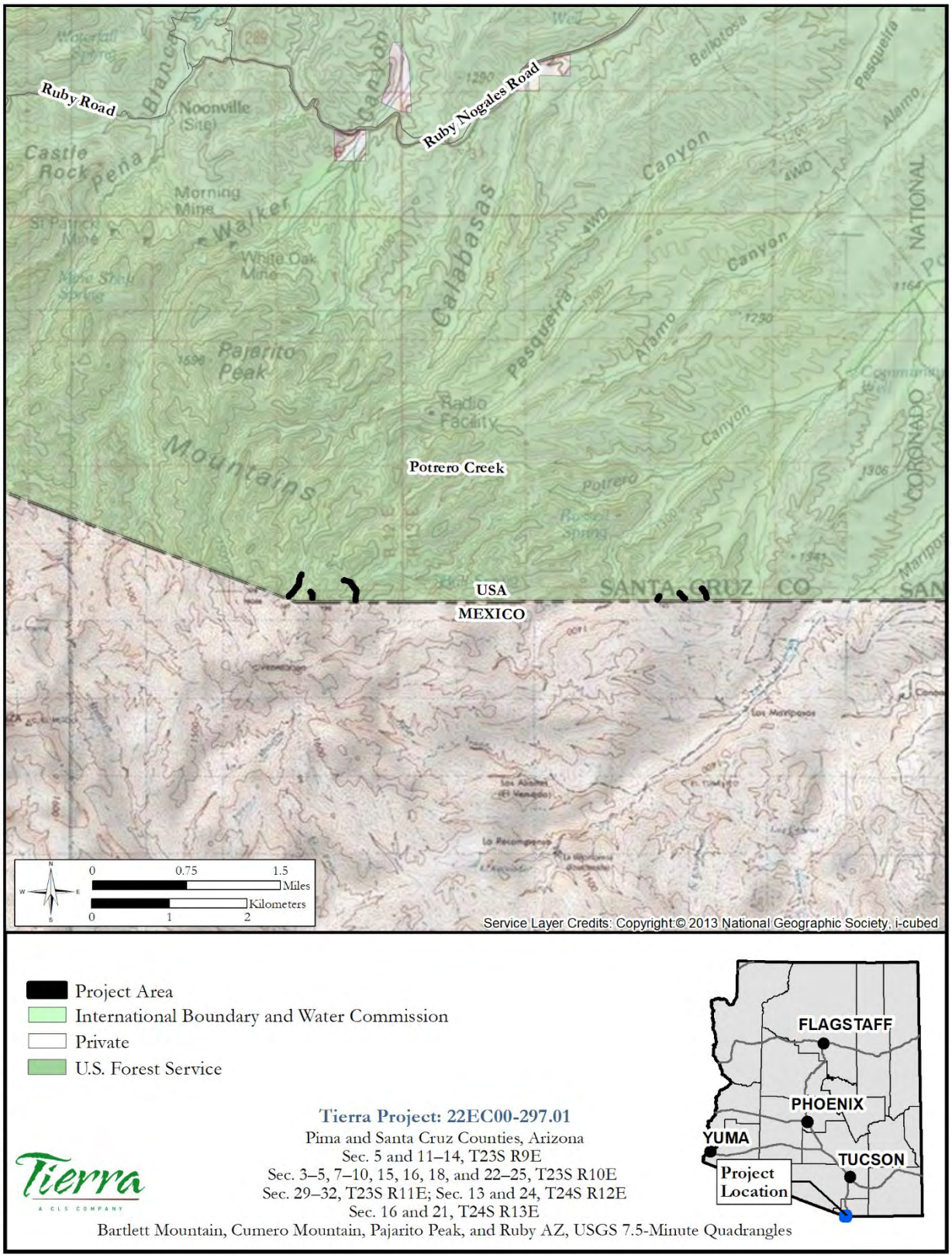
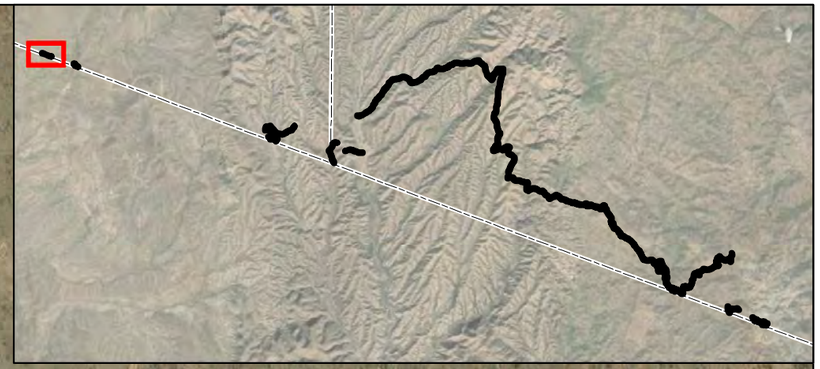


Figure 2c. Topographic project location.



Path: D:\2022\22EC00-297.01\env\General Location\general_location Topo 4.mxd Date: 12/14/2023 Coordinate System: NAD 1983 UTM Zone 12N

Figure 2d. Topographic project location.



ARIZONA (USA)
SONORA (MEX)

Dirt Rd

Dirt Rd

Dirt Rd

Project No. 22EC00-297.01
Holden Canyon
Location: Pima and Santa Cruz Counties, Arizona
Sec. 5 and 11–14, T23S R9E
Sec. 3–5, 7–10, 15, 16, 18, and 22–25, T23S R10E
Sec. 29–32, T23S R11E; Sec. 13 and 24, T24S R12E
Sec. 16 and 21, T24S R13E
Bartlett Mountain, Cumero Mountain, Pajarito Park, and Ruby AZ, USGS 7.5-Minute Quadrangles

Project Midpoint: 31.384152° N, -111.238905° W, NAD 83

Aerial photo printed December 14, 2023, by Tierra Right of Way Services, Ltd, (Esri Online Resources)
Created by: Karla Reeve-Wise

- Drainage Location
- Direction of Flow
- Photo Point
- Waters Outside Project Limits

0 N 200 Feet
1 inch = 200 feet

*** * * * *P R E L I M I N A R Y (RGL 16-01)* * * * ***

SECTION 404 JURISDICTIONAL DELINEATION

US Army Corps of Engineers, Los Angeles District

Application No. _____ - _____ - _____ - _____

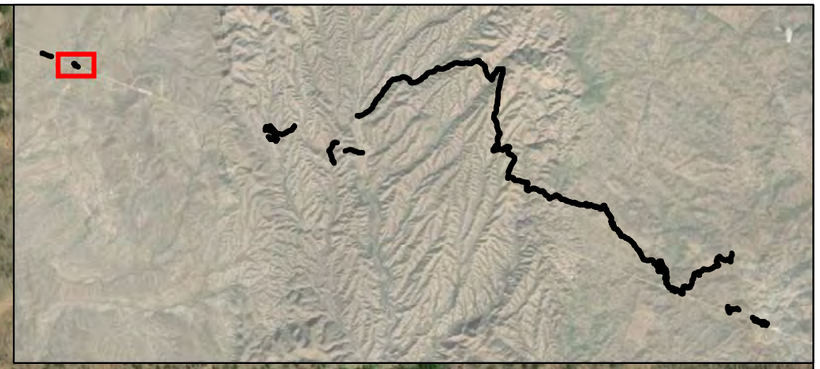
- Boundary of area surveyed for jurisdictional Waters of the United States
- Approximate Ordinary High Water Mark
- Potential Waters of the United States
- Potential Wetlands (If legend is blank, no wetlands occur in survey area.)

Scale: See scale bar **Photograph Date:** 1/20/2022

Site Visit by Corps (Y/N) Date:_____

Determination Issued:_____

Corps Project Manager:_____ **Sheet** 1 **of** 28



Project No. 22EC00-297.01
Holden Canyon
Location: Pima and Santa Cruz Counties, Arizona
Sec. 5 and 11–14, T23S R9E
Sec. 3–5, 7–10, 15, 16, 18, and 22–25, T23S R10E
Sec. 29–32, T23S R11E; Sec. 13 and 24, T24S R12E
Sec. 16 and 21, T24S R13E
Bartlett Mountain, Cumero Mountain, Pajarito Park, and Ruby AZ, USGS 7.5-Minute Quadrangles

Project Midpoint: 31.384152° N, -111.238905° W, NAD 83

Aerial photo printed December 14, 2023, by Tierra Right of Way Services, Ltd, (Esri Online Resources)
Created by: Karla Reeve-Wise

Drainage Location

Direction of Flow

Photo Point

Waters Outside Project Limits

0 N 200 Feet
1 inch = 200 feet

*** * * * *P R E L I M I N A R Y (RGL 16-01)* * * * ***

SECTION 404 JURISDICTIONAL DELINEATION

US Army Corps of Engineers, Los Angeles District

Application No. _____ - _____ - _____ - _____

Boundary of area surveyed for jurisdictional Waters of the United States

Approximate Ordinary High Water Mark

Potential Waters of the United States

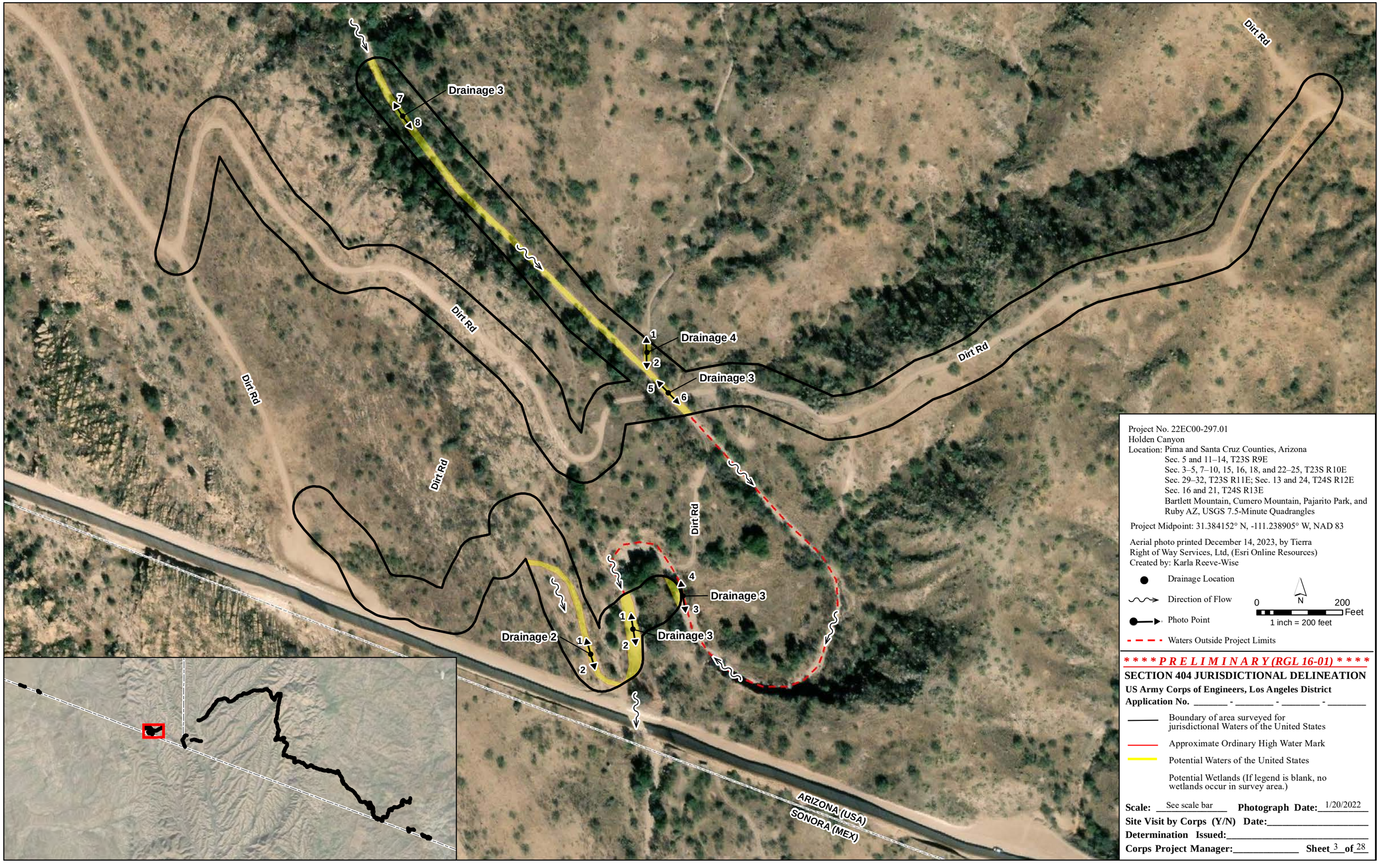
Potential Wetlands (If legend is blank, no wetlands occur in survey area.)

Scale: See scale bar **Photograph Date:** 1/20/2022

Site Visit by Corps (Y/N) Date:_____

Determination Issued:_____

Corps Project Manager:_____ **Sheet** 2 **of** 28



Project No. 22EC00-297.01
Holden Canyon
Location: Pima and Santa Cruz Counties, Arizona
Sec. 5 and 11–14, T23S R9E
Sec. 3–5, 7–10, 15, 16, 18, and 22–25, T23S R10E
Sec. 29–32, T23S R11E; Sec. 13 and 24, T24S R12E
Sec. 16 and 21, T24S R13E
Bartlett Mountain, Cumero Mountain, Pajarito Park, and Ruby AZ, USGS 7.5-Minute Quadrangles

Project Midpoint: 31.384152° N, -111.238905° W, NAD 83

Aerial photo printed December 14, 2023, by Tierra Right of Way Services, Ltd, (Esri Online Resources)
Created by: Karla Reeve-Wise

- Drainage Location
- Direction of Flow
- Photo Point
- Waters Outside Project Limits

N
0 200 Feet
1 inch = 200 feet

*** * * * P R E L I M I N A R Y (RGL 16-01) * * * ***

SECTION 404 JURISDICTIONAL DELINEATION

US Army Corps of Engineers, Los Angeles District

Application No. _____ - _____ - _____ - _____

- Boundary of area surveyed for jurisdictional Waters of the United States
- Approximate Ordinary High Water Mark
- Potential Waters of the United States
- Potential Wetlands (If legend is blank, no wetlands occur in survey area.)

Scale: See scale bar **Photograph Date:** 1/20/2022

Site Visit by Corps (Y/N) Date: _____

Determination Issued: _____

Corps Project Manager: _____ **Sheet** 3 **of** 28

Project No. 22EC00-297.01
Holden Canyon
Location: Pima and Santa Cruz Counties, Arizona
Sec. 5 and 11–14, T23S R9E
Sec. 3–5, 7–10, 15, 16, 18, and 22–25, T23S R10E
Sec. 29–32, T23S R11E; Sec. 13 and 24, T24S R12E
Sec. 16 and 21, T24S R13E
Bartlett Mountain, Cumero Mountain, Pajarito Park, and Ruby AZ, USGS 7.5-Minute Quadrangles

Project Midpoint: 31.384152° N, -111.238905° W, NAD 83

Aerial photo printed December 14, 2023, by Tierra Right of Way Services, Ltd, (Esri Online Resources)
Created by: Karla Reeve-Wise

Drainage Location

Direction of Flow

Photo Point

Waters Outside Project Limits

0 N 200 Feet
1 inch = 200 feet

*** * * * *P R E L I M I N A R Y (RGL 16-01)* * * * ***

SECTION 404 JURISDICTIONAL DELINEATION

US Army Corps of Engineers, Los Angeles District
Application No. _____ - _____ - _____ - _____

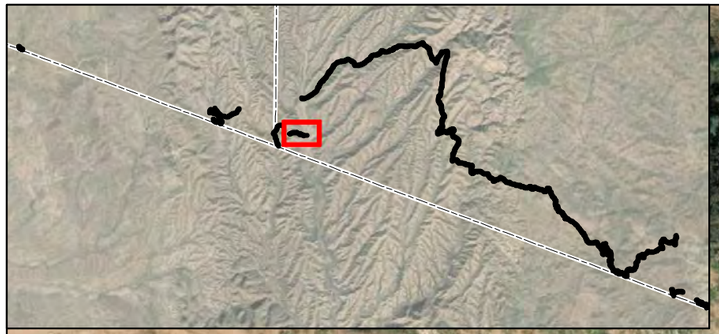
Boundary of area surveyed for jurisdictional Waters of the United States

Approximate Ordinary High Water Mark

Potential Waters of the United States

Potential Wetlands (If legend is blank, no wetlands occur in survey area.)

Scale: See scale bar **Photograph Date:** 1/20/2022
Site Visit by Corps (Y/N) Date:_____
Determination Issued:_____
Corps Project Manager:_____ **Sheet** 4 **of** 28



Tres Bellotas Rd

Sierra Canyon

Dirt Rd

Dirt Rd

Dirt Rd

Drainage 9

Drainage 11

Drainage 8

Drainage 10

Drainage 12

FR 216

Project No. 22EC00-297.01
Holden Canyon
Location: Pima and Santa Cruz Counties, Arizona
Sec. 5 and 11–14, T23S R9E
Sec. 3–5, 7–10, 15, 16, 18, and 22–25, T23S R10E
Sec. 29–32, T23S R11E; Sec. 13 and 24, T24S R12E
Sec. 16 and 21, T24S R13E
Bartlett Mountain, Cumero Mountain, Pajarito Park, and Ruby AZ, USGS 7.5-Minute Quadrangles

Project Midpoint: 31.384152° N, -111.238905° W, NAD 83

Aerial photo printed December 14, 2023, by Tierra Right of Way Services, Ltd, (Esri Online Resources)
Created by: Karla Reeve-Wise

Drainage Location

Direction of Flow

Photo Point

Waters Outside Project Limits

0 N 200 Feet
1 inch = 200 feet

*** * * * P R E L I M I N A R Y (RGL 16-01) * * * ***

SECTION 404 JURISDICTIONAL DELINEATION

US Army Corps of Engineers, Los Angeles District

Application No. _____ - _____ - _____ - _____

Boundary of area surveyed for jurisdictional Waters of the United States

Approximate Ordinary High Water Mark

Potential Waters of the United States

Potential Wetlands (If legend is blank, no wetlands occur in survey area.)

Scale: See scale bar **Photograph Date:** 1/20/2022

Site Visit by Corps (Y/N) Date:_____

Determination Issued:_____

Corps Project Manager:_____ **Sheet** 5 **of** 28

Project No. 22EC00-297.01
Holden Canyon
Location: Pima and Santa Cruz Counties, Arizona
Sec. 5 and 11–14, T23S R9E
Sec. 3–5, 7–10, 15, 16, 18, and 22–25, T23S R10E
Sec. 29–32, T23S R11E; Sec. 13 and 24, T24S R12E
Sec. 16 and 21, T24S R13E
Bartlett Mountain, Cumero Mountain, Pajarito Park, and Ruby AZ, USGS 7.5-Minute Quadrangles

Project Midpoint: 31.384152° N, -111.238905° W, NAD 83

Aerial photo printed December 14, 2023, by Tierra Right of Way Services, Ltd, (Esri Online Resources)
Created by: Karla Reeve-Wise

Drainage Location
Direction of Flow
Photo Point
Waters Outside Project Limits

0 N 200 Feet
1 inch = 200 feet

*** * * * PRELIMINARY (RGL 16-01) * * * ***

SECTION 404 JURISDICTIONAL DELINEATION

US Army Corps of Engineers, Los Angeles District

Application No. _____ - _____ - _____ - _____

Boundary of area surveyed for jurisdictional Waters of the United States

Approximate Ordinary High Water Mark

Potential Waters of the United States

Potential Wetlands (If legend is blank, no wetlands occur in survey area.)

Scale: See scale bar **Photograph Date:** 1/20/2022

Site Visit by Corps (Y/N) Date: _____

Determination Issued: _____

Corps Project Manager: _____ **Sheet** 6 **of** 28

Project No. 22EC00-297.01
Holden Canyon
Location: Pima and Santa Cruz Counties, Arizona
Sec. 5 and 11–14, T23S R9E
Sec. 3–5, 7–10, 15, 16, 18, and 22–25, T23S R10E
Sec. 29–32, T23S R11E; Sec. 13 and 24, T24S R12E
Sec. 16 and 21, T24S R13E
Bartlett Mountain, Cumero Mountain, Pajarito Park, and Ruby AZ, USGS 7.5-Minute Quadrangles

Project Midpoint: 31.384152° N, -111.238905° W, NAD 83

Aerial photo printed December 14, 2023, by Tierra Right of Way Services, Ltd, (Esri Online Resources)
Created by: Karla Reeve-Wise

Drainage Location

Direction of Flow

Photo Point

Waters Outside Project Limits

0 N 200 Feet
1 inch = 200 feet

*** * * * P R E L I M I N A R Y (RGL 16-01) * * * ***

SECTION 404 JURISDICTIONAL DELINEATION

US Army Corps of Engineers, Los Angeles District

Application No. _____ - _____ - _____ - _____

Boundary of area surveyed for jurisdictional Waters of the United States

Approximate Ordinary High Water Mark

Potential Waters of the United States

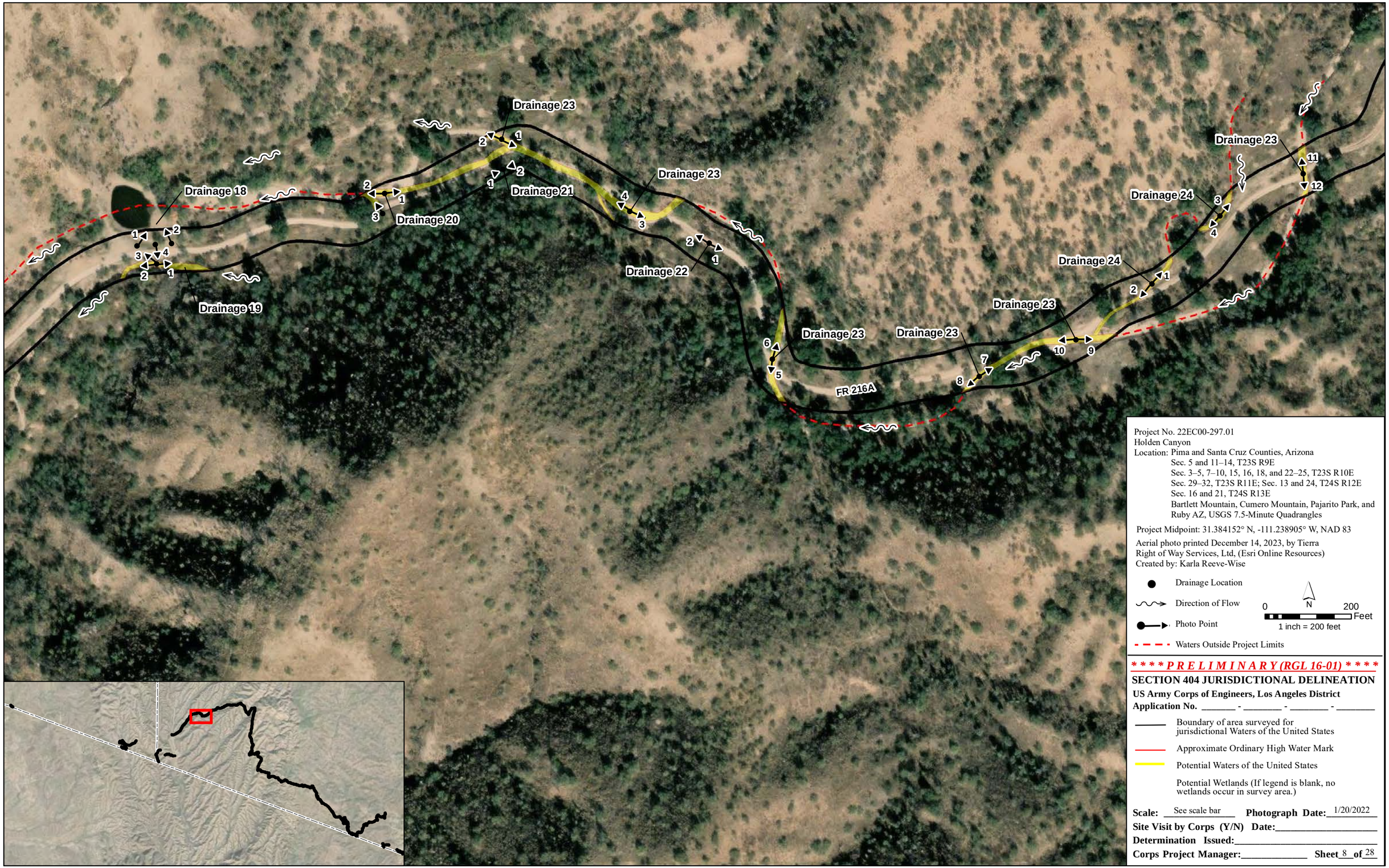
Potential Wetlands (If legend is blank, no wetlands occur in survey area.)

Scale: See scale bar **Photograph Date:** 1/20/2022

Site Visit by Corps (Y/N) Date:_____

Determination Issued:_____

Corps Project Manager:_____ **Sheet** 7 **of** 28



Project No. 22EC00-297.01
Holden Canyon
Location: Pima and Santa Cruz Counties, Arizona
Sec. 5 and 11–14, T23S R9E
Sec. 3–5, 7–10, 15, 16, 18, and 22–25, T23S R10E
Sec. 29–32, T23S R11E; Sec. 13 and 24, T24S R12E
Sec. 16 and 21, T24S R13E
Bartlett Mountain, Cumero Mountain, Pajarito Park, and Ruby AZ, USGS 7.5-Minute Quadrangles

Project Midpoint: 31.384152° N, -111.238905° W, NAD 83

Aerial photo printed December 14, 2023, by Tierra Right of Way Services, Ltd, (Esri Online Resources)
Created by: Karla Reeve-Wise

- Drainage Location
- Direction of Flow
- Photo Point
- Waters Outside Project Limits

0 200 Feet
1 inch = 200 feet

*** * * * P R E L I M I N A R Y (RGL 16-01) * * * ***

SECTION 404 JURISDICTIONAL DELINEATION

US Army Corps of Engineers, Los Angeles District

Application No. _____ - _____ - _____ - _____

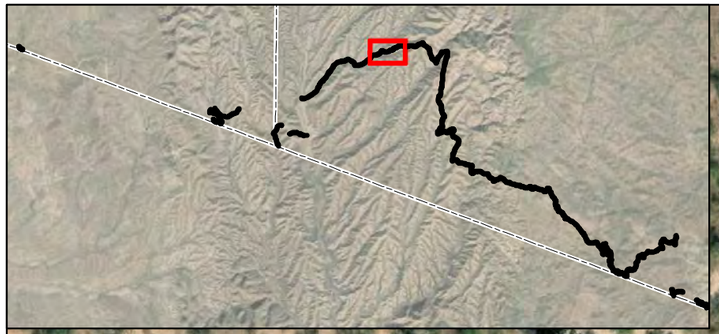
- Boundary of area surveyed for jurisdictional Waters of the United States
- Approximate Ordinary High Water Mark
- Potential Waters of the United States
- Potential Wetlands (If legend is blank, no wetlands occur in survey area.)

Scale: See scale bar **Photograph Date:** 1/20/2022

Site Visit by Corps (Y/N) Date: _____

Determination Issued: _____

Corps Project Manager: _____ **Sheet** 8 **of** 28



Dirt Rd

FR 216A

Dirt Rd

1

2

Drainage 25

Project No. 22EC00-297.01
Holden Canyon
Location: Pima and Santa Cruz Counties, Arizona
Sec. 5 and 11–14, T23S R9E
Sec. 3–5, 7–10, 15, 16, 18, and 22–25, T23S R10E
Sec. 29–32, T23S R11E; Sec. 13 and 24, T24S R12E
Sec. 16 and 21, T24S R13E
Bartlett Mountain, Cumero Mountain, Pajarito Park, and Ruby AZ, USGS 7.5-Minute Quadrangles

Project Midpoint: 31.384152° N, -111.238905° W, NAD 83

Aerial photo printed December 14, 2023, by Tierra Right of Way Services, Ltd, (Esri Online Resources)
Created by: Karla Reeve-Wise

- Drainage Location
- Direction of Flow
- Photo Point
- Waters Outside Project Limits

N

0 200 Feet

1 inch = 200 feet

*** * * * P R E L I M I N A R Y (RGL 16-01) * * * ***

SECTION 404 JURISDICTIONAL DELINEATION

US Army Corps of Engineers, Los Angeles District

Application No. _____ - _____ - _____ - _____

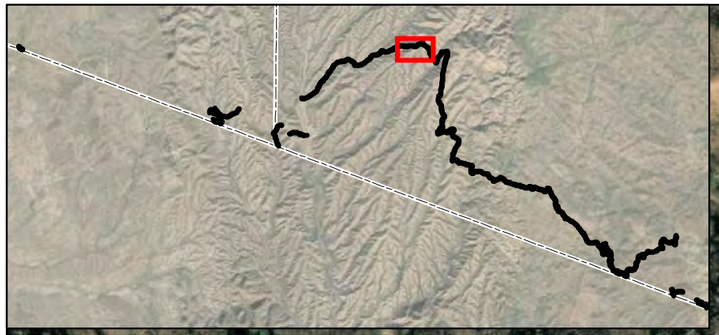
- Boundary of area surveyed for jurisdictional Waters of the United States
- Approximate Ordinary High Water Mark
- Potential Waters of the United States
- Potential Wetlands (If legend is blank, no wetlands occur in survey area.)

Scale: See scale bar **Photograph Date:** 1/20/2022

Site Visit by Corps (Y/N) Date: _____

Determination Issued: _____

Corps Project Manager: _____ **Sheet** 9 **of** 28



FR 216A

Project No. 22EC00-297.01
Holden Canyon
Location: Pima and Santa Cruz Counties, Arizona
Sec. 5 and 11–14, T23S R9E
Sec. 3–5, 7–10, 15, 16, 18, and 22–25, T23S R10E
Sec. 29–32, T23S R11E; Sec. 13 and 24, T24S R12E
Sec. 16 and 21, T24S R13E
Bartlett Mountain, Cumero Mountain, Pajarito Park, and Ruby AZ, USGS 7.5-Minute Quadrangles

Project Midpoint: 31.384152° N, -111.238905° W, NAD 83

Aerial photo printed December 14, 2023, by Tierra Right of Way Services, Ltd, (Esri Online Resources)
Created by: Karla Reeve-Wise

- Drainage Location
- Direction of Flow
- Photo Point
- Waters Outside Project Limits

0 N 200 Feet
1 inch = 200 feet

*** * * * *P R E L I M I N A R Y (RGL 16-01)* * * * ***

SECTION 404 JURISDICTIONAL DELINEATION

US Army Corps of Engineers, Los Angeles District

Application No. _____ - _____ - _____ - _____

- Boundary of area surveyed for jurisdictional Waters of the United States
- Approximate Ordinary High Water Mark
- Potential Waters of the United States
- Potential Wetlands (If legend is blank, no wetlands occur in survey area.)

Scale: See scale bar **Photograph Date:** 1/20/2022

Site Visit by Corps (Y/N) Date:_____

Determination Issued:_____

Corps Project Manager:_____ **Sheet** 10 **of** 28

Project No. 22EC00-297.01
Holden Canyon
Location: Pima and Santa Cruz Counties, Arizona
Sec. 5 and 11–14, T23S R9E
Sec. 3–5, 7–10, 15, 16, 18, and 22–25, T23S R10E
Sec. 29–32, T23S R11E; Sec. 13 and 24, T24S R12E
Sec. 16 and 21, T24S R13E
Bartlett Mountain, Cumero Mountain, Pajarito Park, and Ruby AZ, USGS 7.5-Minute Quadrangles

Project Midpoint: 31.384152° N, -111.238905° W, NAD 83

Aerial photo printed December 14, 2023, by Tierra Right of Way Services, Ltd, (Esri Online Resources)
Created by: Karla Reeve-Wise

Drainage Location
Direction of Flow
Photo Point
Waters Outside Project Limits

0 N 200 Feet
1 inch = 200 feet

*** * * * *P R E L I M I N A R Y (RGL 16-01)* * * * ***

SECTION 404 JURISDICTIONAL DELINEATION

US Army Corps of Engineers, Los Angeles District

Application No. _____ - _____ - _____ - _____

Boundary of area surveyed for jurisdictional Waters of the United States

Approximate Ordinary High Water Mark

Potential Waters of the United States

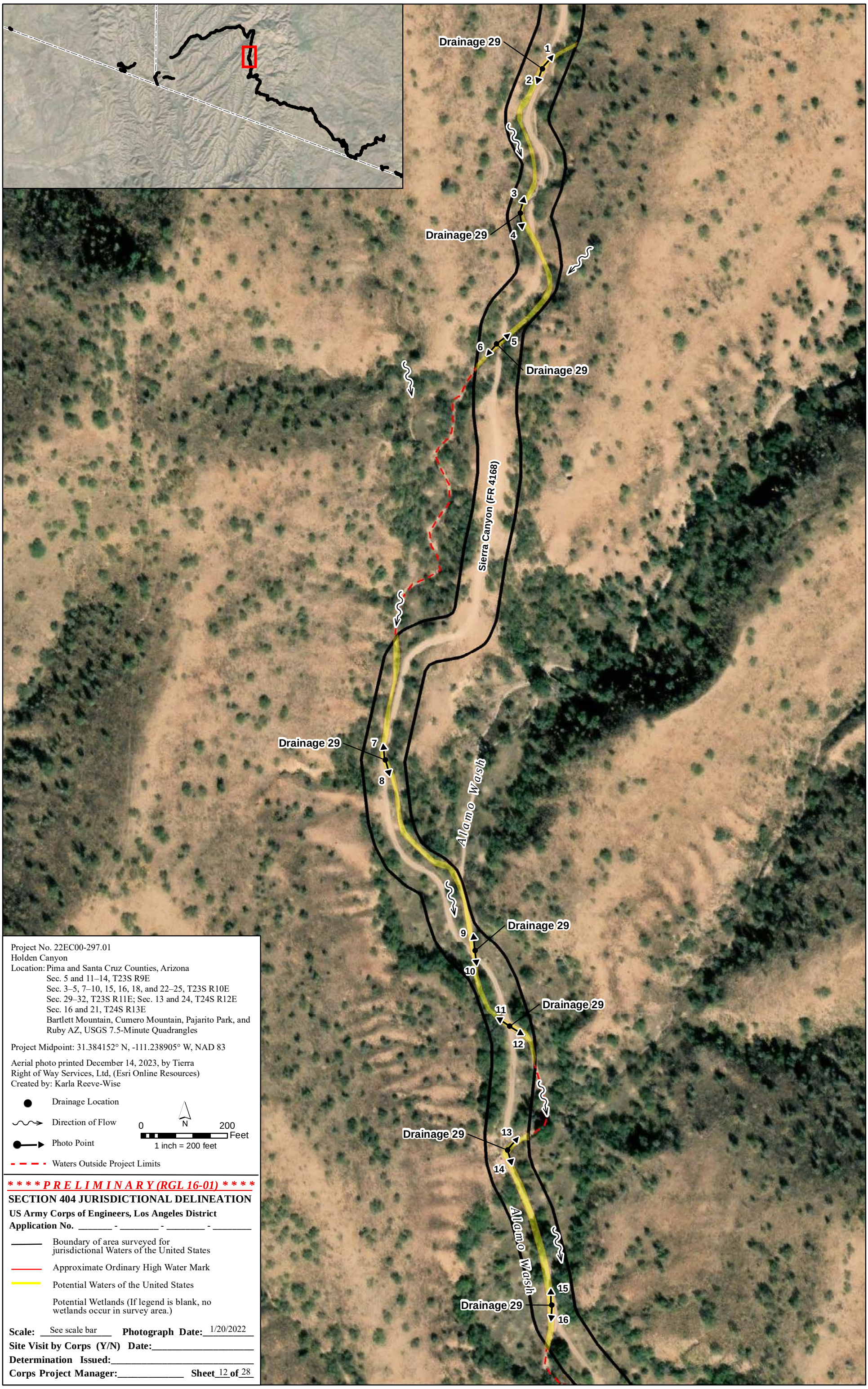
Potential Wetlands (If legend is blank, no wetlands occur in survey area.)

Scale: See scale bar **Photograph Date:** 1/20/2022

Site Visit by Corps (Y/N) Date: _____

Determination Issued: _____

Corps Project Manager: _____ **Sheet** 11 **of** 28



Project No. 22EC00-297.01
Holden Canyon
Location: Pima and Santa Cruz Counties, Arizona
Sec. 5 and 11–14, T23S R9E
Sec. 3–5, 7–10, 15, 16, 18, and 22–25, T23S R10E
Sec. 29–32, T23S R11E; Sec. 13 and 24, T24S R12E
Sec. 16 and 21, T24S R13E
Bartlett Mountain, Cumero Mountain, Pajarito Park, and Ruby AZ, USGS 7.5-Minute Quadrangles

Project Midpoint: 31.384152° N, -111.238905° W, NAD 83

Aerial photo printed December 14, 2023, by Tierra Right of Way Services, Ltd, (Esri Online Resources)
Created by: Karla Reeve-Wise

Drainage Location

Direction of Flow

Photo Point

Waters Outside Project Limits

N
0 200 Feet
1 inch = 200 feet

*** * * * *PRELIMINARY (RGL 16-01)* * * * ***

SECTION 404 JURISDICTIONAL DELINEATION

US Army Corps of Engineers, Los Angeles District

Application No. _____ - _____ - _____ - _____

Boundary of area surveyed for jurisdictional Waters of the United States

Approximate Ordinary High Water Mark

Potential Waters of the United States

Potential Wetlands (If legend is blank, no wetlands occur in survey area.)

Scale: See scale bar **Photograph Date:** 1/20/2022

Site Visit by Corps (Y/N) Date:_____

Determination Issued:_____

Corps Project Manager:_____ **Sheet** 12 **of** 28

Project No. 22EC00-297.01
Holden Canyon
Location: Pima and Santa Cruz Counties, Arizona
Sec. 5 and 11–14, T23S R9E
Sec. 3–5, 7–10, 15, 16, 18, and 22–25, T23S R10E
Sec. 29–32, T23S R11E; Sec. 13 and 24, T24S R12E
Sec. 16 and 21, T24S R13E
Bartlett Mountain, Cumero Mountain, Pajarito Park, and Ruby AZ, USGS 7.5-Minute Quadrangles

Project Midpoint: 31.384152° N, -111.238905° W, NAD 83

Aerial photo printed December 14, 2023, by Tierra Right of Way Services, Ltd, (Esri Online Resources)
Created by: Karla Reeve-Wise

- Drainage Location
- Direction of Flow
- Photo Point
- Waters Outside Project Limits

0 N 200 Feet
1 inch = 200 feet

*** * * * P R E L I M I N A R Y (RGL 16-01) * * * ***

SECTION 404 JURISDICTIONAL DELINEATION

US Army Corps of Engineers, Los Angeles District

Application No. _____ - _____ - _____ - _____

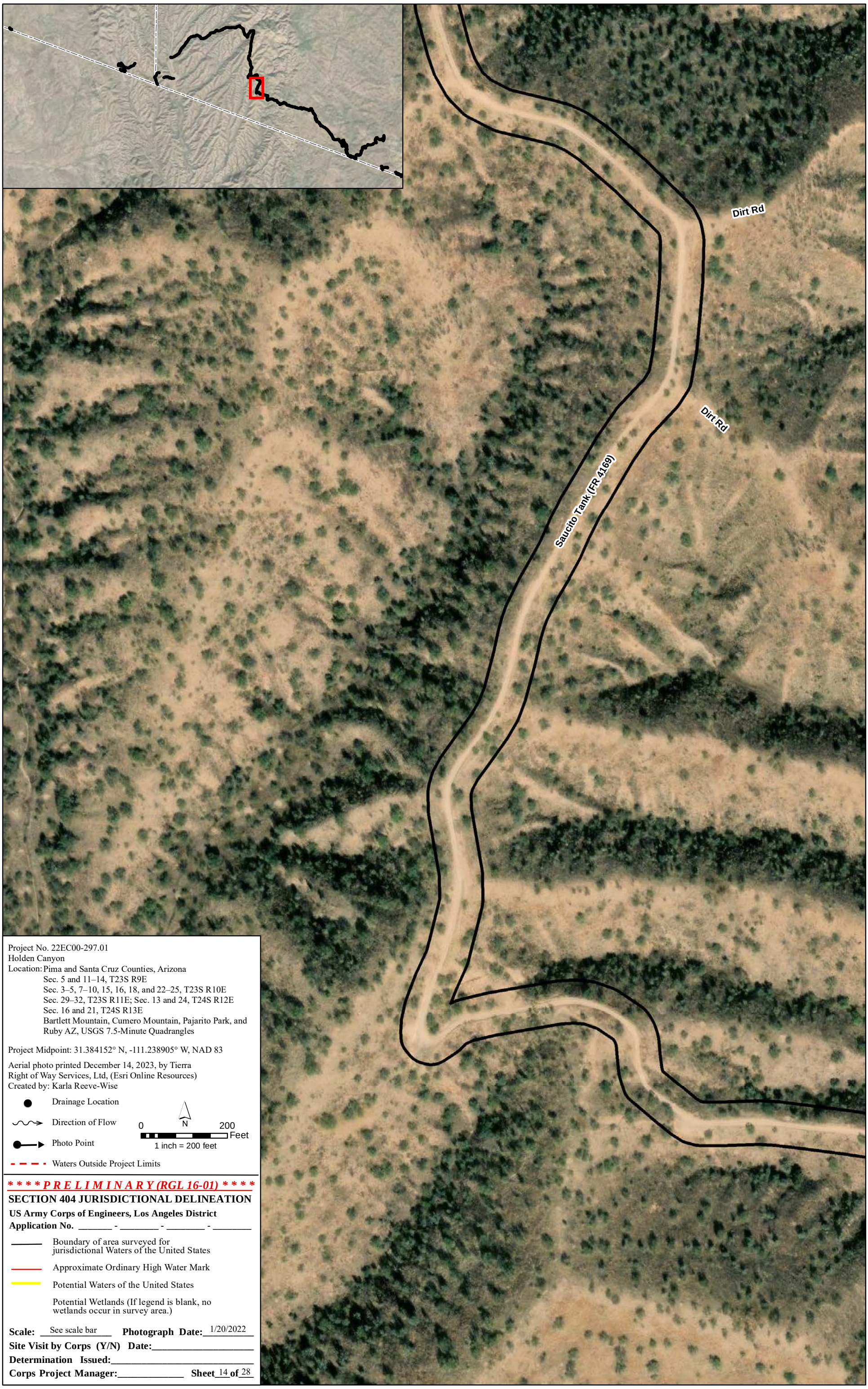
- Boundary of area surveyed for jurisdictional Waters of the United States
- Approximate Ordinary High Water Mark
- Potential Waters of the United States
- Potential Wetlands (If legend is blank, no wetlands occur in survey area.)

Scale: See scale bar **Photograph Date:** 1/20/2022

Site Visit by Corps (Y/N) Date: _____

Determination Issued: _____

Corps Project Manager: _____ **Sheet** 13 **of** 28



Project No. 22EC00-297.01
Holden Canyon
Location: Pima and Santa Cruz Counties, Arizona
Sec. 5 and 11–14, T23S R9E
Sec. 3–5, 7–10, 15, 16, 18, and 22–25, T23S R10E
Sec. 29–32, T23S R11E; Sec. 13 and 24, T24S R12E
Sec. 16 and 21, T24S R13E
Bartlett Mountain, Cumero Mountain, Pajarito Park, and Ruby AZ, USGS 7.5-Minute Quadrangles

Project Midpoint: 31.384152° N, -111.238905° W, NAD 83

Aerial photo printed December 14, 2023, by Tierra Right of Way Services, Ltd, (Esri Online Resources)
Created by: Karla Reeve-Wise

Drainage Location

Direction of Flow

Photo Point

Waters Outside Project Limits

N

0 200 Feet

1 inch = 200 feet

*** * * * *P R E L I M I N A R Y (RGL 16-01)* * * * ***

SECTION 404 JURISDICTIONAL DELINEATION

US Army Corps of Engineers, Los Angeles District

Application No. _____ - _____ - _____ - _____

Boundary of area surveyed for jurisdictional Waters of the United States

Approximate Ordinary High Water Mark

Potential Waters of the United States

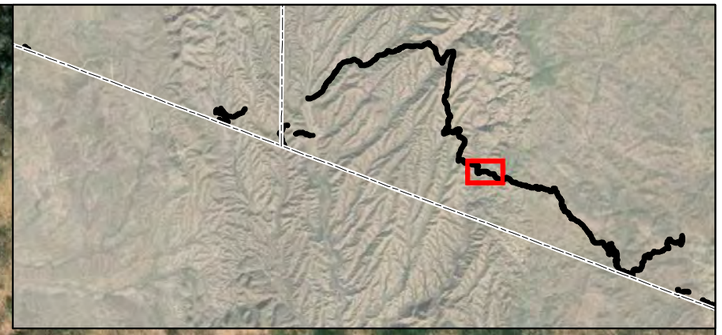
Potential Wetlands (If legend is blank, no wetlands occur in survey area.)

Scale: See scale bar **Photograph Date:** 1/20/2022

Site Visit by Corps (Y/N) Date:_____

Determination Issued:_____

Corps Project Manager:_____ **Sheet** 14 **of** 28



Saucito Tank (FR 4169)

Drainage 32

Drainage 32

Drainage 33

Bonita Canyon

Saucito Tank (FR 4169)

Dirt Rd

Drainage 34

Project No. 22EC00-297.01
Holden Canyon
Location: Pima and Santa Cruz Counties, Arizona
Sec. 5 and 11–14, T23S R9E
Sec. 3–5, 7–10, 15, 16, 18, and 22–25, T23S R10E
Sec. 29–32, T23S R11E; Sec. 13 and 24, T24S R12E
Sec. 16 and 21, T24S R13E
Bartlett Mountain, Cumero Mountain, Pajarito Park, and Ruby AZ, USGS 7.5-Minute Quadrangles

Project Midpoint: 31.384152° N, -111.238905° W, NAD 83

Aerial photo printed December 14, 2023, by Tierra Right of Way Services, Ltd, (Esri Online Resources)
Created by: Karla Reeve-Wise

Drainage Location

Direction of Flow

Photo Point

Waters Outside Project Limits

0 N 200 Feet
1 inch = 200 feet

*** * * * *P R E L I M I N A R Y (RGL 16-01)* * * * ***

SECTION 404 JURISDICTIONAL DELINEATION

US Army Corps of Engineers, Los Angeles District

Application No. _____ - _____ - _____ - _____

Boundary of area surveyed for jurisdictional Waters of the United States

Approximate Ordinary High Water Mark

Potential Waters of the United States

Potential Wetlands (If legend is blank, no wetlands occur in survey area.)

Scale: See scale bar **Photograph Date:** 1/20/2022

Site Visit by Corps (Y/N) Date:_____

Determination Issued:_____

Corps Project Manager:_____ **Sheet** 15 **of** 28

Project No. 22EC00-297.01
Holden Canyon
Location: Pima and Santa Cruz Counties, Arizona
Sec. 5 and 11–14, T23S R9E
Sec. 3–5, 7–10, 15, 16, 18, and 22–25, T23S R10E
Sec. 29–32, T23S R11E; Sec. 13 and 24, T24S R12E
Sec. 16 and 21, T24S R13E
Bartlett Mountain, Cumero Mountain, Pajarito Park, and Ruby AZ, USGS 7.5-Minute Quadrangles

Project Midpoint: 31.384152° N, -111.238905° W, NAD 83

Aerial photo printed December 14, 2023, by Tierra Right of Way Services, Ltd, (Esri Online Resources)
Created by: Karla Reeve-Wise

- Drainage Location
- Direction of Flow
- Photo Point
- Waters Outside Project Limits

0 200 Feet
N
1 inch = 200 feet

*** * * * *P R E L I M I N A R Y (RGL 16-01)* * * ***

SECTION 404 JURISDICTIONAL DELINEATION

US Army Corps of Engineers, Los Angeles District

Application No. _____ - _____ - _____ - _____

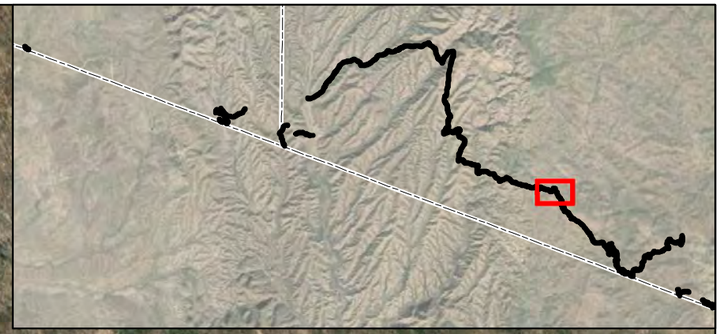
- Boundary of area surveyed for jurisdictional Waters of the United States
- Approximate Ordinary High Water Mark
- Potential Waters of the United States
- Potential Wetlands (If legend is blank, no wetlands occur in survey area.)

Scale: See scale bar **Photograph Date:** 1/20/2022

Site Visit by Corps (Y/N) Date:_____

Determination Issued:_____

Corps Project Manager:_____ **Sheet** 16 **of** 28



Project No. 22EC00-297.01
Holden Canyon
Location: Pima and Santa Cruz Counties, Arizona
Sec. 5 and 11–14, T23S R9E
Sec. 3–5, 7–10, 15, 16, 18, and 22–25, T23S R10E
Sec. 29–32, T23S R11E; Sec. 13 and 24, T24S R12E
Sec. 16 and 21, T24S R13E
Bartlett Mountain, Cumero Mountain, Pajarito Park, and Ruby AZ, USGS 7.5-Minute Quadrangles

Project Midpoint: 31.384152° N, -111.238905° W, NAD 83

Aerial photo printed December 14, 2023, by Tierra Right of Way Services, Ltd, (Esri Online Resources)
Created by: Karla Reeve-Wise

- Drainage Location
- Direction of Flow
- Photo Point
- Waters Outside Project Limits

N

0 200 Feet

1 inch = 200 feet

Drainage 36

1

2

*** * * * *P R E L I M I N A R Y (RGL 16-01)* * * * ***

SECTION 404 JURISDICTIONAL DELINEATION

US Army Corps of Engineers, Los Angeles District

Application No. _____ - _____ - _____ - _____

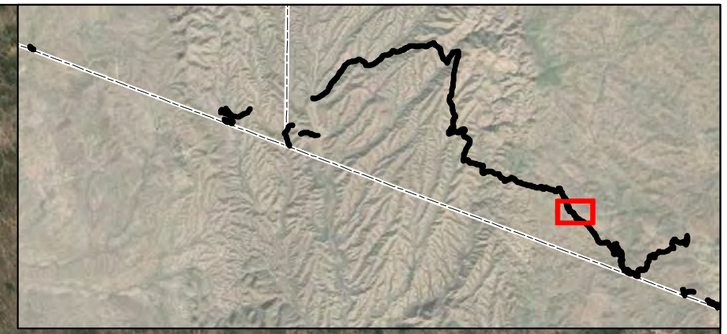
- Boundary of area surveyed for jurisdictional Waters of the United States
- Approximate Ordinary High Water Mark
- Potential Waters of the United States
- Potential Wetlands (If legend is blank, no wetlands occur in survey area.)

Scale: See scale bar **Photograph Date:** 1/20/2022

Site Visit by Corps (Y/N) Date:_____

Determination Issued:_____

Corps Project Manager:_____ **Sheet** 17 **of** 28



Project No. 22EC00-297.01
Holden Canyon
Location: Pima and Santa Cruz Counties, Arizona
Sec. 5 and 11–14, T23S R9E
Sec. 3–5, 7–10, 15, 16, 18, and 22–25, T23S R10E
Sec. 29–32, T23S R11E; Sec. 13 and 24, T24S R12E
Sec. 16 and 21, T24S R13E
Bartlett Mountain, Cumero Mountain, Pajarito Park, and Ruby AZ, USGS 7.5-Minute Quadrangles

Project Midpoint: 31.384152° N, -111.238905° W, NAD 83

Aerial photo printed December 14, 2023, by Tierra Right of Way Services, Ltd, (Esri Online Resources)
Created by: Karla Reeve-Wise

- Drainage Location
- Direction of Flow
- Photo Point
- Waters Outside Project Limits

0 N 200 Feet
1 inch = 200 feet

*** * * * *P R E L I M I N A R Y (RGL 16-01)* * * * ***

SECTION 404 JURISDICTIONAL DELINEATION

US Army Corps of Engineers, Los Angeles District

Application No. _____ - _____ - _____ - _____

- Boundary of area surveyed for jurisdictional Waters of the United States
- Approximate Ordinary High Water Mark
- Potential Waters of the United States
- Potential Wetlands (If legend is blank, no wetlands occur in survey area.)

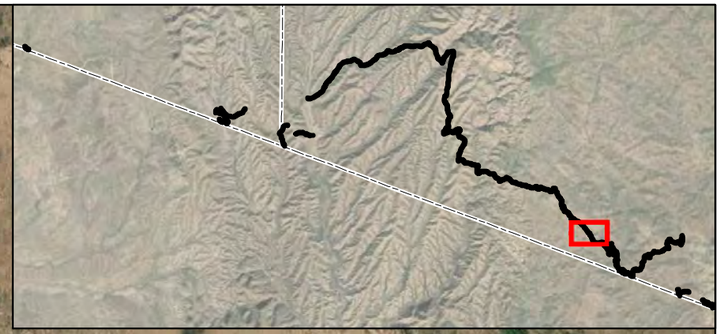
Scale: See scale bar **Photograph Date:** 1/20/2022

Site Visit by Corps (Y/N) Date:_____

Determination Issued:_____

Corps Project Manager:_____ **Sheet** 18 **of** 28

Drainage 37
1
2



Drainage 38

Drainage 39

Drainage 40

Project No. 22EC00-297.01
Holden Canyon
Location: Pima and Santa Cruz Counties, Arizona
Sec. 5 and 11–14, T23S R9E
Sec. 3–5, 7–10, 15, 16, 18, and 22–25, T23S R10E
Sec. 29–32, T23S R11E; Sec. 13 and 24, T24S R12E
Sec. 16 and 21, T24S R13E
Bartlett Mountain, Cumero Mountain, Pajarito Park, and Ruby AZ, USGS 7.5-Minute Quadrangles

Project Midpoint: 31.384152° N, -111.238905° W, NAD 83

Aerial photo printed December 14, 2023, by Tierra Right of Way Services, Ltd, (Esri Online Resources)
Created by: Karla Reeve-Wise

Drainage Location

Direction of Flow

Photo Point

Waters Outside Project Limits

0 200 Feet
N
1 inch = 200 feet

*** * * * *P R E L I M I N A R Y (RGL 16-01)* * * ***

SECTION 404 JURISDICTIONAL DELINEATION

US Army Corps of Engineers, Los Angeles District

Application No. _____ - _____ - _____ - _____

Boundary of area surveyed for jurisdictional Waters of the United States

Approximate Ordinary High Water Mark

Potential Waters of the United States

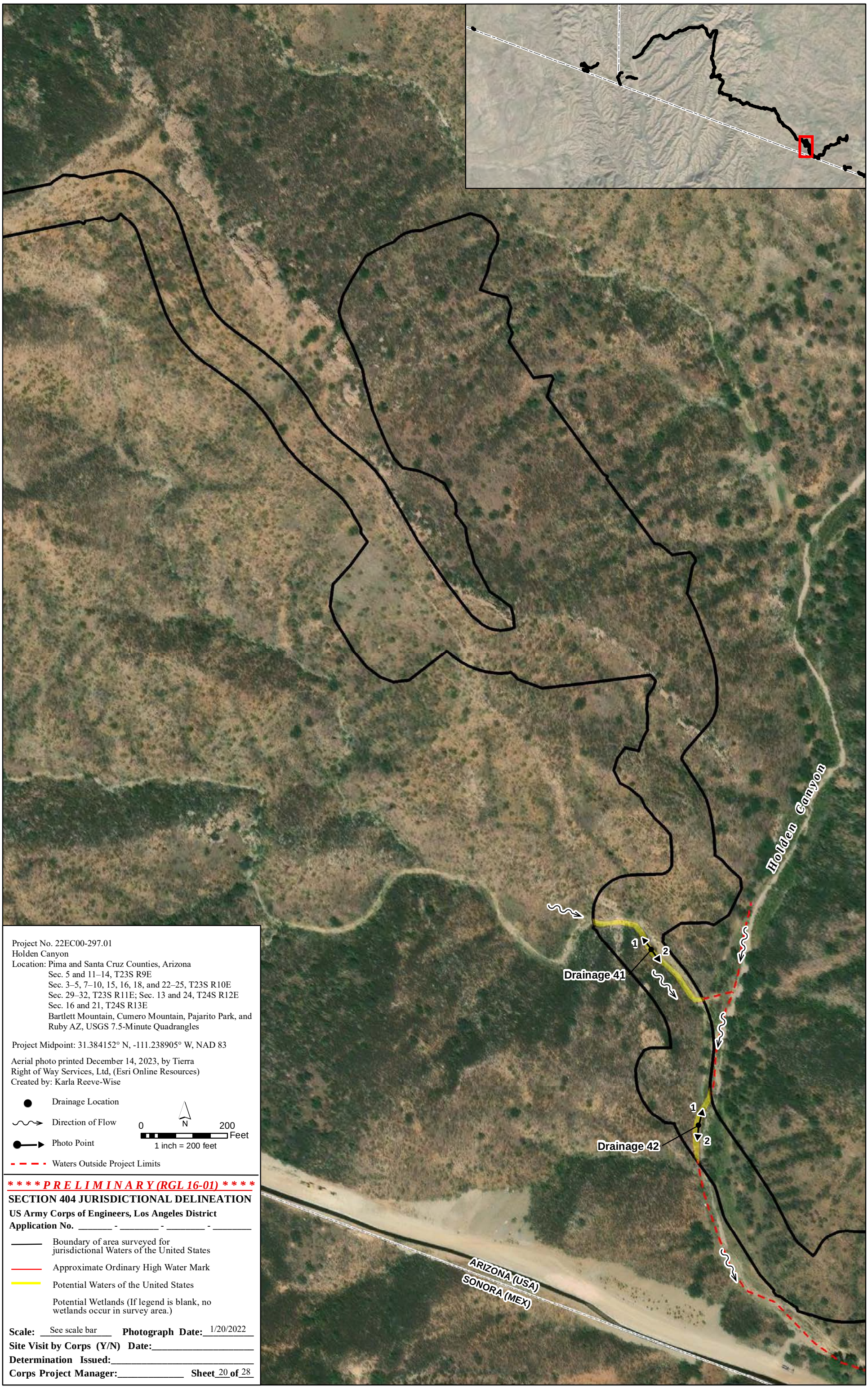
Potential Wetlands (If legend is blank, no wetlands occur in survey area.)

Scale: See scale bar **Photograph Date:** 1/20/2022

Site Visit by Corps (Y/N) Date:_____

Determination Issued:_____

Corps Project Manager:_____ **Sheet** 19 **of** 28



Project No. 22EC00-297.01
Holden Canyon
Location: Pima and Santa Cruz Counties, Arizona
Sec. 5 and 11–14, T23S R9E
Sec. 3–5, 7–10, 15, 16, 18, and 22–25, T23S R10E
Sec. 29–32, T23S R11E; Sec. 13 and 24, T24S R12E
Sec. 16 and 21, T24S R13E
Bartlett Mountain, Cumero Mountain, Pajarito Park, and Ruby AZ, USGS 7.5-Minute Quadrangles

Project Midpoint: 31.384152° N, -111.238905° W, NAD 83

Aerial photo printed December 14, 2023, by Tierra Right of Way Services, Ltd, (Esri Online Resources)
Created by: Karla Reeve-Wise

Drainage Location
Direction of Flow
Photo Point
Waters Outside Project Limits

N
0 200 Feet
1 inch = 200 feet

*** * * * *P R E L I M I N A R Y (RGL 16-01)* * * * ***

SECTION 404 JURISDICTIONAL DELINEATION

US Army Corps of Engineers, Los Angeles District

Application No. _____ - _____ - _____ - _____

Boundary of area surveyed for jurisdictional Waters of the United States

Approximate Ordinary High Water Mark

Potential Waters of the United States

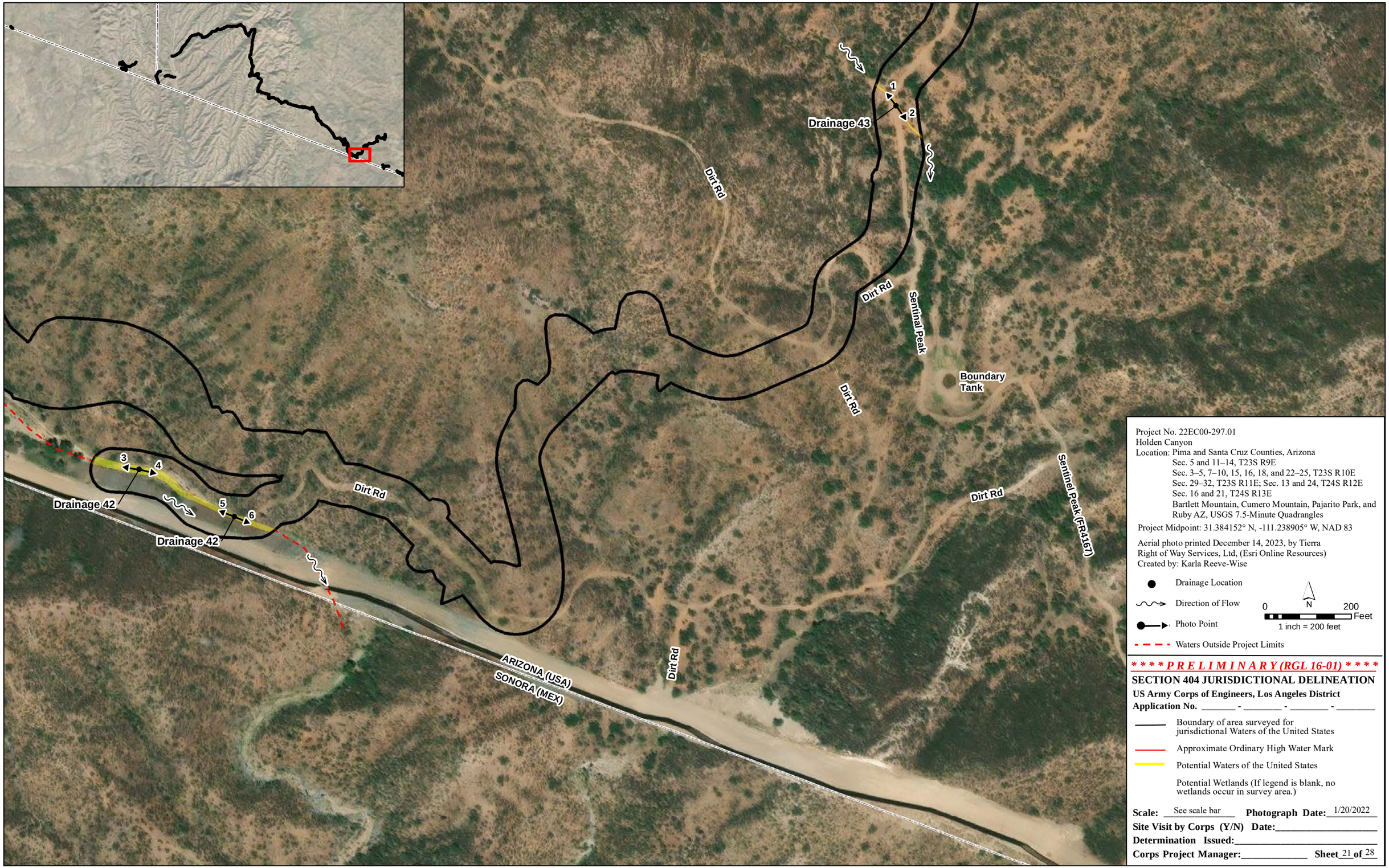
Potential Wetlands (If legend is blank, no wetlands occur in survey area.)

Scale: See scale bar **Photograph Date:** 1/20/2022

Site Visit by Corps (Y/N) Date:_____

Determination Issued:_____

Corps Project Manager:_____ **Sheet** 20 **of** 28



Project No. 22EC00-297.01
Holden Canyon
Location: Pima and Santa Cruz Counties, Arizona
Sec. 5 and 11–14, T23S R9E
Sec. 3–5, 7–10, 15, 16, 18, and 22–25, T23S R10E
Sec. 29–32, T23S R11E; Sec. 13 and 24, T24S R12E
Sec. 16 and 21, T24S R13E
Bartlett Mountain, Cumero Mountain, Pajarito Park, and Ruby AZ, USGS 7.5-Minute Quadrangles

Project Midpoint: 31.384152° N, -111.238905° W, NAD 83

Aerial photo printed December 14, 2023, by Tierra Right of Way Services, Ltd, (Esri Online Resources)
Created by: Karla Reeve-Wise

- Drainage Location
- Direction of Flow
- Photo Point
- Waters Outside Project Limits

N
0 200 Feet
1 inch = 200 feet

*** * * * P R E L I M I N A R Y (RGL 16-01) * * * ***

SECTION 404 JURISDICTIONAL DELINEATION

US Army Corps of Engineers, Los Angeles District

Application No. _____ - _____ - _____ - _____

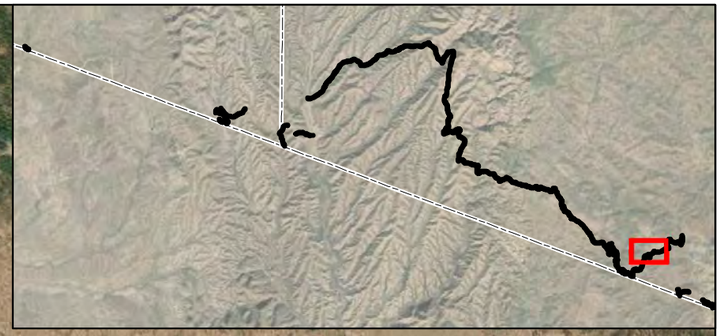
- Boundary of area surveyed for jurisdictional Waters of the United States
- Approximate Ordinary High Water Mark
- Potential Waters of the United States
- Potential Wetlands (If legend is blank, no wetlands occur in survey area.)

Scale: See scale bar **Photograph Date:** 1/20/2022

Site Visit by Corps (Y/N) Date: _____

Determination Issued: _____

Corps Project Manager: _____ **Sheet** 21 **of** 28



Dirt Rd

Sentinal Peak (FR 4167)

Project No. 22EC00-297.01
Holden Canyon
Location: Pima and Santa Cruz Counties, Arizona
Sec. 5 and 11–14, T23S R9E
Sec. 3–5, 7–10, 15, 16, 18, and 22–25, T23S R10E
Sec. 29–32, T23S R11E; Sec. 13 and 24, T24S R12E
Sec. 16 and 21, T24S R13E
Bartlett Mountain, Cumero Mountain, Pajarito Park, and Ruby AZ, USGS 7.5-Minute Quadrangles

Project Midpoint: 31.384152° N, -111.238905° W, NAD 83

Aerial photo printed December 14, 2023, by Tierra Right of Way Services, Ltd, (Esri Online Resources)
Created by: Karla Reeve-Wise

Drainage Location

Direction of Flow

Photo Point

Waters Outside Project Limits

0 N 200 Feet
1 inch = 200 feet

*** * * * *P R E L I M I N A R Y (RGL 16-01)* * * * ***

SECTION 404 JURISDICTIONAL DELINEATION

US Army Corps of Engineers, Los Angeles District

Application No. _____ - _____ - _____ - _____

Boundary of area surveyed for jurisdictional Waters of the United States

Approximate Ordinary High Water Mark

Potential Waters of the United States

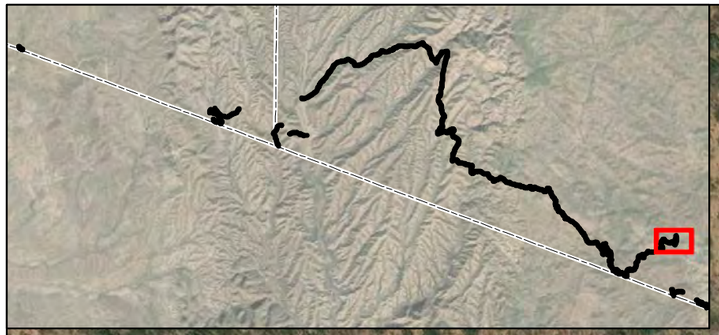
Potential Wetlands (If legend is blank, no wetlands occur in survey area.)

Scale: See scale bar **Photograph Date:** 1/20/2022

Site Visit by Corps (Y/N) Date:_____

Determination Issued:_____

Corps Project Manager:_____ **Sheet** 22 **of** 28



Scribner Gulch

California Gulch Rd

Dirt Rd

Drainage 44

Drainage 46

Drainage 45

Sentinal Peak (FR 4167)

Scribner Gulch

1

2

Project No. 22EC00-297.01
Holden Canyon
Location: Pima and Santa Cruz Counties, Arizona
Sec. 5 and 11–14, T23S R9E
Sec. 3–5, 7–10, 15, 16, 18, and 22–25, T23S R10E
Sec. 29–32, T23S R11E; Sec. 13 and 24, T24S R12E
Sec. 16 and 21, T24S R13E
Bartlett Mountain, Cumero Mountain, Pajarito Park, and Ruby AZ, USGS 7.5-Minute Quadrangles

Project Midpoint: 31.384152° N, -111.238905° W, NAD 83

Aerial photo printed December 14, 2023, by Tierra Right of Way Services, Ltd, (Esri Online Resources)
Created by: Karla Reeve-Wise

Drainage Location

Direction of Flow

Photo Point

Waters Outside Project Limits

N

0 200 Feet

1 inch = 200 feet

*** * * * P R E L I M I N A R Y (RGL 16-01) * * * ***

SECTION 404 JURISDICTIONAL DELINEATION

US Army Corps of Engineers, Los Angeles District

Application No. _____ - _____ - _____ - _____

Boundary of area surveyed for jurisdictional Waters of the United States

Approximate Ordinary High Water Mark

Potential Waters of the United States

Potential Wetlands (If legend is blank, no wetlands occur in survey area.)

Scale: See scale bar **Photograph Date:** 1/20/2022

Site Visit by Corps (Y/N) Date:_____

Determination Issued:_____

Corps Project Manager:_____ **Sheet** 23 **of** 28

Project No. 22EC00-297.01
Holden Canyon
Location: Pima and Santa Cruz Counties, Arizona
Sec. 5 and 11–14, T23S R9E
Sec. 3–5, 7–10, 15, 16, 18, and 22–25, T23S R10E
Sec. 29–32, T23S R11E; Sec. 13 and 24, T24S R12E
Sec. 16 and 21, T24S R13E
Bartlett Mountain, Cumero Mountain, Pajarito Park, and Ruby AZ, USGS 7.5-Minute Quadrangles

Project Midpoint: 31.384152° N, -111.238905° W, NAD 83

Aerial photo printed December 14, 2023, by Tierra Right of Way Services, Ltd, (Esri Online Resources)
Created by: Karla Reeve-Wise

- Drainage Location
- Direction of Flow
- Photo Point
- Waters Outside Project Limits

0 200 Feet
N
1 inch = 200 feet

*** * * * *P R E L I M I N A R Y (RGL 16-01)* * * * ***

SECTION 404 JURISDICTIONAL DELINEATION

US Army Corps of Engineers, Los Angeles District

Application No. _____ - _____ - _____ - _____

- Boundary of area surveyed for jurisdictional Waters of the United States
- Approximate Ordinary High Water Mark
- Potential Waters of the United States
- Potential Wetlands (If legend is blank, no wetlands occur in survey area.)

Scale: See scale bar **Photograph Date:** 1/20/2022

Site Visit by Corps (Y/N) Date:_____

Determination Issued:_____

Corps Project Manager:_____ **Sheet** 24 **of** 28

Project No. 22EC00-297.01
Holden Canyon
Location: Pima and Santa Cruz Counties, Arizona
Sec. 5 and 11–14, T23S R9E
Sec. 3–5, 7–10, 15, 16, 18, and 22–25, T23S R10E
Sec. 29–32, T23S R11E; Sec. 13 and 24, T24S R12E
Sec. 16 and 21, T24S R13E
Bartlett Mountain, Cumero Mountain, Pajarito Park, and Ruby AZ, USGS 7.5-Minute Quadrangles

Project Midpoint: 31.384152° N, -111.238905° W, NAD 83

Aerial photo printed December 14, 2023, by Tierra Right of Way Services, Ltd, (Esri Online Resources)
Created by: Karla Reeve-Wise

- Drainage Location
- Direction of Flow
- Photo Point
- Waters Outside Project Limits

0 N 200 Feet
1 inch = 200 feet

*** * * * P R E L I M I N A R Y (RGL 16-01) * * * ***

SECTION 404 JURISDICTIONAL DELINEATION

US Army Corps of Engineers, Los Angeles District

Application No. _____ - _____ - _____ - _____

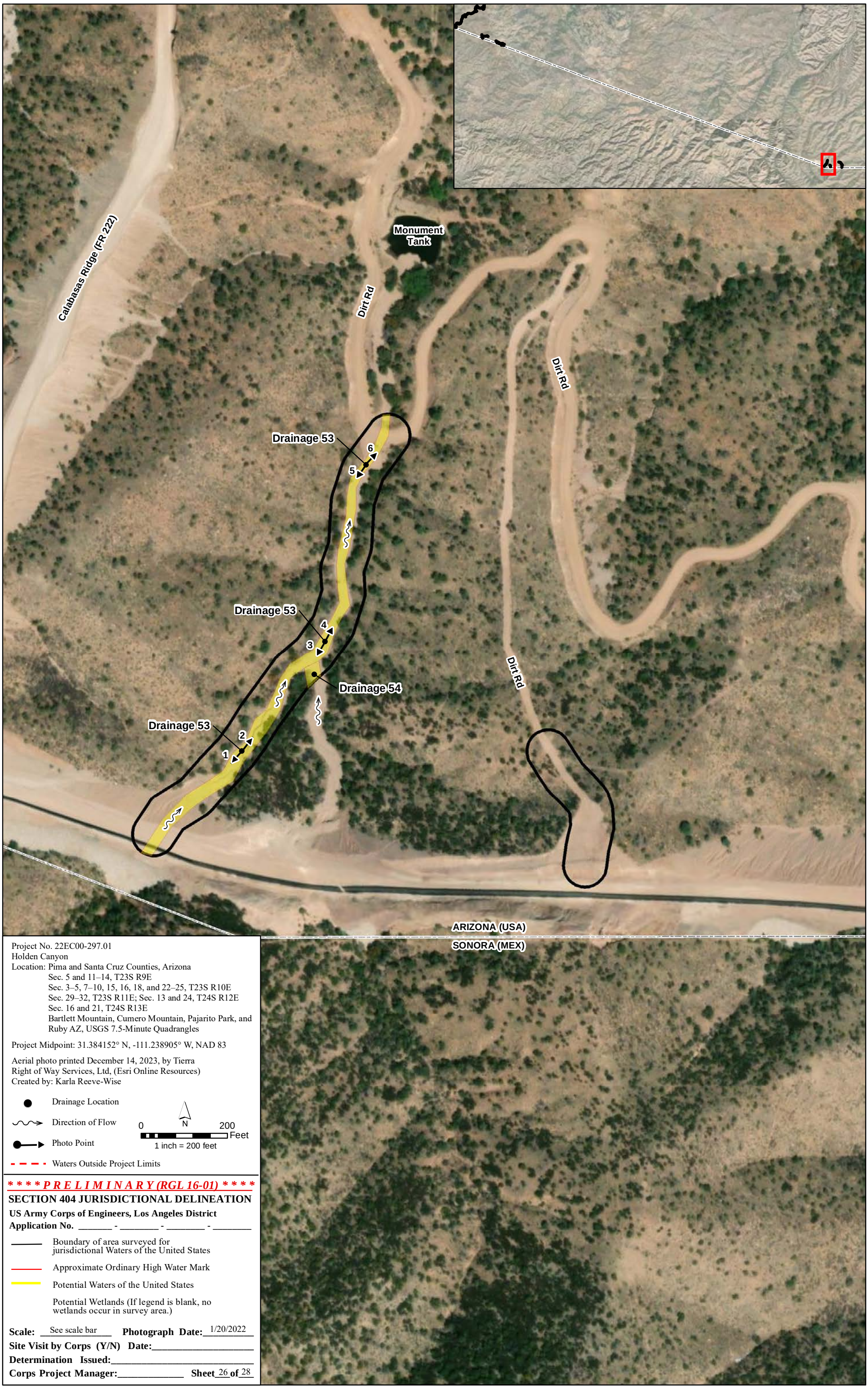
- Boundary of area surveyed for jurisdictional Waters of the United States
- Approximate Ordinary High Water Mark
- Potential Waters of the United States
- Potential Wetlands (If legend is blank, no wetlands occur in survey area.)

Scale: See scale bar **Photograph Date:** 1/20/2022

Site Visit by Corps (Y/N) Date:_____

Determination Issued:_____

Corps Project Manager:_____ **Sheet** 25 **of** 28



Project No. 22EC00-297.01
Holden Canyon
Location: Pima and Santa Cruz Counties, Arizona
Sec. 5 and 11–14, T23S R9E
Sec. 3–5, 7–10, 15, 16, 18, and 22–25, T23S R10E
Sec. 29–32, T23S R11E; Sec. 13 and 24, T24S R12E
Sec. 16 and 21, T24S R13E
Bartlett Mountain, Cumero Mountain, Pajarito Park, and Ruby AZ, USGS 7.5-Minute Quadrangles

Project Midpoint: 31.384152° N, -111.238905° W, NAD 83

Aerial photo printed December 14, 2023, by Tierra Right of Way Services, Ltd, (Esri Online Resources)
Created by: Karla Reeve-Wise

Drainage Location
Direction of Flow
Photo Point
Waters Outside Project Limits

0 N 200 Feet
1 inch = 200 feet

*** * * * *P R E L I M I N A R Y (RGL 16-01)* * * * ***

SECTION 404 JURISDICTIONAL DELINEATION

US Army Corps of Engineers, Los Angeles District

Application No. _____ - _____ - _____ - _____

Boundary of area surveyed for jurisdictional Waters of the United States

Approximate Ordinary High Water Mark

Potential Waters of the United States

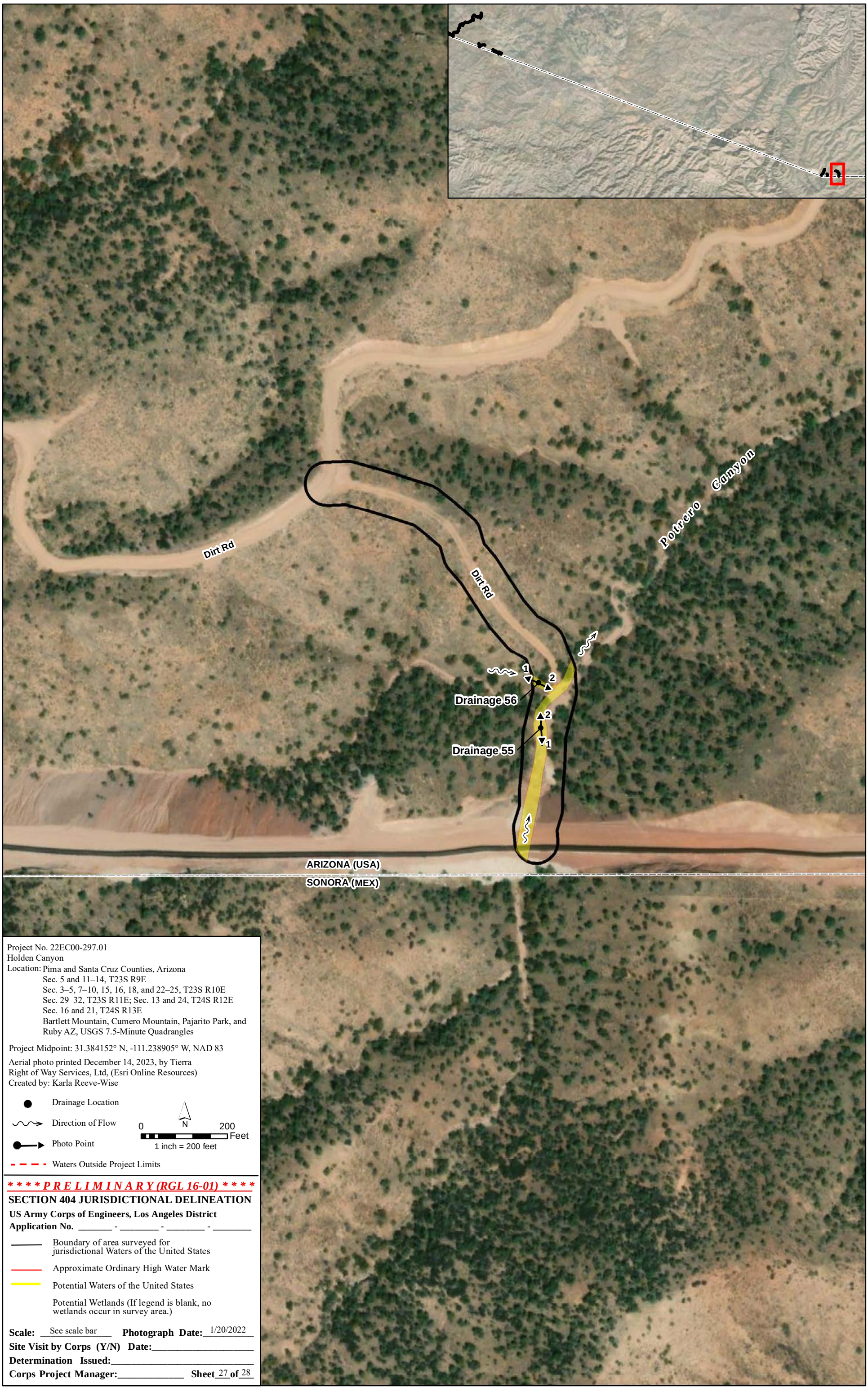
Potential Wetlands (If legend is blank, no wetlands occur in survey area.)

Scale: See scale bar **Photograph Date:** 1/20/2022

Site Visit by Corps (Y/N) Date:_____

Determination Issued:_____

Corps Project Manager:_____ **Sheet** 26 **of** 28



Project No. 22EC00-297.01
Holden Canyon
Location: Pima and Santa Cruz Counties, Arizona
Sec. 5 and 11–14, T23S R9E
Sec. 3–5, 7–10, 15, 16, 18, and 22–25, T23S R10E
Sec. 29–32, T23S R11E; Sec. 13 and 24, T24S R12E
Sec. 16 and 21, T24S R13E
Bartlett Mountain, Cumero Mountain, Pajarito Park, and Ruby AZ, USGS 7.5-Minute Quadrangles

Project Midpoint: 31.384152° N, -111.238905° W, NAD 83

Aerial photo printed December 14, 2023, by Tierra Right of Way Services, Ltd, (Esri Online Resources)
Created by: Karla Reeve-Wise

Drainage Location
Direction of Flow
Photo Point
Waters Outside Project Limits

0 N 200 Feet
1 inch = 200 feet

*** * * * *P R E L I M I N A R Y (RGL 16-01)* * * * ***

SECTION 404 JURISDICTIONAL DELINEATION

US Army Corps of Engineers, Los Angeles District
Application No. _____ - _____ - _____ - _____

Boundary of area surveyed for jurisdictional Waters of the United States
Approximate Ordinary High Water Mark
Potential Waters of the United States
Potential Wetlands (If legend is blank, no wetlands occur in survey area.)

Scale: See scale bar **Photograph Date:** 1/20/2022
Site Visit by Corps (Y/N) Date:_____
Determination Issued:_____
Corps Project Manager:_____ **Sheet** 27 **of** 28

Dirt Rd

Dirt Rd

Dirt Rd

Dirt Rd

Dirt Rd

Dirt Rd

Dirt Rd

Dirt Rd

Dirt Rd

ARIZONA (USA)

SONORA (MEX)

Project No. 22EC00-297.01
Holden Canyon
Location: Pima and Santa Cruz Counties, Arizona
Sec. 5 and 11–14, T23S R9E
Sec. 3–5, 7–10, 15, 16, 18, and 22–25, T23S R10E
Sec. 29–32, T23S R11E; Sec. 13 and 24, T24S R12E
Sec. 16 and 21, T24S R13E
Bartlett Mountain, Cumero Mountain, Pajarito Park, and Ruby AZ, USGS 7.5-Minute Quadrangles

Project Midpoint: 31.384152° N, -111.238905° W, NAD 83

Aerial photo printed December 14, 2023, by Tierra Right of Way Services, Ltd, (Esri Online Resources)
Created by: Karla Reeve-Wise

Drainage Location

Direction of Flow

Photo Point

Waters Outside Project Limits

0 N 200 Feet
1 inch = 200 feet

*** * * * P R E L I M I N A R Y (RGL 16-01) * * * ***

SECTION 404 JURISDICTIONAL DELINEATION

US Army Corps of Engineers, Los Angeles District

Application No. _____ - _____ - _____ - _____

Boundary of area surveyed for jurisdictional Waters of the United States

Approximate Ordinary High Water Mark

Potential Waters of the United States

Potential Wetlands (If legend is blank, no wetlands occur in survey area.)

Scale: See scale bar **Photograph Date:** 1/20/2022

Site Visit by Corps (Y/N) Date:_____

Determination Issued:_____

Corps Project Manager:_____ **Sheet** 28 **of** 28

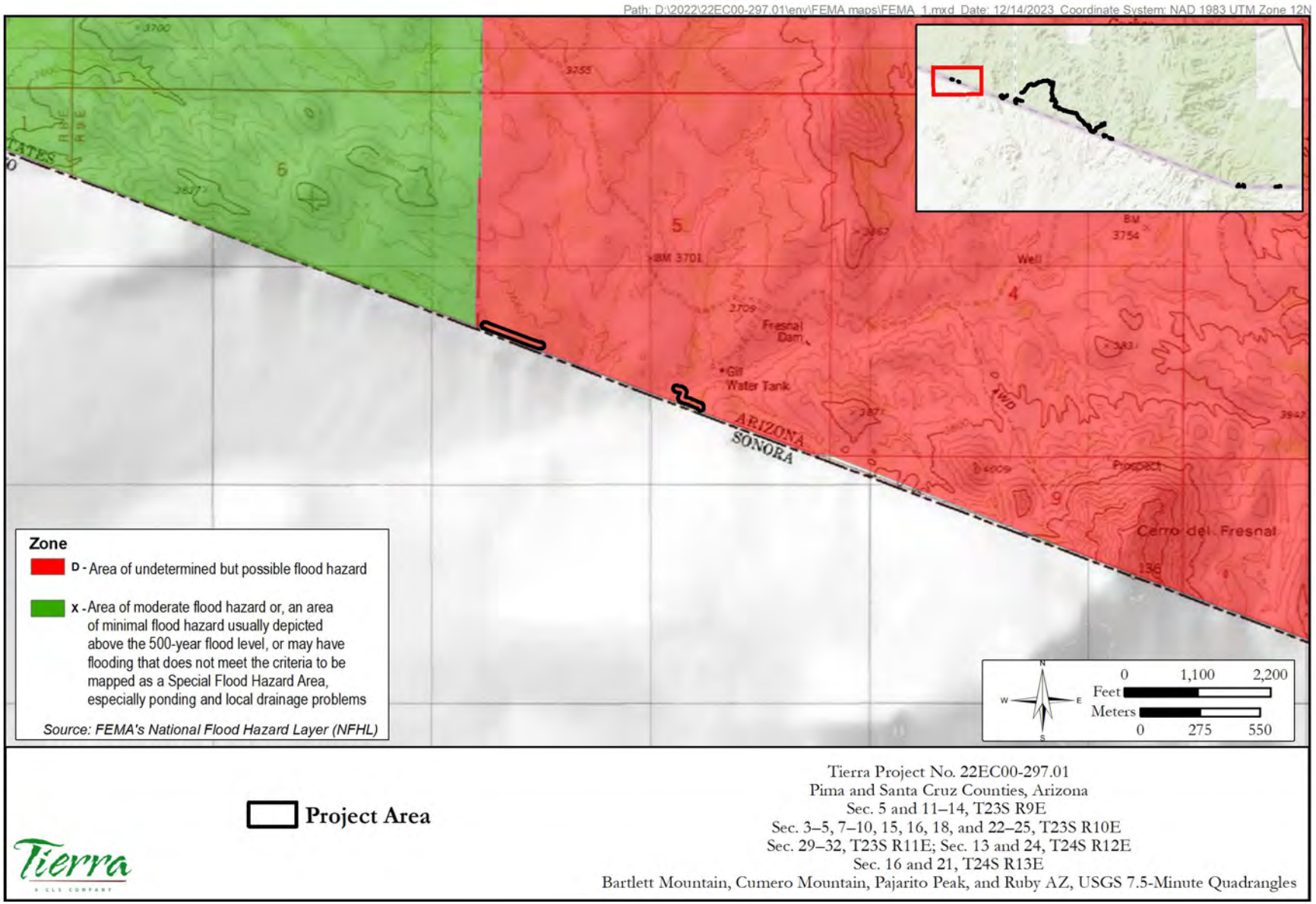


Figure 3a. Federal Emergency Management Agency–designated floodplain.

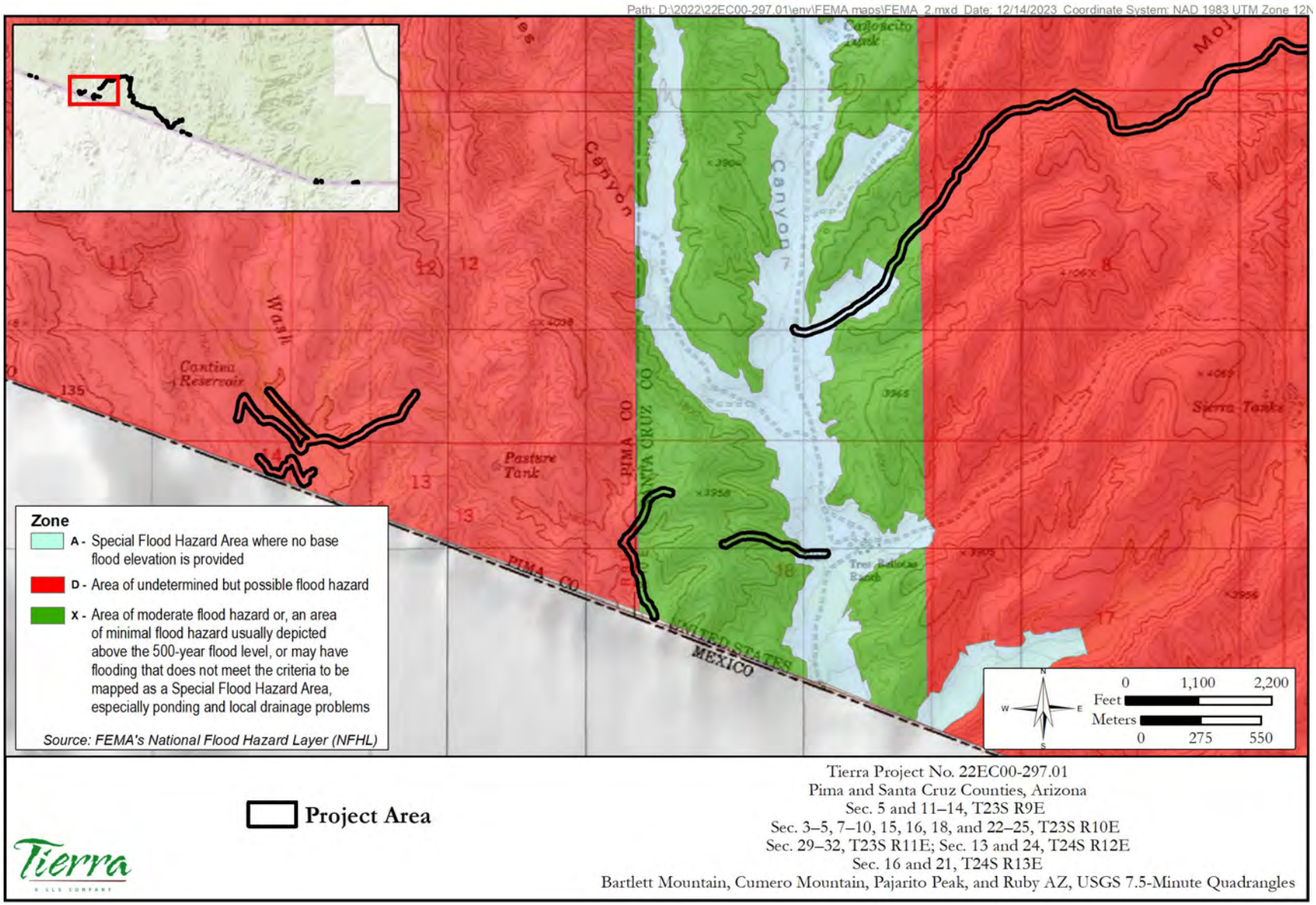


Figure 3b. Federal Emergency Management Agency–designated floodplain.

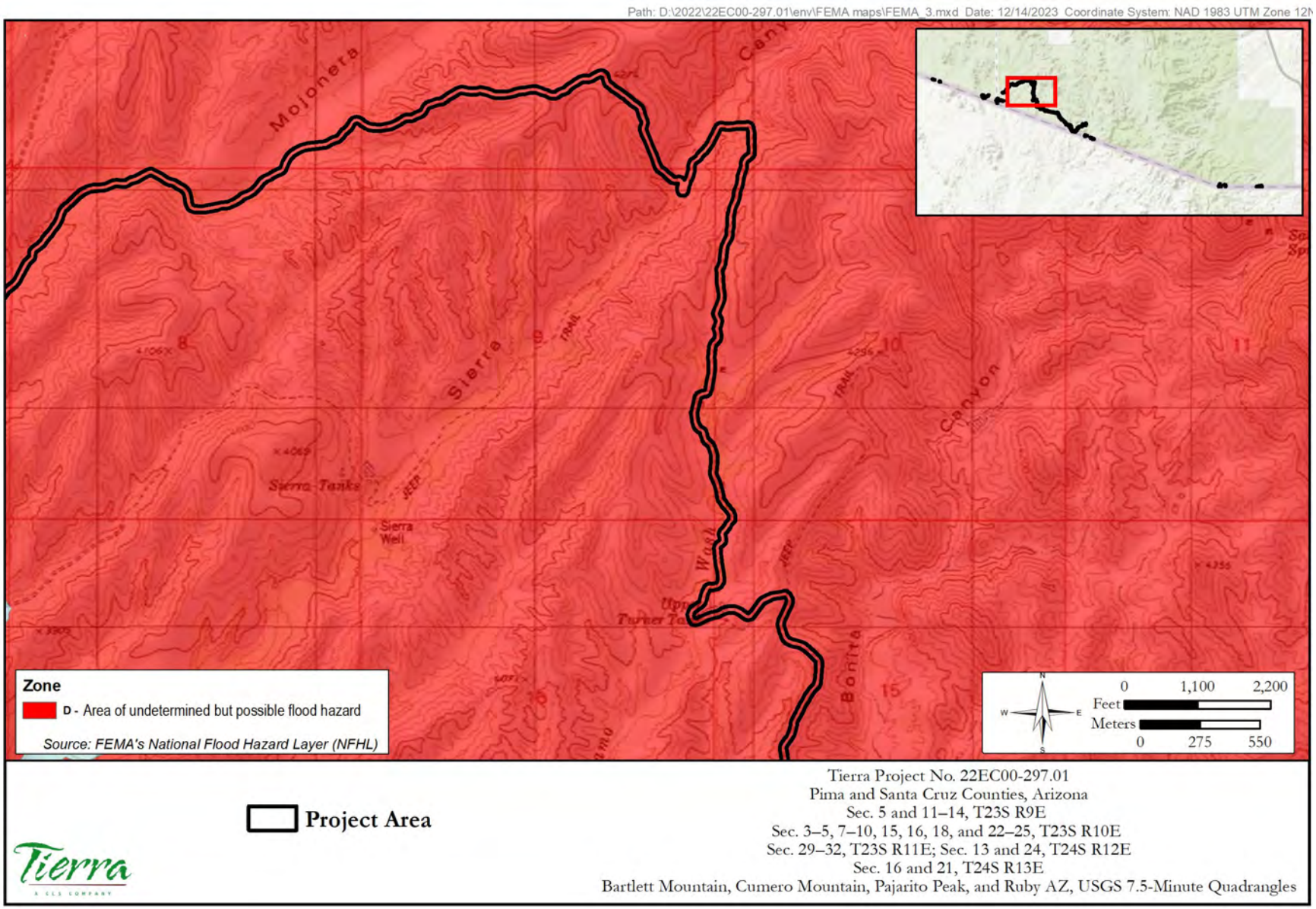


Figure 3c. Federal Emergency Management Agency–designated floodplain.

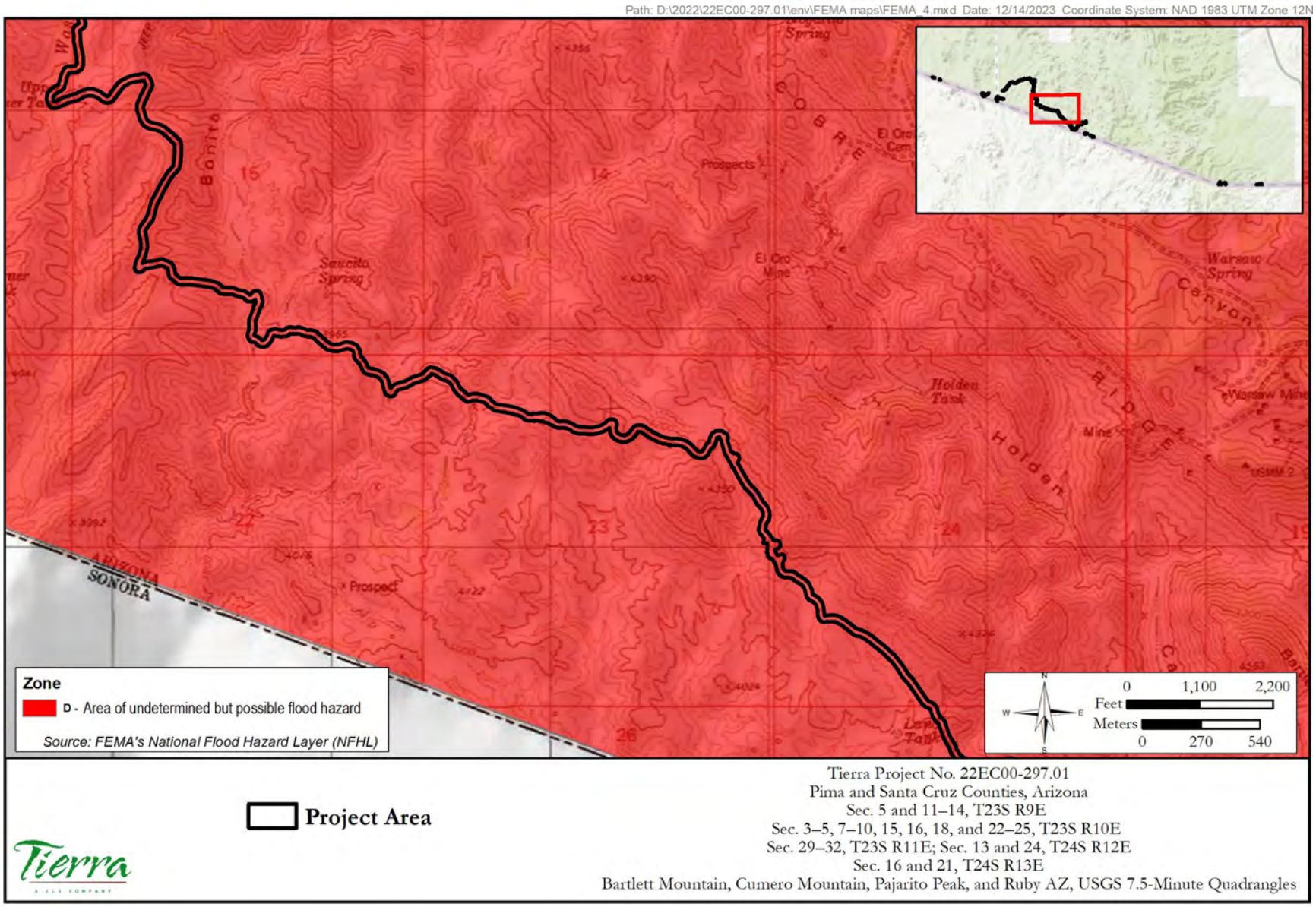


Figure 3d. Federal Emergency Management Agency–designated floodplain.

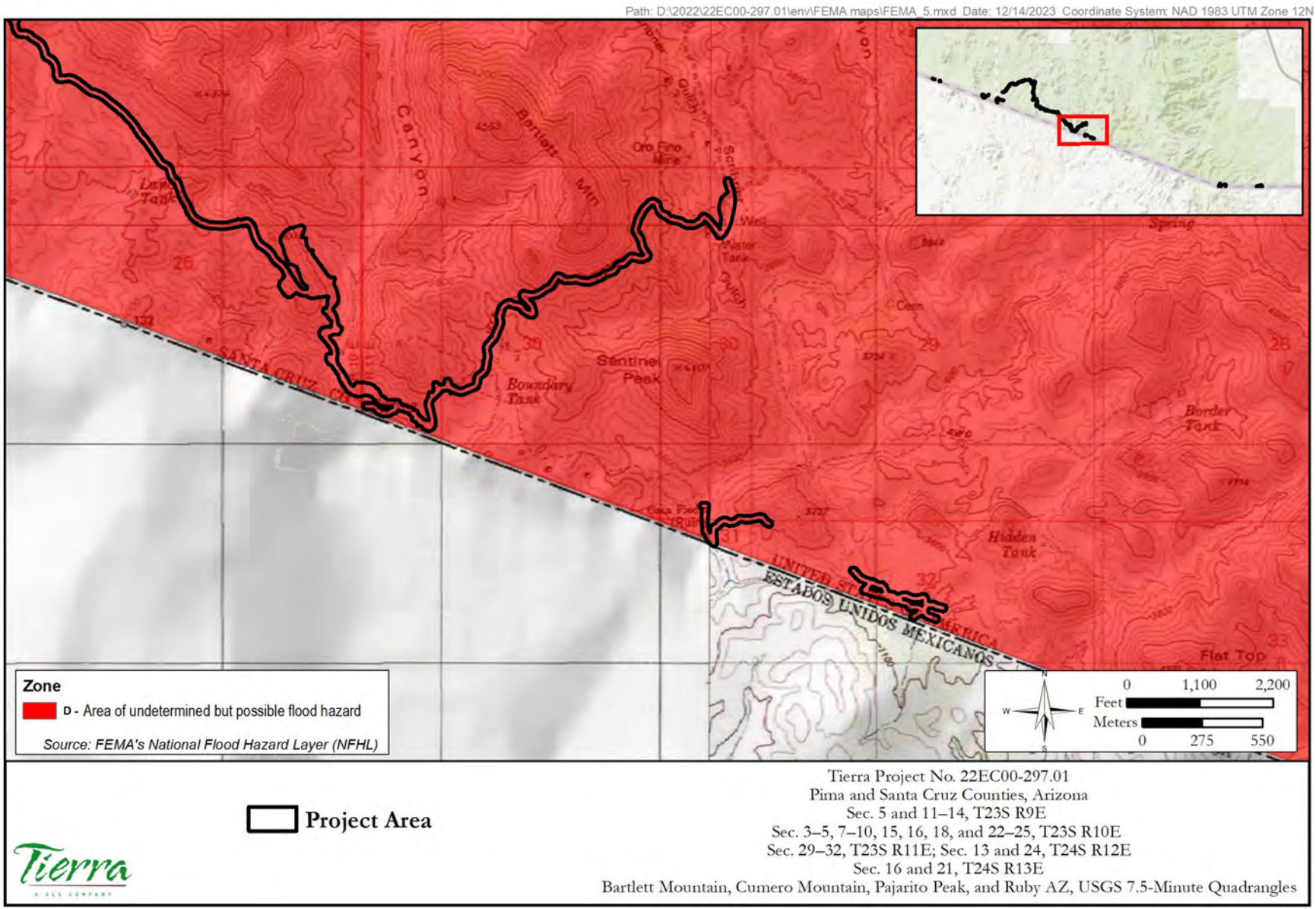


Figure 3e. Federal Emergency Management Agency–designated floodplain.

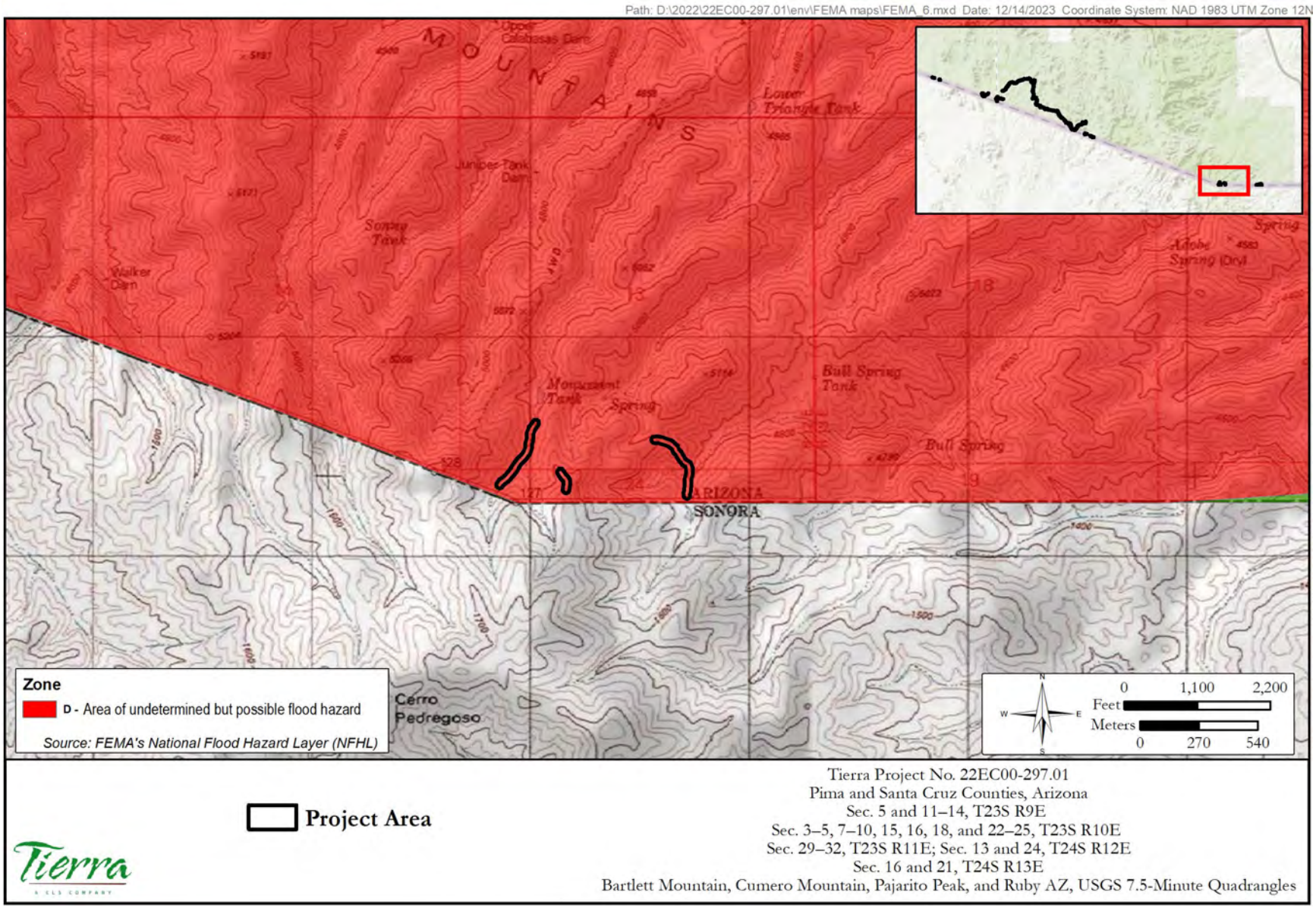


Figure 3f. Federal Emergency Management Agency–designated floodplain.

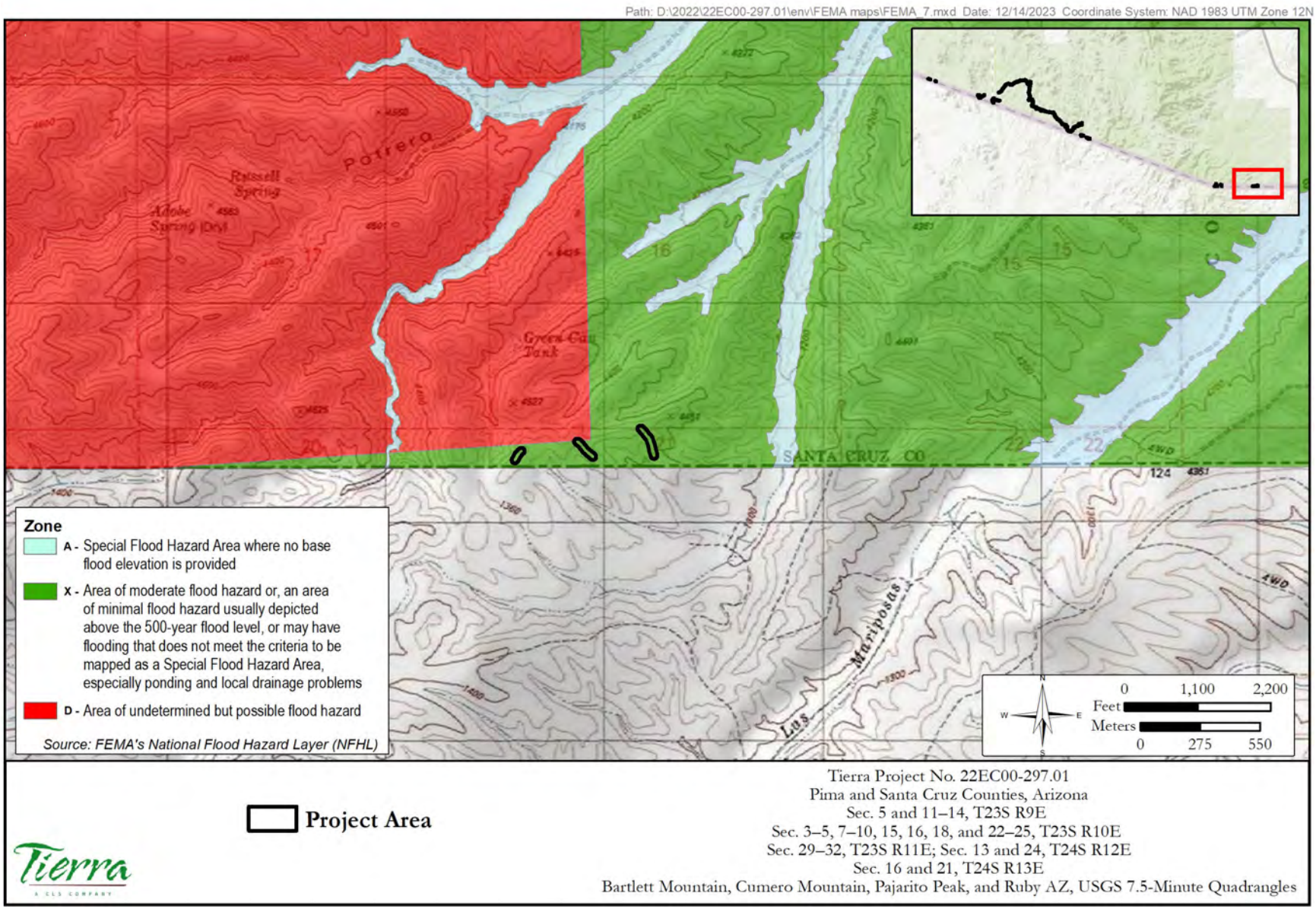


Figure 3g. Federal Emergency Management Agency–designated floodplain.

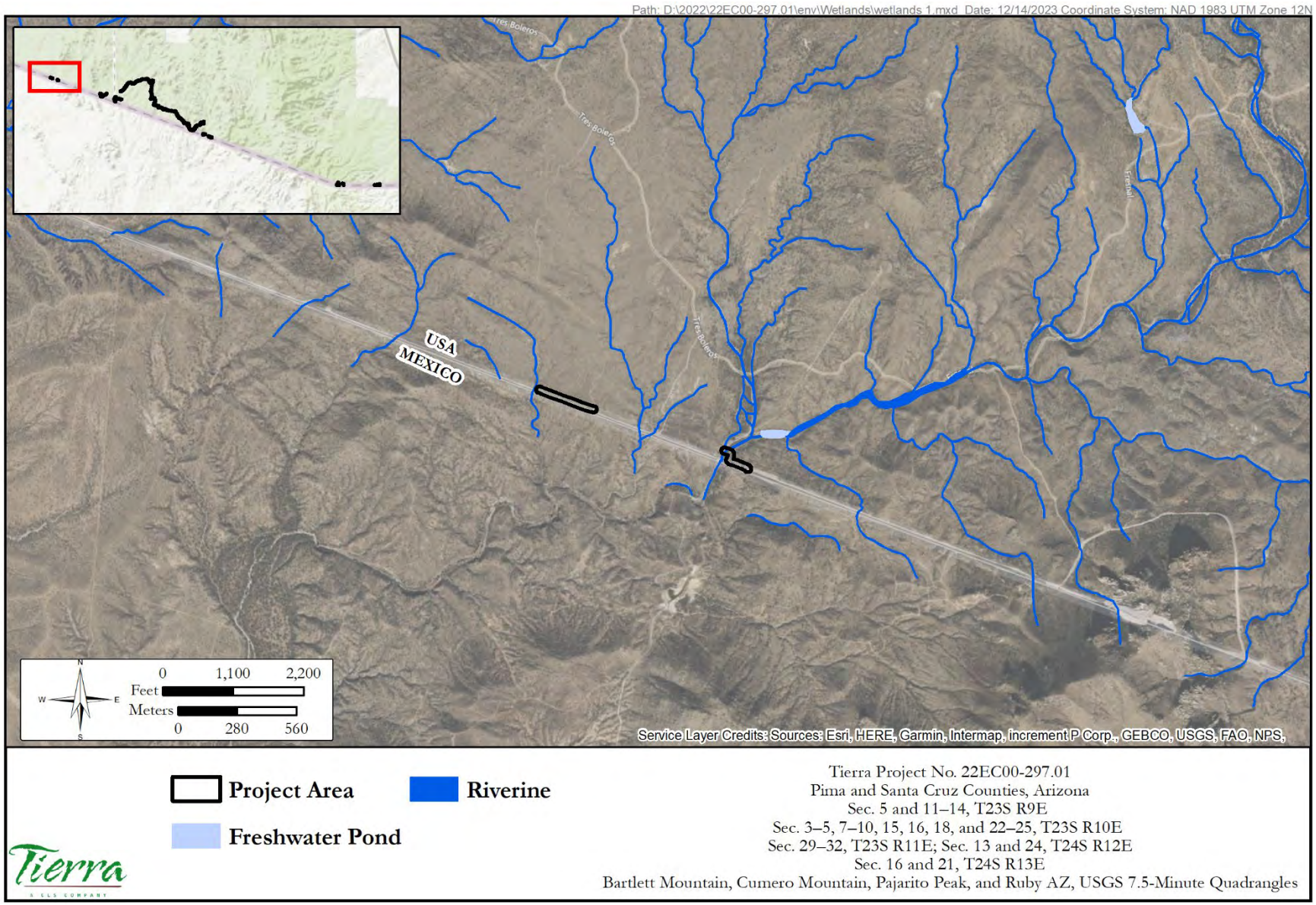


Figure 4a. National Wetlands Inventory map.

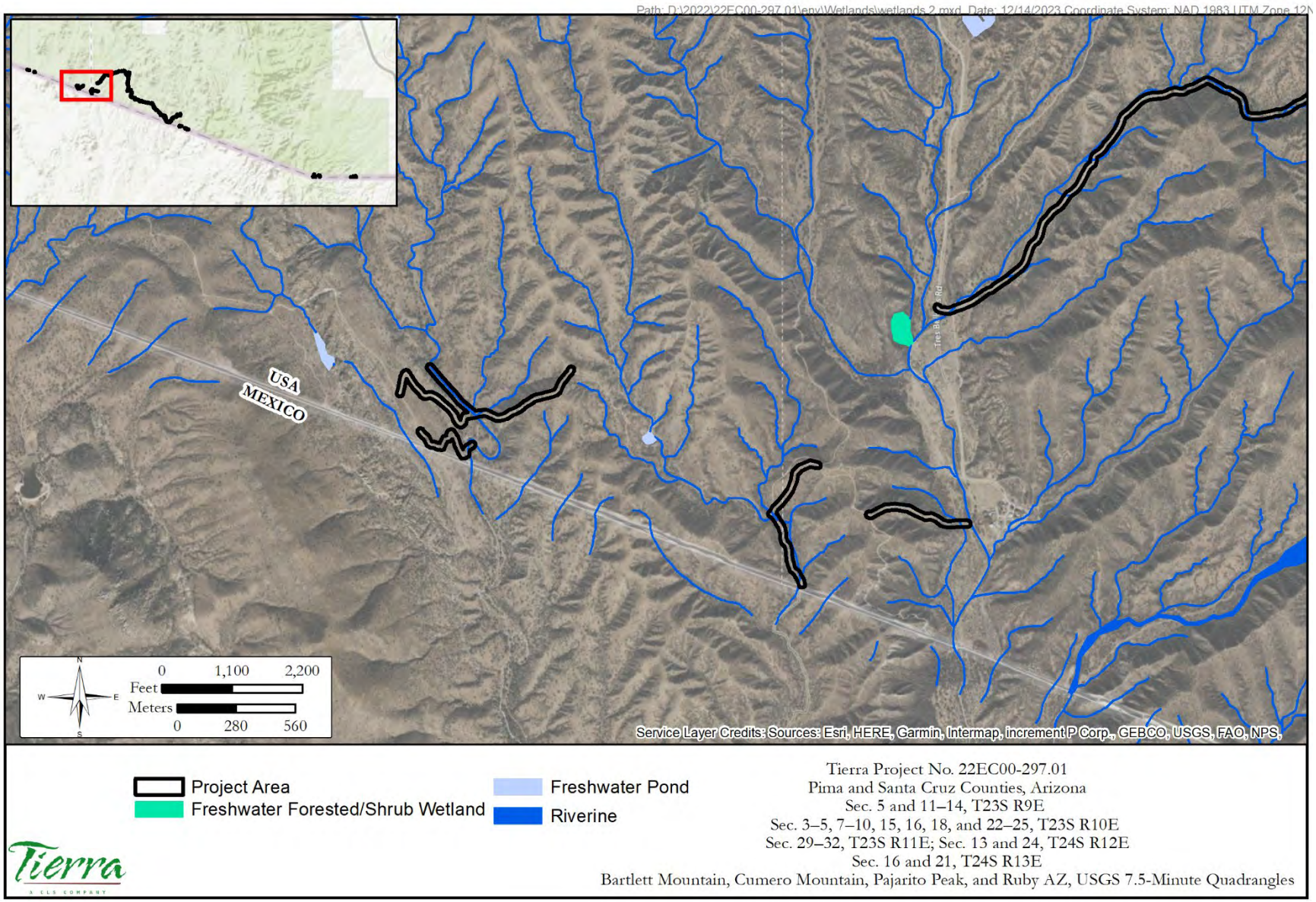


Figure 4b. National Wetlands Inventory map.

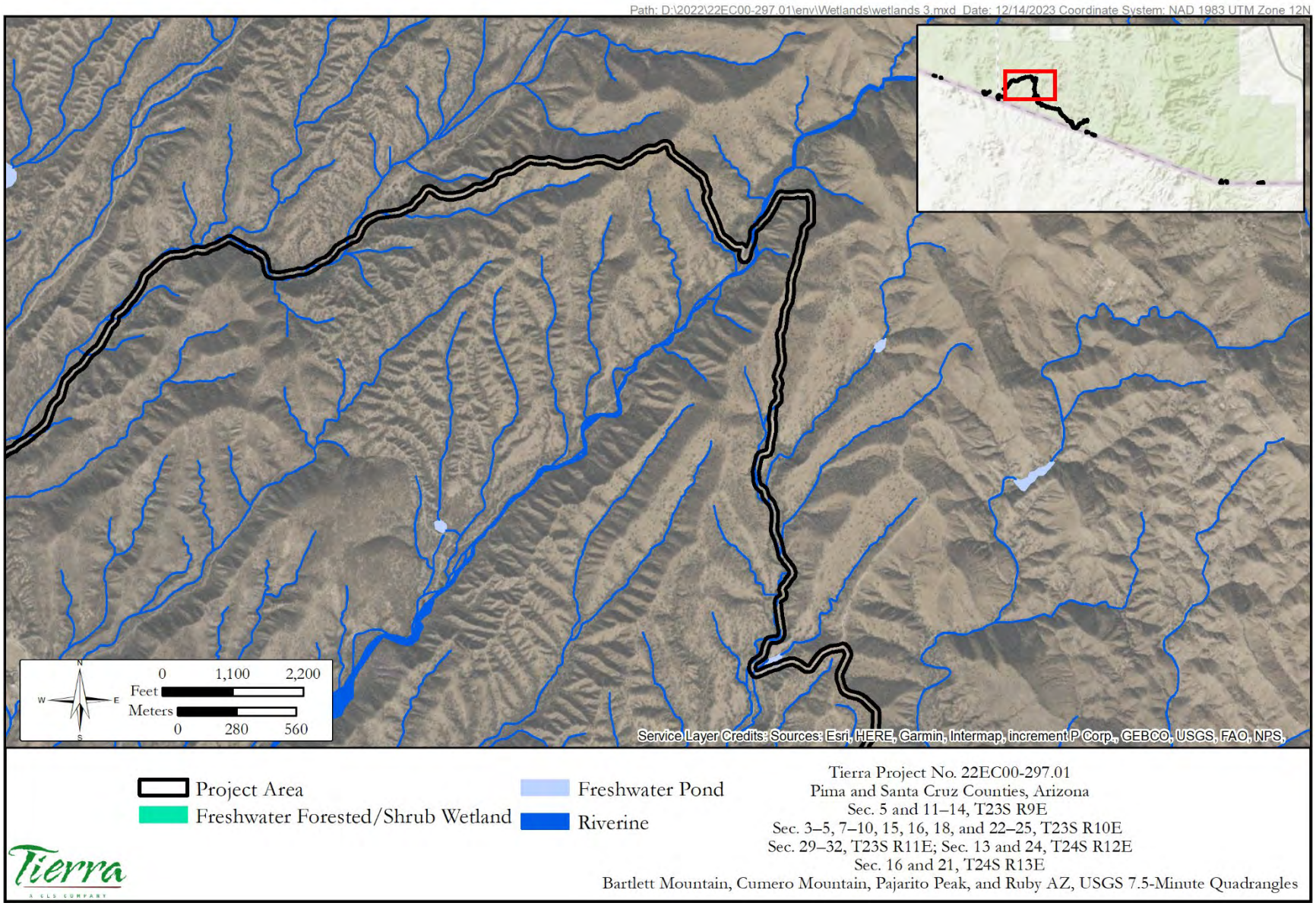


Figure 4c. National Wetlands Inventory map.

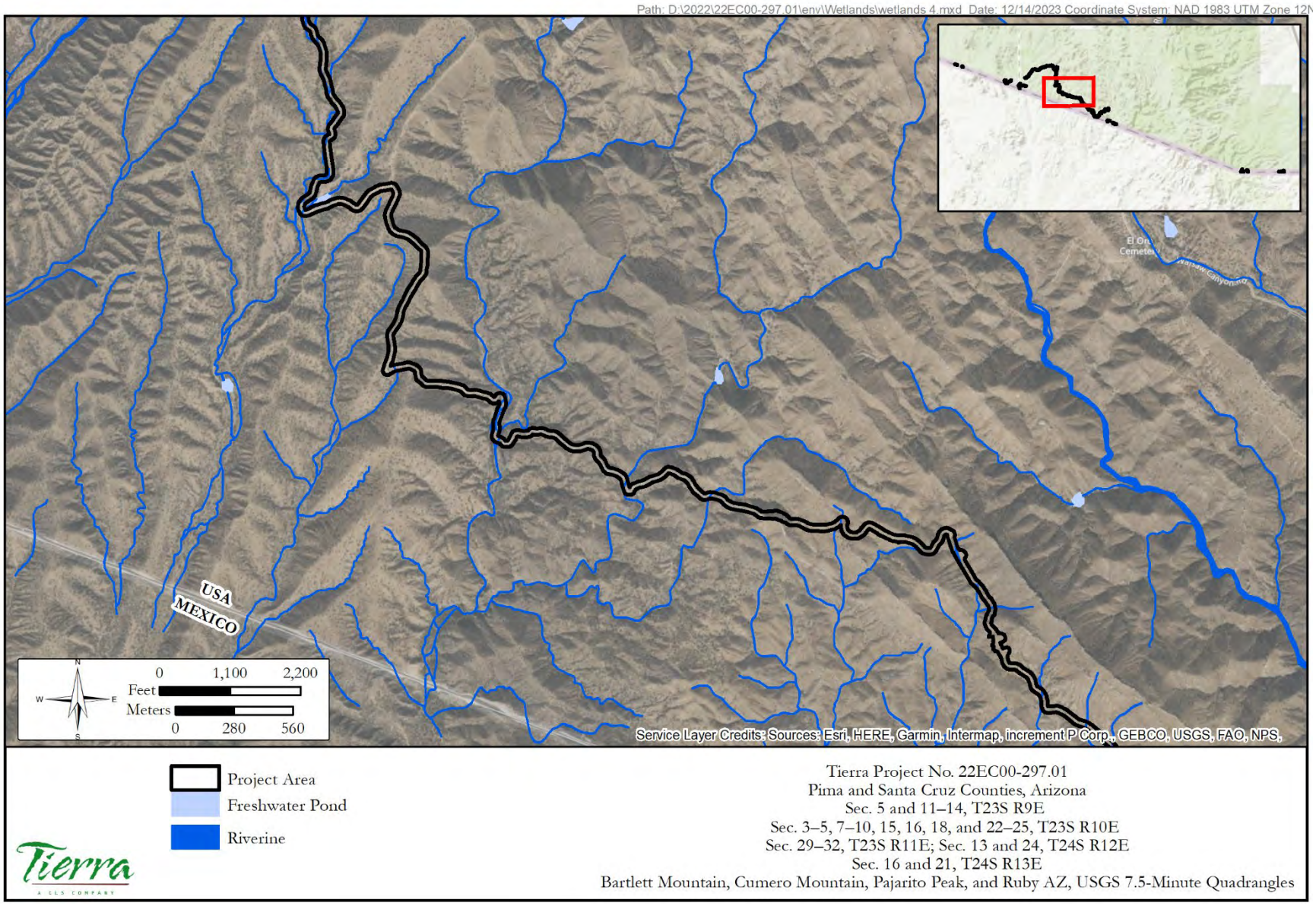


Figure 4d. National Wetlands Inventory map.

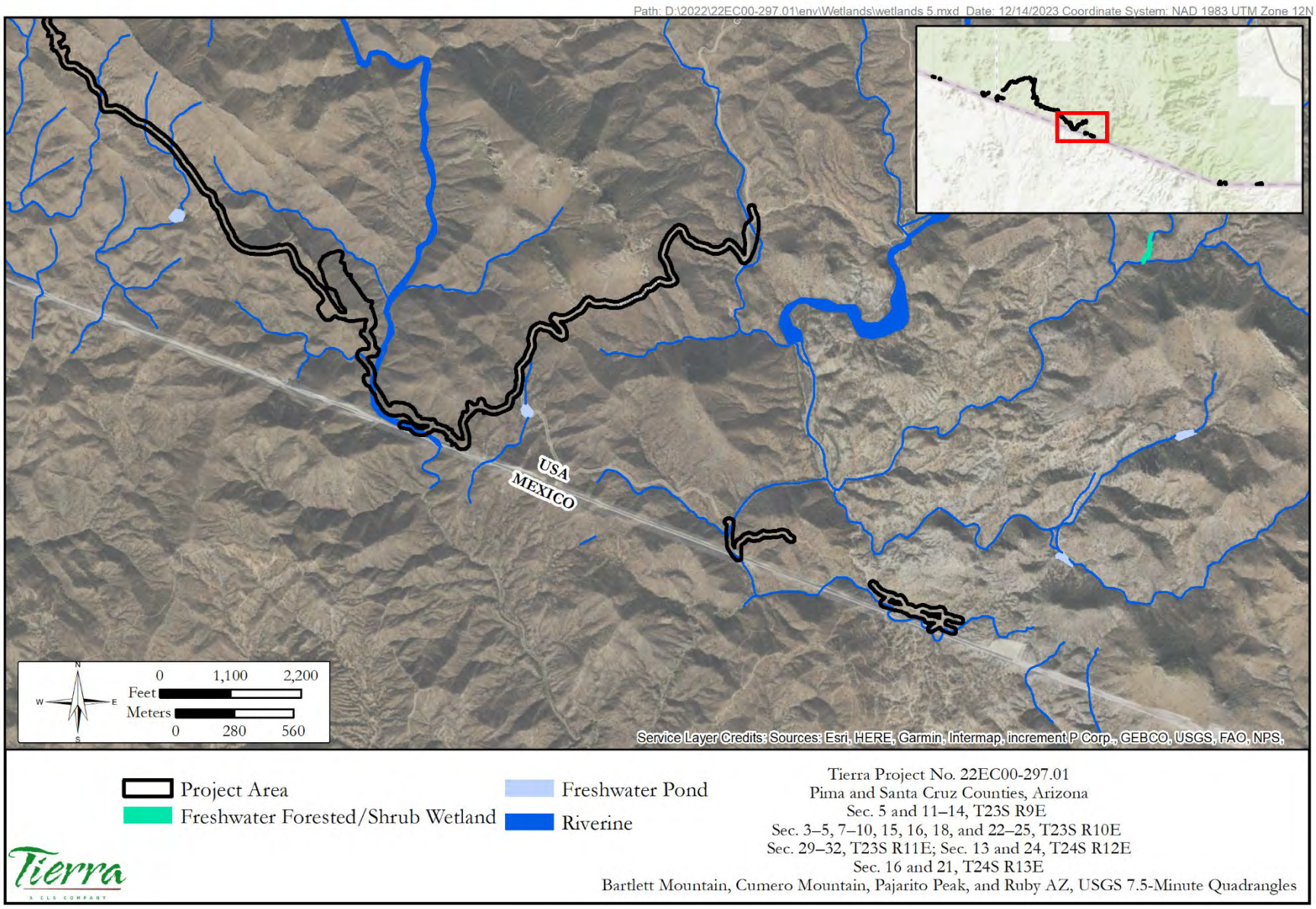


Figure 4e. National Wetlands Inventory map.

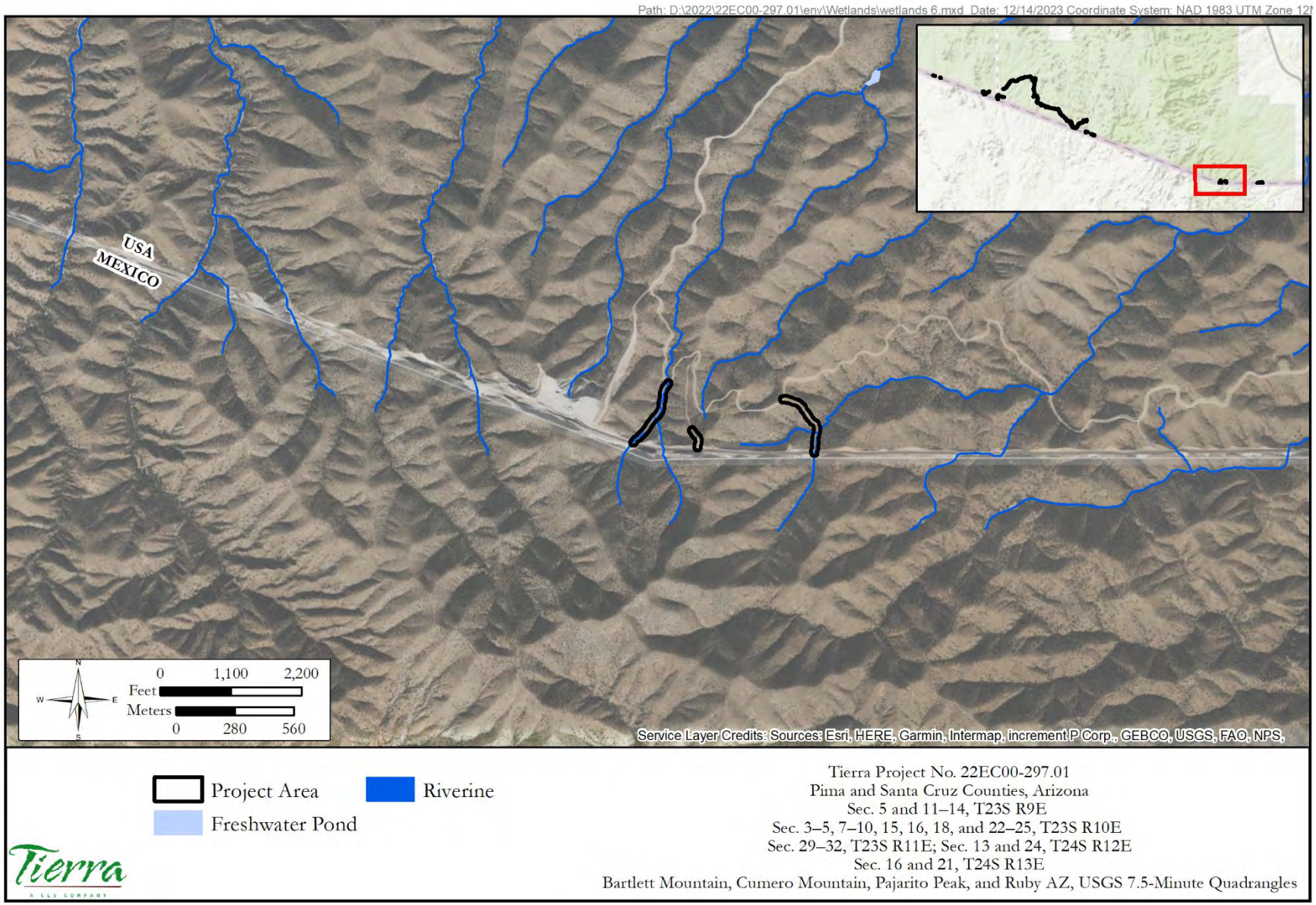


Figure 4f. National Wetlands Inventory map.

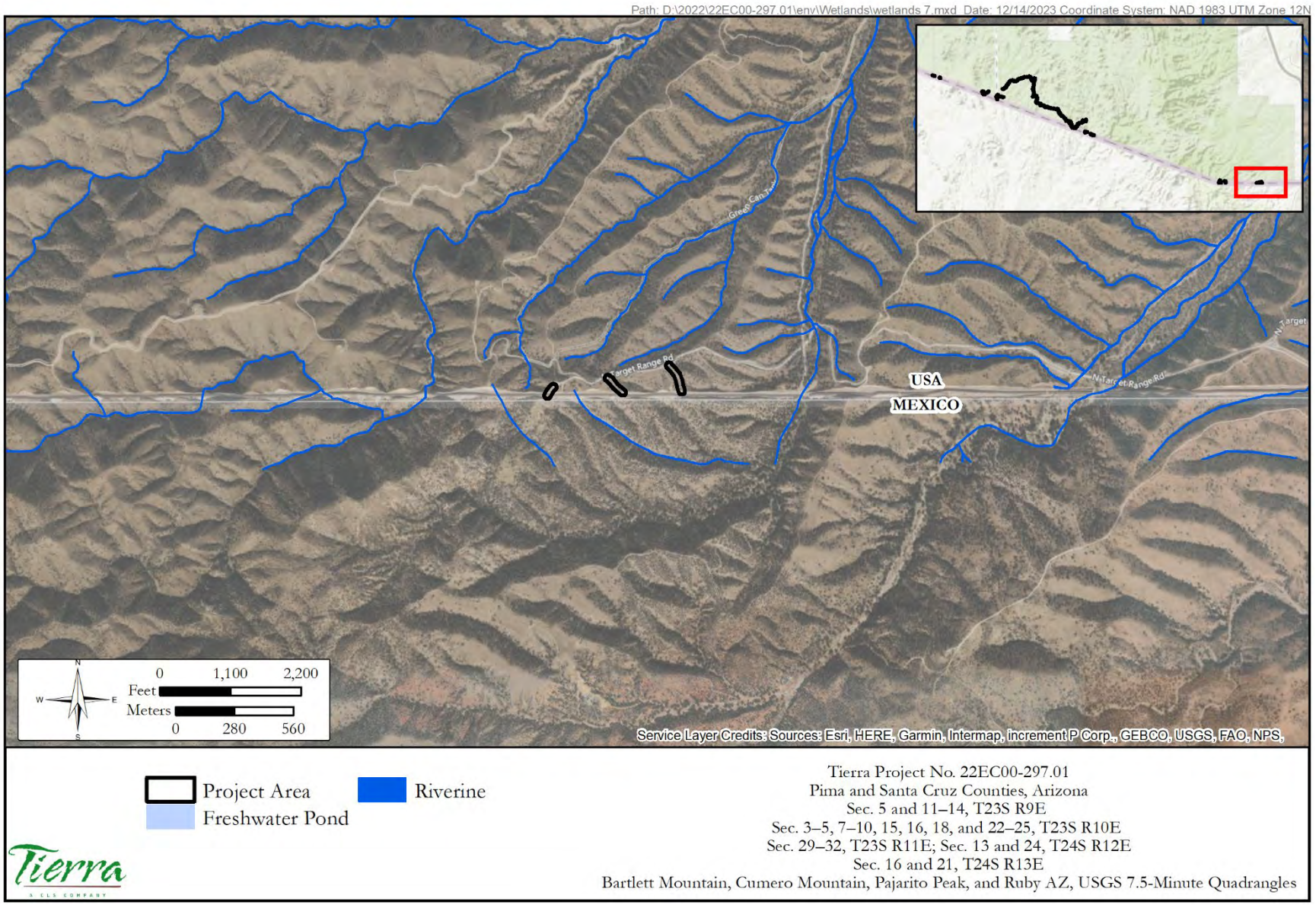


Figure 4g. National Wetlands Inventory map.

APPENDIX B

Preliminary Jurisdictional Delineation Field Data Sheet

PJD Field Data Sheet

Project Name: Holden Canyon
Project Number: 22EC00-297.01
Data Collectors: Kelsey Crawford, Karla Reeve-Wise, and Brent Martin
Date of Collection: April 19 and 20, May 3 and 4, and May 9–11, 2023

Table 1. Drainage Characteristics

Drainage No.	Latitude Midpoint (NAD 83)	Longitude Midpoint (NAD 83)	Ordinary High Water Mark Field Indicators								Cowardin Type	Dominant Vegetation	Active Channel Width (feet)	Linear Distance (feet)	Yes/No	Area of Water of the United States (acres)	Aerial Sheet No.	Comments
			Vegetation Difference Between Drainage and Upland	Change in Soil Characteristics	Waterline Mark on Bank/ Water Stains	Destruction of Terrestrial Vegetation	Shelving or Cut Banks	Exposed Roots	Sediment Deposits	Presence of Litter or Debris					Water of the United States?			
1	31.45069	-111.44139	Yes	Yes	No	Yes	Yes	No	No	No	R	Mesquite, grass	32	99.6	Yes	0.092	2	
2	31.43165	-111.38232	No	No	No	Yes	Yes	No	Yes	No	R	Mesquite, grass	4	398.6	Yes	0.130	3	Bedrock, algae
3	31.43494	-111.38389	Yes	Yes	No	No	Yes	Yes	No	No	R	Mesquite, grass	19–24	200.6	Yes	0.593	3	Main channel
4	31.43357	-111.38210	Yes	Yes	No	Yes	Yes	No	Yes	No	R	Mesquite, grass	3	65.8	Yes	0.025	3	Sandy bottom
5	31.43135	-111.36597	No	No	No	No	Yes	No	No	No	R	Mesquite, grass	2.5	N/A	No	N/A	4	Erosional feature
6	31.43106	-111.36586	No	No	No	No	Yes	No	No	No	R	Mesquite, grass	2–3	N/A	No	N/A	4	Erosional feature
7	31.43021	-111.36607	No	No	No	No	Yes	No	No	No	R	Mesquite, grass	1.5	N/A	No	N/A	4	Erosional feature
8	31.42878	-111.35851	No	No	No	No	Yes	No	Yes	No	R	Mesquite, grass	2	N/A	No	N/A	5	Erosional feature
9	31.42909	-111.36184	No	No	No	No	Yes	No	No	No	R	Mesquite, grass	1	N/A	No	N/A	5	Erosional feature
10	31.42912	-111.35909	No	No	No	No	Yes	No	Yes	No	R	Mesquite, grass	1	N/A	No	N/A	5	Erosional feature
11	31.42903	-111.35920	No	No	No	No	Yes	No	No	No	R	Mesquite, grass	3	N/A	No	N/A	5	Erosional feature
12	31.42878	-111.35851	No	Yes	No	Yes	Yes	No	No	No	R	Mesquite, grass	1	N/A	No	N/A	5	Erosional feature
13	31.43789	-111.35802	Yes	Yes	No	Yes	Yes	No	Yes	Yes	R	Mesquite, grass	10	192.05	Yes	0.081	6	
14	31.43847	-111.35665	Yes	Yes	No	Yes	Yes	No	Yes	No	R	Mesquite, grass	9	164.8	Yes	0.044	6	
15	31.43349	-111.36083	No	No	No	No	Yes	No	Yes	No	R	Mesquite, grass	1–3	41	Yes	0.017	6	
16	31.44441	-111.35100	No	No	No	Yes	Yes	Yes	Yes	No	R	Mesquite, grass	8	99.8	Yes	0.028	7	
17	31.44454	-111.35095	No	No	No	Yes	Yes	No	Yes	No	R	Mesquite, grass	1–3	N/A	No	N/A	7	Erosional feature
18	31.44736	-111.34825	Yes	Yes	Yes	Yes	Yes	No	No	No	R	Mesquite, grass	10	N/A	Yes	N/A	8	Stock pond just outside project limits; not reported on app
19	31.44709	-111.34793	Yes	Yes	No	Yes	Yes	Yes	Yes	No	R	Mesquite, grass	6	211.6	Yes	0.055	8	
20	31.44538	-111.34504	Yes	Yes	No	Yes	Yes	Yes	No	No	R	Mesquite, grass	10	350.0	Yes	0.124	8	
21	31.44738	-111.34638	No	Yes	No	No	Yes	No	No	No	R	Mesquite, grass	2–3	N/A	No	N/A	8	Grassy swale; no upstream or downstream connectivity
22	31.44709	-111.34392	No	No	No	Yes	Yes	No	No	No	R	Mesquite, grass	3	N/A	No	N/A	8	Grassy swale; no upstream or downstream connectivity
23	31.44652	-111.34119	Yes	Yes	No	Yes	Yes	Yes	No	No	R	Mesquite, grass	3–18	1211.89	Yes	0.433	8	
24	31.44693	-111.34075	Yes	Yes	No	Yes	No	No	Yes	No	R	Mesquite, grass	2–6	392.42	Yes	0.087	8	Mostly 6 foot
25	31.44857	-111.33853	No	No	No	Yes	Yes	No	No	No	R	Mesquite, grass	1	N/A	No	N/A	9	Erosional feature
26	31.44792	-111.31927	Yes	Yes	No	Yes	Yes	Yes	No	No	R	Mesquite, grass	8–10	251.9	Yes	0.092	11	
27	31.44976	-111.31652	No	No	No	No	Yes	No	No	No	R	Mesquite, grass	1.5	N/A	No	N/A	11	
28	31.44510	-111.31752	Yes	No	No	Yes	Yes	No	No	No	R	Mesquite, grass	3	N/A	No	N/A	11	Erosional feature
29 Alamo Wash	31.43470	-111.31782	Yes	Yes	No	Yes	Yes	Yes	No	No	R	Mesquite, grass	3–10	3879.19	Yes	1.204	12-13	
30	31.43315	-111.31763	No	No	No	No	Yes	No	No	No	R	Mesquite, grass	2–4	N/A	No	N/A	13	Erosional feature

Drainage No.	Latitude Midpoint (NAD 83)	Longitude Midpoint (NAD 83)	Ordinary High Water Mark Field Indicators								Cowardin Type	Dominant Vegetation	Active Channel Width (feet)	Linear Distance (feet)	Yes/No	Area of Water of the United States (acres)	Aerial Sheet No.	Comments
			Vegetation Difference Between Drainage and Upland	Change in Soil Characteristics	Waterline Mark on Bank/ Water Stains	Destruction of Terrestrial Vegetation	Shelving or Cut Banks	Exposed Roots	Sediment Deposits	Presence of Litter or Debris					Water of the United States?			
31	31.43315	-111.31763	No	No	No	No	No	No	No	No	R	Mesquite, grass	1	N/A	No	N/A	13	Erosional feature; high spot just before road
32	31.42117	-111.30915	Yes	Yes	No	Yes	No	No	Yes	No	R	Mesquite, grass	9–16	578.7	Yes	0.172	15	
33	31.41987	-111.30955	Yes	Yes	No	Yes	Yes	No	Yes	No	R	Mesquite, grass	3–8	101.9	Yes	0.025	15	
34	31.41772	-111.30301	Yes	Yes	No	Yes	Yes	No	Yes	No	R	Mesquite, grass	2–4	147.0	Yes	0.037	15	Black rock, mud caking
35	31.41719	-111.29876	Yes	Yes	No	Yes	Yes	No	Yes	No	R	Mesquite, grass	2–5	110.1	Yes	0.031	16	Bedrock, white patina (algae)
36	31.41320	-111.28540	Yes	No	No	Yes	Yes	No	Yes	No	R	Mesquite, grass	4	106.1	Yes	0.025	17	Bedrock, algae, standing water
37	31.40790	-111.28092	No	No	No	No	No	No	Yes	No	R	Mesquite, grass	2.5	N/A	No	N/A	18	
38	31.40659	-111.27861	No	No	No	No	No	No	Yes	No	R	Mesquite, grass	2	N/A	No	N/A	19	
39	31.40621	-111.27819	No	No	No	No	No	No	Yes	No	R	Mesquite, grass	2	N/A	No	N/A	19	
40	31.40562	-111.27764	Yes	Yes	No	No	No	No	No	No	R	Mesquite, grass	3	N/A	No	N/A	19	Middle has high point
41 Holden Canyon West	31.39731	-111.26892	Yes	Yes	Yes	No	No	No	Yes	Yes	R	Mixed grass	10–12	340.0	Yes	0.102	20	Standing water, bugs, algae (white patina), bedrock
42 Holden Canyon East	31.39631	-111.26860	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	R	Mixed grass	5–12	450.8	Yes	0.219	20/21	Flowing water; culverts into Mexico, low flow disappears under culverts, algae (white patina), cottonwood, mesquite scrub, bugs, bedrock
43 Boundary Tank	31.39658	-111.26124	Yes	No	No	Yes	Yes	Yes	Yes	Yes	R	Mesquite scrub	3.5	160.5	Yes	0.024	21	Upstream < 3'
44	31.40288	-111.24300	Yes	Yes	No	No	Yes	No	No	No	R	Mesquite scrub	<2	N/A	No	N/A	23	Erosional feature
45 Scribner Gulch West	31.40321	-111.24984	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	R	Mesquite scrub	3	136.5	Yes	0.041	23	Oak, desert olive
46 Scribner Gulch East	31.40332	-111.24990	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	R	Mesquite scrub	4	298	Yes	0.127	23	Mud caking, algae (white patina)
47 California Gulch	31.39028	-111.25070	Yes	Yes	Yes	Yes	No	No	Yes	Yes	R	Velvet ash	5–12	613.5	Yes	0.247	24	Flowing water across border road into Mexico
48	31.38738	-111.24280	Yes	Yes	No	Yes	No	No	Yes	Yes	R	Acacia scrub	5	325.0	Yes	0.10	25	
49	31.38709	-111.24308	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	R	Acacia scrub	5	202.95	Yes	0.060	25	Bedrock, bugs
50	31.38678	-111.24165	Yes	Yes	No	No	Yes	No	Yes	No	R	Acacia scrub	1.5–3.5	250.9	Yes	0.070	25	Upstream < 3'
51	31.38641	-111.23966	No	Yes	No	No	No	No	Yes	Yes	R	Acacia scrub	<2.5	N/A	No	N/A	25	
52	31.38600	-111.24001	Yes	Yes	No	No	No	No	Yes	Yes	R	Acacia scrub	5–8	464.2	Yes	0.153	25	Bedrock, ponding at road (20'), algae (white patina)

Drainage No.	Latitude Midpoint (NAD 83)	Longitude Midpoint (NAD 83)	Ordinary High Water Mark Field Indicators								Cowardin Type	Dominant Vegetation	Active Channel Width (feet)	Linear Distance (feet)	Yes/No	Area of Water of the United States (acres)	Aerial Sheet No.	Comments
			Vegetation Difference Between Drainage and Upland	Change in Soil Characteristics	Waterline Mark on Bank/ Water Stains	Destruction of Terrestrial Vegetation	Shelving or Cut Banks	Exposed Roots	Sediment Deposits	Presence of Litter or Debris					Water of the United States?			
53 Monument Tank	31.33573	-111.07406	Yes	Yes	No	Yes	Yes	Yes	Yes	No	R	Juniper, oak, grass	6–24 Approximately 32 feet where two washes merge	1226.1	**Yes***	0.722	26	Y stream that joins (main branch) four concrete pipes upstream, five corrugated metal pipes downstream; flows south to north
54 Monument Tank	31.33454	-111.07427	Yes	Yes	No	Yes	Yes	Yes	Yes	No	R	Juniper, oak, grass	16	38.0	**Yes***	0.034	26	Branch joining; flows south to north
55 Potrero Canyon	31.33344	-111.06659	Yes	Yes	No	Yes	Yes	Yes	Yes	No	R	Juniper, oak, grass	10	475.29	**Yes***	0.289	27	Main, six concrete pipes; flows south to north
56 Potrero Canyon	31.33356	-111.06666	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	R	Juniper, oak, grass	7	56.35	**Yes***	0.023	27	Smaller joins; flows south to north

Key: N/A = not applicable; NAD = North American Datum; R = Riverine; **Yes*** = drainages continue north downstream and eventually enter the Santa Cruz River; a portion of the Santa Cruz River is identified as a Traditionally Navigable River between Tubac and Continental, Arizona.

APPENDIX C

Waters of the U.S. Survey Photographs

Photos taken April 19 and 20, May 3 and 4, and May 9–11, 2023. Bar is 4 feet long with 6-inch segments.

Drainage 1, Photo 1. Looking upstream, facing northeast.

Drainage 1, Photo 2. Looking downstream, facing southwest.

Drainage 2, Photo 1. Looking upstream, facing north-northwest.

Drainage 2, Photo 2. Looking downstream, facing south-southeast.

Photos taken April 19 and 20, May 3 and 4, and May 9–11, 2023. Bar is 4 feet long with 6-inch segments.

Drainage 3, Photo 1. Looking upstream, facing north-northwest.

Drainage 3, Photo 2. Looking downstream, facing south-southeast.

Drainage 3, Photo 3. Looking upstream, facing south-southeast.

Drainage 3, Photo 4. Looking downstream, facing north-northwest.

Photos taken April 19 and 20, May 3 and 4, and May 9–11, 2023. Bar is 4 feet long with 6-inch segments.

Drainage 3, Photo 5. Looking upstream, facing northwest.

Drainage 3, Photo 6. Looking downstream, facing southeast.

Drainage 3, Photo 7. Looking upstream, facing northwest.

Drainage 3, Photo 8. Looking downstream, facing southeast.

Photos taken April 19 and 20, May 3 and 4, and May 9–11, 2023. Bar is 4 feet long with 6-inch segments.

Drainage 4, Photo 1. Looking upstream, facing north.

Drainage 4, Photo 2. Looking downstream, facing south.

Drainage 5, Photo 1. Looking upstream, facing east-northeast.

Drainage 5, Photo 2. Looking downstream, facing west-southwest.

Photos taken April 19 and 20, May 3 and 4, and May 9–11, 2023. Bar is 4 feet long with 6-inch segments.

Drainage 6, Photo 1. Looking upstream, facing east-northeast.

Drainage 6, Photo 2. Looking downstream, facing northwest.

Drainage 7, Photo 1. Looking upstream, facing northeast.

Drainage 7, Photo 2. Looking downstream, facing southwest.

Photos taken April 19 and 20, May 3 and 4, and May 9–11, 2023. Bar is 4 feet long with 6-inch segments.

Drainage 8, Photo 1. Looking upstream, facing southwest.

Drainage 8, Photo 2. Looking downstream, facing northeast.

Drainage 9, Photo 1. Looking upstream, facing northwest.

Drainage 9, Photo 2. Looking downstream, facing southeast.

Photos taken April 19 and 20, May 3 and 4, and May 9–11, 2023. Bar is 4 feet long with 6-inch segments.

Drainage 10, Photo 1. Looking upstream, facing west-southwest.

Drainage 10, Photo 2. Looking downstream, facing east-northeast.

Drainage 11, Photo 1. Looking upstream, facing west-southwest.

Drainage 11, Photo 2. Looking downstream, facing east-northeast.

Photos taken April 19 and 20, May 3 and 4, and May 9–11, 2023. Bar is 4 feet long with 6-inch segments.

Drainage 12, Photo 1. Looking upstream, facing southwest.

Drainage 12, Photo 2. Looking downstream, facing northeast.

Drainage 13, Photo 1. Looking upstream, facing northeast.

Drainage 13, Photo 2. Looking downstream, facing southwest.

Photos taken April 19 and 20, May 3 and 4, and May 9–11, 2023. Bar is 4 feet long with 6-inch segments.

Drainage 14, Photo 1. Looking upstream, facing east.

Drainage 14, Photo 2. Looking downstream, facing west.

Drainage 15, Photo 1. Looking "upstream" (no upstream), facing east.

Drainage 15, Photo 2. Looking downstream, facing west-northwest.

Photos taken April 19 and 20, May 3 and 4, and May 9–11, 2023. Bar is 4 feet long with 6-inch segments.

Drainage 16, Photo 1. Looking upstream, facing east.

Drainage 16, Photo 2. Looking downstream, facing west.

Photos taken April 19 and 20, May 3 and 4, and May 9–11, 2023. Bar is 4 feet long with 6-inch segments.

Drainage 17, Photo 1. Looking upstream, facing northeast.

Drainage 17, Photo 2. Looking downstream, facing south-southwest.

Drainage 18, Photo 1. Looking upstream, facing northeast.

Drainage 18, Photo 2. Looking downstream, facing north-northwest.

Photos taken April 19 and 20, May 3 and 4, and May 9–11, 2023. Bar is 4 feet long with 6-inch segments.

Drainage 19, Photo 1. Looking upstream, facing east.

Drainage 19, Photo 2. Looking downstream, facing west.

Drainage 19, Photo 3. Looking downstream, facing northwest at erosion.

Drainage 19, Photo 4. Facing south at erosion near road (approximately 24 feet long).

Photos taken April 19 and 20, May 3 and 4, and May 9–11, 2023. Bar is 4 feet long with 6-inch segments.

Drainage 20, Photo 1. Looking upstream, facing east.

Drainage 20, Photo 2. Looking downstream, facing west.

Drainage 20, Photo 3. Looking downstream, facing northwest.

Photos taken April 19 and 20, May 3 and 4, and May 9–11, 2023. Bar is 4 feet long with 6-inch segments.

Drainage 21, Photo 1. Looking upstream, facing northeast. No downstream connectivity.

Drainage 21, Photo 2. Looking downstream, facing southwest. Land high on upstream end.

Drainage 22, Photo 1. Looking upstream, facing southeast. No upstream connectivity.

Drainage 22, Photo 2. Looking downstream, facing northwest. No downstream connectivity.

Photos taken April 19 and 20, May 3 and 4, and May 9–11, 2023. Bar is 4 feet long with 6-inch segments.

Drainage 23, Photo 1. Looking upstream, facing southeast.

Drainage 23, Photo 2. Looking downstream, facing northwest.

Drainage 23, Photo 3. Looking upstream, facing southeast.

Drainage 23, Photo 4. Looking downstream, facing northwest.

Drainage 23, Photo 5. Looking upstream, facing south-southwest.

Drainage 23, Photo 6. Looking downstream, facing northeast.

Drainage 23, Photo 7. Looking upstream, facing northeast.

Drainage 23, Photo 8. Looking downstream, facing southwest.

Drainage 23, Photo 9. Looking upstream, facing east.

Drainage 23, Photo 10. Looking downstream, facing west.

Drainage 23, Photo 11. Looking upstream, facing north.

Drainage 23, Photo 12. Looking downstream, facing south.

Photos taken April 19 and 20, May 3 and 4, and May 9–11, 2023. Bar is 4 feet long with 6-inch segments.

Drainage 24, Photo 1. Looking upstream, facing northeast.

Drainage 24, Photo 2. Looking downstream, facing southwest.

Drainage 24, Photo 3. Looking upstream, facing northeast.

Drainage 24, Photo 4. Looking downstream, facing southwest.

Photos taken April 19 and 20, May 3 and 4, and May 9–11, 2023. Bar is 4 feet long with 6-inch segments.

Drainage 25, Photo 1. Looking upstream, facing northeast.

Drainage 25, Photo 2. Looking downstream, facing southwest.

Drainage 26, Photo 1. Looking upstream, facing north-northwest.

Drainage 26, Photo 2. Looking downstream, facing south-southeast.

Photos taken April 19 and 20, May 3 and 4, and May 9–11, 2023. Bar is 4 feet long with 6-inch segments.

Drainage 27, Photo 1. Looking upstream, facing south.

Drainage 27, Photo 2. Looking downstream, facing north.

Drainage 28, Photo 1. Looking upstream (no upstream), facing east-northeast.

Drainage 28 , Photo 2. Looking downstream, facing southwest.

Drainage 28, Photo 3. Looking upstream, facing north-northeast.

Drainage 28, Photo 4. Looking downstream, facing south.

Drainage 28, Photo 5. Looking upstream, facing north at end (no more downstream).

Photos taken April 19 and 20, May 3 and 4, and May 9–11, 2023. Bar is 4 feet long with 6-inch segments.

Drainage 29, Photo 1. Looking upstream, facing northeast.

Drainage 29, Photo 2. Looking downstream, facing south-southwest.

Drainage 29, Photo 3. Looking upstream, facing north-northeast.

Drainage 29, Photo 4. Looking downstream, facing south-southeast.

Photos taken April 19 and 20, May 3 and 4, and May 9–11, 2023. Bar is 4 feet long with 6-inch segments.

Drainage 29, Photo 5. Looking upstream, facing northeast.

Drainage 29, Photo 6. Looking downstream, facing southwest.

Drainage 29, Photo 7. Looking upstream, facing north-northwest.

Drainage 29, Photo 8. Looking downstream, facing south-southeast.

Photos taken April 19 and 20, May 3 and 4, and May 9–11, 2023. Bar is 4 feet long with 6-inch segments.

Drainage 29, Photo 9. Looking upstream, facing north-northwest.

Drainage 29, Photo 10. Looking downstream, facing south-southeast.

Drainage 29, Photo 11. Looking upstream, facing northwest.

Drainage 29, Photo 12. Looking downstream, facing southeast.

Photos taken April 19 and 20, May 3 and 4, and May 9–11, 2023. Bar is 4 feet long with 6-inch segments.

Drainage 29, Photo 13. Looking upstream, facing northeast.

Drainage 29, Photo 14. Looking downstream, facing south-southeast.

Drainage 29, Photo 15. Looking upstream, facing north.

Drainage 29, Photo 16. Looking downstream, facing south.

Drainage 29, Photo 17. Looking upstream, facing northwest.

Drainage 29, Photo 18. Looking downstream, facing south.

Drainage 29, Photo 19. Looking upstream, facing northwest.

Drainage 29, Photo 20. Looking downstream, facing south-southwest.

Photos taken April 19 and 20, May 3 and 4, and May 9–11, 2023. Bar is 4 feet long with 6-inch segments.

Drainage 29, Photo 21. Looking upstream, facing north-northeast.

Drainage 29, Photo 22. Looking downstream, facing southwest.

Drainage 29, Photo 23. Looking upstream, facing north.

Drainage 29, Photo 24. Looking downstream, facing south.

Photos taken April 19 and 20, May 3 and 4, and May 9–11, 2023. Bar is 4 feet long with 6-inch segments.

Drainage 30, Photo 1. Looking upstream, facing northeast, area to left. No upstream connectivity. Drainage 30 and 31 side by side.

Drainage 30, Photo 2. Looking downstream, facing southwest. No downstream connectivity. Drainage 30 and 31 side by side.

Drainage 31, Photo 1. Looking upstream, facing northeast, area to right. Drainage 30 and 31 side by side. High spot just before road.

Drainage 31, Photo 2. Looking downstream, facing southwest. No downstream connectivity. Drainage 30 and 31 side by side.

Photos taken April 19 and 20, May 3 and 4, and May 9–11, 2023. Bar is 4 feet long with 6-inch segments.

Drainage 32, Photo 1. Looking upstream, facing northeast.

Drainage 32, Photo 2. Looking downstream, facing southwest.

Drainage 32, Photo 3. Looking upstream, facing north-northeast.

Drainage 32, Photo 4. Looking downstream, facing south-southwest.

Photos taken April 19 and 20, May 3 and 4, and May 9–11, 2023. Bar is 4 feet long with 6-inch segments.

Drainage 33, Photo 1. Looking upstream, facing north-northeast.

Drainage 33, Photo 2. Looking downstream, facing south-southwest.

Drainage 34, Photo 1. Looking upstream, facing north-northeast.

Drainage 34, Photo 2. Looking downstream, facing south-southwest.

Photos taken April 19 and 20, May 3 and 4, and May 9–11, 2023. Bar is 4 feet long with 6-inch segments.

Drainage 35, Photo 1. Looking upstream, facing north-northeast.

Drainage 35, Photo 2. Looking downstream, facing south.

Drainage 36, Photo 1. Looking upstream, facing northeast.

Drainage 36, Photo 2. Looking downstream, facing south-southwest.

Photos taken April 19 and 20, May 3 and 4, and May 9–11, 2023. Bar is 4 feet long with 6-inch segments.

Drainage 37, Photo 1. Looking upstream, facing northeast.

Drainage 37, Photo 2. Looking downstream, facing southwest.

Drainage 38, Photo 1. Looking upstream, facing north-northeast.

Drainage 38, Photo 2. Looking downstream, facing south-southwest.

Drainage 39, Photo 1. Looking upstream, facing northeast.

Drainage 39, Photo 2. Looking downstream, facing southwest.

Drainage 40, Photo 1. Looking upstream, facing northeast. High spot in middle.

Drainage 40, Photo 2. Looking downstream, facing southwest. High spot in middle.

Photos taken April 19 and 20, May 3 and 4, and May 9–11, 2023. Bar is 4 feet long with 6-inch segments.

Drainage 41, Photo 1. Looking upstream, facing northwest.

Drainage 41, Photo 2. Looking downstream, facing southeast.

Drainage 42, Photo 1. Looking upstream, facing north-northeast.

Drainage 42, Photo 2. Looking downstream, facing south-southwest.

Photos taken April 19 and 20, May 3 and 4, and May 9–11, 2023. Bar is 4 feet long with 6-inch segments.

Drainage 42, Photo 3. Looking upstream, facing west-northwest.

Drainage 42, Photo 4. Looking downstream, facing east-southeast.

Drainage 42, Photo 5. Looking upstream, facing west-northwest.

Drainage 42, Photo 6. Looking downstream, facing east-southeast.

Photos taken April 19 and 20, May 3 and 4, and May 9–11, 2023. Bar is 4 feet long with 6-inch segments.

Drainage 43, Photo 1. Looking upstream, facing northwest.

Drainage 43, Photo 2. Looking downstream, facing southeast.

Drainage 44, Photo 1. Looking upstream, facing southwest.

Drainage 44, Photo 2. Looking downstream, facing northeast.

Drainage 45, Photo 1. Looking upstream, facing northwest.

Drainage 45, Photo 2. Looking downstream, facing southeast.

Drainage 46, Photo 1. Looking upstream, facing northwest.

Drainage 46, Photo 2. Looking downstream, facing southeast.

Photos taken April 19 and 20, May 3 and 4, and May 9–11, 2023. Bar is 4 feet long with 6-inch segments.

Drainage 47, Photo 1. Looking upstream, facing north-northeast.

Drainage 47, Photo 2. Looking downstream, facing south-southwest.

Drainage 47, Photo 3. Looking upstream, facing northwest.

Drainage 47, Photo 4. Looking downstream, facing southeast.

Photos taken April 19 and 20, May 3 and 4, and May 9–11, 2023. Bar is 4 feet long with 6-inch segments.

Drainage 48, Photo 1. Looking upstream, facing northeast.

Drainage 48, Photo 2. Looking downstream, facing southwest.

Drainage 49, Photo 1. Looking upstream, facing south-southeast.

Drainage 49, Photo 2. Looking downstream, facing west-northwest.

Photos taken April 19 and 20, May 3 and 4, and May 9–11, 2023. Bar is 4 feet long with 6-inch segments.

Drainage 50, Photo 1. Looking upstream, facing northeast.

Drainage 50, Photo 2. Looking downstream, facing southwest.

Drainage 51, Photo 1. Looking upstream, facing northeast.

Drainage 51, Photo 2. Looking downstream, facing southwest.

Photos taken April 19 and 20, May 3 and 4, and May 9–11, 2023. Bar is 4 feet long with 6-inch segments.

Drainage 52, Photo 1. Looking downstream, facing southwest.

Drainage 52, Photo 2. Looking upstream, facing northeast.

Drainage 52, Photo 3. Looking downstream, facing west-northwest.

Photos taken April 19 and 20, May 3 and 4, and May 9–11, 2023. Bar is 4 feet long with 6-inch segments.

Drainage 53, Photo 1. Looking upstream, facing southwest.

Drainage 53, Photo 2. Looking downstream, facing northeast.

Drainage 53, Photo 3. Looking upstream, facing southwest. Drainage 53 merging with Drainage 54.

Drainage 53, Photo 4. Looking downstream, facing northeast. Drainages 53 and 54 merged.

Drainage 53, Photo 5. Looking upstream, facing southwest.

Drainage 53, Photo 6. Looking downstream, facing northeast.

Drainage 55, Photo 1. Looking upstream, facing south.

Drainage 55, Photo 2. Looking downstream, facing north.

Photos taken April 19 and 20, May 3 and 4, and May 9–11, 2023. Bar is 4 feet long with 6-inch segments.

Drainage 56, Photo 1. Looking upstream, facing northwest.

Drainage 56, Photo 2. Looking downstream, facing southeast. Drainages 55 and 56 merging.