

CULTURAL RESOURCES REPORT COVER SHEET

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Title of Report: Archaeological Survey Report for the Kennewick Irrigation District Title Transfer Project, Benton County, Washington

Date of Report: September 2021

County: Benton

Township 7 N Range 30 E, Sections 1, 2, 3, and 12

Township 7 N Range 31 E, Section 7

Township 8 N Range 27 E, Section 1

Township 8 N Range 28 E, Sections 1, 2, 6, 7, 8, 11, 12, 14, 15, 16, 17, 18, 20, 21, 22, 23, and 24

Township 8 N Range 29 E, Sections 2, 4, 5, 7, 8, 9, 10, 11, 14, 15, 16, 17, 18, 23, 24, 25, and 33

Township 8 N Range 30 E, Sections 29, 30, 32, 33, and 34

Township 9 N Range 26 E, Sections 13, 14, 15, 16, 17, and 24

Township 9 N Range 27 E, Sections 11, 12, 13, 19, 24, 28, 29, 30, 33, 34, 35, and 36

Township 9 N Range 28 E, Sections 18, 19, 20, 21, 24, 25, 27, 28, 31, 34, 35, and 36

Township 9 N Range 29 E, Section 35

Quad(s): Badger Mountain WA.; Benton City, WA; Corral Canyon, WA.; Kennewick, WA.; Nine Canyon, WA; Pasco, WA.; Richland, WA.; Wallula, WA; and Webber Canyon, WA.

Acres: 1,610

PDF of report submitted (REQUIRED) Yes.

Historic Property Export Files submitted? Yes No

Archaeological Site(s)/Isolate(s) Found or Amended? Yes No

TCP(s) found? Yes No

Replace a draft? Yes No

Satisfy a DAHP Archaeological Excavation Permit requirement? Yes # No

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Archaeological Survey Report for the Kennewick Irrigation District Title Transfer Project, Benton County, Washington



Submitted to:

Kennewick Irrigation District

Prepared by:

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September 2021



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1 Introduction

This archaeological survey report was prepared for the U. S. Bureau of Reclamation (Reclamation) and the Kennewick Irrigation District (KID) to meet the requirements of Section 106 of the National Historic Preservation Act of 1966 (NHPA), through its implementing of the regulation 36 Code of Federal Regulations (CRF) 800, "Protection of Historic Properties." The KID is pursuing transfer of legal title, and full responsibility for the federally owned lands, rights, and facilities that support KID water users and operations within Reclamation's property boundary (Figure 1). Prior to the land transfer, Reclamation must consider possible adverse effects to historic properties within the Project Area of Potential Effect (APE) in the title transfer area in accordance with Section 106 of the NHPA and other applicable federal historic preservation legislation and regulations. The cultural resources (CR) investigation of the Project APE in the KID title transfer area, including this archaeological survey and investigation will provide Reclamation and KID with the information necessary to identify mitigation options should there be any adverse effects to historic properties in the Project APE.

In conjunction with the archaeological survey, a CR investigation was conducted during 2019-2020 of the same Project APE that focused primarily on the built environment (Harvey et al. 2020b). To identify any possible adverse effects of the title transfer on historic properties in the Project APE, KID, through its prime engineering consultant RH2 Engineering, Inc. (RH2) contracted the services of Northwest Cultural Resources Services (NCRS) to conduct a CR survey investigation of the built environment in the Project APE. The CR survey was conducted by David Harvey, the owner/principal consultant of NCRS and a Secretary of the Interior-qualified historian/architectural historian. Mr. Harvey was assisted by James Sharpe, a Secretary of the Interior-qualified archaeologist.

The 2020 CR investigation identified nine historic properties in the Project APE that are eligible or recommended eligible for listing in the National Register of Historic Properties (National Register). NCRS recommended that the proposed undertaking, i.e., the KID Title Transfer, will have an adverse effect on the nine historic properties in the Project APE (Harvey et al. 2020b). According to 36 CFR 800.5(3), the transfer of historic properties out of federal ownership is considered an adverse effect on the historic properties in the Project APE. Reclamation, KID, and the Washington State Historic Preservation Officer (SHPO) prepared a memorandum of agreement (MOA) that identified stipulations to mitigate the adverse effects of the title transfer on the historic properties (Harvey et al. 2020b).

In summary, this archaeological survey report was prepared for the KID Title Transfer from Reclamation. The report provides the eligibility determination findings and other documentation needed to satisfy the requirements of Section 106 of the NHPA, through implementation of 36 CFR 800, "Protection of Historic Properties."

The archaeological survey was conducted in the following Townships, Ranges and Sections:

- Township 7 N Range 30 E, Sections 1, 2, 3, and 12
- Township 7 N Range 31 E, Section 7
- Township 8 N Range 27 E, Section 1
- Township 8 N Range 28 E, Sections 1, 2, 6, 7, 8, 11, 12, 14, 15, 16, 17, 18, 20, 21, 22, 23, and 24
- Township 8 N Range 29 E, Sections 2, 4, 5, 7, 8, 9, 10, 11, 14, 15, 16, 17, 18, 23, 24, 25, and 33

- Township 8 N Range 30 E, Sections 29, 30, 32, 33, and 34
- Township 9 N Range 26 E, Sections 13, 14, 15, 16, 17, and 24
- Township 9 N Range 27 E, Sections 11, 12, 13, 19, 24, 28, 29, 30, 33, 34, 35, and 36
- Township 9 N Range 28 E, Sections 18, 19, 20, 21, 24, 25, 27, 28, 31, 34, 35, and 36
- Township 9 N Range 29 E, Section 35

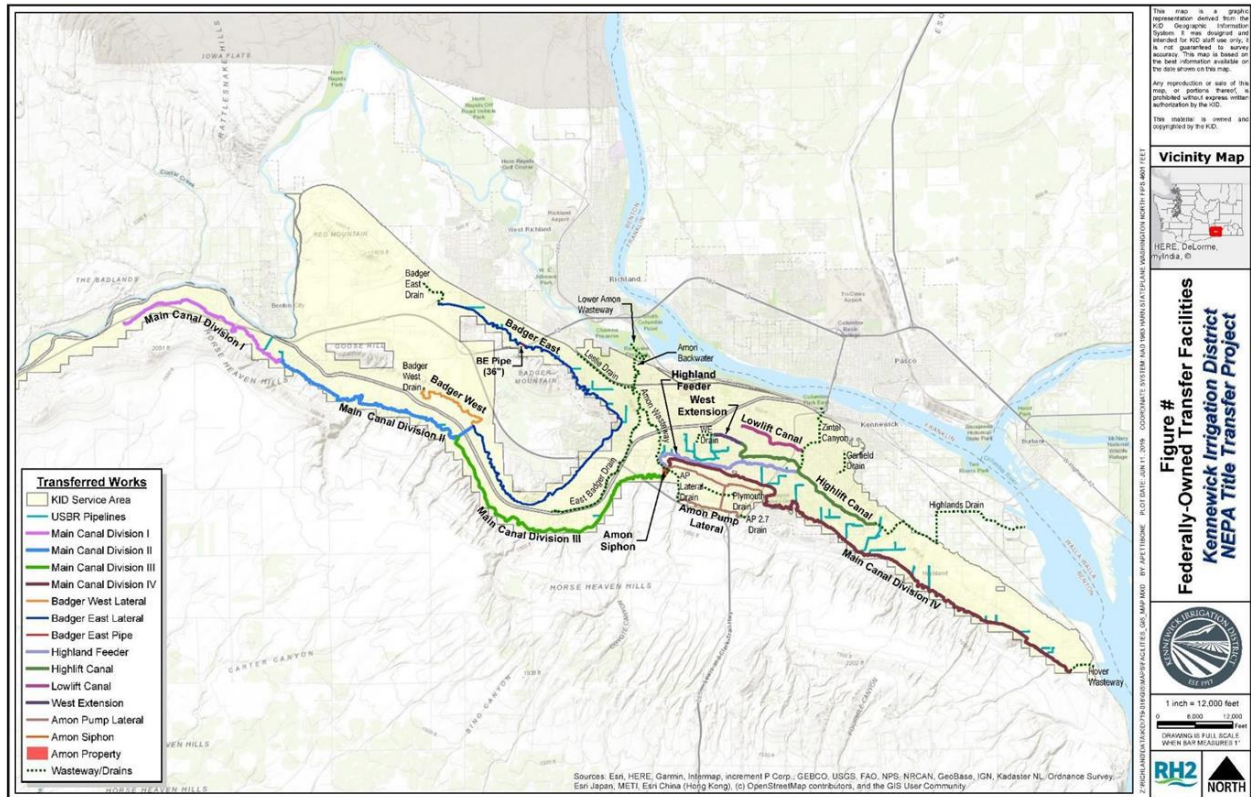


Figure 1. Title Transfer Project Area

Quadrangle maps for this archaeological survey include the following: Badger Mountain WA.; Benton City, WA.; Corral Canyon, WA.; Kennewick, WA.; Nine Canyon, WA.; Pasco, WA.; Richland, WA.; Wallula, WA.; and Webber Canyon, WA.

The archaeological survey/investigation was conducted of the Project APE in the title transferred area facilities and easements consisting of the open canals, laterals, wasteways and associated facilities discussed below. For this study, a canal is defined as a waterway constructed to convey water for irrigation purposes. For the KID canals, water is diverted into the canals from its original source (i.e., the Yakima River) and delivered downstream to residential and agricultural customers. Although the terms canal and lateral are often used interchangeably, a KID canal is the main arterial that diverts some of its water to smaller branch or lateral canals. A wasteway is usually a non-engineered structure, such as a natural streambed used to drain excess water from the main canal into a larger receiving waterbody (i.e., the Columbia or Yakima River).

Appendix A provides additional information on each of the canal systems and the Project APE and provides relevant topographic maps.

Kennewick Main Canal Divisions I - IV: The 43.6-mi-long Kennewick Main Canal Divisions I - IV were constructed in sections from 1953 to 1957 (Harvey et al. 2020b). The Main Canal originates west of Benton City where water is diverted from the Yakima River at the Chandler Power Plant where it is discharged into Division I and proceeds eastward to Division IV's terminus at Hover Wasteway near the Columbia River.

Hover Wasteway: The Hover Wasteway begins at the terminus of the Kennewick Main Canal Division IV, where a siphon directs excess water under a roadway into a natural stream or gorge. The wasteway proceeds northeast about 0.6 of a mile where it empties into the backwater of Lake Wallula, which extends up the Columbia River.

Amon Wasteway, Lower Amon Wasteway and Amon Backwater: The Amon Wasteway is used as an emergency and operational drainage for excess water from the Kennewick Main Canal Divisions I - IV. The wasteway begins where Division III of the Main Canal ends, and the water is diverted in two directions. The water primarily flows into the Amon Siphon for delivery to the Division IV Canal, Highland Feeder Canal and Amon Pump Lateral via the Amon Pumping Plant (Harvey et al. 2020b). The rest of the water is diverted into the Amon Wasteway which proceeds north through a natural gorge and under Bob Olson Parkway where it turns west and then northward and empties into the Yakima River delta and the backwater of the Columbia River.

Badger East and West Laterals: Badger East and West Laterals originate at the Badger Siphon that branches off from Division II of the Main Canal. Division II begins near Benton City and proceeds through the valley between Badger Mountain and Horse Heaven Hills for 7.7 mi to just past the Badger Siphon (Harvey et al. 2020b).

Badger West Lateral is approximately 3 mi long and flows entirely through an area that is primarily rural and agricultural; it is mainly farms and orchards interspersed with single-family homes (Harvey et al. 2020b).

Badger East Lateral is approximately 16.5 mi long. A portion of the lateral is on the north side of Badger Mountain. At the west terminus of the lateral, the water empties into the Badger East Drain (Harvey et al. 2020b).

West Extension: The West Extension, built during the construction of the Kennewick Main Canal sometime between 1953 and 1958, is an extension of the Highlift (West) Canal at Edison Street. A siphon from the Highlift (West) Canal goes under Edison Street and directs excess irrigation water into the West Extension. The excess water proceeds in a westerly direction through an underground pipe that briefly surfaces at Steptoe Street before emptying into the Amon Wasteway (Harvey et al. 2020b).

Amon Pump Lateral: The Amon Pump Lateral originates at the Amon Pumping Plant, as irrigation water from Division III of the Kennewick Main Canal is diverted to the Amon Pumping Plant via the Amon Siphon. The pumping plant directs the water to the Highland Feeder Canal and to the Amon Pump Lateral (U. S. Department of the Interior, Bureau of Reclamation, Facilities List 1958b). The first 0.8 mi of the Amon Pump (North) Lateral is an underground pipe that empties into the unlined, basalt gravel canal (Harvey et al. 2020b).

At mile post (MP) 1.8, the Amon Pump (North) Lateral re-enters an underground pipe where some of the irrigation water continues eastward into an underground sublateral and is delivered to the Southridge, Panorama, and Canyon Lakes neighborhoods. The rest of the water empties into a siphon that proceeds under Sherman Street southward under the Bob Olson Parkway to where it intersects and empties into the Amon Pump (South) Lateral at MP 2.7/2.8 (Harvey et al. 2020b).

Highlift Canal: The Highlift Canal is divided into two separate sections: Highlift West and Highlift East. A siphon from the Highland Feeder Canal at 16th Avenue and Edison Street diverts the water northward into a water-flow regulating facility on the Highlift Canal where the Highlift Canal is divided into the east-west sections (Harvey et al. 2020b).

Lowlift Canal: The Lowlift Canal originates at a valve station on Edison Street adjacent to the IBEW Building. Irrigation water from the terminus of the Highlift (West) Canal flows north through the Edison Street Pipeline to the valve station where the water is diverted into the Lowlift Canal. The Lowlift Canal flows eastward in an underground pipe that parallels West 7th Avenue. East of U. S. 395 the pipeline surfaces through a water-flow regulating facility into an open, narrow concrete-lined canal. In 300 ft the open canal enters a siphon where the water empties into Zintel Creek Canyon and flows through a drain east towards the Columbia River (Harvey et al. 2020b).

Highland Feeder Canal: The 4.8-mi-long Highland Feeder Canal originates at the Amon Pumping Plant, as irrigation water from Division III of the Main Canal is diverted to the pumping plant via the Amon Siphon. At MP 3.1, the Highland Feeder Canal ends near West 16th Avenue and South Edison in Kennewick as the majority of the irrigation water is diverted through an underground lateral/pipe north to the Highlift Canal. The remainder of the water transitions into the Highland Feeder 3.3 Canal via a siphon from its junction with the Highland Feeder and Highlift Canals. The open section of the Highland Feeder 3.3 Canal terminates at South 19th Avenue and Perry Street in Kennewick.

Amon Pumping Plant and 35-Acre Amon Pumping Plant Parcel: Since its construction in 1956, the Amon Pumping Plant has provided irrigation water to the Southridge area of Kennewick. Irrigation water is gravity-fed via the Amon Siphon from the terminus of the Kennewick Main Canal Division III to the pumping plant that directs water to the Highland Feeder Canal, Division IV of the Main Canal and the Amon Pump Lateral. The pumping plant is situated in Reclamation's 35-acre Amon Pumping Plant Parcel.

2 Project Area of Potential Effect

The Project APE includes 1,610.33 acres located in Benton County, in several Townships, Ranges and Sections noted in the Project Description. The elevation of the Project APE varies from about 700 ft at the highest point to nearly 350 ft at the lowest elevation. The Map Book for the Topographic Maps of the Project APE and Canal Systems can be found in Appendix A.

3 Environmental Setting

The project area is located within the physiographic boundaries of the Columbia Plateau and is described in *Handbook of North American Indians*, Vol. 12, as follows: "bounded on the west by the Cascade Range, on the south by the Blue Mountains and the Salmon River, on the east by the Rocky Mountains and to the north by the lower extensions of the Rocky Mountains and the northern portion of the Columbia River" (Walker 1998).

The Project APE is in Benton County in the lower Yakima Valley. Benton County covers 1,266 sq mi. Within this area are about 106,723 acres used primarily for irrigated agriculture, with the remainder used for dryland crops and rangeland (Rasmussen n.d.). Discussion of the geology, climate and vegetation for the Project APE is provided in the following subsections.

3.1 Geology

The project area lies within the Columbia Basin Physiographic Province located between the Cascade and Blue Mountain Ranges. The combined effects of lava flows and glacial floods have primarily shaped the Columbia Plateau. Geologically, the province was formed by successive eruptions of volcanic lava during the Miocene that covered most of eastern Washington and Oregon. The lava flows streamed westward down the Columbia River to the sea, these flows built up over time to form the thick layer of basalt referred to as the Columbia River Basalt Formation that underlies the Columbia Basin. Within this physiographic province are the Channeled Scablands that contain a series of dry, deeply cut channels in the Columbia River Basalt Formation (Franklin and Dyrness 1973; Orr and Orr 1996).

During the Pleistocene epoch, continental glaciers advanced and retreated from British Columbia into northern Washington State. The advances and retreats created ice dams and glacial lakes that when breached caused extensive flooding. Locally, the most noted was the flooding caused by the release of glacial melt water from Lake Missoula. It is believed the last major Pleistocene floods occurred about 12,000 years ago (Franklin and Dyrness 1973; Orr and Orr 1996). Due to the geologic and ice age events, three rivers (Columbia, Yakima and the Snake) are present within the general project area. The KID canal systems use both the Columbia and Yakima Rivers.

This section provides a summary of the available geologic matrix for water segments of the KID land transfer. Information was obtained from the Washington Geologic Information Portal (<https://geologyportal.dnr.wa.gov/>).

3.1.1 Amon Pump Lateral Drain, Amon Pump Lateral, and Plymouth Drain

The geologic matrix for the Amon Pump Lateral Drain, Amon Pump Lateral, and Plymouth Drain is characterized by three components:

- The geologic matrix is primarily Tertiary volcanic rocks from the Columbia River Basalt Group. These Miocene age deposits consist of fine-grained flood basalt flows, flood basalt sills and dikes, and pillowed lava flows.
- Pleistocene outburst flood deposits of Quaternary age consist of sandy gravel deposits with interbedded silt lenses.
- A small area of Quaternary alluvium consists of consolidated or semi consolidated alluvial clay, silt, sand gravel and or cobble deposits.

3.1.2 Amon Wasteway, Lower Amon Wasteway and Amon Backwater

The geologic matrix for the Amon Wasteway, Lower Amon Wasteway and Amon Backwater is characterized by two components:

- Quaternary alluvium of consolidated or semi consolidated alluvial clay, silt, sand gravel and or cobble deposits.

- Pleistocene outburst flood deposits of Quaternary age consisting of sandy gravel deposits with interbedded silt lenses.

3.1.3 Badger East and Badger West Laterals

The geologic matrix of Badger East and Badger West Laterals is characterized by two components:

- Pleistocene outburst flood deposits of Quaternary age consist of sandy gravel deposits with interbedded silt lenses.
- Areas of Tertiary volcanic rocks from the Columbia River Basalt Group include Miocene age deposits consist of fine-grained flood basalt flows, flood basalt sills and dikes, and pillowed lava flows.

3.1.4 Highlift Canal and Highlands Drain

The geologic matrix for the Highlift Canal and Highlands Drain is characterized by one component:

- Pleistocene outburst flood deposits of Quaternary age consist of sandy gravel deposits with interbedded silt lenses.

3.1.5 Highland Feeder Canal

The geologic matrix for the Highland Feeder Canal is characterized by two components:

- Pleistocene outburst flood deposits of Quaternary age consist of sandy gravel deposits with interbedded silt lenses.
- Small areas of Quaternary alluvium consist of consolidated or semi consolidated alluvial clay, silt, sand gravel and or cobble deposits.

3.1.6 Kennewick Main Canal Divisions I - IV and Hover Wasteway

The geologic matrix for the Kennewick Main Canal Divisions I - IV and Hover Wasteway is characterized by four components.

- Quaternary alluvium of consolidated or semi-consolidated alluvial clay, silt, sand gravel and or cobble deposits.
- Some small areas of Quaternary mass-wasting deposits the result of landslide deposits, and or talus, colluvium, protalus ramparts and rock glaciers.
- Small areas of Tertiary volcanic rocks from the Columbia River Basalt Group. These Miocene age deposits consists of fine-grained flood basalt flows, flood basalt sills and dikes, and pillowed lava flows.
- Pleistocene outburst flood deposits of Quaternary age consisting of sandy gravel deposits with interbedded silt lenses.

3.1.7 Lowlift Canal and West Extension

The geologic matrix for the Lowlift Canal and the West Extension is characterized by two components:

- Pleistocene outburst flood deposits of Quaternary age consisting of sandy gravel deposits with interbedded silt lenses.

- A small area of Quaternary alluvium consisting of consolidated or semi consolidated alluvial clay, silt, sand gravel and or cobble deposits.

3.2 Climate

The post-glacial climate ca. 13,000-9,000 years before present (BP) was cooler and moister than today. After 9,000 BP, the climate transitioned to warmer and drier conditions until about 4,400 BP. From ca. 4,400 BP to ca. 2,500 BP, the climate was again cool and wet. Conditions from 2,500 BP to the present appear somewhat warmer and drier than the earlier warm phase and reflect current conditions. The climate of the general project area is influenced by moist air from the Pacific Ocean and by cold air moving southward from Canada. Summers are hot and dry; winters are mostly clear, cold, and dry (Rasmussen n.d.). Precipitation ranges from 9-12 in. annually.

3.3 Vegetation

Vegetation of the project area is consistent with the low-rainfall, semi-arid landscape, and includes shrub-steppe vegetation such as cheat grass, rabbitbrush, bitterbrush, greasewood, hopsage, and sagebrush. Additionally, perennial, and annual grasses, as well as perennial and annual wildflowers are present (Franklin and Dyrness 1973; O’Conner and Wieda 2001).

4 Cultural Setting

The cultural setting is characterized by the Columbia Plateau/Mid-Columbia Basin Pre-Contact Cultural Sequence, the Ethnographic Period, and the Euro-American Period, as described in this section.

4.1 Columbia Plateau/Mid-Columbia Basin Pre-Contact Cultural Sequence

Archaeological investigations conducted on the Columbia Plateau enabled the creation of a cultural chronology dating back to the end of the Pleistocene epoch. Table 1 summarizes the cultural sequence for the project area.

Table 1. Pre-Contact Cultural Sequence

Cultural Period	Years BP	Site Types	Architecture	Subsistence
General Columbia Plateau				
Windust Phase	11,000 – 8,000	Rock shelters, caves, game processing sites, lithic reduction sites; isolated lithic tools. Examples include Marmes Rockshelter, Bernard Creek, Lind Coulee, Kirkwood Bar, Deep Gully, Granite Point, Five Mile Rapids, and Bobs Point.	Rock shelters and caves; open habitation sites. No evidence of constructed dwellings or storage features.	Large mammals supplemented with small mammals and fish. Toolset: Windust, Clovis, Folsom, and Scottsbluff points; contracting stemmed points and/or lanceolate points; cobble tools.

Table 1. Pre-Contact Cultural Sequence

Cultural Period	Years BP	Site Types	Architecture	Subsistence
Mid-Columbia Region—Vantage Area				
Cascade/Vantage Phase	8,000 – 4,500	Lithic scatters, quarry sites, resource processing sites, temporary camps.	Rock shelters and caves; open habitation sites.	Mobile, opportunistic foragers subsisting on fish, mussels, seeds, and mammals. Basalt leaf-shaped Cascade and stemmed projectile points, ovate knives, edge-ground cobble tools, microblades, hammerstones, core tools, and scrapers.
Frenchman Springs Period	4,500 – 2,500	Habitation sites along major rivers, confluences, tributaries, canyons, and rapids. Lithic scatters, quarry sites, resource processing sites. Seasonal round of upland to lowland travel for resource procurement; seasonal camps.	House dwellings, including semi-subterranean.	As earlier, but with increased use of upland resources, seeds, and roots. Groundstone and cobble tools, mortars, pestles, contracting stemmed, corner notched, and stemmed projectile points, hopper mortar bases and pestles, knives, scrapers, and graves. Wider tool material variety.
Cayuse Phase	I 2,500 – 1,200	Habitation sites at major rivers, confluences, tributaries, canyons, and rapids. Lithic scatters, quarry sites, resource processing sites, seasonal round camps. Ideological and spiritual sites.	Pithouses with wall benches.	Reliance on riverine resources, fish, and botanicals; basal-notched and corner-notched projectile points (most corner-notched); variety of tools including groundstone, scrapers, lanceolate and pentagonal knives, net weights, cobble tools, drills, etc.
	II 1,200 – 900	Same as Cayuse Phase I	Pithouses without wall benches.	Same as Cayuse Phase I.
	II I 900 – 250	Increased mobility and hunting ability due to horse introduction. Large village habitation sites along rivers, seasonal round camps. Same site types as Cayuse Phases I & II.	Pit longhouse village sites.	Decrease in corner-notched points, increase in stemmed and side-notched projectile points, fine pressure-flaked tools. Increase in trade goods.

Sources: Morgan et al. (2001), Walker (1998), Sharpe and Marceau (2001), Swanson (1962), Nelson (1969), Galm et al. (1981), Benson et al. (1989), Thoms et al. (1983), Green (1975), Rice (1980).

BP = Before Present

4.2 Ethnographic Period

Ethnographically the project area may have been used by the Cayuse, Umatilla, Walla Walla, Paluse, Yakama and neighboring groups of Sahaptin speakers (Trost 2012; Steinmentz and Dickson 2003). Many of these tribes relied on the Columbia Plateau and its major tributaries as residential and year-round subsistence areas and as primary movement corridors. Other Native Tribes made seasonal use of the region for resource procurement, trade, and inter-tribal relations. Territorial boundaries were generally delineated by geography, but were crossed regularly for hunting, fishing, gathering, and trading activities (Churchill and Griffin 2003).

During this period, residents relied on a pattern of seasonal rounds that included semi-permanent residences in villages along major waterways during the winter months. With the arrival of spring, small groups would travel into the canyons and river valleys to gather roots, living in temporary camps. Seasonal camps were used in the interior of the Columbia Plateau during the spring and early summer months. By late summer or early fall, seasonal rounds focused on ripening berries in the mountains. It was this time of the year when the acquisition of food ended and families returned to the winter villages (Chatters 1980).

The *Handbook of North American Indians* (Walker 1998) summarizes the ethnohistoric cultural pattern of the Columbia Plateau as follows:

- Riverine settlement patterns
- Reliance on a diverse subsistence base of anadromous fish and extensive game and root resources
- Mutual cross-utilization of subsistence resources among the various groups comprising the local populations.
- Extension of kinship ties through extensive intermarriage
- Limited political integration, primarily at the village and band levels, until adoption of the horse
- Uniform mythology, art styles, and religious beliefs and practices focused on the vision quest, shamanism, life-cycle observances, and seasonal celebrations of the annual subsistence cycle.

A review of *Čáw Pawá Láakni They Are Not Forgotten* (Hunn et al. 2015) indicates that the Cayuse, Umatilla, and Walla Walla Tribes traditionally used the general project area for trails, trade, hunting, grazing, fishing, mythical age sites, materials and medicines, plant foods and seasonal camps. Winter villages were located near the Columbia, Snake and Yakima Rivers.

The project area is in the general vicinity of religious and cultural significance known as Piyuušmaamí Puštáy ('hills of snakes') (Hunn et al. 2015). Piyuušmaamí Puštáy is described as follows:

A chain of hills beginning southwest of Richland, Washington, and extending southeast to the Columbia River in the vicinity of Crescent and Badger Islands. This feature on the landscape refers to a mythical snake transformed into a mountain chain whose head has now been inundated by the Columbia River. Hills in this chain include Red Mountain, Candy Mountain, and Badger Mountain (Hunn et al. 2015).

South of the project area is Kúsipamá, which was a horse range on the low grassy slopes between the Columbia River from the Yakima River. The Cayuse, Umatilla, Walla Walla and other tribes used this area. Today, it is referred to as the Horse Heaven Hills (Hunn et al. 2015).

Other areas of significance to the local tribes are provided in the literature review section by water segment.

The first historic contact between Native American and non-Indian people occurred between 1600 and 1750 AD. Non-Indian contact resulted in the introduction of horses, epidemic diseases, Christian missionaries, and trade goods that resulted in profound effects on the traditional Native American lifestyle (Walker 1998). During 1805-1806, the Lewis and Clark Expedition entered the Mid-Columbia, soon to be followed by fur traders entering the Columbia Plateau in search of furs, horses, and trade routes. The non-Indian expansion resulted in mounting tensions with aboriginal groups. Tensions remained high until the early 1850s when an Indian agency was established in Echo, Oregon. The agency monitored Indian relations with non-Indian settlers that laid the groundwork for the treaties of 1855. The Walla Walla Treaty of 1855 was signed with 14 bands and tribes of central and eastern Washington and Oregon. These groups ceded their lands in exchange for three reservations: the Yakama, Nez Perce, and Umatilla. Treaty terms reserved the right for tribal members to hunt, fish, and gather plants at their traditional locations.

4.3 Euro-American Period

The Lewis and Clark Expedition of 1804-1806 began the Euro-American exploration and settlement of the Columbia Plateau. Lewis and Clark and other early explorers sought trade items from Native Americans, and trade routes were established. Gold miners, livestock producers, and homesteaders soon followed. By the 1860s, the discovery of gold north and east of the mid-Columbia region resulted in an influx of miners traveling through the area. The mining industry created a demand for beef, and the Columbia Basin turned out to be ideal for livestock production (Gundy et al. 1998).

Euro-American settlement began slowly in eastern Washington during the mid-19th century. Livestock producers discovered that the region was suitable for grazing cattle with its abundant bunchgrass and open rangeland to graze cattle and later sheep and horses. The open range lasted until the beginning of the 20th century as farmers and homesteaders overtook livestock operations throughout the Columbia Plateau. Concurrent with this land use transition was the arrival in the early 1880s of the Northern Pacific Railroad in eastern Washington. Other transcontinental railroads soon followed, creating transportation routes for the region's agricultural commodities and transporting settlers into eastern Washington (Lewty 1987; Meinig 1968).

Circa 1900, homesteaders began travelling by railroad to the Columbia Basin. By 1905, wheat cultivation had surpassed livestock production as the most important agricultural product in the Columbia Plateau (McGregor 1989). Agricultural production, however, remained difficult in some areas due to the sparse rainfall. Numerous attempts to develop privately funded irrigation canals were mostly unsuccessful due to the shortages of financial support. The Newlands Reclamation Act of 1902 created opportunities for federally funded irrigation projects in the arid lands, particularly in the West. Several years later funding was approved for irrigation projects in the Yakima Valley, which included the proposed title transfer area and the future KID (Pfaff 2002).

Irrigation water was first provided to the Kennewick Highlands in 1909 from the Columbia Irrigation District (CID) canal and was under the management of the Highland Water Users Association until 1930, when the KID took control (Doncaster 2008). In 1930, KID entered into a contract with Reclamation for

rehabilitation of the Kennewick Highlands irrigation system and for construction of a new hydroelectric power plant at Prosser to supply cheap power for pumping water to their irrigation district (U. S. Department of the Interior, Bureau of Reclamation, February 1955).

The first Congressionally authorized projects built by Reclamation in Washington State were the Yakima and Okanogan Projects in 1905 (Rowley 2006). The Yakima Project was the largest and most extensive of its kind in Washington State until the Columbia Basin project became operational in the 1950s. The Yakima Project was so large that it was composed of several discrete irrigation divisions that would irrigate almost 500,000 acres.

The Yakima Valley became a model of intensive irrigated farming, and its success is tied directly to the Yakima Project where hundreds of thousands of acres were brought into agricultural production (Doncaster 2011). When the Yakima Project began in 1906, Washington ranked twenty-second in the United States for apple production. By 1933, Washington was number one (Merchant 1935). In 1930, the Yakima District (which the Washington State fruit industry identified as including the Yakima, Kittitas, Franklin and Benton Counties) had 41% of Washington State's 2.1 million apple-bearing trees (Hampson 1933, Page 74). In 1936, 99% of all fruit and nut crops in the Yakima Valley were grown by irrigation (Overholster 1936).

The Kennewick Division, located in southcentral Washington in the lower Yakima River drainage area in the vicinity of Kennewick, Washington, was the last unfinished component of the Yakima Project. Authorized on June 12, 1948, construction of the Kennewick Division commenced in 1953 and was completed in 1958, bringing a total of 474,000 acres under irrigation in the Yakima Project (Doncaster 2011; U. S. Department of the Interior, Bureau of Reclamation, February 1955).

The Kennewick Division provides for irrigation and hydroelectric power generation. The Kennewick Division irrigates lands in the lower end of the Yakima Valley, and its Chandler Power Plant generates power that is transferred into the power grid for distribution by the Bonneville Power Administration (BPA) (Defoe 2019). In 1958, Reclamation turned over the transferred works to the KID which included the operation and maintenance of the newly completed Kennewick Division (U. S. Department of the Interior, Bureau of Reclamation, 1958a).

The Yakima Project had a significant impact on the livelihood, agriculture, and environment of the 175-mi-long Yakima Basin and turned it into one of the most productive agricultural areas in the United States (Doncaster 2011). Of the Yakima Project divisions, the Kennewick Division is the most unique for its purpose and designation. The Kennewick Division was the second multipurpose development in the Yakima Project to provide both irrigation and hydroelectric power, however it was also authorized as a replacement for lands taken by the federal government in the Kennewick area during and after World War II. No other division in the Yakima Project was authorized due to federal removal of irrigated lands from production. During World War II, the federal government condemned over 6,000 acres of irrigable land north of Kennewick as part of the lands acquired in 1943 for the top- secret Manhattan Project which established the Hanford Engineer Works (HEW). In 1947, the Atomic Energy Commission (AEC) renamed the HEW the Hanford Works (HW) and acquired an additional 7,000 acres for expanded plutonium production during the Cold War. The Kennewick Division replaced the 13,000 plus acres of farmland that had been taken for the HEW/HW, and an additional 1,000 irrigated acres that were flooded by McNary Dam during the mid-1950s.

The Kennewick Division was sorely needed as the displacement of the 7,000 acres in 1947 reduced the available supply of certain vegetables and soft fruits to processors and shippers in Kennewick by an estimated 50 percent. The Mid-Columbia region of Washington has the earliest crop season in the Pacific Northwest so the reduction in irrigated farmland was an impact locally and nationally in food production.

The Kennewick Division was not only a replacement of lands removed for the HEW/HW and by McNary Dam, but it also was established to create new job opportunities in the Kennewick area. It provided employment for returning servicemen, farmers who lost their land, and workers formerly employed in wartime installations in eastern Washington.

Construction on the Kennewick Division started in 1953 with the construction of the Chandler Canal and the Kennewick Main Canal Division I. By 1955-1956 construction had progressed to Mile 24.7, the end of Division III of the Kennewick Main Canal. This is where the water is diverted to the Amon Siphon and the Amon Wasteway. At the Amon Siphon, the water enters a 1,375-ft, 78-in.-diameter concrete pressure pipe from its intake and is delivered north to Division IV and the Amon Relift Pumping Plant. From the pumping plant, the water is lifted to the Amon Pump Lateral. In addition, the Amon Wasteway, with its entrance to the right of the siphon intake, allows excess water to flow downstream following the natural contours of the ephemeral drainage channel referred to as Amon Canyon and into the wasteway on the valley floor and north into the Yakima River (Doncaster 2008).

The Kennewick Main Canal is divided into four divisions. Division I begins at the outlet of the Chandler Power and Pumping Plant discharge pipe at Station 0+61.1, and water travels to an area directly south of Benton City at Station 351+55 for 6.6 mi. Division II runs from Station 351+545 past Benton City through the valley between Badger Mountain and the Horse Heaven Hills for approximately 7.7 mi, ending past where the Badger Siphon branches off the main canal at Station 766+08.04. Division III runs from Station 766+50 to Amon Siphon at Station 1301+27.30 for approximately 11 mi (U. S. Department of the Interior, Bureau of Reclamation, Facilities List, January 1958b). The siphon delivers water through a gravity-fed system to Division IV and the Amon Relift Pumping Plant. The plant lifts water to the Amon Pump Lateral. Division IV starts at Station 1301+27.30 and runs 18.5 mi to Station 2206+06.6 where the main canal empties into the Columbia River via the Hover Wasteway (U. S. Department of the Interior, Bureau of Reclamation, Facilities List, 1958b).

The other canals, laterals, wasteways and associated facilities constructed in the Kennewick Division and part of the title transfer and within the Project APE include the Amon Pump Lateral, Amon (Relift) Pumping Plant, Badger East and Badger West Laterals, Highland Feeder Canal, Highlift Canal, Lowlift Canal, West Extension, and Amon and Hover Wasteways.

5 Literature Review and Records Search

A literature review was completed using historical maps and the Washington Information System for Architectural and Archaeological Records Data (WISAARD) database. The literature search identified existing archaeological information, such as site records and previous CR surveys within the one-mile search area surrounding the Project APE. This information was used to guide field work and support both the draft and final CR archaeological survey report.

This section summarizes the results of the literature review in the search area surrounding each of the title transfer canals, laterals and wasteways.

5.1 General Land Office

General Land Office (GLO) maps were reviewed for historical information with dates ranging from 1866-1884. Townships and Ranges as well as dates for the GLO review are as follows:

Township 7 N Range 30 E -1867
Township 7 N Range 31 E - 1861
Township 8 N Range 27 E - 1872
Township 8 N Range 28 E - 1871
Township 8 N Range 29 E - 1871
Township 8 N Range 30 E - 1866
Township 9 N Range 26 E - 1870
Township 9 N Range 27 E - 1863
Township 9 N Range 28 E - 1865
Township 9 N Range 29 E - 1884

Appendix B provides the GLO Map Books for the project area. A review of the GLO maps identified historic period trails in the following locations:

- Page 1, Section 16: A road extended in a north-south direction near the west end of the Kennewick Main Canal Division I. The canal appears to have cut through the road that terminated at the Yakima River.
- Page 2, Section 24: A north-south trail crossed through the Kennewick Main Canal Division I that connected with a trail that paralleled the south side of the Yakima River.
- Page 4, Section 33: A trail identified on Page 2, Section 24 continues southeast into Webber Canyon where it turns and continues south.
- Page 5, Section 13: A trail splits into two directions near the Badger East Canal. Both trails extend in a northeast-southwest direction.
- Page 11, Section 20: The Kennewick Main Division II Canal crossed a northwest-southeast trail.
- Page 12, Section 11: The Kennewick Main Division II Canal crossed the wagon road from Umatilla to the Yakima River. Based on the GLO maps, it appears the road was created between 1865 and 1871.
- Page 13, Sections 9, 10, 16 and 17: In Section 9, a lateral pipe from the Highland Feeder Canal was constructed through a northeast-southwest trail. The Kennewick Main Canal Division IV was constructed through the northeast-southeast trail in Section 9. In Section 10, the Highlift Canal was constructed through a northeast-southwest trail. In Sections 16 and 17, a lateral pipe was constructed through the northeast-southwest trail in the Amon Pumping Plant Parcel.
- Page 14, Sections, 3, 10 and 11: The Lowlift Canal crossed the northeast-southwest oriented trail. A segment of the Lowlift Canal was constructed through a northeast-southwest oriented trail in Section 10. A lateral pipe was constructed through a northeast-southwest oriented trail across the Highlift Canal in Section 11.

- Page 15, Section 14: The Amon Pump Lateral crossed a northeast-southwest oriented trail.
- Page 16, Section 23: The Kennewick Main Canal Division IV crossed a northeast-southwest trail.
- Page 17, Section 29: The Kennewick Main Canal Division IV crossed a southwest-northeast oriented trail.

5.2 1917 Historic Topographic Maps

The 1917 USGS Maps of the project area are provided in Appendix C, Pages 1-20. A review of these historic period maps and a summary of the findings includes the following:

- Page 10: The Kennewick Main Canal Division III crossed two unknown features between Sheep and Scouten Canyons.
- Page 14: The Highlift Canal passes adjacent to the south side of three features. The Lowlift Canal passes adjacent to two features. All features are noted in the Kennewick East Highlands.

5.3 WISAARD Database

This section presents the findings from a literature review of the WISAARD database that includes previous CR archaeological surveys and known archaeological sites within the one-mile literature search area of the project area waterways. The findings are provided in table form below for each irrigation water component. In addition, information from *Čáw Pawá Láakni They Are Not Forgotten* (Hunn et al. 2015) is also provided.

5.3.1 Amon Pump Lateral

The Amon Pump Lateral (North) begins on the north side of the Bob Olsen Parkway via water from the Amon Siphon at the terminus of Kennewick Main Canal Division III. The Amon Pumping Plant directs the water to Amon Pump Lateral (North) where it heads east toward U. S. 395 and terminates near Sherman Street. The water then proceeds south of Bob Olsen Parkway via a siphon where it empties into Amon Pump Lateral (South) near West 41st Avenue at MP 2.7/2.8. At this junction Amon Pump Lateral (South) is divided into east-west sections. The west section parallels the north side of Interstate 82 and empties into the Amon Pump Lateral Drain. The east section extends towards U. S. 395 where it empties into an unnamed drain. Tables 2 and 3 provide information for existing CR surveys and archaeological sites. Additionally, sites of Tribal significance identified within the one-mile search area were documented.

Table 2. Amon Pump Lateral Cultural Resources Surveys

NADB #	Title	Summary	Reference
1342261	Letter to Kristine Thorne Regarding Northwest Pipeline Corporation Pasco District Spokane Lateral Smart Digging Project (PN 38028 and PN 38187)	An archaeological survey was conducted for two Pasco District Spokane Lateral smart digging project areas. The investigation resulted in negative findings.	Baker and Fagan 2001
1342384	A Cultural Resource Survey of the City of Kennewick's Zone 3, Zone 4, and Zone 5 Reservoirs	Archaeological survey resulted in negative findings.	Steinmetz 2003

Table 2. Amon Pump Lateral Cultural Resources Surveys

NADB #	Title	Summary	Reference
1682848	Cultural Resources Assessment for the Kennewick Irrigation District 2012-2014 Capital Improvement Plan	This 456-acre project was for the KID Capital Improvement Plan included irrigation rehabilitation and betterment projects on the infrastructure of the Kennewick Division to reduce seepage through earthen-lined canals and increase irrigation system efficiency. No CRs were identified during the survey.	Trost 2012
1683818	Archaeological Survey for the City of Kennewick's Proposed Aquifer Storage and Recovery Project	Archaeological survey resulted in negative findings.	Senn 2013
1684998	Cultural Resources Assessment for the Williams Northwest Pipeline LLC's Pasco Replacement Project	This 12-acre project was for the replacement of nearly 4,000 ft of pipeline for Williams Northwest Pipeline LLC. The archaeological survey and 15 shovel probes resulted in negative findings.	Dampf et al. 2014
1689735	Cultural Resources Inventory for the US 395/Ridgeline Drive Grade Separation Project	Archaeological survey resulted in negative findings.	Aymond and Dampf 2017
1692158	Executive order 05-05 Archaeological Review and Inventory of the City of Kennewick Stormwater Masterplan Geotechnical Survey, Benton County, Washington	Archaeological testing and monitoring resulted in negative findings.	Landreau and Pitts 2019
1692186	Cultural Resources Inventory for the City of Kennewick W 10th Avenue Widening-Joliet Street to Columbia Center Boulevard Project Benton County, Washington	This 3.7-acre project was for the City of Kennewick for the widening of West 10 th Avenue. The archaeological survey and 15 shovel test probes resulted in negative findings.	Costigan and O'Brien 2018

NADB = National Archaeological Database Reports

Table 3. Amon Pump Lateral Archaeological Sites

Smithsonian Number	Description	Eligible for Listing in the National Register (Yes\No\Unevaluated)	Within APE	Reference
BN2015	Historic debris scatter	Not eligible	No	Dampf 2018
BN2095	Dixon Home Site that contained a private collection of both pre-contact and historic artifacts that were out of context collected by a private landowner.	Unevaluated	No	Morton 2020

Tribal Significance - The project area is in the general vicinity of a historical property of religious and cultural significance known as Piyuušmaamí Puštáy ('hills of snakes') (Hunn et al. 2015).

5.3.2 Amon Wasteway, Lower Amon Wasteway and Amon Backwater

The Amon Wasteway begins on the southside of Bob Olsen Parkway at the end of Division III of the Kennewick Main Canal. The water is diverted into the Amon Wasteway which proceeds through a natural gorge and under Bob Olson Parkway onto the valley floor. The Wasteway then turns west and then north and parallel to Steptoe Street and through the Meadow Springs Golf Course toward the Yakima River delta. The Wasteway terminates near Columbia Park Trail where it joins the Amon Backwater and Lower Amon Wasteways. The Amon Backwater drains into the Columbia River near the confluence of the Yakima and Columbia Rivers. The Lower Amon Wasteway drains into the Yakima River. Tables 4 and 5 provide information for previous CR surveys and archaeological sites. Additionally, sites of Tribal significance identified within the one-mile literature review search area are documented.

Table 4. Amon Wasteway, Lower Amon Wasteway and Amon Backwater Cultural Resources Surveys

NADB #	Title	Summary	Reference
1340516	To John Leier, re: Results of the Cultural Resource Protection Program's Testing of the Kurk Watts Easement Application Area	This project was for the Kurk Watts easement application. Nine shovel tests resulted in negative findings. This project is within the current Project APE.	Dickson 2001
1341167	Cultural Resources Survey of a Proposed Apartment Complex, Gage Boulevard, City of Richland, Parcel 12598300006000	This 18-acre project was for a proposed apartment complex in Richland, Washington. A historic can dump (45BN884) was recorded and recommended not eligible for listing in the National Register.	Ferguson and Root 2002
1342277	A Cultural Resources Survey of the Washington State Department of Transportation's SR 240: I-182 to Columbia Boulevard Project, Richland, Washington	The project was for upgrades the on and off ramps at the Richland "Y." The archaeological survey and mechanical trenching. The CR investigation resulted in negative findings.	Hartmann 1999
1342232	Letter to Gary Beeman Regarding References: Supplemental Cultural Resources Investigations, SR 240: I-182 to Columbia Center Boulevard, Agreement Y-7898 TAD-AJ	The project was for improvements to SR 240 near Richland, Washington. The archaeological survey and soil borings resulted in negative findings.	Hartman 2002
1342384	A Cultural Resource Survey of the City of Kennewick's Zone 3, Zone 4, and Zone 5 Reservoirs	This project was for the City of Kennewick for the construction of three new reservoirs. The archaeological survey resulted in negative findings.	Steinmetz and Dickson 2003
1348202	An Archaeological Survey of the Proposed Steptoe Street Extension	This 24-acre project was for the expansion of Steptoe Street. The archaeological survey identified the Badger Canyon-Richland electrical transmission line and a segment of the Northern Pacific Railroad.	Dickson 2006

Table 4. Amon Wasteway, Lower Amon Wasteway and Amon Backwater Cultural Resources Surveys

NADB #	Title	Summary	Reference
1349057	A Cultural Resources Survey for the Richland Wye Levee Trail Improvements, City of Richland, Benton County, Washington.	The project was for a levee project near the Yakima River. The archaeological survey resulted in the identification of one flaked cobble.	Miller 2007
1352273	Archaeological Resource Survey and Evaluation for the Hanford Reach Interpretive Center Project	The project was for the proposed development of the Hanford Reach Interpretive Center. The archaeological survey and shovel testing identified pre-contact deposits, possibly associated with 45BN23.	Gilpin et al. 2008
1682848	Cultural Resources Assessment for the Kennewick Irrigation District 2012-2014 Capital Improvement Plan	This 456-acre project was for the KID Capital Improvement Plan included irrigation rehabilitation and betterment projects on the infrastructure of the Kennewick Division to reduce seepage through earthen-lined canals and increase irrigation system efficiency. No CR were identified during the survey.	Trost 2012
1684043	Inventory of Unsurveyed Lands within the McNary Project Area, Umatilla County, Oregon, Benton, Franklin, and Walla Walla Counties, Washington	This project was for 36 parcels within the McNary Reservoir. One of the locations was within the current Project APE for the Lower Amon Wasteway and Amon Backwater. No archaeological resources were observed.	Dickson 2011
1689682	Cultural Resources Survey for Pasco District FY17 Priority Pole Project – 2018 Construction Franklin, Benton and Walla Walla County, Washington	This 23-acre project was for the Bonneville Power Administration (BPA) pole replacement project. The archaeological survey and shovel testing identified several structures associated with the BPA electrical system. A small portion of this project is within the current APE.	Teoh 2017b
1692158	Executive order 05-05 Archaeological Review and Inventory of the City of Kennewick Storm-water Masterplan Geotechnical Survey, Benton County, Washington	This project was for the City of Kennewick's development of a stormwater system. Eight test pits were completed for geotechnical testing. The archaeological investigation resulted in negative findings.	Landreau and Pitts 2019
1692186	Cultural Resources Inventory for the City of Kennewick W 10th Avenue Widening - Joliet Street to Columbia Center Boulevard Project Benton County, Washington	This 3.7-acre project was for the City of Kennewick for the widening of West 10 th Avenue. The archaeological survey and 15 shovel test probes resulted in negative findings.	Costigan and O'Brian 2018
1683122	Archaeological Survey for Improvements to Claybell Park, City of Richland, Benton County, Washington	This 28-acre project was for the City of Richland for improvements to Claybell Park. The archaeological survey resulted in negative findings.	Miller 2012

Table 4. Amon Wasteway, Lower Amon Wasteway and Amon Backwater Cultural Resources Surveys

NADB #	Title	Summary	Reference
1689883	Cultural Resources Survey for the Proposed Bellerive (347371) Tower Site Benton County, Washington.	This project was for less than one acre for a communications tower. The archaeological survey and five shovel test probes resulted in negative findings.	Stephens 2017
Not Available	Cultural Resources Survey Report for the Amon Pumping Plant Parcel, Kennewick Irrigation District, Benton County, Washington	This 35-acre survey was for Reclamation and the KID as part of the title transfer project. The archaeological survey and shovel testing resulted in negative findings. The survey was within the current Project APE	Sharpe et. al. 2019

Table 5. Amon Wasteway, Lower Amon Wasteway and Amon Backwater Archaeological Sites

Smithsonian Number	Description	Eligible for Listing in the National Register (Yes\No\Unevaluated)	Within the APE (Yes/No)	Reference
45BN18	Pre-contact campsite. The site is inundated.	Unevaluated	No	Fenenga 1947; Dickson 1999
45BN884	Historic can dump	Unevaluated	No	Ferguson 2002
45BN1328	Historic concrete foundations, irrigation feature, Hanford Construction Workers Dwellings	Not eligible	No	Hartman 2004
45BN1679	Union Pacific Railroad	Unevaluated	No	DeBoer 2011
DT41	Tri-Cities Archaeological District. Prehistoric sites in the district typically include house pits, burials, and open camps.	National Register and Washington Heritage Register	No	Western Heritage Inc. 1983

Tribal Significance - Locations of Tribal significance within the literature review search area include Ncí Wána (Columbia River) and Čamná (village site) (Hunn et al. 2015). The project area is in the general vicinity of a historical property of religious and cultural significance known as Piyuušmaamí Puštáy ('hills of snakes') (Hunn et al. 2015). The Lower Amon Wasteway is near Čamná that once contained a medium-sized Native American winter village near the mouth of the Yakima River. Materials and medicines were collected and fishing was conducted. This area was used by the Walla Walla and other tribes. Also, near the mouth of the Yakima River was a healing spring (Tilupípye) with warm water in the winter and chilly water in the summer (Hunt 2015).

5.3.3 Badger West Lateral

Both Badger West Lateral and Badger East Lateral begin at Universal Transverse Mercator (UTM) coordinates 11T 317853, 5120340 via water from a siphon off Kennewick Main Canal Division II. The laterals go in opposite directions: Badger West extends northwest and Badger East extends in an easterly direction. Tables 6 and 7 provide information for previous CR surveys and known archaeological sites. Additionally, sites of Tribal significance identified within the one-mile literature review search area are documented.

Table 6. Badger West Lateral Cultural Resources Surveys

NADB #	Title	Summary	Reference
1689655	Cultural Resources Identification Survey of the Robert Cox 2017 NRCS EQIP Project. NRCS EQIP Contract # 740546170Y0	This nearly 2.4-acre project was completed for the installing a combined center pivot and wheel line irrigation system. An archaeological survey and 19 shovel test units resulted in negative findings.	Woody 2017

Table 7. Badger West Lateral Archaeological Sites

Smithsonian Number	Description	Eligible for Listing in the National Register (Yes\No\Unevaluated)	Within the APE (Yes/No)	Reference
45BN333	Five secondary flakes	Not eligible	No	Kraft 1983a
45BN334	CCS flakes, bifacially worked tip, basalt fragment and possibly fire cracked rock and tool	Unevaluated	No	Kraft 1983b

Tribal Significance - Locations of Tribal significance within the literature review search area include Kúsipamá (Horse Heaven Hills) and Piyuušmaamí Puštáy ('hills of snakes') (Hunt 2015).

5.3.4 Badger East Lateral

Both the Badger West Lateral and Badger East Lateral begin at UTM coordinates 11T 317853, 5120340 via water from a siphon off the Kennewick Main Canal Division II. Both laterals go in opposite directions: Badger West extends northwest, and Badger East extends in an easterly direction and terminates on the northwest side of Candy Mountain. The Badger East Drain begins at the end of Badger East Lateral and extends northwest. Tables 8 and 9 provide information for previous CR surveys and archaeological sites. Additionally, sites of Tribal significance identified within the one-mile literature review search area are documented.

Table 8. Badger East Lateral Cultural Resources Surveys

NADB #	Title	Summary	Reference
1342253	A Cultural Resources Survey of the Keene Road Realignment, Benton County, Washington.	This nearly 29-acre project was for the Keene Road Realignment project. The archaeological survey resulted in negative findings.	Komen 2001
1342272	A Cultural Resource Inventory for the Bonneville Power Administration's Proposed Substation near Red Mountain, Benton County, Washington	This project was for the Bonneville Power Administration for a proposed substation. The archaeological survey and 42 shovel test probes resulted in negative findings.	Jaehnig 2001
1342327	Letter Report D0T97-52; SR 224 Ambassador Drive to Red Mountain Road, MP 3.29 to MP 4.11, T9N, R27E, Secs.10 and 11, Benton County, Washington	This project was for the realignment on SR224. The archaeological survey resulted in negative findings.	Regan 1997

Table 8. Badger East Lateral Cultural Resources Surveys

NADB #	Title	Summary	Reference
1346236	Candy Mountain Project Cultural Resources Survey	This project was for an access road near West Richland. The archaeological survey identified one historic isolate.	Kopf and Stilson 2005
1347192	A Cultural Resources Survey for the Walla Walla Region 2006 Transmission Line Maintenance Project, Benton and Franklin Counties, Washington	This nearly 17-acre project was for the BPA for access road improvements. The archaeological survey resulted in negative findings.	Clark 2006
1347755	A Cultural Resources Survey on Bureau of land Management lands in the BLM-State DNR land Exchange Project Area, Benton County, Washington	This 334-acre project was for a land exchange. The archaeological survey identified one prehistoric isolate.	Sharley 1998
1352984	Cultural Resources Assessment for Keene Road Widening Project, Richland, Washington	This nearly 19-acre project was for proposed improvements to Keene Road in West Richland. No CR were identified.	Schumacher 2009
1353152	Cultural Resource Survey for the Kiona Cellular Tower, Location #347355, Benton County, Washington	This one-acre project was for the construction of a monopole communication tower and the installation of the associated equipment. The archaeological survey resulted in negative findings.	Harder and Hannum 2009
1348905	Cultural Resource Survey for the Keene Road Cellular Tower, Location #347349, Benton County, Washington	This small one-acre project was for the construction of a cell tower. The archaeological survey resulted in negative findings.	Harder and Hannum 2007a
1353118	Archaeological Review and Inventory of the Red Mountain Interchange Project, Benton County, Washington	This 180-acre project was for a new interchange on Interstate 82. The archaeological survey resulted in negative findings.	Landreau 2009a
1353218	Archaeological Review and Inventory of the Red Mountain Interchange Project, Benton County, Washington	This 180-acre project was for an interchange and roads project. The archaeological survey resulted in negative findings.	Landreau 2009a
1682848	Cultural Resources Assessment for the Kennewick Irrigation District 2012-2014 Capital Improvement Plan	The first 6.5 mi of the Badger East Lateral was recommended eligible for listing in the National Register. The last 7.8 mi of the Badger East Lateral and Highland Feeder, including the Highland Feeder 3.3, were recommended as second tier contributing elements to the National Register eligible Kennewick Division of the Yakima Project, but	Trost 2012

Table 8. Badger East Lateral Cultural Resources Surveys

NADB #	Title	Summary	Reference
		not eligible for listing in the National Register as individual properties.	
1683122	Archaeological Survey for Improvements to Claybell Park, City of Richland, Benton County, Washington	This 28-acre project was for the City of Richland for improvements to Claybell Park. The archaeological survey resulted in negative findings.	Miller 2012
1683958	A Cultural Resources Survey on Bureau of Land Management Lands in the Tapani Right of Way Project Area, Benton County, Washington.	The one-acre project was for a road access right-of-way on an existing road to a future residence south of Kennewick off Badger Canyon Road. The archaeological survey resulted in negative findings.	Boyd 2013a
1684508	A Section 106 Archaeological Review and Inventory of the City of West Richland- Bombing Range Road Phase 8 Project, Benton County Washington	This project was for the City of West Richland for the Bombing Range Road project to widen about 0.5 mi of road covering about 2.8 acres. The archaeological survey and four shovel test probes resulted in negative findings.	Schroeder et al. 2013
1686129	A Cultural Resources Survey for the City of West Richland Industrial Process Water Facility, Benton County, Washington	This nearly 6-acre project was for the City of West Richland for the Industrial Process water Facility. The archaeological survey and shovel testing resulted in no cultural materials within the project area.	Nakonechny 2014
1686468	A Section 106 Archaeological Review and Inventory of the City of West Richland - Belmont Blvd Phase 3 and 4 Projects, Benton County, Washington	This project was for a 0.3-mi roadway project. The archaeological survey and eight shovel probes resulted in negative findings.	Landreau 2015
1687890	Cultural Resources Survey for the Kennedy Switch Project Benton County, Washington	This small one-acre project was for the installation for a new line sectionalizing disconnect. The archaeological survey and shovel testing resulted in negative findings.	Teoh 2016
1689192	Goose Gap/Red Mountain Archaeological Survey Benton County,	In 2016, 440 acres were surveyed for a proposed lease of land for viticultural or orchard use by the Department of Natural Resources. The archaeological survey and 13 shovel probes identified two historic debris scatters, one prehistoric isolate and six historic isolates.	Palmer 2016
1689655	Cultural Resources Identification Survey of the Robert Cox 2017 NRCS EQIP Project. NRCS EQIP Contract # 740546170Y0	This nearly 2.4-acre project was completed for the installing a combined center pivot and wheel line irrigation system. An archaeological survey and 19 shovel test units resulted in negative findings.	Woody 2017
1689682	Cultural Resources Survey for Pasco District FY17	This nearly 23-acre project was for the Bonneville Power Administration (BPA) pole	Teoh 2017b.

Table 8. Badger East Lateral Cultural Resources Surveys

NADB #	Title	Summary	Reference
	Priority Pole Project – 2018 Construction Franklin, Benton and Walla Walla County, Washington	replacement project. The archaeological survey and shovel testing identified several structures associated with the BPA electrical system.	
1690781	Cultural Resource Survey of the Leslie Road Tap Project, Benton County, Washington	The archaeological survey resulted in negative findings.	Becker 2018
1692614	Archaeological Resources Inventory for the Cottonwood Creek Phase III Project, Benton County, Washington	Historical Research Associates, Inc., conducted an archaeological resources inventory for the Cottonwood Creek Phase III Project south of Interstate 82. The archaeological investigation on 49 acres included a pedestrian survey and shovel testing that resulted in negative findings.	Dampf and Tarman 2019

Table 9. Badger East Lateral Archaeological Sites

Smithsonian Trinomial	Description	Eligible for Listing in the National Register (Yes\No\Unevaluated)	Within the APE (Yes/No)	Reference
0	0	0	0	0

Tribal Significance - Locations of Tribal significance within the literature review search area include Piyuušmaamí Puštáy ('hills of snakes') and Kúsipamá (Horse Heaven Hills) (Hunt 2015).

5.3.5 Highland Feeder Canal and Highlift Canal

The Highland Feeder Canal begins near the Amon Pumping Plant and meanders north then east where it terminates at the beginning of Highland Feeder 3.3 Canal. Near this point is also the beginning of the Highlift Canal. Water from the terminus of Highland Feeder Canal is delivered north via a siphon to the west and east sections of Highlift Canal. Tables 10 and 11 provide information for previous CR surveys and archaeological sites. Additionally, sites of Tribal significance identified within the one-mile literature review search area are documented.

Table 10. Highland Feeder Canal and Highlift Canal (West) Cultural Resources Surveys

NADB #	Title	Summary	Reference
1340727	Cultural Resources Survey for the City of Kennewick's Columbia Center Boulevard Overpass Project, Benton County, Washington	This 40-acre project was for the construction of an overpass crossing the Burlington Northern-Santa Fe Railroad. The archaeological investigation resulted in negative findings.	Axton and Walker 2001a
1341291	Letter Report: Procedures and results of a Cultural Resources survey of Cingular Wireless project site WA-629 (General Mills Building) in Benton County, Washington	This small project was for the construction of a telecommunications facility. The archaeological investigation resulted in negative findings.	Rooke 2002

Table 10. Highland Feeder Canal and Highlift Canal (West) Cultural Resources Surveys

NADB #	Title	Summary	Reference
1342384	A Cultural Resource Survey of the City of Kennewick's Zone 3, Zone 4, and Zone 5 Reservoirs	This project was for the City of Kennewick for the construction of three new reservoirs. The archaeological survey resulted in negative findings.	Steinmetz and Dickson 2003
1348595	A Cultural Resources Survey for the Franklin-Badger Canyon, McNary-Badger Canyon, and McNary-Franklin Transmission Line Wood Pole Replacement	This project was for the BPA for road improvements and wood pole replacements. The archaeological investigation identified one historic isolate.	Brannon 2006
1688106	Archaeological Survey of the Creekstone Telecommunications Facility Project Area, City of Kennewick, Benton County, Washington	This less than one acre project was for geotechnical trenching for a telecommunications facility. The archaeological survey and monitoring of trenching resulted in negative findings.	Mastrangelo and Holschuh 2016
1684998	Cultural Resources Assessment for the Williams Northwest Pipeline LLC's Pasco Replacement Project	This 12-acre project was for the replacement of 4,000 ft of pipeline for Williams Northwest Pipeline LLC. The archaeological survey and 15 shovel probes resulted in negative findings.	Dampf, et al. 2014
1682848	Cultural Resources Assessment for the Kennewick Irrigation District 2012-2014 Capital Improvement Plan	No prehistoric cultural material, archaeological sites, or Traditional Cultural Properties (TCPs) were observed during this survey. The first 6.5 mi of the Badger East Lateral was recommended eligible for listing in the National Register. The last 7.8 mi of the Badger East Lateral and Highland Feeder, including the Highland Feeder 3.3 were recommended as second tier contributing elements to the National Register eligible Kennewick Division of the Yakima Project, but not eligible for listing in the National Register as individual properties.	Trost 2012
1687325	Cultural Resources Survey for the Pasco Region 2015 Transmission Line Maintenance Project in Benton & Franklin Counties, Washington	This 9-acre project was for the replacement of 20 structures and insulator upgrades for the BPA. The archaeological investigation resulted in a finding of no adverse effects.	Teoh 2015
1689095	Cultural Resources Survey for Pasco District FY17 Priority Pole Project – 2017 Construction Benton County, Washington	This one-acre project was for the replacement of three wood pole structures for the BPA. The archaeological survey resulted in negative findings.	Teoh 2017a
1689203	Cultural Resource Survey for the John Day-Franklin Subsection of the Bonneville Power Administration's	This 30-acre project was for 38 work areas in Washington and Oregon for the BPA. A portion of the project was within one mile of the project	Swanson and Ozburn 2017

Table 10. Highland Feeder Canal and Highlift Canal (West) Cultural Resources Surveys

NADB #	Title	Summary	Reference
	Benton and Franklin Counties, Washington	area. No archeological resources were identified within the Benton County work areas.	
1691490	Cultural Resources Assessment for the Vista Field Redevelopment Project, Kennewick, Washington	This 103-acre project was for a cultural resource assessment of Vista Field. The archaeological survey and 47 shovel probes resulted in no archaeological materials identified.	Boswell et al. 2017
1692158	Executive order 05-05 Archaeological Review and Inventory of the City of Kennewick Storm-water Masterplan Geotechnical Survey, Benton County, Washington	Archaeological testing and monitoring resulted in negative findings.	Landreau and Pitts 2019
1692186	Cultural Resources Inventory for the City of Kennewick W 10th Avenue Widening - Joliet Street to Columbia Center Boulevard Project Benton County, Washington	This 3.7-acre project was for the City of Kennewick for the widening of West 10th Avenue. The archaeological survey and 15 shovel test probes resulted in negative findings.	Costigan and O'Brien 2018
Not Available	Cultural Resources Survey Report for the Amon Pumping Plant Parcel, Kennewick Irrigation District, Benton County, Washington	This 35-acre survey was for Reclamation and the KID as part of the title transfer project. The archaeological survey and shovel testing resulted in negative findings. The survey was within the current Project APE.	Sharpe et. al. 2019
1681748	An Archaeological Survey for the Proposed Reconstruction of South Olympia Street, City of Kennewick, Benton County, Washington	No archaeological resources were documented. The report noted that the undertaking would cross over the National Register eligible Division Four of the Kennewick Main Canal and the National Register eligible Highlift Canal.	Miller 2011

Table 11. Highland Feeder Canal and Highlift Canal (East) Archaeological Sites

Smithsonian Trinomial	Description	Eligible for Listing in the National Register (Yes/No/Unevaluated)	Within the APE (Yes/No)	Reference
45BN615	Historic Period Dump	Unevaluated	No	Axton and Walker 2001c
45BN616	Historic Period Dump	Unevaluated	No	Axton and Walker 2001b
45BN2095	Dixon Home Site that contained a private collection of both pre-contact and historic artifacts that were out of context collected by a private landowner.	Unevaluated	No	Morgan et al. 2021

Table 11. Highland Feeder Canal and Highlift Canal (East) Archaeological Sites

Smithsonian Trinomial	Description	Eligible for Listing in the National Register (Yes\No\Unevaluated)	Within the APE (Yes/No)	Reference
45BN1495	Desert Lawn Memorial Park Cemetery	Unevaluated	Yes	Not Available
45BN1496	Riverview Heights Cemetery	Unevaluated	No	Not Available

The Desert Lawn Memorial Park Cemetery is located on the north side of Highlift Canal (East), south of West 10th Avenue, east of West 12th Avenue, and north of West 14th Avenue. The WISAARD database provides the following information:

“The Desert Lawn Memorial Park (45BN1495) is located in the NW ¼ of the NW ¼ of T8, R 29E, Section 10. The land on which the cemetery is located was patented by the Northern Pacific Railway Co. in 1921 (US BLM GLO 2018). The land was not officially used for a cemetery until Steven and Verona Churman established it in 1952 (Benton County Auditor 1952). When it was platted, eleven cemetery sections were laid out, including one labelled “Fairy Land,” which appears to have been used only for children (Benton County Auditor 1952, US Gen Web 2018). By 1978, the Mueller Funeral Home filed a short plat just south of the cemetery and took over its management (Benton County Auditor 1978), completing the construction of their Tri-Cities Funeral Home there in 1979 (Mueller 2018, Benton County Assessor 2018). Mueller’s Funeral Homes had been operating in Kennewick since it was established by Irvin Mueller in 1910 (Mueller 2018). Irvin’s son Amon Mueller saw to the establishment of the Tri-Cities Funeral Home at Desert Lawn Memorial Park in 1979 and subsequently turned control over the family business to his son Jay and daughter Gail in the 1980s (Mueller 2018). In 1989, the cemetery was rededicated in county records (Benton County Auditor 1989). The cemetery is clearly visible in a 1976 county atlas as well as topographic maps (Metsker 1976, USGS 1964, USGS 1992). In 2005, volunteer Lisa Rickords documented inscriptions for individuals buried in the Parkhurst, Glendale, and Fairy Land Sections of the cemetery (US Gen Web 2018). In 2010, the cemetery was forced to remove all grave offerings except for flowers within the Fairy Land section of the cemetery, as buildup of items in the area prevented adequate maintenance of the grounds (Joshi 2010). By 2012, Jay and Gail Mueller’s children took over management of the funeral home and Desert Lawn Memorial Park (Mueller 2018, Benton County Assessor 2018). During the past few years, they have been holding a Wreaths Across America event where wreaths are placed on the graves of veterans in the cemetery (Mueller 2018, Proctor 2017). There are currently over 11,000 graves recorded in the cemetery” (Find A Grave 2018).

References: 1989 Cemetery Centennial; US Gen Web; Find-A-Grave (photo documentation - May 2, 2004); Benton County Auditor - Miscellaneous #1989-005719 "Declaration of Dedication" for Desert Lawn Memorial Park, filed Vol. 516, p. 920, April 28, 1989.

Acreage: 38.26

Tribal Significance - Locations of Tribal significance within the literature review search area include Piyuušmaamí Puštáy (‘hills of snakes’) (Hunt 2015).

5.3.6 Leslie Drain

The Leslie Drain extends west from the Amon Wasteway on the north side of Gage Boulevard, parallel to Keene Road. Tables 12 and 13 provide information for previous CR surveys and archaeological sites. Additionally, sites of Tribal significance identified within the one-mile literature review search area are documented.

Table 12. Leslie Drain Cultural Resources Surveys

NADB #	Title	Summary	Reference
1340516	To John Leier, re: Results of the Cultural Resource Protection Program's Testing of the Kurk Watts Easement Application Area	This project was for the Kurk Watts easement application. Nine shovel tests resulted in negative findings.	Dickson 2001
1341167	Cultural Resources Survey of a Proposed Apartment Complex, Gage Boulevard, City of Richland, Parcel 12598300006000	This 18-acre project was for a proposed apartment complex in Richland, Washington. A historic can dump (45BN884) was recorded and recommended as not eligible for listing in the National Register.	Ferguson and Root 2002
1348905	Cultural Resource Survey for the Keene Road Cellular Tower, Location #347349, Benton County, Washington	This one-acre project was for the placement of a cell tower. The archaeological investigation resulted in negative findings.	Harder and Hannum 2007b
1687325	Cultural Resources Survey for the Pasco Region 2015 Transmission Line Maintenance Project in Benton & Franklin Counties, Washington	This 9-acre project was for the replacement of 20 structures and insulator upgrades for the BPA in Franklin and Benton Counties. The archaeological investigation resulted in no adverse effects.	Teoh 2015
1682848	Cultural Resource Assessment for the Kennewick Irrigation District 2012-2014 Capital Improvement Plan, Benton County, Washington	This 456-acre project was for the KID Capital Improvement Plan included irrigation rehabilitation and betterment projects on the infrastructure of the Kennewick Division to reduce seepage through earthen-lined canals and increase irrigation system efficiency. No archaeological resources were identified during the survey.	Trost 2012
1689682	Cultural Resources Survey for Pasco District FY17 Priority Pole Project – 2018 Construction Franklin, Benton and Walla Walla Counties, Washington	This 24-acre project was for the replacement of structures for the BPA. The archaeological investigation resulted in negative findings near the current Project APE.	Teoh 2017b

Table 13. Leslie Drain Archaeological Sites

Smithsonian Trinomial	Description	Eligible for Listing in the National Register (Yes\No\Unevaluated)	Within the APE (Yes/No)	Reference
45BN884	Historic can dump	Unevaluated	No	Ferguson 2002
45BN1679	Union Pacific Railroad	Unevaluated	No	DeBoer 2011

Tribal Significance - Locations of Tribal significance within the literature review search area include Piyuušmaamí Puštáy ('hills of snakes') (Hunt 2015).

5.3.7 Kennewick Main Canal Divisions I, II and III

The Kennewick Main Canal Divisions I - III begins on the south bank of the Yakima River near UTM coordinates 11T306327, 5125594 and extends southeast via a siphon under Interstate 82 eastward to the terminus of Division III. Water is then diverted into Amon Siphon to the Amon Pumping Plant. Tables 14 and 15 provide information for previous CR surveys and archaeological sites. Additionally, sites of Tribal significance identified within the one-mile literature review search area are documented.

Table 14. Kennewick Main Canal Divisions I, II and III Cultural Resources Surveys

NADB #	Title	Summary	Reference
1342311	Cultural Resource Inventory Report Benton City Public Fishing Area Development Walla Walla District, Corps of Engineers	The 15-acre project was for a public fishing area. The pedestrian survey resulted in negative findings.	Tracy 1995a
1342320	A Cultural Resources Survey of the Bureau of Reclamation's Chandler Power and Pumping Plant, Benton County, Washington	Archaeological survey and testing resulted in negative findings.	Calaway 1997
1342321	Cultural Resource Investigation Chandler Power/ Pumping Plant Electrification Project	Archaeological survey resulted in negative findings.	Freed 1997
1347179	A Cultural Resources Survey on Bureau of Land Management Lands (BLM) in the Benton City Community Pit Project Area, Benton County, Washington	This project was conducted to initiate the Competitive Minerals Sale process on 73 acres of BLM ground, developing competitive mineral material sales for removal of up to 16,000,000 tons of sand and gravel from this Federal parcel. The archaeological survey identified one incomplete chert flake.	Perry 2006
1347584	A Section 106 Archaeological Review and Inventory at the North Webber Canyon Roadway Re-Alignment. Benton County. Washington.	This 85-acre project included a visual reconnaissance, and shovel probes along a proposed new alignment for North Webber Canyon Road	Landreau 2009b

Table 14. Kennewick Main Canal Divisions I, II and III Cultural Resources Surveys

NADB #	Title	Summary	Reference
1347755	A Cultural Resources Survey on Bureau of Land Management lands in the BLM-State DNR land Exchange Project Area, Benton County, Washington.	This 334-acre project was conducted for a federal land exchange with the State of Washington of Natural Resources. The archaeological investigation identified one core and one chert flake.	Sharley 1998
1348615	A Cultural Resources Survey on Bureau of Land Management Lands in the McBee Fire Project Area, Benton County, Washington	This 10-acre archaeological investigation was completed for an area burned by a rangeland fire. One historic debris scatter was identified (45BN1456).	Boyd 2002c
1349802	Cultural Resources Survey Report for Clipper Windpower's Chandler Butte Meteorological Tower Project: Proposed Towers in Sections 20 and 23. Benton County. Washington.	This small 1.5-acre project was for the placement of two meteorological towers on Chandler Butte. No CRs were identified.	Kelly 2007
1349927	Benton City Aquatic Center Project, Cultural Resource Survey, Benton City, Washington	This 6-acre project was for the Benton City Aquatic Park Project. An archaeological survey and 49 shovel probes resulted in negative findings.	Harder and Hannum 2007a
1351023	A Cultural Resources Survey on Bureau of Land Management Lands in the 2007 McBee Grade Fire Area, Benton County, Washington	This 10-acre archaeological investigation was completed for an area burned by a rangeland fire. One prehistoric rock cairn (45BN1474) was documented.	Boyd 2008a
1351687	An Archaeological Review and Inventory of a Proposed Housing Development near 45BN422 in Benton County, Washington	This 44-acre project included an archaeological survey and shovel testing for a proposed housing development. The findings from the cultural resource's investigation included one new pre-contact site (45BN1484), existing pre-contact site (45BN4222) and two historic sites associated with the Kiona Main Canal.	Landreau and Cain 2008
1351961	An Archaeological Review and Inventory for Phase One of a Proposed Benton Irrigation District Pump Project in Benton County, Washington	This 5-acre project was for a proposed irrigation pumping station and pipeline. The archaeological survey and subsurface testing identified two historic properties (45BN1482), the abandoned Kiona Main Canal and the North Coast Railway line (45BN1483).	Landreau 2009b
1352784	Cultural Resources Inventory Report for Clipper Windpower's Chandler Butte 2009 Meteorological Tower Project Towers 1, 2, 3a, 3b, 3c, and 5, Benton County, Washington	This 15-acre project was for the placement of meteorological towers on Chandler Butte. The CR investigation identified one small circular rock feature (45BN1535).	McDaniel 2009b

Table 14. Kennewick Main Canal Divisions I, II and III Cultural Resources Surveys

NADB #	Title	Summary	Reference
1353152	Cultural Resource Survey for the Kiona Cellular Tower, Location #347355, Benton County, Washington	This one-acre project was for the construction of a monopole communication tower and the installation of the associated equipment. The archaeological survey resulted in negative findings.	Harder and Hannum 2009b
1354377	Cultural Resource Survey for the Kiona Cellular Tower, Location #347355, Benton County, Washington	This one-acre project for a communication tower and the installation of the associated and necessary equipment. The archaeological survey and one shovel probe resulted in negative findings.	Harder and Hannum 2010
1354445	Phase 3 Benton Irrigation District Water Conservation Project Cultural Resources Survey, Benton City, Washington.	This project was to replace the existing water distribution system with a pressurized subterranean system for increased efficiency and water conservation. The archaeological investigation identified one historic dump and two lithic isolates.	Ellis 2010
1354708	Cultural Resource Investigation for SEPA Phase 4 & 5, Benton Irrigation District (BID) Water Conservation Project 2010	This 225-acre project was for Phase 4 and 5 for the BID Water Conservation Project. The archaeological investigation documented a four-mile section of the abandoned OWRN/Union Pacific Railroad Grade, segments of 35 historic BID irrigation laterals and 68 above ground water control structures.	Womack and Churchill 2010
1681107	A Cultural Resources Survey and Monitoring on Bureau of Land Management (BLM) Lands in the Horse Heaven Steel Gate Project Area, Benton County, Washington	This one-acre project was for the installation of a steel gate, mounted on posts installed in auger holes. The archaeological survey resulted in negative findings.	Madeline 2001
1681417	Cultural Resource Investigation for Benton Irrigation District, SEPA Phase 6, Construction Phase 3, Pipeline Pressurization Project	This 7-acre project was for the BID, SEPA Phase 6, Construction Phase 3, Pipeline Pressurization Project. The archaeological investigation identified one historic lateral.	Womack 2011
1681594	Cultural Resources Survey for the Washington State Department of Transportation's SR224/225 Benton City Construct Roundabout Project, Benton County, Washington.	This 6-acre project was for the construction of a roundabout at the SR224/225 intersection in Benton City. The archaeological survey and shovel testing resulted in negative findings.	Weaver 2011
1684942	A Cultural Resources Survey and Records Search for a Proposed Tower Telecommunications Site, American Towers LLC – Tower Site #282247-Clodfelter Road, Kennewick, Benton County, WA	This small project of just under one acre include an archaeological survey of the project area. No CRs were identified.	Johnson 2013

Table 14. Kennewick Main Canal Divisions I, II and III Cultural Resources Surveys

NADB #	Title	Summary	Reference
1686055	Archaeological Survey for the West Kennewick Telecommunications Site (KP0445), Kennewick, Benton County, Washington	A small project for a telecommunications facility near South Clodfelter Road, Kennewick. The findings from the archaeological investigation were negative.	Castronuevo 2014
1681784	Historic Resources Survey: Chandler Power and Pumping Plant Switchyard Modification in the Vicinity of Benton City	The modification of the National Register eligible Chandler Switchyard adversely affected the characteristics that make the facility a historic property.	Doncaster and Hurley 2012
1682596	Horse Heaven Hills Geotech Project Cultural Resources Survey Report, Benton County, Washington	This 8-acre project was for geotechnical testing at four separate locations. The archaeological survey identified on historic debris scatter.	Ellis 2012a
1682848	Cultural Resource Assessment for the Kennewick Irrigation District 2012-2014 Capital Improvement Plan, Benton County, Washington	This 456-acre project was for the KID Capital Improvement Plan included irrigation rehabilitation and betterment projects on the infrastructure of the Kennewick Division to reduce seepage through earthen-lined canals and increase irrigation system efficiency. No archaeological resources were identified during the survey. This survey was conducted within the current APE.	Trost 2012
1683958	A Cultural Resources Survey on Bureau of Land Management Lands in the Tapani Right of Way Project Area, Benton County, Washington.	The one-acre project was for a road access right-of-way on an existing road to a future residence south of Kennewick off Badger Canyon Road. The archaeological survey resulted in negative findings. A portion of this survey was within the current APE at UTM 11T324023, 5115166.	Boyd 2013a
1687140	An Archaeological Site Delineation and Evaluation for the Seitz Property Development, Benton County, Washington	This 43-acre archaeological investigation included 201 shovel probes to determine site delineation for five pre-contact sites (45BN422, 45BN1484, 45Bn1625 and 45BN1626). Pre-contact sites were identified as temporary subsistence occupations.	Noll 2015c
1684155	A Cultural Resources Survey on Bureau of Land Management Lands In the Dennis Command Fire Suppression Impacts Project Area, Benton County, Washington.	An archaeological survey of eleven acres was conducted for a fire line that was to be replanted. The survey resulted in negative findings.	Boyd 2013b
1684761	Archaeological Survey of the I-82 and Badger Road Telecommunications Facility (KP0445), Benton County, Washington.	The project was for a communications tower southwest of the city of Kennewick. An archaeological survey and four shovel test probes were conducted on a one-acre parcel with negative findings.	Ferguson and Root 2013

Table 14. Kennewick Main Canal Divisions I, II and III Cultural Resources Surveys

NADB #	Title	Summary	Reference
1689111	A Cultural Resources Survey on Bureau of Land Management Lands in the McBee Command Fire Suppression Line Rehabilitation Project Area, Benton County, Washington	The 3.5-acre survey was conducted for a dozer line used to control a range fire. Two chert flakes were identified within the survey area but were determined to have been out of context from a nearby site.	Litzkow and Evenson 2016
1692614	Archaeological Resources Inventory for the Cottonwood Creek Phase III Project, Benton County, Washington	Historical Research Associates, Inc. conducted an archaeological resources inventory for the Cottonwood Creek Phase III Project south of Interstate 82. The archaeological investigation on 49 acres included a pedestrian survey and shovel testing that resulted in negative findings.	Dampf and Tarman 2019
1689655	Cultural Resources Identification Survey of the Robert Cox 2017 NRCS EQIP Project. NRCS EQIP Contract # 740546170Y0	This nearly 2.4-acre project was completed for the installing a combined center pivot and wheel line irrigation system. An archaeological survey and 19 shovel test units resulted in negative findings. A portion of this project was conducted within the current APE at UTM 11T323122, 5117961 to 11T323149, 5117055.	Woody 2017
1692495	Cultural Resources Survey for the FY18 Ellensburg District Wood Pole Replacement Program, Chelan, Benton, Douglas, and Yakima Counties, Washington	This nearly 24-acre project was completed for the BPA for wood pole replacement. No CRs were identified.	Perkins 2019
1693286	A Cultural Resources Survey on Bureau of Land Management Lands in the Badger Mountain Challenge SRP Route, Benton County, Washington	This nearly 4-acre project was for a special recreational permit for a foot race that crossed BLM lands. The archaeological survey resulted in negative findings.	Litzkow 2020a
1693361	A Cultural Resources Inventory of the Kiona West Shop Project, Benton County, Washington	This 3-acre project was for a new shop facility in Benton City. The archaeological survey and shovel testing resulted in negative findings.	Landreau and Morris 2020
1693850	A Cultural Resources Survey on Bureau of Land Management Lands in the Chandler Butte BLM Communications Right of Way (ROW) (WAOR-69625), Benton County, Washington	This nearly 5-acre project was for the right of way for a micro communication site repeater location. This location was considered sacred by the Confederated Tribes of the Umatilla Indian Reservation and a Traditional Cultural Property (TCP) by the Yakama Nation.	Litzkow 2020b
1694327	Cultural Resource Survey for the Mountain View Meadows, Phase 2 Project, Benton County, Washington	This ~14-acre project was for development of the Mountain View Meadows, Phase 2 residential housing development. The archaeological survey and 22 shovel probes resulted in negative findings.	Fitzpatrick, et al. 2020

Table 14. Kennewick Main Canal Divisions I, II and III Cultural Resources Surveys

NADB #	Title	Summary	Reference
Not Available	Cultural Resources Survey Report for the Kennewick Irrigation District's Main Canal Widening and Lining Project from Mile Posts 12.8-14.0, Benton County, Washington	This 27-acre survey was for an improvement project to widen and line the main canal. The archaeological survey and shovel testing resulted in negative findings. The survey was within the current Project APE.	Harvey et al. 2020a
Not Available	Cultural Resources Survey Report for the Amon Pumping Plant Parcel, Kennewick Irrigation District, Benton County, Washington	This 35-acre survey was for Reclamation and the KID as part of the KID Title Transfer project. The archaeological survey and shovel testing resulted in negative findings. The undertaking was within the current Project APE.	Sharpe et al. 2019

Table 15. Kennewick Main Canal Divisions I, II and III Archaeological Sites

Smithsonian Number	Description	Eligible for Listing in the National Register (Yes\No\Unevaluated)	Within the APE	Reference
BN259	Circle of stone	Unevaluated	No	Randolph 1980a
BN260	Basalt stone circle and cairns	Unevaluated		Randolph 1980b
BN262	Basalt stone cairn	Unevaluated	No	Randolph 1980c
BN421	Prehistoric or early historic pithouse village.	Eligible	No	Lyons 1991
BN1456	Historic dump	Unevaluated	No	Boyd 2002a
BN1474	Rock Cairn	Unevaluated	No	Boyd 2008b
BN1482	Historic irrigation feature	Unevaluated	No	Landreau 2008a
BN1483	OWNR/Union Pacific Railroad Grade, Corral Creek to District Line Rd	Unevaluated		Womack 2010
BN1484	Pre-contact site	Unevaluated	No	Landreau 2008b and Noll 2015a
BN1490	Old Webber Canyon Road	Unevaluated	No	Landreau 2008c
BN1535	Historic rock feature	Unevaluated	No	McDaniel 2009b
BN1677	Rock Ring and cairn	Unevaluated	No	Boyd 2002b
BN1685	Pre-contact lithic material/shell/occupation site	Unevaluated	No	Yakima CRP 2011
BN1692	Historic Debris Scatter	Unevaluated	No	Ellis 2012b
BN1849	Pre-contact camp	Unevaluated	No	Noll 2015b

Tribal Significance - At the beginning of the Kennewick Main Canal near the Yakima River, there are several important Native American locations. Summaries for each location include the following (Hunt 2015).

- **Íkusipamá:** Horse range on the low grassy slopes between the Columbia River from the Yakima River. The Cayuse, Umatilla, Walla Walla and other tribes used this area. Today, it is referred to as the Horse Heaven Hills.
- **Pápšut:** A location near Kiona where horses were brought in the spring and early summer. Fish were caught near this location.
- **Káyuna:** A Native American village on both sides of the Yakima River containing twelve to sixteen lodges. A location used by the Walla Walla and other tribes for fishing.
- **Tamalúuk:** A location both the Yakama and Umatilla Tribes used for fishing. The Walla Walla’s and other tribes also used this location.
- **Piyuušmaamí Puštáy** (‘hills of snakes’).
- **Skalast Skala:** A location on the Yakima River used for fishing by the Walla Walla and other tribes.
- **Tamáltawlat:** A high point on the trail between Prosser and the Columbia River. Referred to as a mythical site because a mythical story tells of Coyote dragging a sturgeon from the Yakima to the Columbia River, over the ridge of the Horse Heaven Hills. This location was a winter village where plant foods were collected and the Walla Walla and other tribes fished.
- **Táptat:** A village location on both sides of the Yakima River where scouts were positioned. An important fishing area also used for plant foods; also a mythical age site and trail used by the Umatilla and other tribes for hunting and trade.
- **Mawlatiyi:** A large natural rock with a hole where people stored fish, used by the Walla Walla and other tribes.

5.3.8 Kennewick Main Canal Division IV

The Kennewick Main Canal Division IV begins on the north side of Bob Olsen Parkway near the Amon Pumping Plant and continues in a north then southeast direction toward the Columbia River and terminates at Hover Wasteway. Tables 16 and 17 provide information for previous CR surveys and archaeological sites. Additionally, sites of Tribal significance identified within the one-mile literature review search area are documented.

Table 16. Kennewick Main Canal Division IV Cultural Resources Surveys

NADB #	Title	Summary	Reference
1342215	A Cultural Resource Survey for the Proposed Interstate 82/State Route 397 Intertie Project	This project was for a nearly 11-mi road construction project. The CR investigation identified a portion of the Columbia Canal.	Miller 2003
1342384	A Cultural Resource Survey of the City of Kennewick’s Zone 3, Zone 4, and Zone 5 Reservoirs, Benton County, Washington	This project was for the City of Kennewick for the construction of three new reservoirs. The archaeological survey resulted in negative findings.	Steinmetz and Dickson 2003
1348202	An Archaeological Survey of the Proposed Steptoe Street Extension	This 24-acre project was for the expansion of Steptoe Street. The archaeological survey identified the Badger Canyon-Richland electrical transmission line and a segment of the Northern Pacific Railroad.	Dickson 2006

Table 16. Kennewick Main Canal Division IV Cultural Resources Surveys

NADB #	Title	Summary	Reference
1348595	A Cultural Resources Survey for the Franklin-Badger Canyon, McNary-Badger Canyon, and McNary-Franklin Transmission Line Wood Pole Replacement	This project was for the BPA for road improvements and wood pole replacements. The archaeological investigation identified one historic isolate.	Brannan 2006
1349051	A Cultural Resources Survey for the Construction of the Zephyr Heights Substation	This project was for the BPA to tap into the Franklin-Badger Canyon No. 1 transmission line. No CR were identified during the archaeological survey.	Brannan 2007
1350779	Results of an Archaeological Survey of the McNary-Badger Canyon No. 1 Transmission Line Rebuild Project	This project was for a 2.3-mi section of electrical transmission line corridor for the replacement of wood structures. The archaeological survey and five shovel test units resulted in negative findings.	Anderson and Roulette 2007
1681232	Cultural Resources Assessment for the Hedges Lateral Line Lowering Project, City of Kennewick	This 7.5-acre project was for the relocation of South Olympia Street and lowering two natural gas pipelines. The archaeological survey and eight shovel test probes resulted in negative findings.	Dampf and Tarman 2011
1681748	An Archaeological Survey for the Proposed Reconstruction of South Olympia Street, City of Kennewick, Benton County, Washington	This 59-acre project was for the reconstruction of South Olympia Street. The archaeological survey stated that the new crossings for the Division Four Canal and the High Lift Canal would not have an adverse effect.	Miller 2011
1682848	Cultural Resources Assessment for the Kennewick Irrigation District 2012-2014 Capital Improvement Plan	This 456-acre project was for the KID Capital Improvement Plan included irrigation rehabilitation and betterment projects on the infrastructure of the Kennewick Division to reduce seepage through earthen-lined canals and increase irrigation system efficiency. No CRs were identified during the survey. Segments of this project included small portions of the current APE. One segment was at UTM coordinates 11T340431, 5111009 to 11T340328, 5110857. Another segment was at UTM coordinates 11T339599, 511392 to 11T339624, 5111345. An additional segment was at UTM 11T336213, 5113398 to 11T336271, 5113351 and 11T33393, 5115875 to 11T333429, 5115681.	Trost 2012
1684043	Inventory of Unsurveyed Lands within the McNary Project Area, Umatilla County, Oregon, Benton, Franklin, and Walla Walla Counties, Washington	No archaeological sites were documented within or near the project area.	Dickson 2011

Table 16. Kennewick Main Canal Division IV Cultural Resources Surveys

NADB #	Title	Summary	Reference
1684998	Cultural Resources Assessment for the Williams Northwest Pipeline LLC's Pasco Replacement Project	This 12-acre project was for the replacement of ~ 4,000 ft of pipeline for Williams Northwest Pipeline LLC. The archaeological survey and 15 shovel probes resulted in negative findings.	Dampf et al. 2014
1688106	Archaeological Survey of the Creekstone Telecommunications Facility Project Area, City of Kennewick, Benton County, Washington	This less than one-acre project was for geotechnical trenching for a telecommunications facility. The archeological survey and monitoring resulted in negative findings.	Mastrangelo and Holschuh 2016
1689111	A Cultural Resources Survey on Bureau of Land Management Lands in the McBee Command Fire Suppression Line Rehabilitation Project Area, Benton County, Washington	This 3.5-acre project was for a fire line rehabilitation project. The archaeological survey did not identify any new sites.	Litzkow and Evenson 2016
1692158	An executive order 05-05 Archaeological Review and Inventory of the City of Kennewick Stormwater Masterplan Geotechnical Survey, Benton County, Washington	This project was for the City of Kennewick for the development of a stormwater system. Eight test pits were completed for geotechnical testing. The archaeological investigation resulted in negative findings.	Landreau 2009a
1692186	Cultural Resources Inventory for the City of Kennewick W 10th Avenue Widening - Joliet Street to Columbia Center Boulevard Project Benton County, Washington	This 3.7-acre project was for the City of Kennewick for the widening of West 10 th Avenue. The archaeological survey and 15 shovel test probes resulted in negative findings.	Costigan and O'Brien 2018
1694014	Cultural Resources Survey Report for the Kennewick Irrigation District for the Nine Canyon Pipeline Project, Benton County, Washington	This 37-acre project was for the construction of a pipeline within the Nine Canyon Road Right-of-Way and in a County Right-of Way east of Nine Canyon Road. The archaeological survey and 20 shovel test probes resulted in negative findings. Construction monitoring was recommended for in a small area of the Project APE for potential buried debris. The monitoring resulted in negative findings. A small portion of this project is in the current Project APE at UTM coordinates 11T340648, 5110643 at the intersection of the National Register eligible Division IV Canal and South Nine Canyon Road.	Sharpe et al. 2020
1684092	County Road Administration Board 9 Canyon Road Reconstruction, Excavation, and Embankment Project,	This nearly 20-acre project was for the Benton County Road Safety Program for road improvements for Nine Canyon Road and Upper Blair Road. The archaeological survey and 12 shovel probes documented a borrow pit with	Schroeder and Landreau 2012

Table 16. Kennewick Main Canal Division IV Cultural Resources Surveys

NADB #	Title	Summary	Reference
	Phases I & II, Benton County, Washington	historic debris but was recommended as not eligible for listing in the National Register.	
1689203	Cultural Resource Survey for the John Day - Franklin Subsection of the BPA's Ross-Schultz Fiber Replacement Project	This nearly 30-acre project was conducted for 38 different areas for the BPA fiber replacement project. The archaeological survey and 21 shovel test units resulted in negative findings.	Swanson and Ozbun 2017
1689682	Cultural Resources Survey for Pasco District FY17 Priority Pole Project – 2018 Construction Franklin, Benton and Walla Walla County, Washington	This nearly 23-acre project was for the replacement of 34 structures at several locations. The archaeological investigation identified several BPA structures. No prehistoric sites or isolates were identified.	Teoh 2017a
16897	Cultural Resources Inventory for the US 395/Ridgeline Drive Grade Separation Project, Benton, County, Washington	This 50-acre project was for the grade separated facility at the intersection of US 395 and Ridgeline Drive in Kennewick, Washington. The archaeological investigation of a survey and 107 shovel probes resulted in negative findings.	Aymond and Dampf 2017

Table 17. Kennewick Main Canal Division IV Archaeological Sites

Smithsonian Number	Description	Eligible for Listing in the National Register (Yes\No\Unevaluated)	Within the APE	Reference
BN2090	Stacked rock feature	Unevaluated	No	Davis 2020

Tribal Significance - Locations of Tribal significance within the literature review search area include Kúsipamá (Horse Heaven Hills) Ncí Wána (Columbia River), and Piyuušmaamí Puštáy ('hills of snakes') (Hunt et al. 2015).

5.3.9 Lowlift Canal

The Lowlift Canal begins at a valve station on Edison Street in Kennewick adjacent to the IBEW Building. The canal flows east through a 2.7-mi underground pipe before it surfaces east of U.S. 395 and flows into a siphon that empties into Zintel Canyon. Tables 18 and 19 provide information for existing CR surveys and archaeological sites. Additionally, sites of Tribal significance identified within the one-mile literature review search area are documented.

5.3.10 Zintel Canyon

Zintel Canyon begins west of West 21st Avenue and north of south Denny Street and extends north toward the Columbia River. Tables 18 and 19 provide information for previous CR surveys and archaeological sites. Additionally, sites of Tribal significance identified within the one-mile literature review search area are documented.

Table 18. Zintel Canyon Cultural Resources Surveys

NADB #	Title	Summary	Reference
1334552	Cultural Resource Inventory Report Columbia Park Pit Area Fence Addition Walla Walla District, Corps of Engineers	This project was for additional fencing at the Columbia Park racing pit location. The archeological survey resulted in negative findings.	Tracy 1995c
1342278	Columbia Park Cultural Resource Testing for the Tri-Cities Playground of Dreams, Water Park and East Entrance Improvements, Benton County, Washington	This project was for proposed improvements at three locations in Columbia Park. Thirty-five shovel probes resulted in a finding of no potential effect.	Miller 1999
1342302	Columbia Park East End, Proposed Sanitary Sewer Line, Benton County, Washington	This project was for a sanitary sewer project in Columbia Park. Sixty-five shovel probes resulted in a no adverse effect finding.	Miller 1998
1343143	Archaeological Survey of the City of Kennewick Levee 5D Lowering Project Benton County, Washington.	This project was for the development of a recreational trail along the shoreline of Columbia Park. The archaeological survey resulted in negative findings.	Baker and Fagan 2004
1345538	Cultural Resource Inventory Report No. 05-McNa-036: Columbia Park Lampson Pit Utility Upgrade	The project was for upgrading of utility service to the Lampson Pit area. The archaeological survey resulted in negative findings.	Tracy 2995b
1351722	Cultural Resources Survey US 395 Columbia Drive to SR 240 Interchange Revisions	The archaeological investigation resulted in negative findings.	Weaver 2008
1687325	Cultural Resources Survey for the Pasco Region 2015 Transmission Line Maintenance Project in Benton & Franklin Counties, Washington	This nearly 9-acre project was for the replacement of 20 structures and insulator upgrades for the BPA. The archaeological investigation resulted in a finding of no adverse effects.	Teoh 2015

Table 19. Zintel Canyon Archaeological Sites

Smithsonian Trinomial	Description	Eligible for Listing in the National Register (Yes\No\Unevaluated)	Within the APE (Yes/No)	Reference
45BN18	Prehistoric campsite that appears to be inundated	Unevaluated	No	Fenenga 1947; Dickson 1999
45DT41	Tri-Cities Archaeological District. Prehistoric sites within the district typically include house pits, burials, and open camps.	National Register and Washington Heritage Register	No	Western Heritage, Inc., 1983

Tribal Significance - Locations of Tribal significance within the literature review search area include Piyuušmaamí Puštáy ('hills of snakes') and Ncí Wána (Columbia River) (Hunn et al. 2015).

5.3.11 Summary of the Literature Review

Table 20 summarizes the findings of the literature review and includes the number of CR surveys completed within the literature search area, the number of archaeological sites/districts, the number of archaeological sites/districts within the Project APE, and the sites of Tribal significance by water segment/body.

Table 20. Summary of the Literature Review

Name	No. of CR Surveys	CR Surveys w/in APE	No. of Documented Archaeological Sites/Districts	No. of Archaeological Sites/Districts w/in the APE	*Tribal Sites
Amon Pump Lateral	8	0	2	0	<ul style="list-style-type: none"> • Piyuušmaamí Puštáy ('hills of snakes')
Amon Wasteway, Lower Amon Wasteway and Amon Backwater	16	4	4	1 (DT41) Tri-Cities Archaeological District	<ul style="list-style-type: none"> • Piyuušmaamí Puštáy ('hills of snakes') • Ncí Wána (Columbia River) Čamná (village)
Badger West Lateral	1	0	2	0	<ul style="list-style-type: none"> • Kúsipamá (Horse Heaven Hills) • Piyuušmaamí Puštáy ('hills of snakes')
Badger East Lateral	23	0	0	0	<ul style="list-style-type: none"> • Kúsipamá (Horse Heaven Hills) • Piyuušmaamí Puštáy ('hills of snakes')
Highland Feeder Canal and Highlift Canal East and West	13	0	4	1 (45BN1495) Desert Lawn Memorial Park Cemetery	<ul style="list-style-type: none"> • Piyuušmaamí Puštáy ('hills of snakes')
Highlands Drain	2	0	0	0	<ul style="list-style-type: none"> • Piyuušmaamí Puštáy ('hills of snakes')
Leslie Drain	6	0	2	0	<ul style="list-style-type: none"> • Piyuušmaamí Puštáy ('hills of snakes')
Kennewick Main Canal Divisions I-III	39	5	13	0	<ul style="list-style-type: none"> • Kúsipamá (Horse Heaven Hills) • Pápšut (Location where horses were brought in the spring and early summer. Fish also were caught near this location). • Káyuna (Native American village on both sides of the

Table 20. Summary of the Literature Review

Name	No. of CR Surveys	CR Surveys w/in APE	No. of Documented Archaeological Sites/Districts	No. of Archaeological Sites/Districts w/in the APE	*Tribal Sites
					Yakima River. Fishing was undertaken by the Walla Walla and other tribes. <ul style="list-style-type: none"> • Tamalúuk (Location used for fishing). • Skalast Skala (Location on the Yakima River used for fishing). • Tamáltawlat (“A high point on the trail between Prosser and the Columbia River”). • Táptat (A village location on both sides of the Yakima River where scouts were positioned. An important fishing area, but also used for plant foods, mythical age site, hunting, trade, and trail). • Mawlatiyi (A large natural rock with a hole where people stored fish).
Kennewick Main Canal Division IV	21	3	1	0	<ul style="list-style-type: none"> • Piyuušmaamí Puštáy (‘hills of snakes’) • Ncí Wána (Columbia River)
Lowlift Canal	0	0	2	0	<ul style="list-style-type: none"> • Piyuušmaamí Puštáy (‘hills of snakes’) • Ncí Wána (Columbia River)
Zintel Canyon	7	0	4	0	<ul style="list-style-type: none"> • Piyuušmaamí Puštáy (‘hills of snakes’) • Ncí Wána (Columbia River)
Total	136	12	34	2	25

*Tribal sites were identified through a review of *Čáw Pawá Láakni They Are Not Forgotten* (Hunn et al. 2015).
 CR = Cultural Resource w/in = within

The literature review summarized in Table 20 indicates the following:

- Total overall number of CR surveys within the literature review search area: 136
- Total overall number of CR surveys conducted within the Project APE: 12
- Number of documented archaeological sites/districts in the literature review search area: 34
- Number of archaeological sites/districts within the Project APE: 2 (DT41 and 45BN1495)
- Locations of Tribal significance: 25

The National Register-eligible archaeological district DT41 and archaeological site 45BN1495 were identified within the Project APE as well as locations of Tribal significance that include Piyuušmaamí Puštáy ('hills of snakes'), Ncí Wána (Columbia River) and Kúsipamá (Horse Heaven Hills) (Hunt et al. 2015). Based on the review findings, the following recommendations are provided for specific archaeological sites and districts.

For the Archaeological District DT41 which parallels the Columbia River, it is recommended that the KID title transfer not adversely affect archaeological district DT41.

Since archaeological site 45BN1495, the Desert Lawn Memorial Park Cemetery, is currently in use, it is recommended that the KID title transfer not adversely affect the historic cemetery.

Since locations of Tribal significance that include Piyuušmaamí Puštáy ('hills of snakes'), Ncí Wána (Columbia River), and Kúsipamá (Horse Heaven Hills) were identified within the literature review search area, it is recommended that the KID title transfer not adversely affect these Tribal significant locations.

At the present time, no KID work project activities are planned for any of the above archaeological sites, districts and significant tribal locations identified in the Project APE as part of the KID title transfer. Therefore, the KID title transfer will not adversely affect the above cultural resources.

6 Research Design

The Research Design for the archaeological survey of the Project APE integrates identification activities prepared prior to the startup of field work and serves as a framework to guide the archaeological survey methods. It addresses all phases of investigation, from background research (i.e., literature review and records search) to report preparation. Additionally, an inadvertent discovery plan is included as a component of the Research Design.

6.1 Objectives and Expectations

The *Washington State Standards for Cultural Resources Reporting* (DAHP 2019) provides information for the formulation of this document through objectives and expectations. The objective of this research design is to assist the KID in ensuring compliance with regulatory guidelines for both previously recorded and unidentified archaeological resources within the Project APE in the transferred works facilities and easements. Expectations for the field work are based on the findings from the literature review and records search. The expectation is that there is a low probability for identifying prehistoric sites within the Project APE in the transferred works facilities and easements. There is a potential for historic period sites to be documented within the Project APE. Historic period sites may be associated with trails, livestock or agricultural production. These expectations are based on the literature review and factors related to the Project APE including the distance from riverine settings and previous ground disturbance associated with the construction of the canal systems.

6.2 Field Survey Methods

This section describes the field methods that were used within the Project APE for the archaeological survey. The methodology was developed in part through consultation with the Confederated Tribes and Bands from the Umatilla Indian Reservation (CTUIR) and the Department of Archaeology and Historic Preservation (DAHP). Also included in this section is an inadvertent discovery plan for human remains.

6.3 Archaeological Survey

The archaeological survey was conducted in the Project APE along 80 to 90 mi of open canals, laterals and wasteways. Transects for this archaeological survey were spaced no further than 50 feet apart. Archaeological survey transects meandered, if required by vegetation or topography, at the discretion of the field leaders' best professional judgment. Survey areas at a 30 degree or greater grade were not surveyed due to safety concerns. Subsurface testing was conducted in high probability areas where visibility was low. The need for subsurface testing was determined by the lead field archaeologist.

If areas within the Project APE were previously surveyed for CRs within the past five years, no additional survey was conducted within these locations. If documented archaeological sites were recorded within these previously surveyed areas, they were relocated to determine if any changes have occurred since the initial documentation. Field archaeologists decided whether existing site forms needed to be updated.

Sites or artifacts identified during the archaeological survey were documented in the field through surface manifestation such as area, material type, makers mark, date range, and/or type of artifact (if possible). Global Positioning System (GIS) points and photographs were collected for all sites and artifacts were identified. No site testing or artifact collection was conducted as part of this project.

Archaeological sites and isolates identified during the archaeological survey were recorded according to the standards set by the Washington State Historic Preservation Officer (SHPO) (DAHP 2019).

6.4 Inadvertent Discovery Plan

An Inadvertent Discovery Plan was included in the Field Survey Methods to provide field personnel with a planned process for responding to the possible discovery of human remains during the field work component of the project. The response to the inadvertent discovery of human skeletal remains on non-federal and non-tribal land in the State of Washington is implemented under the Revised Code of Washington 68.50.645, 27.44.055, and 68.60.055. In the event that human remains are encountered during field related project activities, field personnel will implement the following process, which adheres to the guidelines provided on the Washington State DAHP website <https://dahp.wa.gov/archaeology/human-remains> .

Step 1: Stop Work Immediately

If human skeletal remains are encountered during archaeological survey activities, field personnel will cease all activity that may cause further disturbance to those remains. The area of the find will be secured and protected from further disturbance.

In order to secure the discovery, a temporary fencing system such as posts and rope or similar protection measures will be placed around the discovery. Work in the immediate area of the discovery will be discontinued; however, work outside the discovery area may continue.

When an inadvertent discovery is encountered, staff will take measures to avoid further disturbance of the area. Cultural materials shall not be moved from the location of the discovery. Photographs shall not be taken of bones unless photographs are needed to assist in the determination of the remains to be

human or animal and will be deleted as soon as possible (<https://dahp.wa.gov/archaeology/human-remains>).

Step 2: Notification Process

The finding of human skeletal remains will be reported to the county medical examiner/coroner and local law enforcement in the most expeditious manner possible. The remains will not be touched, moved, or further disturbed. The county medical examiner/coroner will assume jurisdiction over the human skeletal remains and make a determination as to whether the remains are forensic or non-forensic (<https://dahp.wa.gov/archaeology/human-remains>). In the event of the discovery of human remains, field staff will contact the following individuals:

Kennewick Irrigation District Program

Manager

Seth Defoe

Phone: (509) 586-6012

Email: sdefoe@kid.org

NCRS Project Manager

David Harvey

Phone: (509) 554-8648

Email: harveynwultural@outlook.com

Benton County Coroner

William Leach

Phone: (509) 736-2720

Email: william.leach@co.benton.wa.us

Benton County Sheriff's Office

Sheriff: Jerry Hatcher

Phone: (509) 735-6555

Email: www.co.benton.wa.us

Step 3: Jurisdictional Authority

If the county medical examiner/coroner determines the remains are non-forensic, they will report that finding to the DAHP and the DAHP will then take jurisdiction over the remains. The DAHP will notify any appropriate cemeteries and all affected tribes of the find. The State Physical Anthropologist will make a determination as to whether the remains are Indian or non-Indian and will report that finding to any appropriate cemeteries and the affected tribes. The DAHP will then handle all consultation with the affected parties as to the future preservation, excavation, and disposition of the remains. The coroner will contact the DAHP office within 24 hours of the discovery (<http://www.dahp.wa.gov/programs/human-remains-program/idp-language>).

DAHP Contact

Guy Tasa, State Physical Anthropologist

(360) 586-3534

Guy.Tasa@dahp.wa.gov

Project-related activities in the immediate vicinity of the discovery will remain on pause to avoid damage to the discovery until significance is determined and an appropriate treatment is identified and implemented through consultation among Reclamation, KID Program Managers, DAHP, and the tribes(s) under 36 Code of Federal Regulations 800.13 (b). During this period, project-related activities outside the discovery area may continue.

7 Survey Results

An archaeological field survey of the Project APE within the KID Title Transfer Area was conducted between January and April of 2021, by professional archaeologists Stacie Sexton and Molly Swords. Ms. Sexton and Ms. Swords meet the Secretary of the Interior's Qualification Standards for Professional Archaeologists and are Registered Professional Archaeologists. Table 21 identifies the locations and dates for the archaeological survey of the KID waterways and facilities within the Project APE, which included:

1. Kennewick Main Canal, Divisions I-IV
2. Hover Wasteway
3. Amon Wasteway, Lower Amon Wasteway, and Amon Backwater
4. Badger East and West Laterals
5. West Extension
6. Amon Pump Lateral
7. Highlift Canal
8. Lowlift Canal
9. Highland Feeder Canal
10. Amon Pumping Plant and 35-acre Amon Pumping Plant Parcel

Table 21. Locations and Dates of the KID Archaeological Survey

Survey Locations	Survey Dates
1. Kennewick Main Canal, Division I	January 26 & 28, 2021
2. Kennewick Main Canal, Division II	January 30 and February 4, 2021; Partially surveyed (Harvey et al. 2020a)
3. Kennewick Main Canal, Division III	February 4 & 5, March 6, 11, 12, 16, 19, 20, & 23 and April 14, 2021
4. Kennewick Main Canal, Division IV	March 2, 5, 8, 10, 16, & 18, 2021
5. Hover Wasteway	April 28, 2021
6. Amon Wasteway, Lower Amon Wasteway, Amon Backwater	April 27, 29, & 30, 2021
7. Badger West Lateral	February 4, 8, & 24, 2021
8. Badger East Lateral	February 3, 9, 10, 11, 24, 25, 27, & 28, 2021
9. West Extension	February 25, 2021
10. Amon Pump Lateral (North)	February 2, 2021
11. Amon Pump Lateral (South)	April 26, 2021
12. Highlift Canal	February 25, 26, & 27, 2021
13. Lowlift Canal	February 25, 2021
14. Highland Feeder Canal	January 29, 2021
15. Amon Pumping Plant and 35-Acre Amon Pumping Plant Parcel	Previously Surveyed (Sharpe et al. 2019); Not surveyed as part of this project.

The survey area consisted primarily of gravel access roads flanked by residential, agricultural, and/or industrial areas, as well as shrub steppe desert. Intact native sediments observed near or within the Project APE consisted of sand and silt with low-lying vegetation including sagebrush, Russian thistle,

balsamroot, cheatgrass, and some erosion control grasses (e.g., crested wheat grass). Survey transects were spaced no greater than 15 m (50 ft) apart throughout the Project APE, parallel to each waterway. Most of the canals and laterals consisted of two maintenance and access roads parallel to each waterway (one on each bank): a primary road (“A” road) opposite a smaller secondary or backside road (“B” road). Figure 2 shows the “A” and “B” roads. At times, the “B” road was inaccessible due to construction, fencing, or marked private property. Other areas that did not include a “B” road were not accessed and, thus, not surveyed due to safety concerns and often impenetrable ground cover obscuring surface visibility.



Figure 2. Canal and Adjacent Access Roads (taken from Google Earth)

Cultural material observed during the survey included modern debris (e.g., food and beverage containers, plastic grocery bags, golf and other sports balls, mylar celebration balloons, shotgun shells, etc.), current residential-use items including garden materials, stored items (e.g., vehicles and auto parts, tools, rain barrels, fire pits, etc.), toys and children’s playsets, etc. These items are cultural in origin but do not meet the criterion for archaeological resources (50 years of age or greater) and therefore were not recorded at archaeological sites or isolates. Photographs of typical modern debris observed throughout the Project APE are provided in Figures 3 through 6.



Figure 3. PVC Irrigation Pipe Debris on Badger East Lateral



Figure 4. Plastic Trash Bag Debris in Badger West Lateral



Figure 5. Modern Debris: Lighter on Division I



Figure 6. Modern Debris: 3.5-in. High Density (HD) Floppy Disk

Additional field procedures included establishing protocols for working in winter weather and Covid-19 safety. Inclement weather protocols included restricting work during safe lighting (e.g., winter hours) and driving conditions (e.g., muddy, snowy, or icy road conditions; overly narrow or steep roads; pedestrians in roadways). Covid-19 safety protocols included wearing masks while working in close proximity (less than 6 ft from other personnel), restricting driving to single-occupancy vehicles, and limiting use of public facilities (i.e., restrooms). When necessary, survey personnel also limited interactions with members of the public encountered during the survey to polite but short conversations and wore masks when interacting with the public. These measures potentially limited daily working hours, but drastically increased field worker safety.

Standing structures (privately-owned and KID irrigation features) related to the individual waterways were previously recorded and evaluated in 2020 during the field survey of the built environment in the Project APE within the KID Title Transfer Area (Harvey et al. 2020b). The current survey focused on identifying non-canal/lateral-related archaeological resources within the Project APE. Survey results for each waterway are presented in the following sections.

7.1 Kennewick Main Canal Divisions I-IV

Following are survey results for the waterways in Kennewick Main Canal Divisions I through IV.

7.1.1 Division I

The Kennewick Main Canal Division I was surveyed on January 26 and 28, 2021. Field conditions were generally overcast with light rain and high temperatures reaching approximately 1.5°C (35°F). Both the “A” and “B” roads were surveyed starting at the western end of Division I, heading east toward the start of Division II. Both sides of the canal consisted of gravel access/maintenance roads bordered by shrub steppe desert or agricultural land. Modern debris and trash (e.g., modern food and beverage containers/wrappers) were observed throughout the Project APE. Figures 7 and 8 show typical landscapes throughout Division I.



Figure 7. Overview of KID Main Canal Division I, Aspect: West



Figure 8. Overview of KID Main Canal Division I at Turnout 2.2, Division I, Aspect: East

In total, approximately 45.27 ha (111.87 ac) of the 47.65 ha (117.76 ac) waterway (95%) were surveyed for CRs. Aside from contemporary items and debris, no other CRs were identified during the survey (Table 22).

Table 22. Division I - Cultural Resources Identified

KID Survey Location	Survey Date	Cultural Resources Identified
Division I	January 26, 2021	None
Division I	January 28, 2021	None

7.1.2 Division II

The Kennewick Main Canal Division II was surveyed on January 30 and February 4, 2021. Field conditions were generally overcast, with high temperatures reaching approximately 7°C (45°F). Both the “A” and “B” roads were surveyed starting at the western end of Division II, heading east toward the start of Division III. Both sides of the canal consisted of gravel access/maintenance roads bordered by shrub steppe desert or agricultural land. Modern debris and trash (e.g., modern food and beverage containers/wrappers) were observed throughout the Project APE.

A segment of Division II, immediately east of the Webber Canyon Road crossing was inaccessible due to construction near the canal. Construction activities continued east until they overlapped an area previously surveyed for archaeological resources (Harvey et al 2020a). Neither section was surveyed due to 1) safety concerns within the construction area and 2) the previously surveyed area has already been examined for CRs. Additionally, a portion of the “B” road, 1.3 miles west of Webber Canyon Road was

not surveyed as the canal was inaccessible due to the steep grade of the road. Figures 9 and 10 show typical landscapes throughout Division II.



Figure 9. Overview of KID Main Canal Division I, Aspect: West



Figure 10. Overview of KID Main Canal Division II, Aspect: East

In total, approximately 24.28 ha (60.00 ac) of the 58.97 ha (145.73 ac) waterway (41%) were surveyed for CRs. Aside from contemporary items and debris, no other CRs were identified during the survey (Table 23).

Table 23. Division II - Cultural Resources Identified

KID Survey Location	Date	Cultural Resources Identified
Division II	January 30, 2021	None
Division II	February 4, 2021	None

7.1.3 Division III

The Kennewick Main Canal Division III was surveyed on February 4 and 5, March 6, 11, 12, 16, 19, 20, and 23, and April 14, 2021. Field conditions were variable (sunny to overcast), with high temperatures ranging between approximately -3.88°C (25°F) and approximately 22.78°C (73°F). Late winter/early spring winds were prevalent during the survey.

Both the “A” and “B” roads were surveyed starting at the western end of Division II, heading east toward the eastern end of Division III. Both sides of the canal consisted of gravel access/maintenance roads bordered primarily by shrub steppe desert south of the canal or agricultural/residential land north of the canal. Modern debris and trash (e.g., modern food and beverage containers/wrappers) were observed throughout the Project APE. Sections of the “B” road were inaccessible due to vegetation and steep terrain. Thus, the “B” road starting from near S 875 PR SE to US Highway 82 was not surveyed. Figures 11 through 13 show typical landscapes throughout Division III.



Figure 11. Overview of KID Main Canal Division III near N Bridge PR NE, Aspect: West



Figure 12. Overview of KID Main Canal Division III at Turnout 14.0, Aspect: East



Figure 13. Overview of KID Main Canal Division III east of South Badger Canyon Road, Aspect: East

In total, approximately 59.48 ha (147 ac) of the 71.08 ha (175.65 ac) waterway (83%) were surveyed for CRs. Aside from contemporary items and debris, no other CRs were identified during the survey (Table 24).

Table 24. Division III - Cultural Resources Identified

KID Survey Location	Date	Cultural Resources Identified
Division III	February 4, 2021	None
Division III	February 5, 2021	None
Division III	March 6, 2021	None
Division III	March 11, 2021	None
Division III	March 12, 2021	None
Division III	March 16, 2021	None
Division III	March 19, 2021	None
Division III	March 20, 2021	None
Division III	March 23, 2021	None
Division III	April 14, 2021	None

7.1.4 Division IV

The Kennewick Main Canal Division IV was surveyed on March 2, 5, 8, 10, 16, and 18, 2021. Field conditions were variable (sunny to overcast), with high temperatures ranging between approximately 1.5°C (35°F) and approximately 18°C (65°F). Spring winds and light rain showers were prevalent during

the survey. Both the “A” and “B” roads were surveyed starting at the western end of Division IV, heading east toward the start of the Hover Wasteway. Both sides of the canal consisted of gravel access/maintenance roads bordered by shrub steppe desert or agricultural land. Several sand cutbanks along the canal roads consisting of light brown, fine-grained sands and silts were examined during the survey. Modern debris and trash (e.g., modern food and beverage containers/wrappers, grocery bags, and mylar celebration balloons) were observed throughout the Project APE. Figures 14 through 17 show typical landscapes throughout Division IV.

In total, approximately 117.70 ha (290.86 ac) of the 123.90 ha (306.17 ac) waterway (95%) were surveyed for CRs. Aside from contemporary items and debris, no other CRs were identified during the survey (Table 25).

Table 25. Division IV - Cultural Resources Identified

KID Survey Location	Date	Cultural Resources Identified
Division IV	March 2, 2021	None
Division IV	March 5, 2021	None
Division IV	March 8, 2021	None
Division IV	March 10, 2021	None
Division IV	March 16, 2021	None
Division IV	March 18, 2021	None



Figure 14. Overview of KID Main Canal Division IV at Turnout 25.8, Aspect: East



Figure 15. Overview of KID Main Canal Division IV at Turnout 31.5, Aspect: Northwest



Figure 16. Overview of KID Main Canal Division IV at Turnout 37.6, Aspect: Southeast



Figure 17. Overview of KID Main Canal Division IV near Meals Road, Finley, Aspect: Northwest

7.2 Hover Wasteway

The Hover Wasteway was surveyed on April 28, 2021. Field conditions were sunny with high temperatures reaching approximately 24°C (75°F). Heat caused humid conditions during the survey.

The Hover Wasteway was surveyed starting at Meals Road, heading east to the wasteway outlet near the Columbia River. The survey began on the south side of the wasteway and continued until reaching a fence where the wasteway meets a modern orchard, restricting access to the wasteway. The survey resumed at Meals Road on the north side of the wasteway, continuing through the orchard to the wasteway outlet. The western portion of the wasteway crossed through shrub steppe desert, with bicycle and animal paths crisscrossing the terrain. The wasteway then bisected a modern orchard where both sides of the wasteway consisted of gravel or dirt orchard roads bordered by cultivated fruit trees. Several sand cutbanks along the orchard roads consisting of medium-brown, fine- to medium-grained sands and silts were examined during the survey. Modern items related to the orchard (e.g., equipment, irrigation pipes, warehouse buildings) were observed throughout the Project APE. Figures 18 and 19 show typical landscapes found throughout the Hover Wasteway.

In total, approximately 3.86 ha (9.54 ac) of the 5.14 ha (12.72 ac) waterway (75%) were surveyed for CRs. Aside from contemporary items and debris, no other CRs were identified during the survey (Table 26).

Table 26. Hover Wasteway - Cultural Resources Identified

KID Survey Location	Date	Cultural Resources Identified
Hover Wasteway	April 28, 2021	None



Figure 18. Overview of Hover Wasteway, West End, Aspect: West



Figure 19. Overview of Hover Wasteway, East End, Aspect: East

7.3 Amon Wasteway, Lower Amon Wasteway and Amon Backwater

The Amon Wasteway, Lower Amon Wasteway, and Amon Backwater were surveyed on April 27, 29, and 30, 2021. Field conditions were variable (sunny to slightly overcast), with high temperatures ranging between approximately 21°C (70°F) and approximately 30°C (85°F). Heat caused humid conditions during the field survey. A plume of smoke rising above the vegetation was observed during the survey; the smoke was from a wildfire burning north of the Project APE

A large portion of the waterway was inaccessible due to steep banks and thick brush. Photographs of these areas were taken at access points, as available. The survey was conducted at several locations through Kennewick, specifically from the Amon Pumping Plant west and north along Bob Olson Parkway and South Steptoe St, crossing Center Parkway, and ending near Bellerive Drive. Several sand cutbanks along the canal roads consisting of light brown, fine-grained sands and silts were examined during the survey. Areas near the Amon Pumping Plant contained up to 40% cobble sized river rock in addition to sands described above. Modern debris and trash (e.g., modern food and beverage containers/wrappers, grocery bags, and mylar celebration balloons) and construction debris (e.g., push piles, scrap metal, piles of cut vegetation, etc.) were observed in more industrial areas (near the Amon Pumping Plant). Figures 20 through 22 show typical landscapes found throughout the Project APE in the Amon Wasteway.



Figure 20. Overview of Amon Wasteway, North End (Wildfire in Background), Aspect: North



Figure 21. Overview of Amon Wasteway North of Center Parkway, Kennewick, Aspect: North



Figure 22. Overview of Amon Wasteway near Amon Pumping Plant, Aspect: West

In total, approximately 19.42 ha (48.00 ac) of the 32.98 ha (81.51 ac) waterway (58%) were surveyed for CRs. Aside from contemporary items and debris, no other CRs were identified during the survey (Table 27).

Table 27. Amon Wasteway - Cultural Resources Identified

KID Survey Location	Date	Cultural Resources Identified
Amon Wasteway	April 27, 2021	None
Amon Wasteway	April 29, 2021	None
Amon Wasteway	April 30, 2021	None

7.4 Badger East and West Laterals

Survey results for Badger East and West Laterals are provided in the following subsections.

7.4.1 Badger East Lateral

Badger East Lateral was surveyed on February 3, 9, 10, 11, 24, 25, 27 and 28, 2021. Field conditions were variable (sunny to overcast), with high temperatures ranging between approximately 0°C (32°F) and approximately 10.55°C (51°F). High and medium winds were prevalent during the survey. On February 11, 2021, the survey was halted because of snow showers in the afternoon.

Both the “A” and “B” roads were surveyed starting at the western end of Badger East Lateral, heading east. Both sides of the canal consisted of gravel access/maintenance roads bordered by shrub steppe desert or agricultural land. Modern debris and trash (e.g., modern food and beverage containers / wrappers, grocery bags, and animal waste) were observed throughout the Project APE. At the beginning of Badger East Lateral, ATV tracks, modern farm equipment, and broken PVC/irrigation pipes were observed. When Badger East Lateral crossed beneath Highway 82, it ran through residential communities. There were many people walking, running, and bicycling on the Badger East Lateral canal roads. It was from this section to the end of Badger East Lateral that animal waste, gardening equipment, and modern food and beverage containers were prevalent. Figures 23 through 25 show typical landscapes found throughout Badger East Lateral.



Figure 23. Overview of Badger Lateral East, Near Dallas Road, Aspect: East



Figure 24. Overview of Badger Lateral East, Near Queensgate Avenue, Aspect: West



Figure 25. Overview of Badger Lateral East, Near Queensgate Avenue, Aspect: West

In total, approximately 91.45 ha (226.00 ac) of the 100.83 ha (249.18 ac) waterway (90%) were surveyed for CRs. Aside from contemporary items and debris, no other CRs were identified during the survey (Table 28).

Table 28. Badger East Lateral - Cultural Resources Identified

KID Survey Location	Date	Cultural Resources Identified
Badger East Lateral	February 3, 2021	None
Badger East Lateral	February 9, 2021	None
Badger East Lateral	February 10, 2021	None
Badger East Lateral	February 11, 2021	None
Badger East Lateral	February 24, 2021	None
Badger East Lateral	February 25, 2021	None
Badger East Lateral	February 27, 2021	None
Badger East Lateral	February 28, 2021	None
Badger East Lateral	March 7, 2021	None
Badger East Lateral	March 10, 2021	None

7.4.2 Badger West Lateral

The Badger West Lateral was surveyed on February 4, 8, and 24, 2021. Field conditions were overcast, with high temperatures ranging between approximately -3.88°C (25°F) and approximately 6.66°C (44°F). Winter winds were prevalent during the survey.

The survey was conducted heading west along Badger West Lateral. The “B” road was surveyed starting at Dallas Road and proceeding to the North Goose Gap PR NE bridge. Heading west past North Goose Gap PR NE, the “B” road “B” side of the canal consisted of gravel access/maintenance roads bordered by shrub steppe desert or agricultural land.

Sections of the “A” road were inaccessible for part of the survey because of the dense overgrowth of vegetation, debris, and personal property (i.e., fences), which covered about 1/3 mile of the road and made this section unsafe to survey. An accessible section was surveyed where the “A” road turned into a dirt path beside the canal. Modern debris and trash (e.g., bullets, rifle casings, grocery bags, and an old trash barrel) were observed throughout the Project APE. Figures 26 through 28 show typical landscapes found throughout Badger West Lateral.

In total, approximately 21.04 ha (52.00 ac) of the 24.40 ha (60.31 ac) waterway (86%) were surveyed for CRs. Aside from contemporary items and debris, no other CRs were identified during the survey (Table 29).

Table 29. Badger West Lateral - Cultural Resources Identified

KID Survey Location	Date	Cultural Resources Identified
Badger West Lateral	February 4, 2021	None
Badger West Lateral	February 8, 2021	None
Badger West Lateral	February 24, 2021	None



Figure 26. Overview of Badger West Lateral, West of N Goose Gap Pr NE, Aspect: West



Figure 27. Overview of Badger West Lateral, Aspect: West



Figure 28. Overview of Badger West Lateral, Aspect: West

7.5 West Extension

The West Extension was surveyed on February 25, 2021. Field conditions were variable (sunny to scattered clouds), with high temperatures reaching approximately 16°C (60°F). Spring winds with gusts reaching nearly 30 miles per hour were prevalent during the survey.

The West Extension is mostly underground except where the pipeline empties into a drain west of Steptoe Street. (There was no water at the time of the survey). Because the waterway was underground, the West Extension was not surveyed for CRs (Table 30). Figure 29 shows the typical landscape identified throughout the West Extension.

Table 30. West Extension - Cultural Resources Identified

KID Survey Location	Date	Cultural Resources Identified
West Extension	February 25, 2021	N/A



Figure 29. Overview of West Extension Drain, Aspect: West

7.6 Amon Pump Lateral (North and South)

Survey results for Amon Pump Lateral (North and South) are provided in the following subsections.

7.6.1 Amon Pump Lateral (North)

The Amon Pump Lateral (North) was surveyed on February 2, 2021. Field conditions were partly cloudy, with high temperatures reaching approximately 10°C (50°F).

Both the “A” and “B” roads were surveyed starting at South Sherman Street, heading west toward the end of the above-ground section of the lateral along “A” road, returning to Sherman Street on the “B” road. The survey continued from South Sherman Street east toward the end of the above-ground section of the lateral along the “A” road, returning to Sherman Street on the “B” road.

Both sides of the canal consisted of a dirt or gravel access/maintenance road. The “A” road was bordered by shrub steppe desert to the south. The western portion of the “B” road was bordered by a housing development and residential construction on the north. The eastern portion of the “B” road was bordered by shrub steppe desert to the north. Sediments consisting of light brown, fine-grained sands and silts were examined during the survey. Modern debris and trash (e.g., modern food and beverage containers/wrappers, grocery bags, and one plastic watering can) were observed throughout the Project APE. Figure 30 shows a typical landscape along the Amon Pump Lateral (North).



Figure 30. Overview of Amon Pump Lateral (North) East of Sherman Ave, Kennewick, Aspect: West

In total, approximately 11.33 ha (28.00 ac) of the 40.74 ha (100.69 ac) waterway (28%) were surveyed for CRs. The listed acreage represents both the North and South AP Laterals combined acreage. Aside from contemporary items and debris, no other CRs were identified during the survey (Table 31).

Table 31. Amon Pump Lateral (North) - Cultural Resources Identified

KID Survey Location	Date	Cultural Resources Identified
Amon Pump Lateral - North	February 2, 2021	None

7.6.2 Amon Pump Lateral (South)

The Amon Pump Lateral (South) was surveyed on April 26, 2021. Field conditions were sunny, with high temperatures reaching approximately 21°C (70°F).

Both the “A” and “B” roads were surveyed starting at the East Christenson Road, heading west toward the termination of the above-ground portion of the canal where it empties into the Amon Pump Drain. To the east the open lateral terminates at U. S. 395 before it empties into an unnamed drain. Both sides of the canal consisted of dirt or gravel access/maintenance roads bordered by shrub steppe desert, residential or industrial land, and active construction sites. Sediments consisting of light- to medium-brown, fine-grained sands and silts were examined during the survey. Modern debris and trash (e.g., modern food and beverage containers/wrappers, grocery bags, and one 3.5-in. floppy disk) were observed throughout the Project APE. Figure 31 shows a typical landscape along the Amon Pump Lateral (South).



Figure 31. Overview of Amon Pump Lateral (South) at Turnout 30.0, Aspect: East

In total, approximately 11.33 ha (28.00 ac) of the 40.74 ha (100.69 ac) waterway (28%) were surveyed for CRs. The listed acreage represents the combined North and South AP Laterals. Aside from contemporary items and debris, no other CRs were identified during the survey (Table 32).

Table 32. Amon Pump Lateral (South) - Cultural Resources Identified

KID Survey Location	Date	Cultural Resources Identified
Amon Pump Lateral- South	April 26, 2021	None

7.7 Highlift Canal

The Highlift Canal was surveyed on February 25, 26, and 27, 2021. Field conditions were variable (sunny to scattered clouds), with high temperatures reaching approximately 16°C (60°F). Spring winds with gusts reaching nearly 30 miles per hour were prevalent during the survey on February 25 and 26, 2021. Winds were calm by February 27, 2021.

Both the “A” and “B” roads were surveyed where possible, however, access to the “B” road was often restricted by fences and private property. In these instances, observations were made from the “A” road bank, across the canal. The survey started at the western end of the Highlift Canal, heading east toward the termination of the canal east of South Ely Street. The “A” side of the canal consisted of gravel access/maintenance roads with no shoulder vegetation, while the “B” side of the canal primarily consisted of residential properties with landscaping and fences running up to the edge of the canal in several locations. Modern debris and trash (e.g., modern food and beverage containers/wrappers, grocery bags) were observed throughout the Project APE. Figures 32 and 33 show typical landscapes identified throughout the Highlift Canal.



Figure 32. Overview of Highlift Canal, West End, Aspect: East

In total, approximately 33.68 ha (75.50 ac) of the 41.14 ha (101.67 ac) waterway were surveyed for CRs. Aside from contemporary items and debris, no other CRs were identified during the survey (Table 33)

Table 33. Highlift Canal - Cultural Resources Identified

KID Survey Location	Date	Cultural Resources Identified
Highlift Canal	February 25, 2021	None
Highlift Canal	February 26, 2021	None
Highlift Canal	February 27, 2021	None



Figure 33. Overview of Highlift Canal, West End North of W 45th Ave, Aspect: Southeast

7.8 Lowlift Canal

The Lowlift Canal was surveyed on February 25, 2021. Field conditions were variable (sunny to scattered clouds), with high temperatures reaching approximately 16°C (60°F). Spring winds with gusts reaching nearly 30 miles per hour were prevalent during the survey.

The Lowlift Canal is entirely underground except for a section at the end of the canal that briefly surfaces into a narrow concrete canal before it enters an underground pipeline where the water empties into Zintel Canyon. Therefore, the canal was not surveyed for CRs (Table 34).

Figures 34 and 35 show typical landscapes prevalent throughout the Lowlift Canal.

Table 34. Lowlift Canal - Cultural Resources Identified

KID Survey Location	Date	Cultural Resources Identified
Lowlift Canal	February 25, 2021	N/A



Figure 34. Overview of Lowlift Canal East of Edison St, Kennewick, Aspect: East



Figure 35. Overview of Lowlift Canal at Its Outlet, Aspect: West

7.9 Highland Feeder Canal

The Highland Feeder Canal was surveyed on January 29, 2021. Field conditions were overcast with high temperatures approximately 4°C (40°F).

Both the “A” and “B” roads were surveyed where possible, however, access to the “B” road was sometimes restricted by fences and private property. In these instances, observations were made from the “A” road bank, across the canal. The survey began on the eastern end of the canal at West 19th Ave, heading west toward the Amon Pumping Plant where the canal originates. Both sides of the canal consisted of gravel access/maintenance roads bordered by residential developments or industrial areas. The western end of the canal consisted of both residential and agricultural land. Modern debris and trash (e.g., modern food and beverage containers/wrappers, grocery bags) were observed throughout the Project APE. Figures 36 through 38 show typical landscapes throughout the Highland Feeder Canal.

In total, approximately 33.68 ha (83.24 ac) of the 37.42 ha (92.49 ac) waterway (90%) were surveyed for CRs. Aside from contemporary items and debris, no other CRs were identified during the survey (Table 35).

Table 35. Highland Feeder Canal - Cultural Resources Identified

KID Survey Location	Date	Cultural Resources Identified
Highland Feeder	January 29, 2021	None



Figure 36. Overview of Highland Feeder Canal, East End, Aspect: West



Figure 37. Overview of Highland Feeder Canal, West of South Columbia Center Blvd, Aspect: West



Figure 38. Overview of Highland Feeder Canal, at Turnout 1.1, Aspect: West

7.10 Amon Pumping Plant and 35-Acre Amon Pumping Plant Parcel

The Amon Pumping Plant and 35-acre Pumping Plant parcel were surveyed by Sharpe et al. (2019) with negative findings; thus, they were not resurveyed for CRs as part of the current project. Photographs were taken of the Amon Pumping Plant and 35-acre Amon Pumping Plant parcel for inclusion in this report. Figure 39 shows the typical landscape found throughout the Amon Pumping Plant complex and 35-acre Amon Pumping Plant Parcel.



Figure 39. Overview of Amon Pumping Plant and Highland Feeder Canal, Aspect: East

7.11 Summary of the Survey Results

A pedestrian survey of the Project APE was conducted from January 26 to April 30, 2021. The Project APE consisted of a corridor 23 m (75 ft) wide traversing 130 to 145 km (80 to 90 mi) of KID managed canals and waterways.

The survey area consisted of primarily gravel access roads flanked by residential, agricultural, and/or industrial areas, as well as shrub steppe desert. Intact native sediments observed near or within the Project APE consisted of sand and silt with low-lying vegetation including sagebrush, Russian thistle, balsamroot, cheatgrass, and some erosion control grasses (e.g., crested wheat grass).

In total, 458.06 ha (1132.01 ac) of the total 650.67 ha (1610.33 ac) of the Project APE were surveyed for CRs. The following describes the remaining 193.48 ha (477.99 ac):

- 28.10 ha (69.44 ac) consisted of underground pipes and drains in disturbed areas and bisecting private property (residential yards, schools, industrial areas, etc.)
- 17.40 ha (43.00 ac) were recently surveyed for archaeological resources (Harvey et al. 2020a; Sharpe et al. 2019)
- 3.23 ha (8.00 acres) consisted of an active construction site.

The remaining 144.75 ha (357.55 ac) were not surveyed due to thick vegetation, steep terrain, marked private property, inaccessibility, or other prohibitive conditions.

Additionally, a 100% survey rate was unachievable for any waterway. All the waterways in the Project APE crossed under roads and highways, as necessary. These underpasses were not surveyable; therefore, a maximum 95% survey rate was assumed for each waterway.

Aside from contemporary items and debris, no other CRs were identified during the survey.

8 Conclusions and Recommendations

The KID is pursuing transfer of legal title and full responsibility for the federally (Reclamation) owned lands, rights, and facilities that support KID water users and operations within Reclamation's property boundaries. Prior to the land transfer, Reclamation must consider possible adverse effects to historic properties within the Project APE in the title transfer area facilities and easements in accordance with Section 106 of the NHPA and other applicable federal historic preservation legislation and regulations.

The title transfer will include the following components: Kennewick Main Canal Divisions I-IV, Amon and Hover Wasteways, Badger East and West Laterals, West Extension, Amon Pump Lateral, Highlift Canal, Lowlift Canal, Highland Feeder Canal, Amon Pumping Plant, and the surrounding 35-acre Amon Pumping Plant Parcel. These components represent 80 to 90 mi of open canals, laterals and wasteways.

The geologic matrix of the Project APE is primarily Pleistocene outburst flood deposits of Quaternary age consisting of sandy gravel deposits with interbedded silt lenses and small areas of Quaternary alluvium of consolidated or semi-consolidated alluvial clay, silt, sand gravel and/or cobble deposits.

A review of the GLO and 1917 historic maps indicates that several trails and features were identified within and adjacent to the Project APE. Extensive ground disturbance associated with development has removed all traces of the historic trails. Additionally, none of the features identified on the 1917 topographic maps adjacent to the project footprint were identified.

The literature review indicates one archaeological district, one cemetery, and four areas of Tribal significance were identified within the one-mile literature search area. A summary and a recommendation for each of these locations are provided below:

- The Tri-Cities Archaeological District DT41 parallels the Columbia River and is not within the KID title transfer area. Thus, the KID title transfer project will have no effect on the archaeological district. Therefore, it is recommended that the KID title transfer will not adversely affect the archaeological district.
- Archaeological site 45BN1495, the Desert Lawn Memorial Park Cemetery, is located adjacent to the Highlift Canal, and is currently in use. Since no KID work activities are planned within the cemetery, the KID title transfer will have no effect on the Desert Lawn Memorial Park Cemetery. Therefore, It is recommended that the KID title transfer will not adversely affect the historic cemetery.
- A review of Tribal information from *Čáw Pawá Láakni They Are Not Forgotten* (Hunn et al. 2015) identified areas of significance that border the north and south of the Project APE that include Piyuušmaamí Puštáy ('hills of snakes'), NcíWána (Columbia River), and Kúsipamá (Horse Heaven

Hills). Additionally, the Columbia and Yakima Rivers contain numerous locations of importance to the Tribes but are outside the project footprint. Although several areas of Tribal significance were identified during the literature review, the KID title transfer will have no effect on the above properties. Therefore, it is recommended that the KID title transfer will not adversely affect these important locations.

With the completion of the KID title transfer facilities and easements, cultural resources associated with the KID title transfer will no longer be under federal ownership. Thus, the Section 106 process will be replaced with requirements of the State Environmental Protection Act (SEPA) process to identify solutions for future projects to avoid or minimize possible adverse effects.

At the present time, no KID work activities are planned for any of the above locations as part of the KID title transfer. For future KID projects, ways to avoid or minimize possible adverse effects may involve a variety of measures including, but not limited to, any of (or any combinations of) the following:

- aesthetic treatments
- avoidance
- construction monitoring, if necessary
- alternative construction techniques
- renovation/restoration (replacement in-kind)
- resource protection by fencing or other on-site means.

Based on the findings from the literature review and archaeological survey, no adverse effects to historic properties will occur within the Project APE in the title transferred area facilities and easements with the completion of the KID title transfer. Thus, it is recommended that no further archaeological investigations are required for the KID title transfer.

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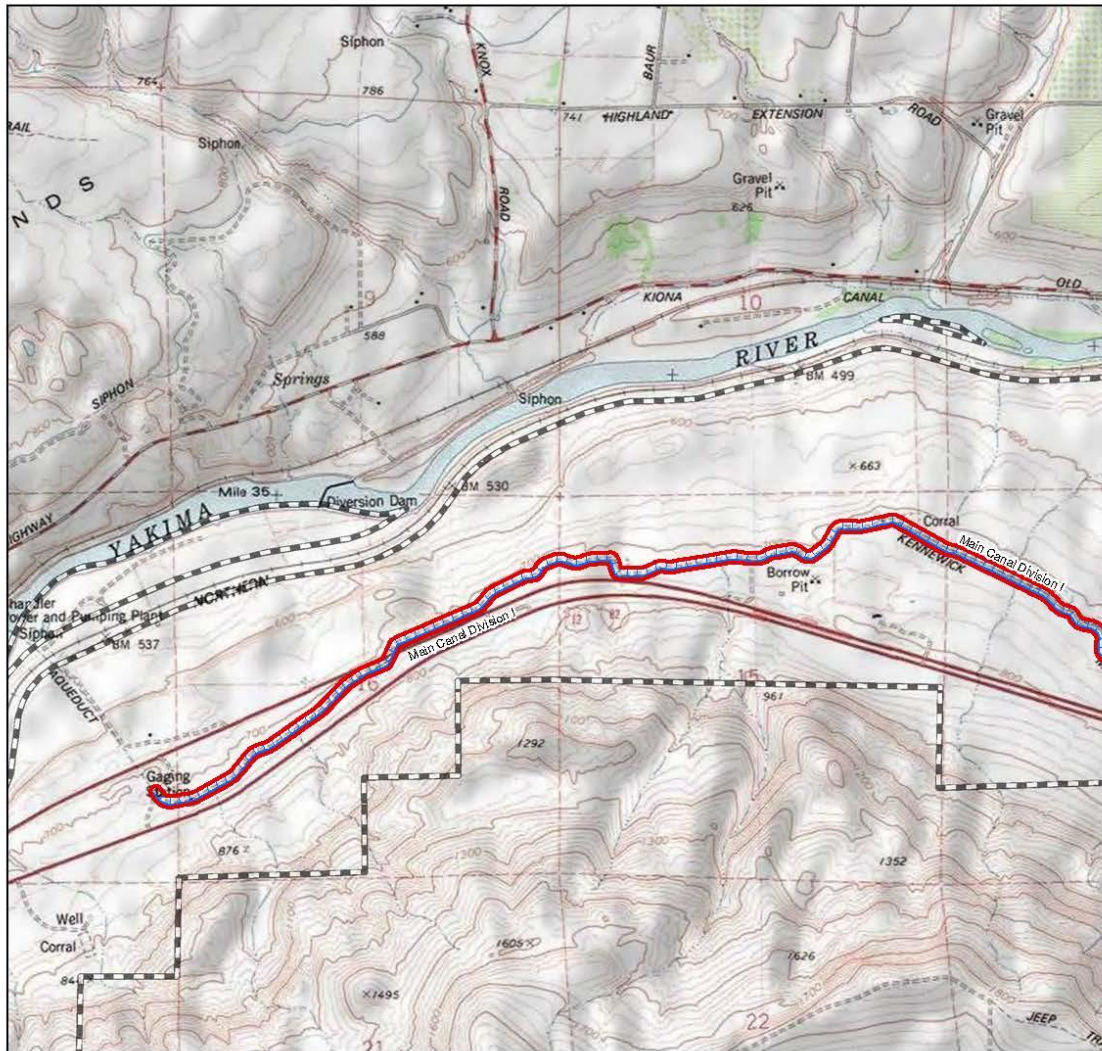
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Appendix A – The Project APE Current Topographic Map Book

This Appendix provides current topographic maps of the Project APE within the title transfer area.

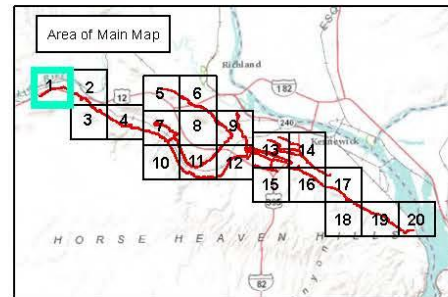
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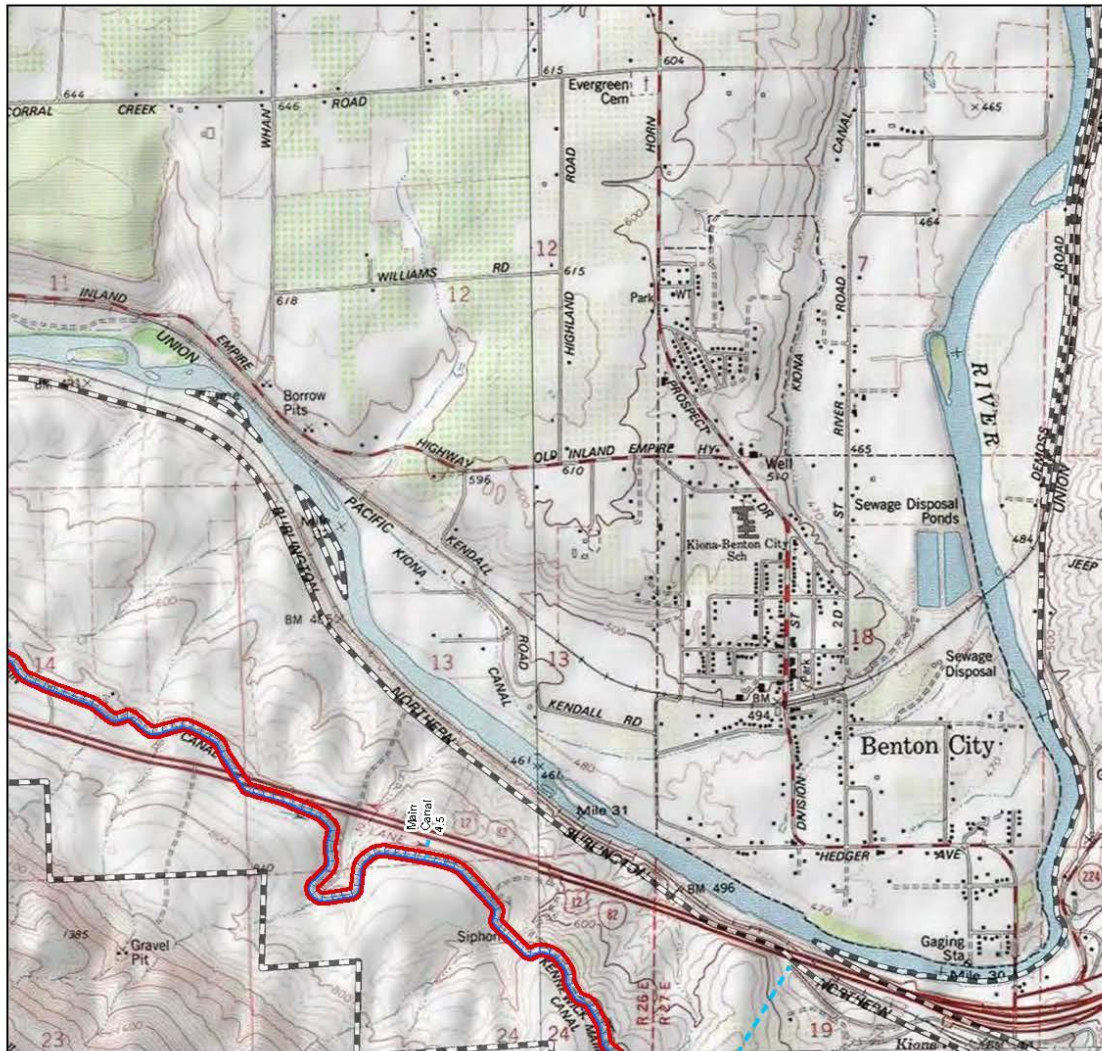
LEGEND

- Area of Potential Effect (APE)
- Open Canal
- Lateral Pipe
- Underground Pipes (Canals & Laterals)
- Drains
- Wasteways
- Other Facility Type
- KID Amon Property
- KID Service Area Boundary

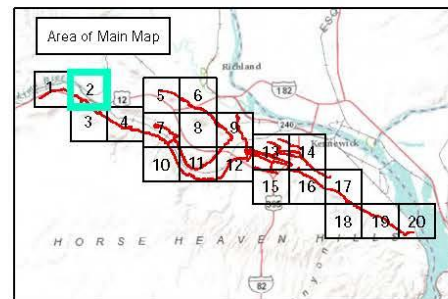


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APE & Historic USGS Maps
 Kennebec Irrigation District
 Benton County, Washington

Figure A-1. Kennebec Main Canal Division I

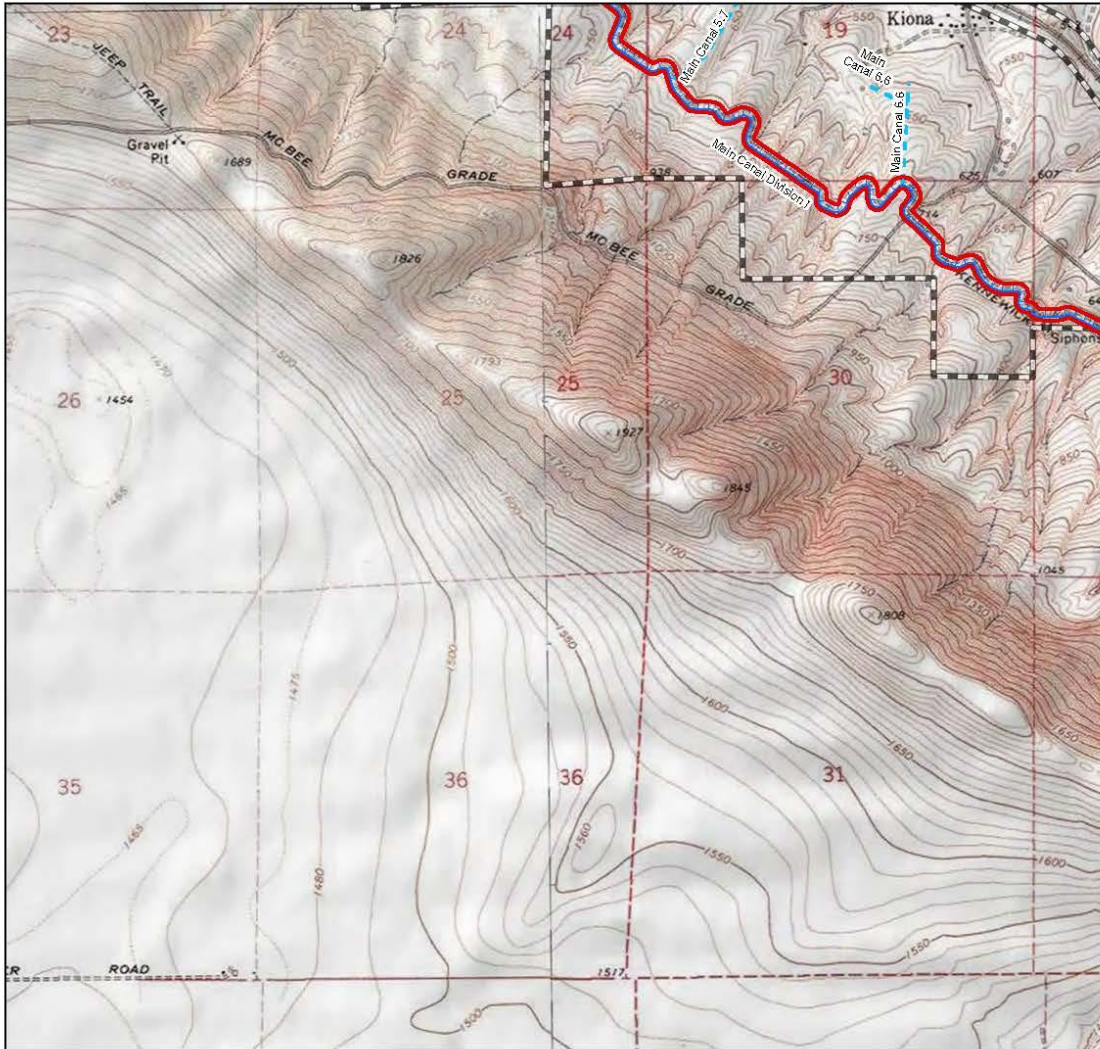


- LEGEND**
- Area of Potential Effect (APE)
 - Open Canal
 - Lateral Pipe
 - Underground Pipes (Canals & Laterals)
 - Drains
 - Wasteways
 - Other Facility Type
 - KID Amon Property
 - KID Service Area Boundary



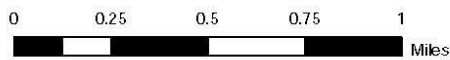
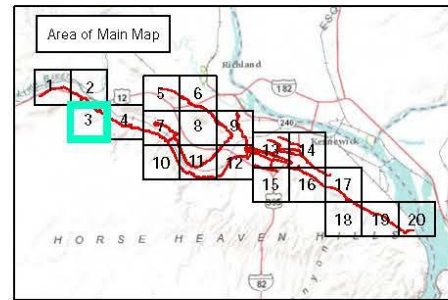
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 APE & Historic USGS Maps
 Kennewick Irrigation District
 Benton County, Washington

Figure A-2. Kennewick Main Canal Division I



LEGEND

- ▭ Area of Potential Effect (APE)
- ▬▬▬ Open Canal
- ▬▬▬ Lateral Pipe
- - - - Underground Pipes (Canals & Laterals)
- ▬▬▬ Drains
- ⋯⋯⋯ Wasteways
- ▬▬▬ Other Facility Type
- ▭ KID Amon Property
- KID Service Area Boundary

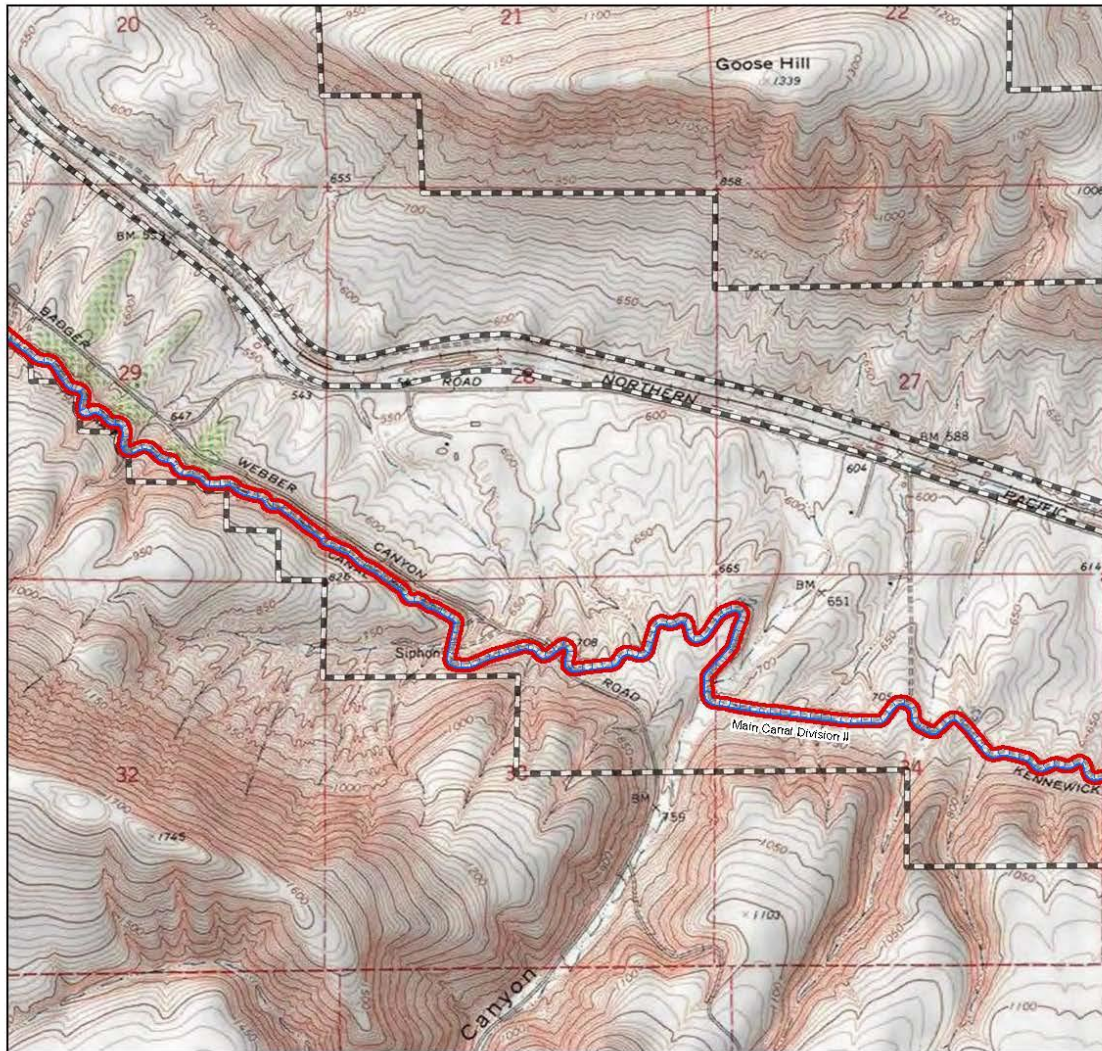


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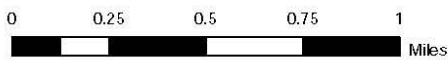
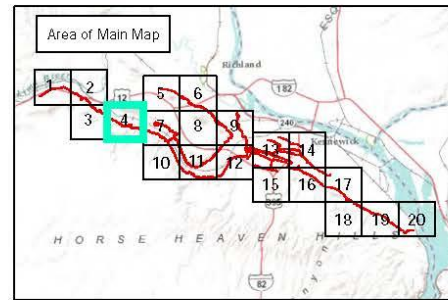
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 Benton County, Washington

Figure A-40. Kennewick Main Canal Division I



LEGEND

- ▭ Area of Potential Effect (APE)
- ▬▬▬ Open Canal
- ▬▬▬ Lateral Pipe
- - - - Underground Pipes (Canals & Laterals)
- ▬▬▬ Drains
- ⋯⋯⋯ Wasteways
- ▬▬▬ Other Facility Type
- KID Amon Property
- KID Service Area Boundary

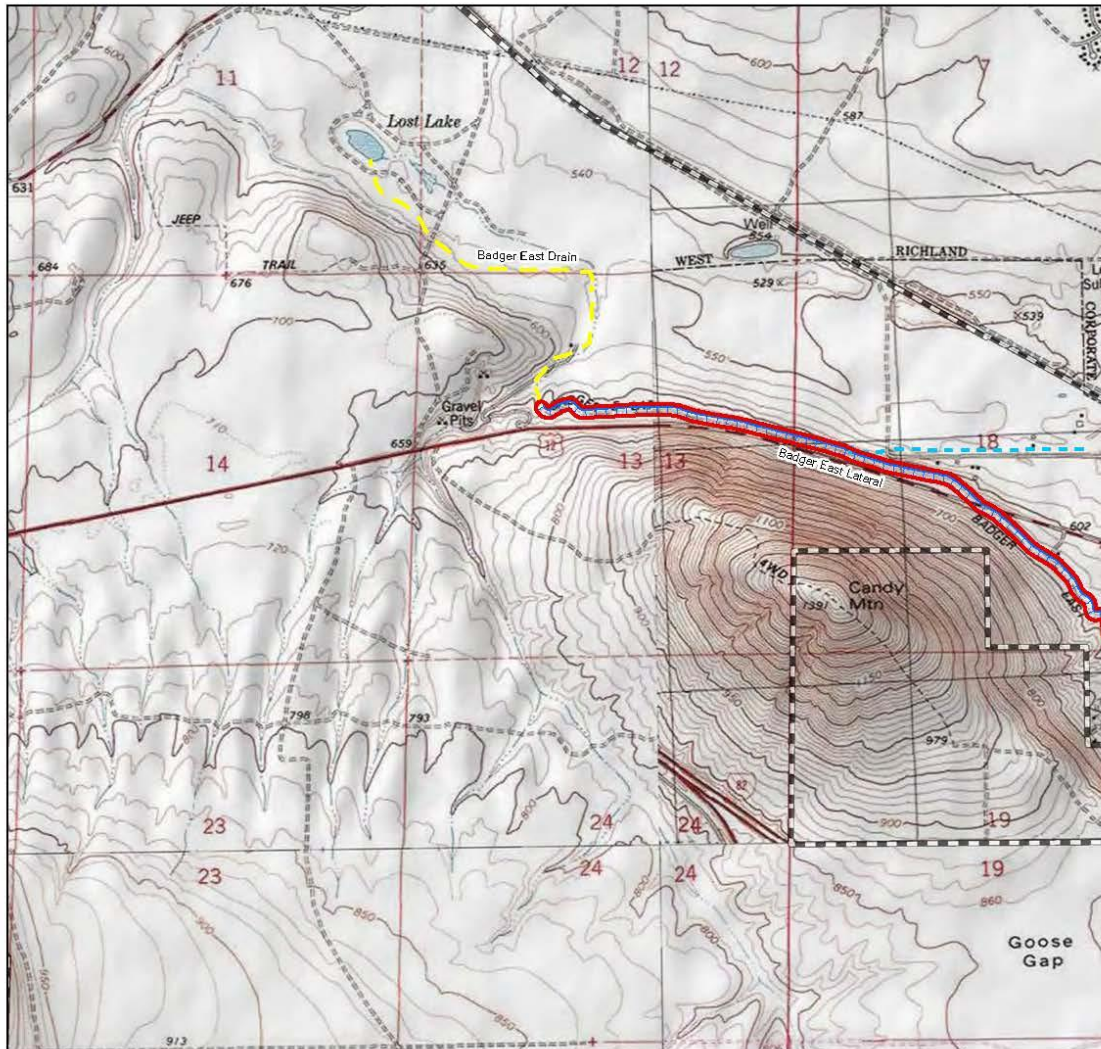


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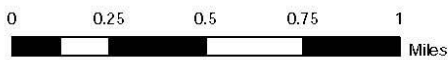
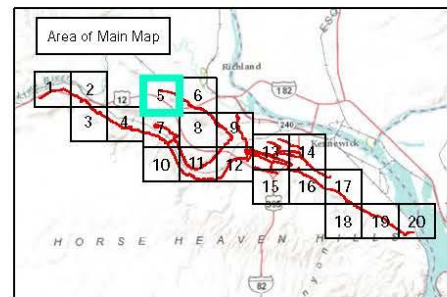
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 Benton County, Washington

Figure A-4. Kennewick Main Canal Division II



LEGEND

- ▭ Area of Potential Effect (APE)
- ▭ Open Canal
- ▭ Lateral Pipe
- ▭ Underground Pipes (Canals & Laterals)
- ▭ Drains
- ▭ Wasteways
- ▭ Other Facility Type
- ▭ KID Amon Property
- KID Service Area Boundary

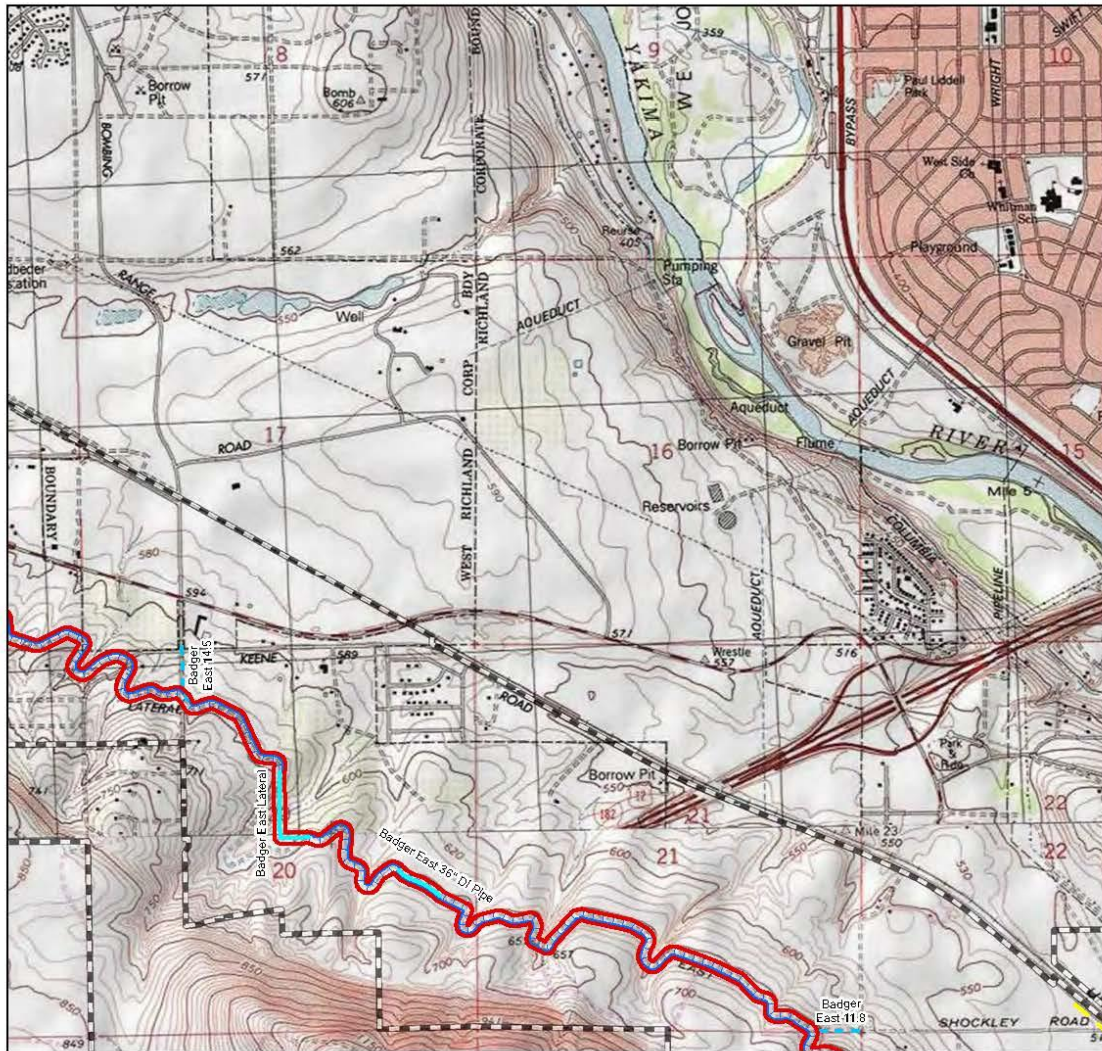


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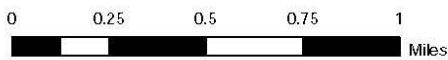
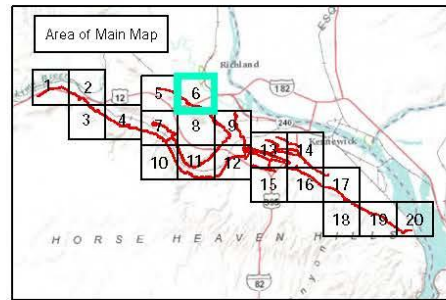
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Figure A-5. Badger East Lateral and Drain



LEGEND

- ▭ Area of Potential Effect (APE)
- ▬▬▬ Open Canal
- ▬ Lateral Pipe
- ▬▬▬ Underground Pipes (Canals & Laterals)
- ▬▬▬ Drains
- ⋯⋯⋯ Wasteways
- ▬ Other Facility Type
- ▭ KID Amon Property
- KID Service Area Boundary

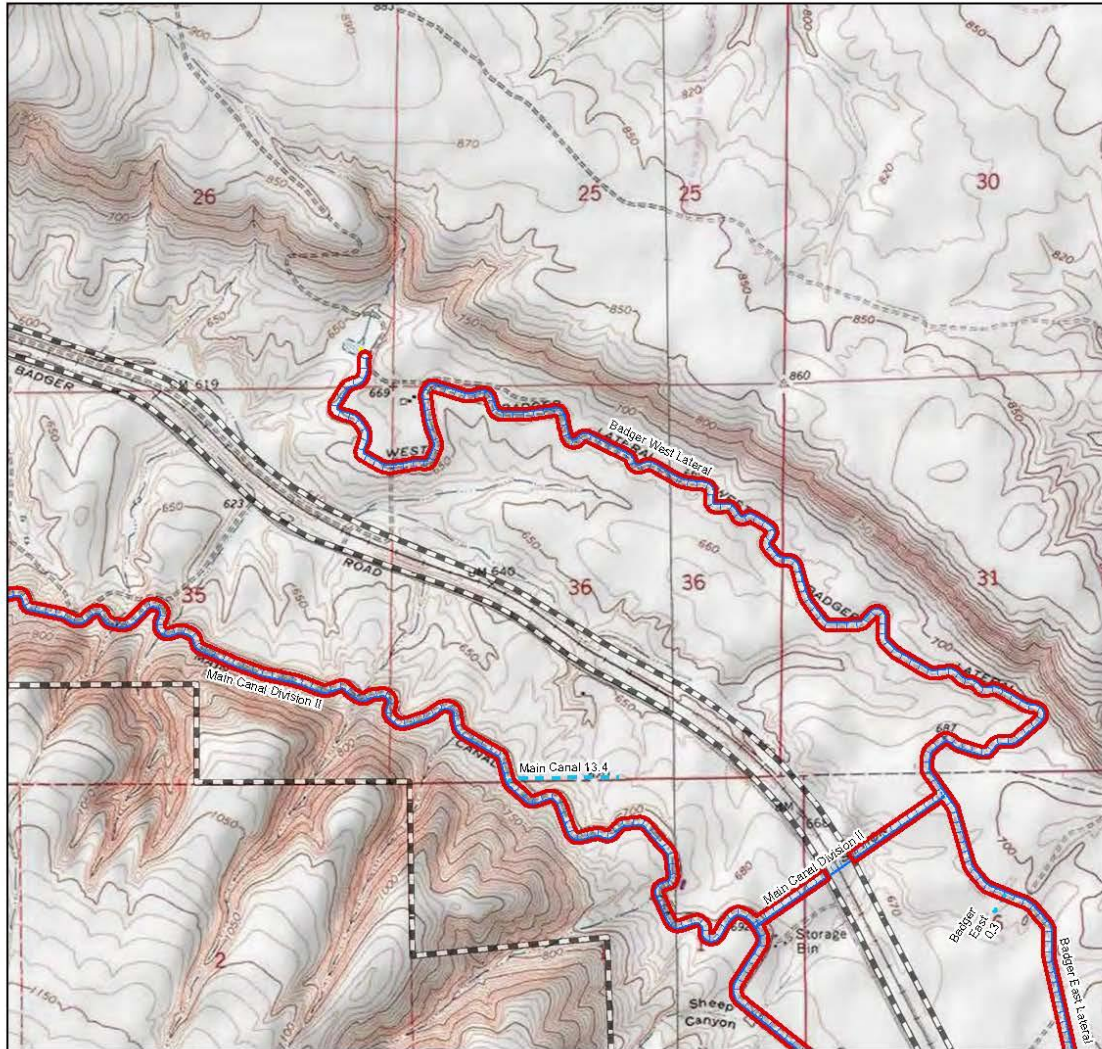


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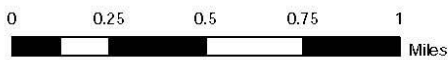
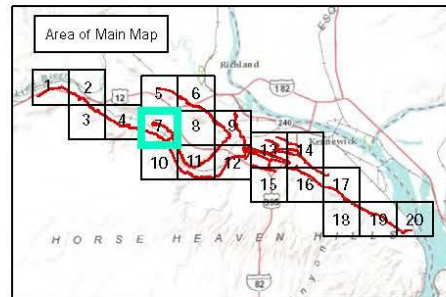


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 Benton County, Washington

Figure A-6. Badger East Lateral



- LEGEND**
- Area of Potential Effect (APE)
 - Open Canal
 - Lateral Pipe
 - Underground Pipes (Canals & Laterals)
 - Drains
 - Wasteways
 - Other Facility Type
 - KID Amon Property
 - KID Service Area Boundary

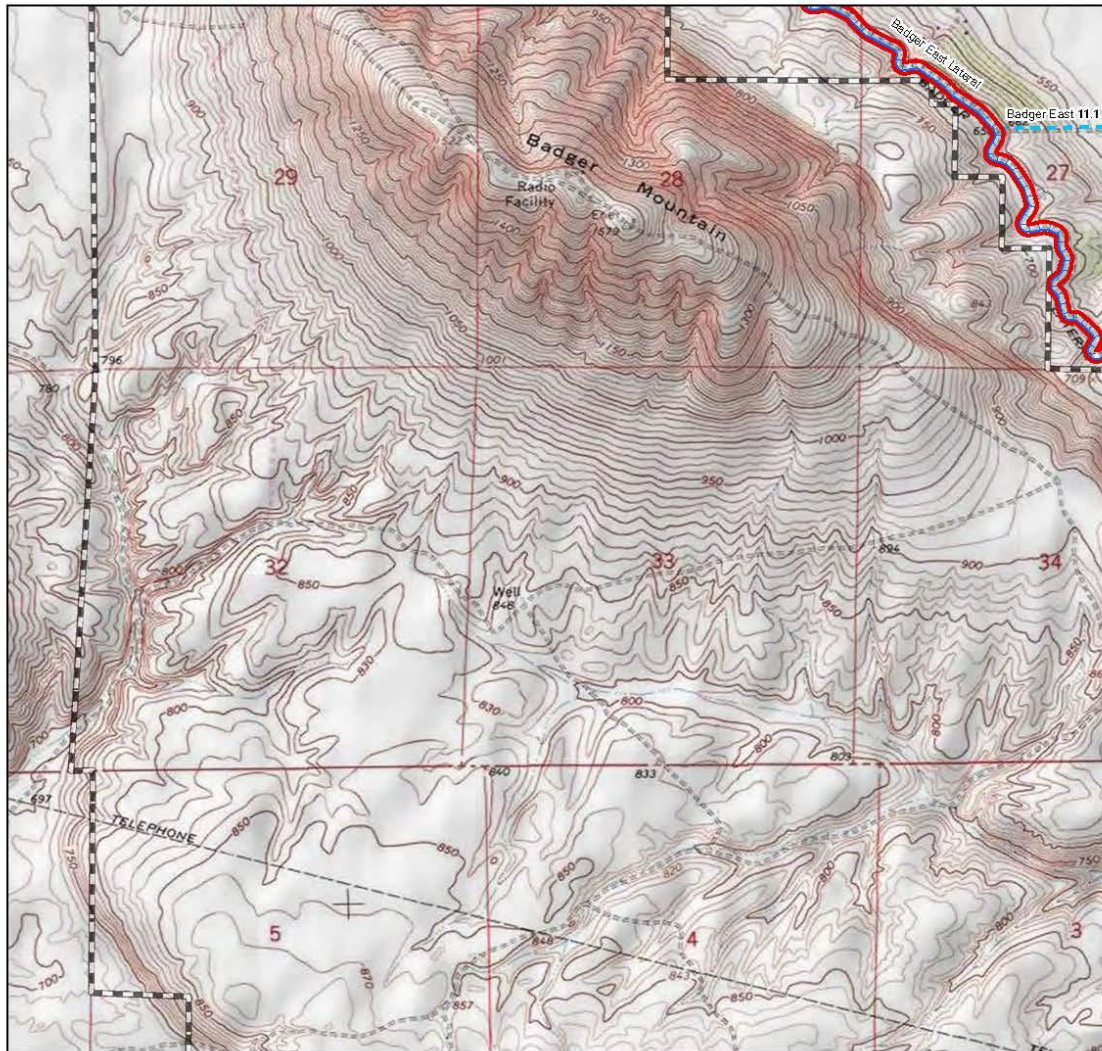


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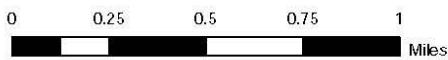
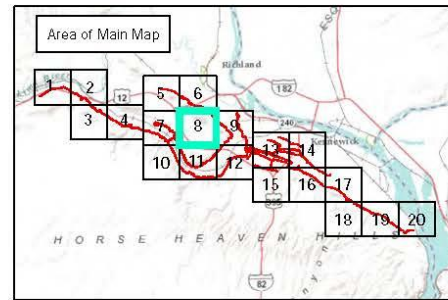
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Figure A-7. Kennebec Main Canal Division II and Badger West and East Laterals



LEGEND

- ▭ Area of Potential Effect (APE)
- ▬▬▬ Open Canal
- ▬ Lateral Pipe
- - - Underground Pipes (Canals & Laterals)
- ▬ Drains
- ⋯ Wasteways
- ▬ Other Facility Type
- ▭ KID Amon Property
- ▭ KID Service Area Boundary

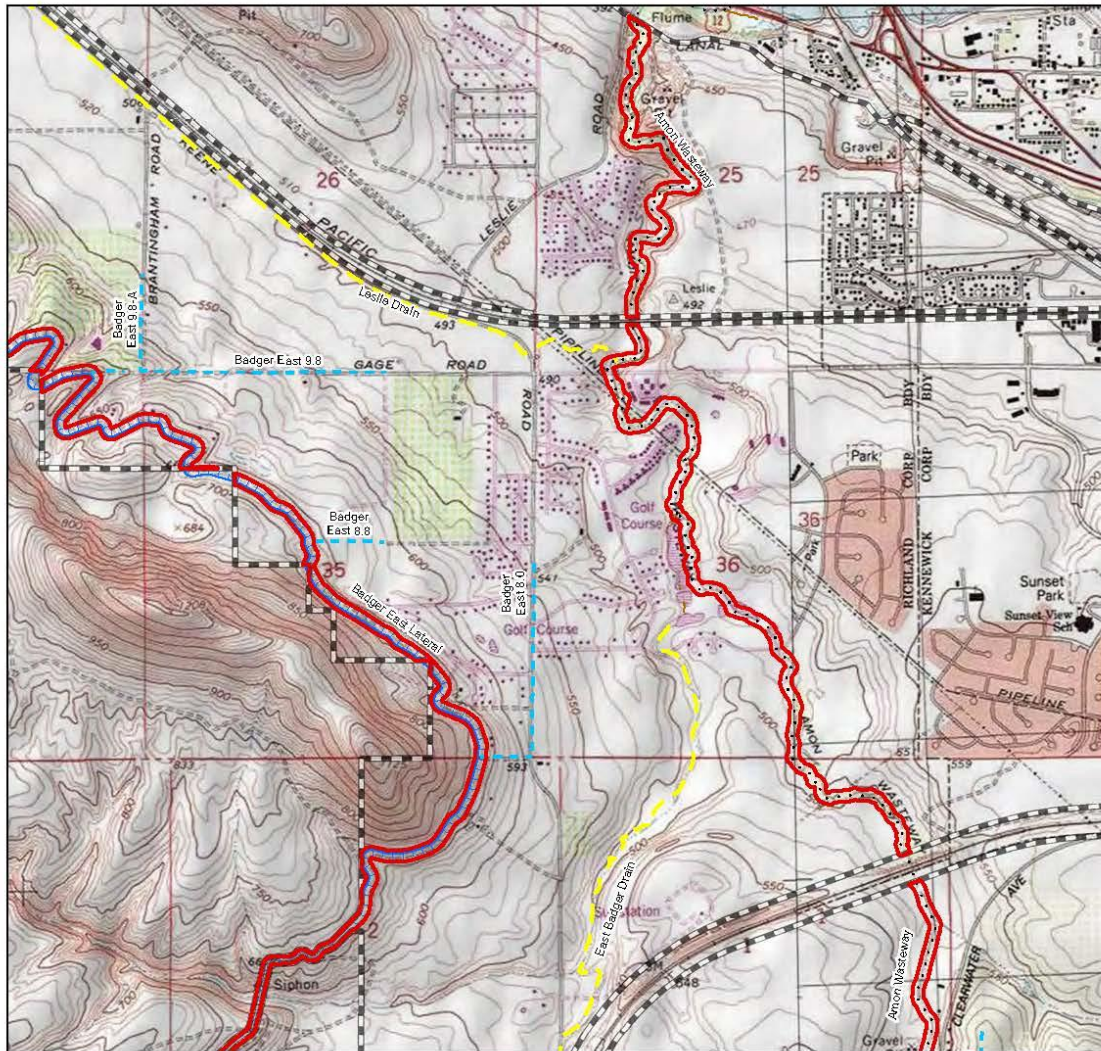


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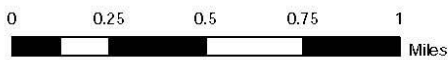
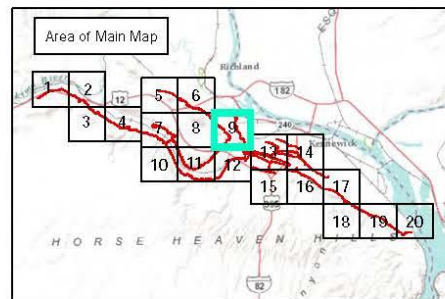


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Figure A-8. Badger East Lateral

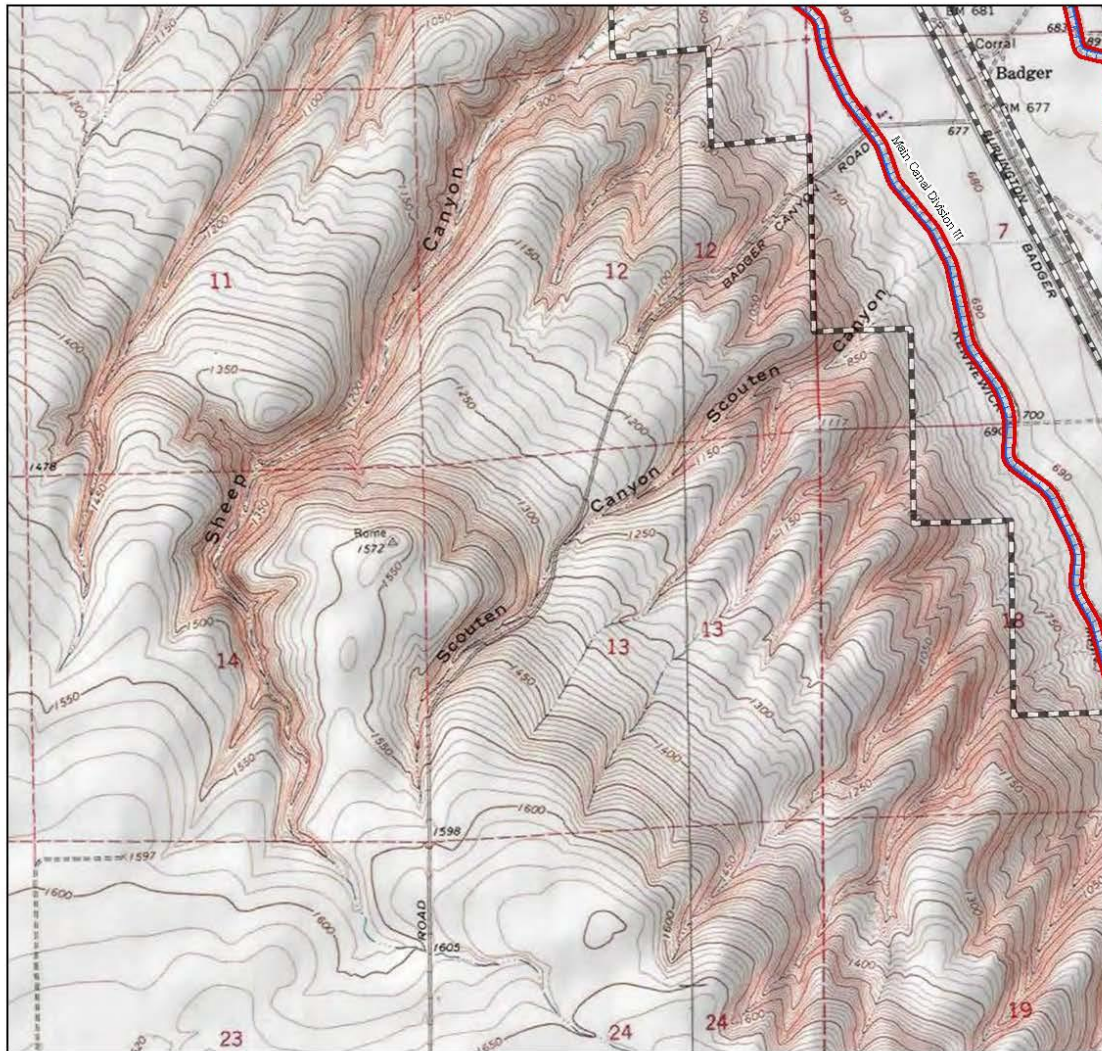


- LEGEND**
- Area of Potential Effect (APE)
 - Open Canal
 - Lateral Pipe
 - Underground Pipes (Canals & Laterals)
 - Drains
 - Wasteways
 - Other Facility Type
 - KID Amon Property
 - KID Service Area Boundary



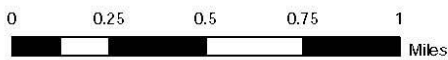
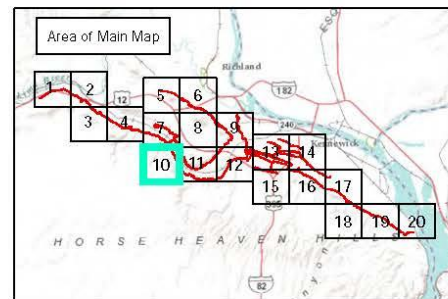
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Figure A-9. Badger East Lateral and Amon Wasteway



LEGEND

- Area of Potential Effect (APE)
- Open Canal
- Lateral Pipe
- Underground Pipes (Canals & Laterals)
- Drains
- Wasteways
- Other Facility Type
- KID Amon Property
- KID Service Area Boundary



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Figure A-10. Kennewick Main Canal Division III

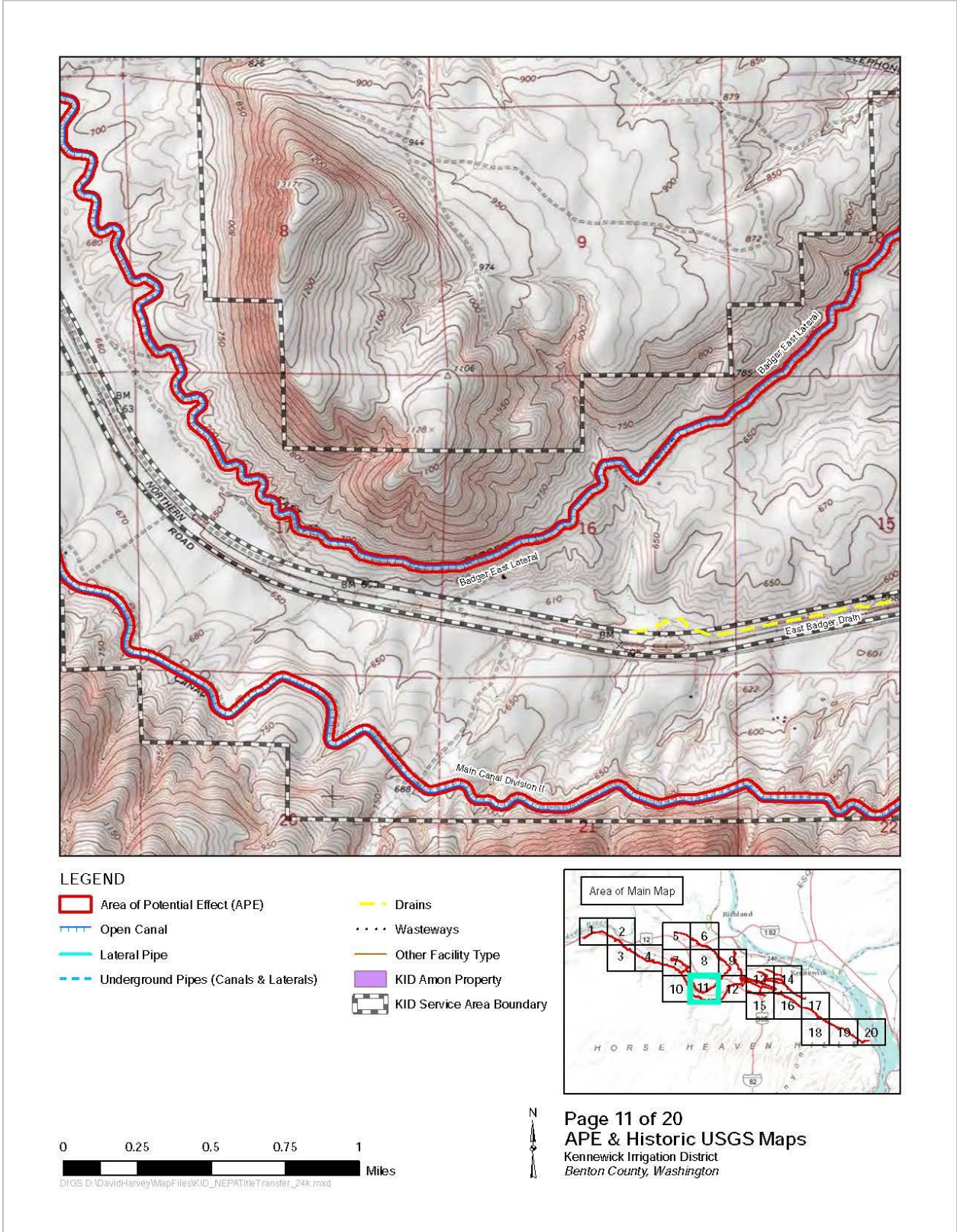


Figure A-11. Kennewick Main Canal Division II and Badger East Lateral

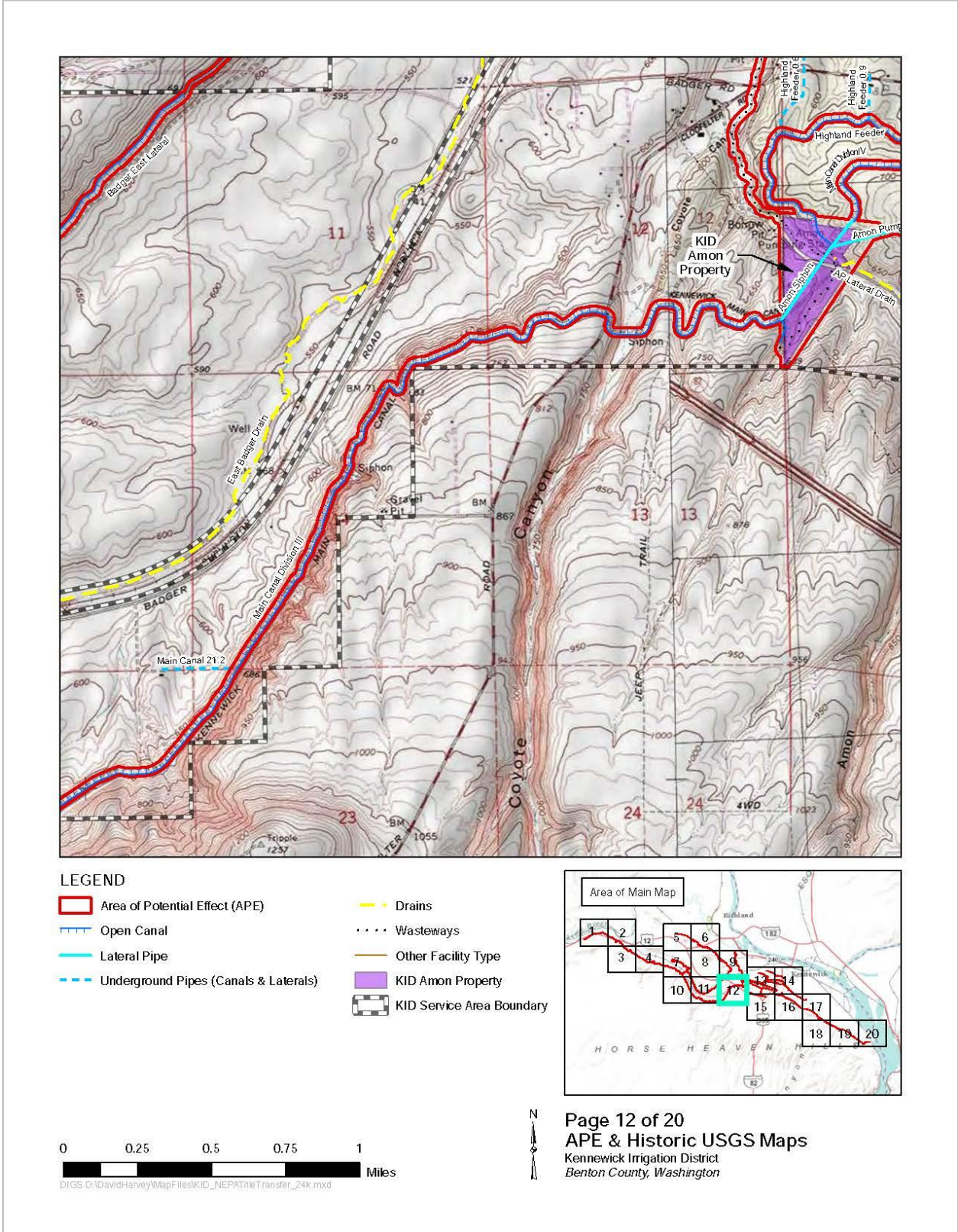
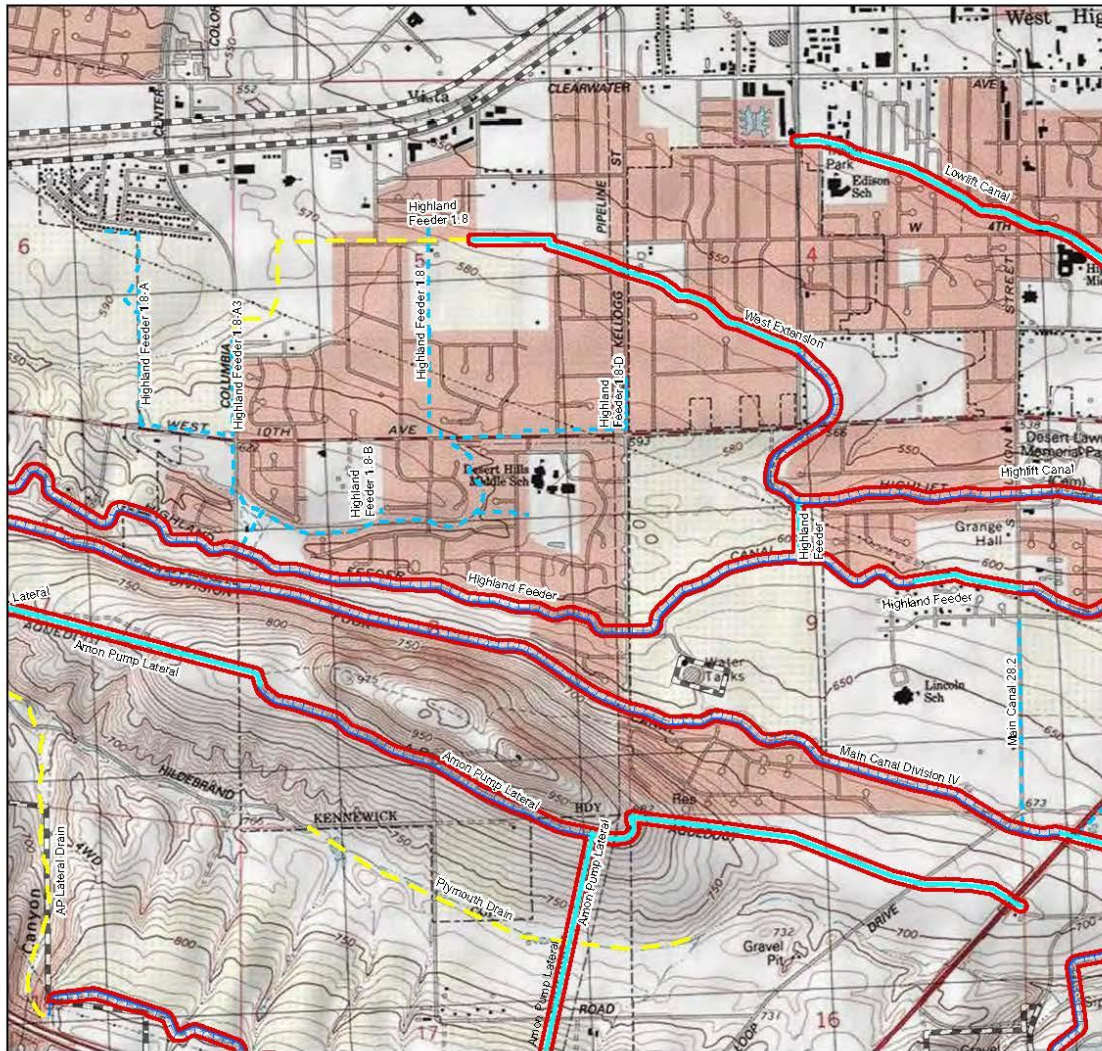
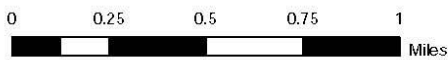
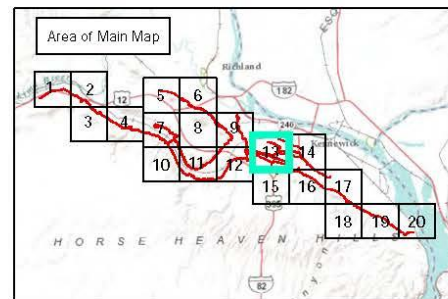


Figure A-12. Badger East Lateral, East Badger Drain, Highland Feeder Canal, Kennewick Main Canal Divisions III and IV, Amon Pump Lateral, AP Lateral Drain, Amon Siphon, and KID Amon Property



LEGEND

- Area of Potential Effect (APE)
- Open Canal
- Lateral Pipe
- Underground Pipes (Canals & Laterals)
- Drains
- Wasteways
- Other Facility Type
- KID Amon Property
- KID Service Area Boundary



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Figure A-13. Kennewick Main Canal Division IV, Highland Feeder Canal, Highlift Canal, West Extension, Amon Pump Lateral, and AP Lateral Drain

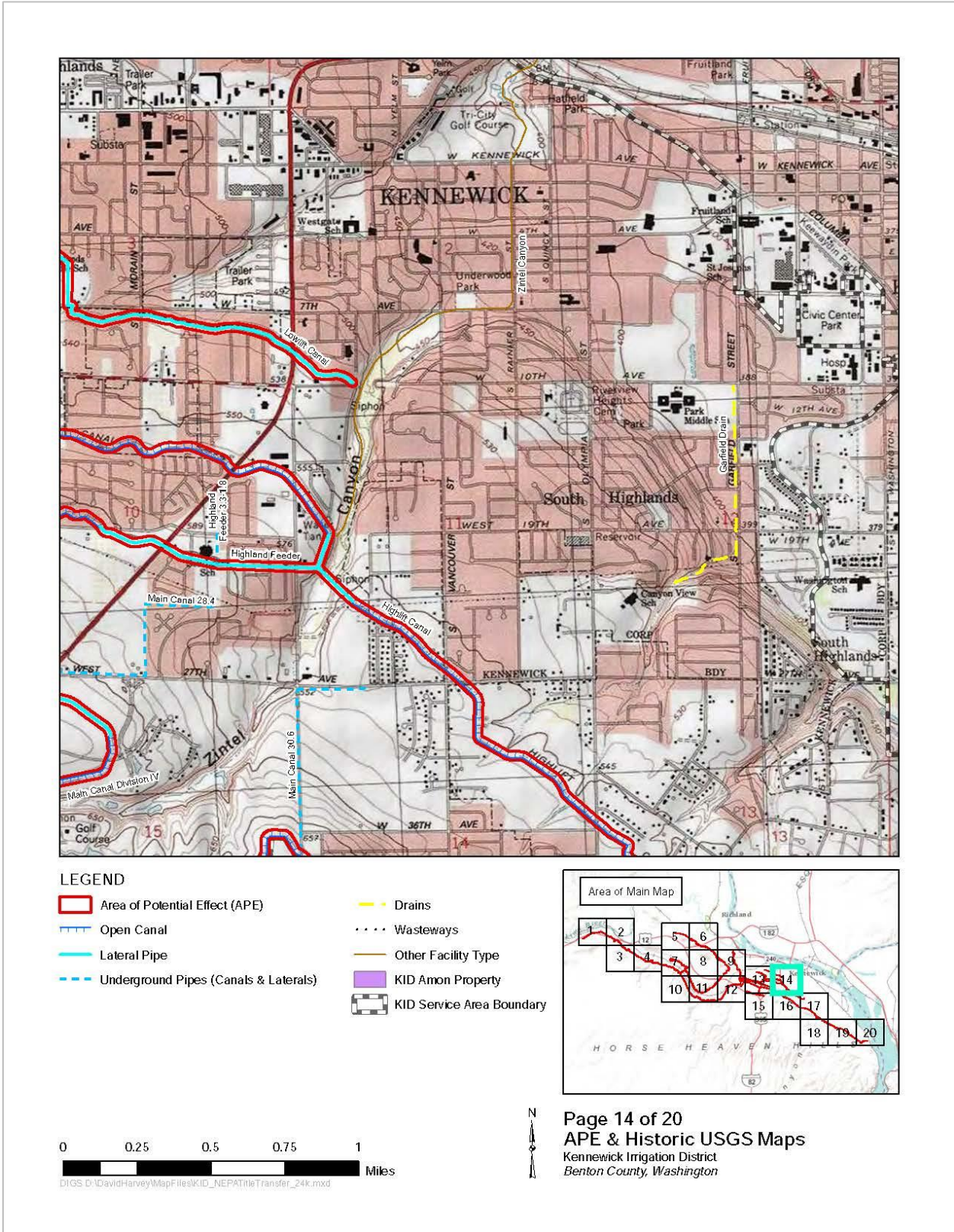
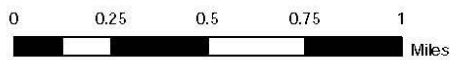
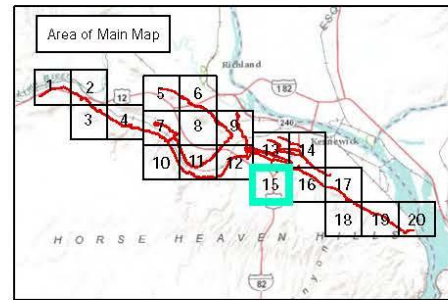


Figure A-14. Kennewick Main Canal Division IV, Highland Feeder Canal, Highlift Canal, and Lowlift Canal



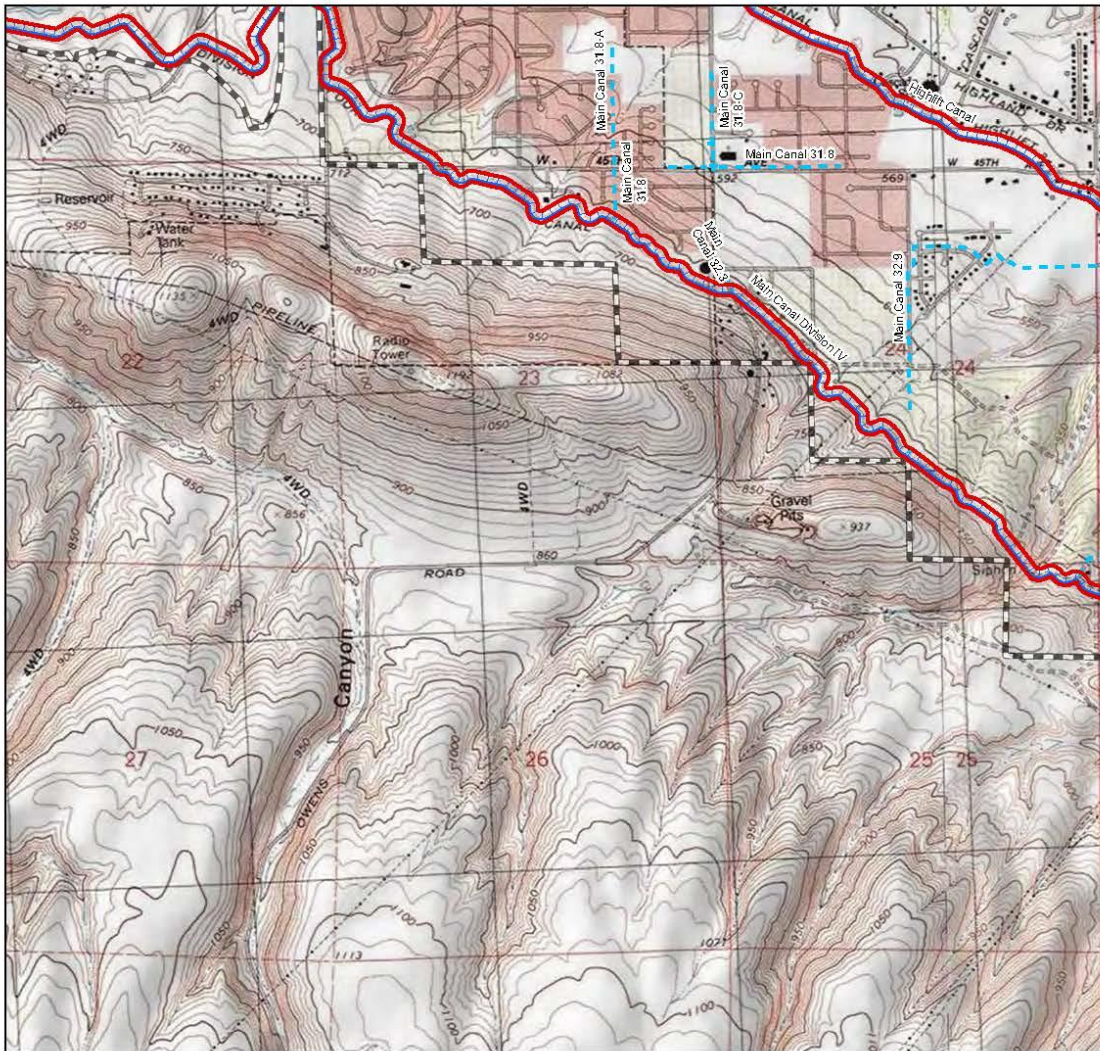
LEGEND

- Area of Potential Effect (APE)
- Open Canal
- Lateral Pipe
- Underground Pipes (Canals & Laterals)
- Drains
- Wasteways
- Other Facility Type
- KID Amon Property
- KID Service Area Boundary



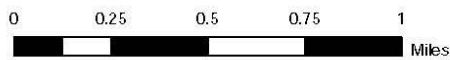
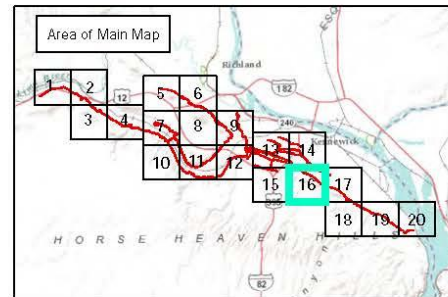
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Figure A-15. Amon Pump Lateral and AP Drain



LEGEND

- Area of Potential Effect (APE)
- Open Canal
- Lateral Pipe
- Underground Pipes (Canals & Laterals)
- Drains
- Wasteways
- Other Facility Type
- KID Amon Property
- KID Service Area Boundary

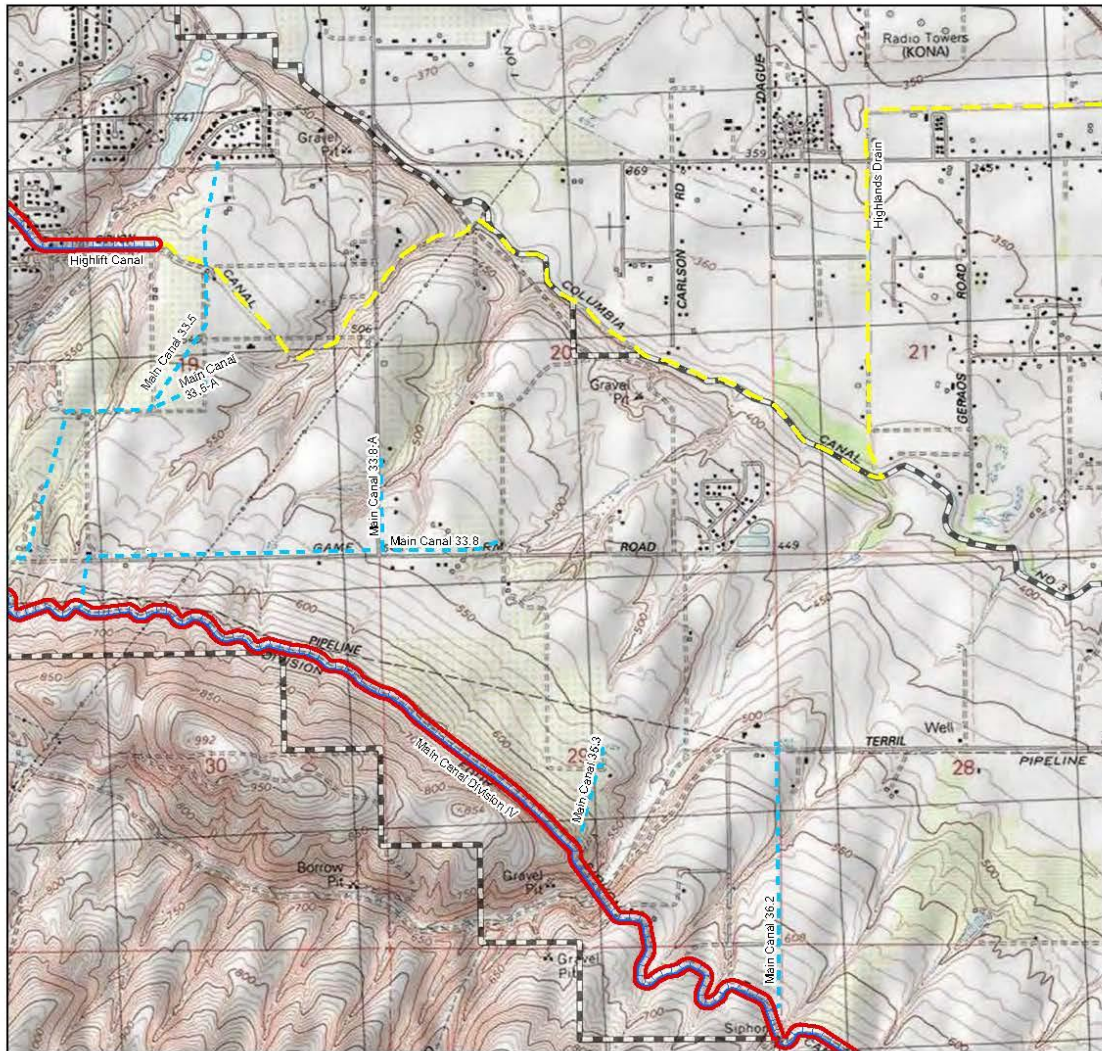


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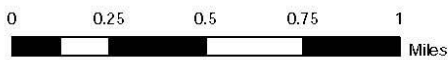
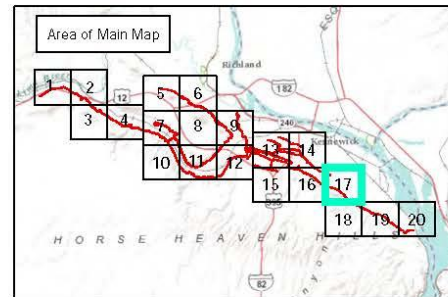
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Figure A-16. Kennewick Main Canal Division IV and Highlift Canal



LEGEND

- ▭ Area of Potential Effect (APE)
- ▬▬▬ Open Canal
- ▬▬▬ Lateral Pipe
- - - - Underground Pipes (Canals & Laterals)
- ▬▬▬ Drains
- ⋯⋯⋯ Wasteways
- ▬▬▬ Other Facility Type
- ▭ KID Amon Property
- ▭ KID Service Area Boundary

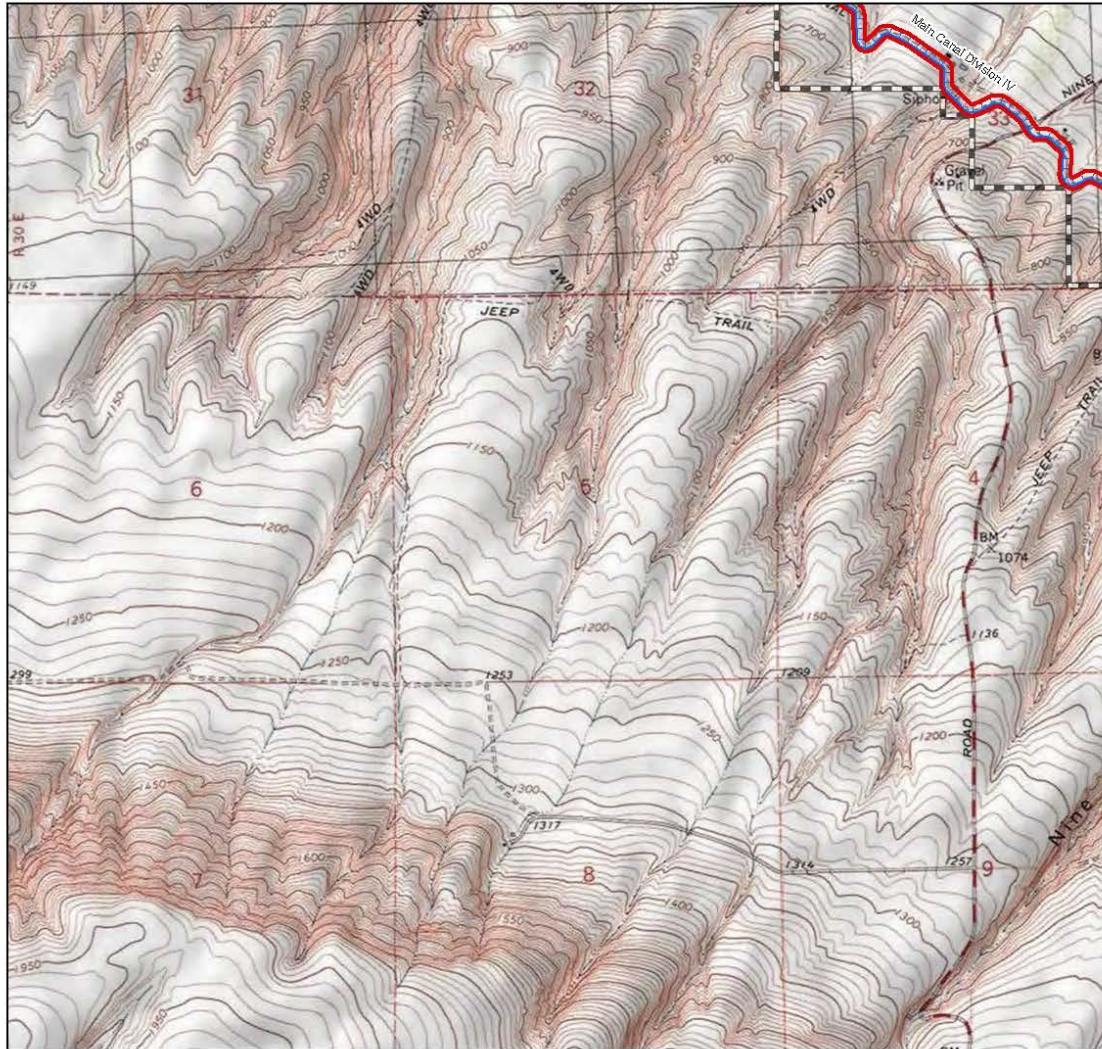


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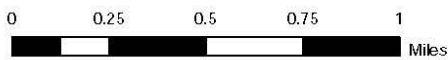
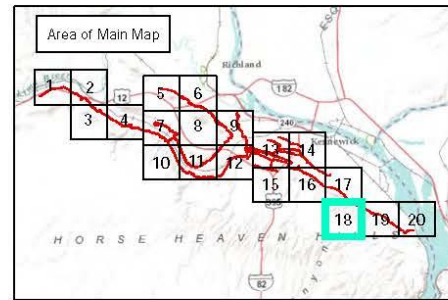
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Figure A-17. Kennewick Main Canal Division IV and Highlift Canal



LEGEND

- ▭ Area of Potential Effect (APE)
- ▬▬▬ Open Canal
- ▬ Lateral Pipe
- - - Underground Pipes (Canals & Laterals)
- ▬ Drains
- ⋯ Wasteways
- ▬ Other Facility Type
- ▭ KID Amon Property
- ▭ KID Service Area Boundary



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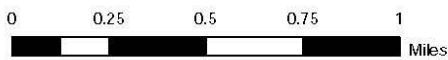
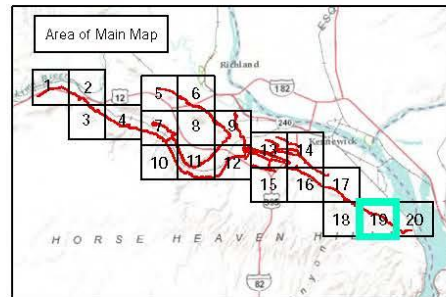
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Figure A-18. Kennewick Main Canal Division IV



LEGEND

- Area of Potential Effect (APE)
- Open Canal
- Lateral Pipe
- Underground Pipes (Canals & Laterals)
- Drains
- Wasteways
- Other Facility Type
- KID Amon Property
- KID Service Area Boundary

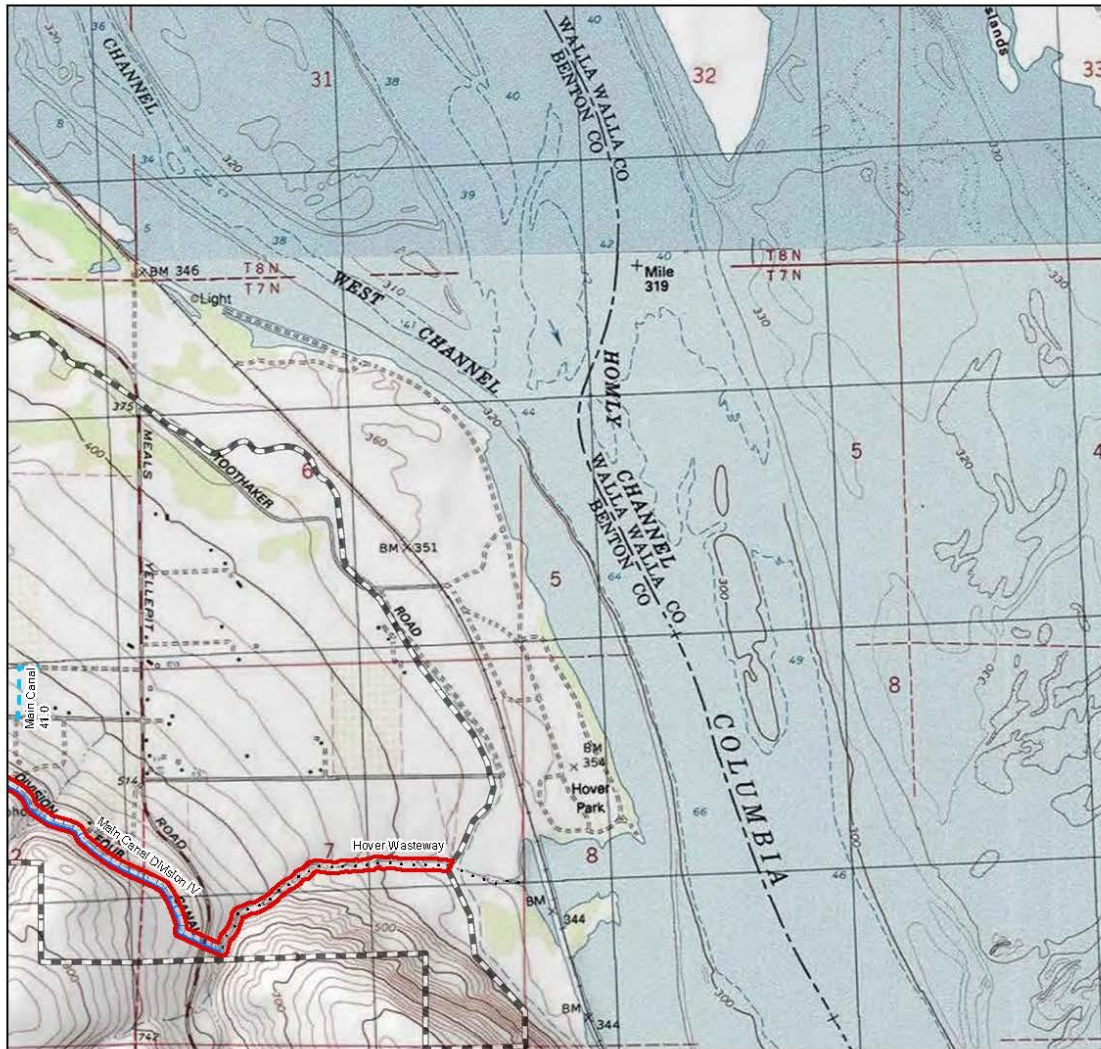


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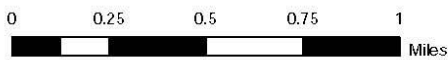
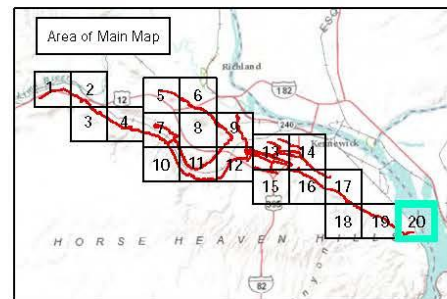
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Figure A-19. Kennewick Main Canal Division IV (MP 37.8 to 47.0)



LEGEND

- Area of Potential Effect (APE)
- Open Canal
- Lateral Pipe
- Underground Pipes (Canals & Laterals)
- Drains
- Wasteways
- Other Facility Type
- KID Amon Property
- KID Service Area Boundary



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Figure A-20. Kennewick Main Canal Division IV and Hover Wasteway

Appendix B – The Project APE GLO Map Book

This Appendix provides the General Land Office (GLO) maps for the Project APE within the title transfer area.

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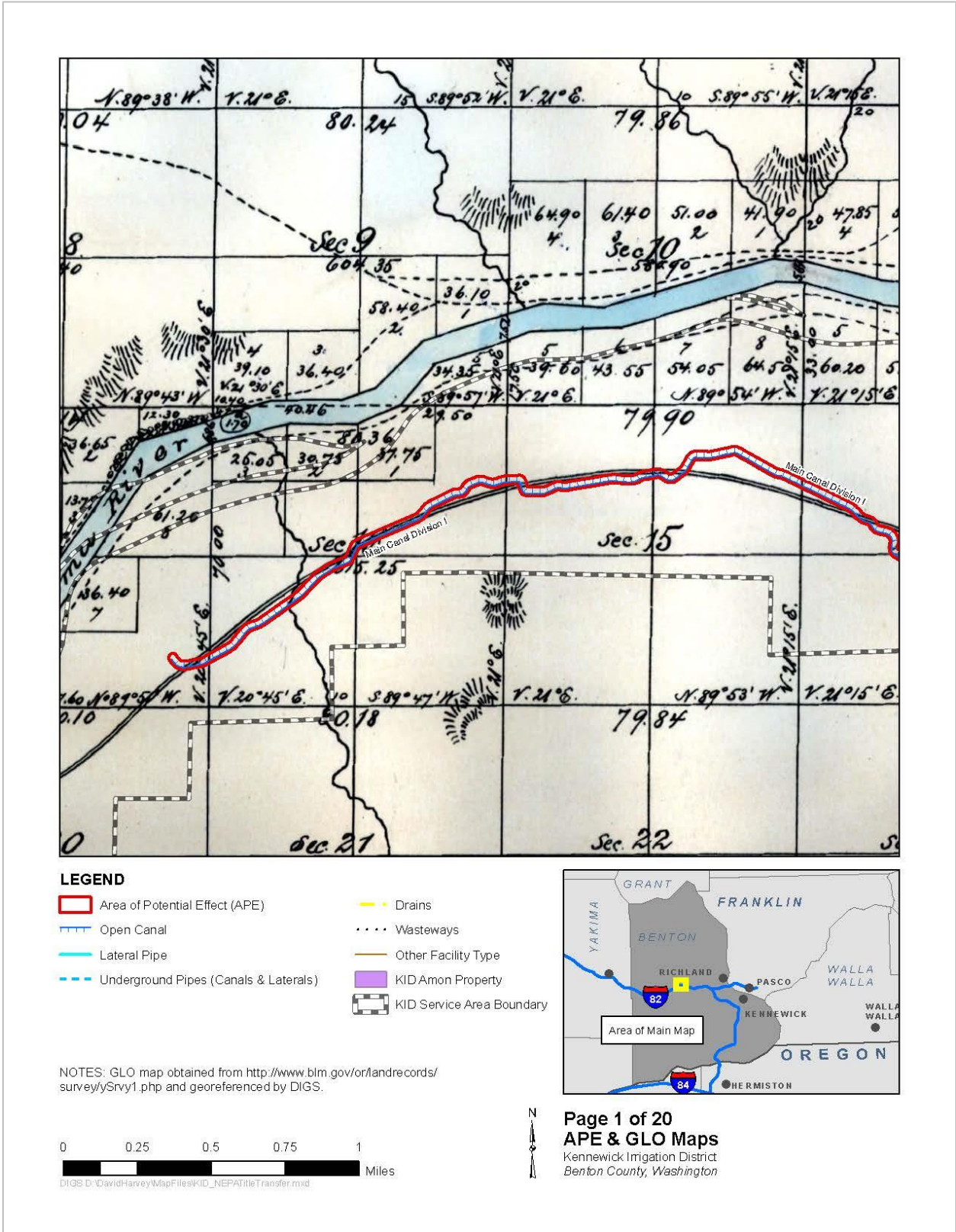
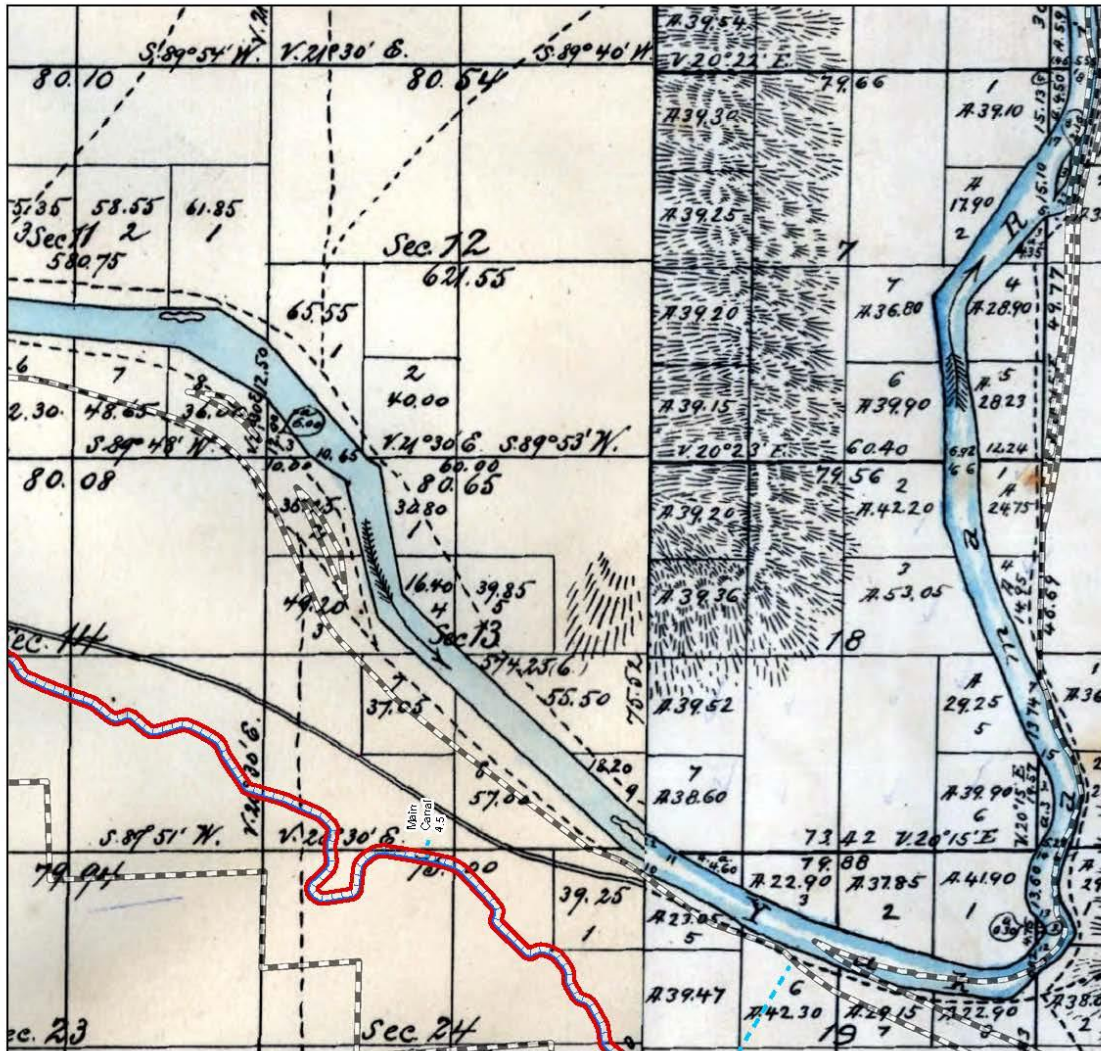


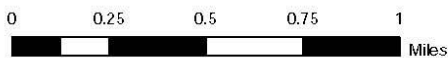
Figure B-1. Kennewick Main Canal Division I, GLO Map



LEGEND

- ▭ Area of Potential Effect (APE)
- ▭ Open Canal
- ▭ Lateral Pipe
- ▭ Underground Pipes (Canals & Laterals)
- ▭ Drains
- ▭ Wasteways
- ▭ Other Facility Type
- ▭ KID Amon Property
- KID Service Area Boundary

NOTES: GLO map obtained from <http://www.blm.gov/or/landrecords/survey/ySrvy1.php> and georeferenced by DIGS.



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Figure B-2. Kennewick Main Canal, MP 4.5, GLO Map

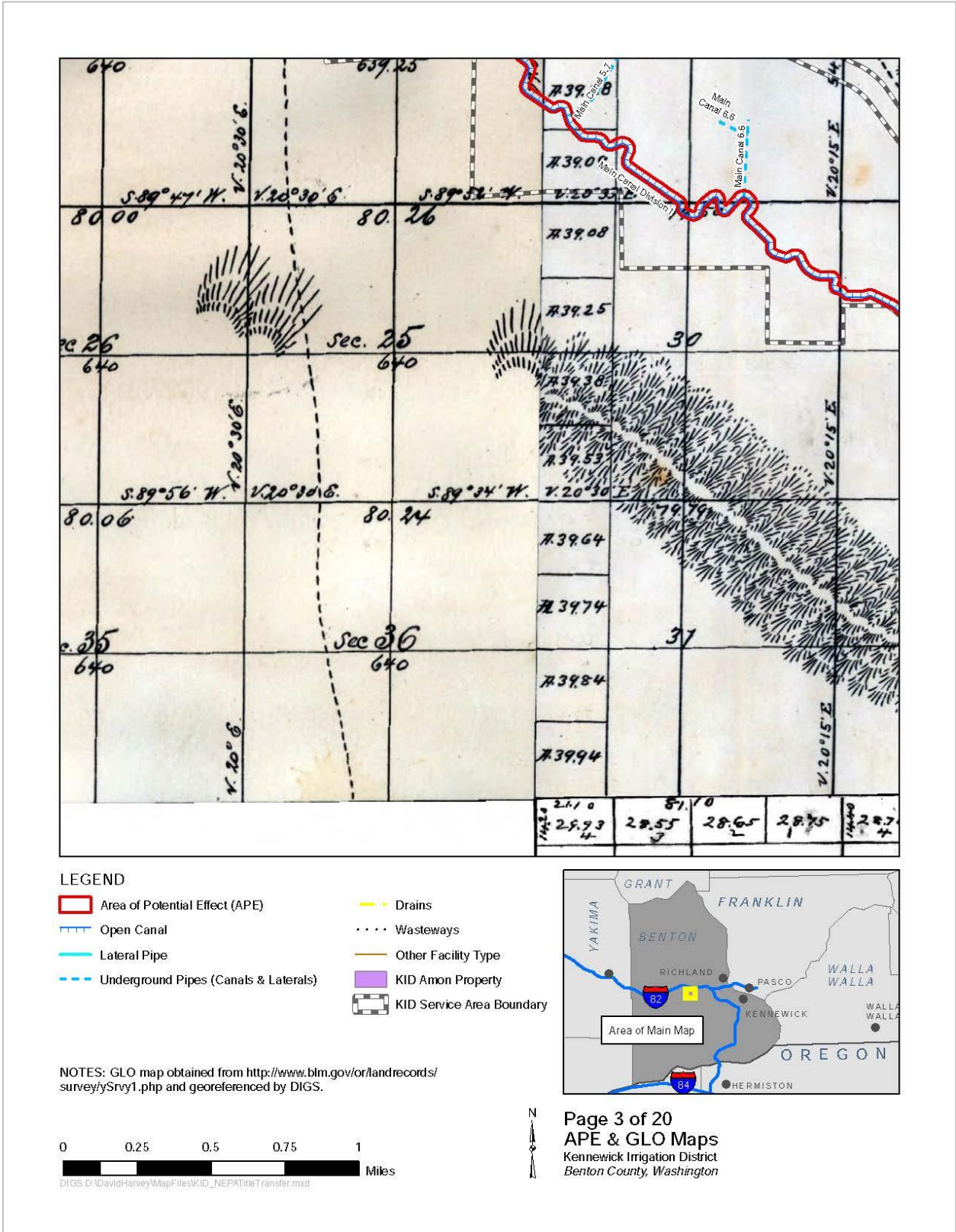
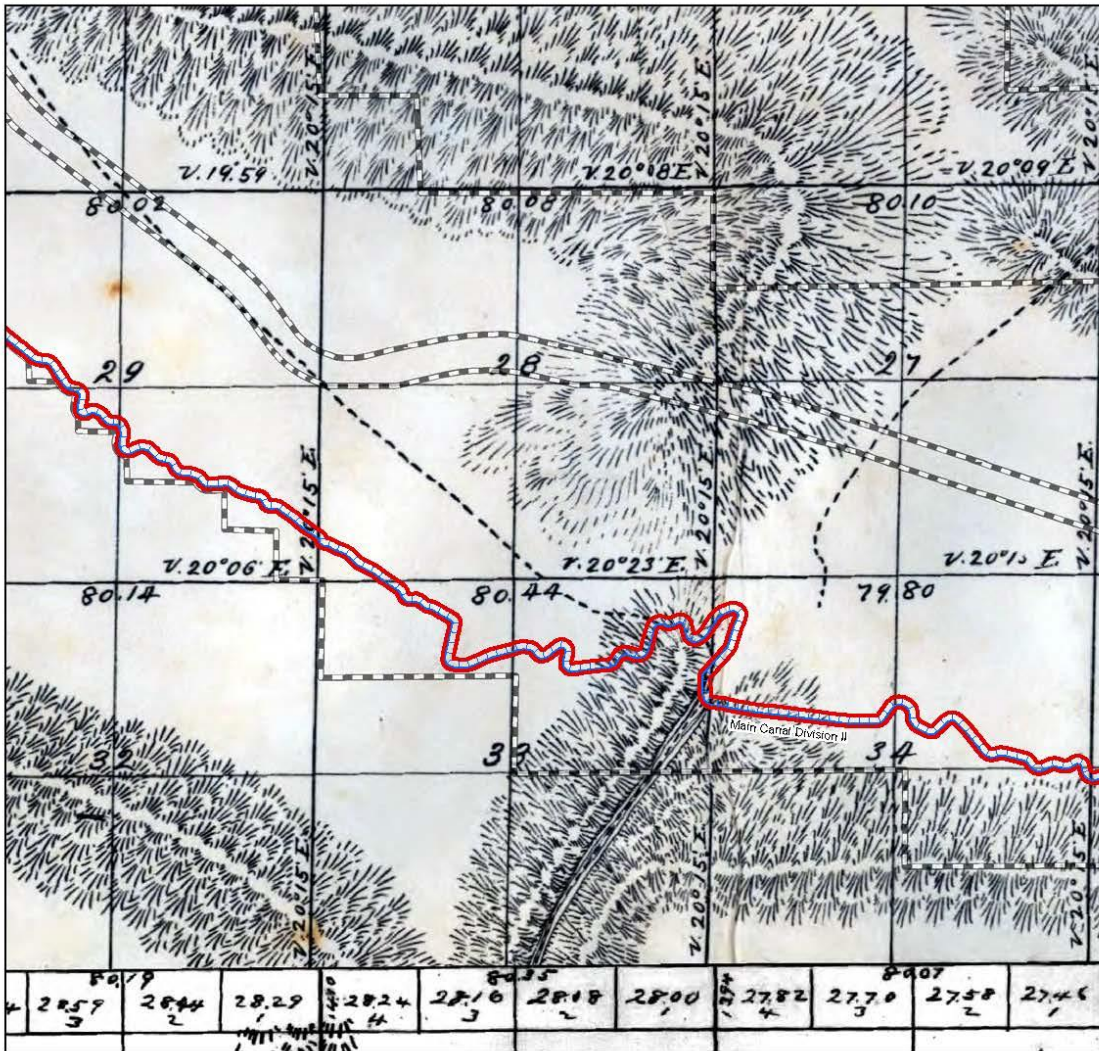


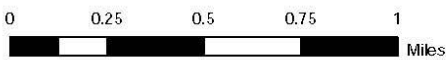
Figure B-3. Kennewick Main Canal Division I, GLO Map



LEGEND

- Area of Potential Effect (APE)
- Open Canal
- Lateral Pipe
- Underground Pipes (Canals & Laterals)
- Drains
- Wasteways
- Other Facility Type
- KID Amon Property
- KID Service Area Boundary

NOTES: GLO map obtained from <http://www.blm.gov/or/landrecords/survey/ySrvy1.php> and georeferenced by DIGS.



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Figure B-4. Kennewick Main Canal Division II, GLO Map

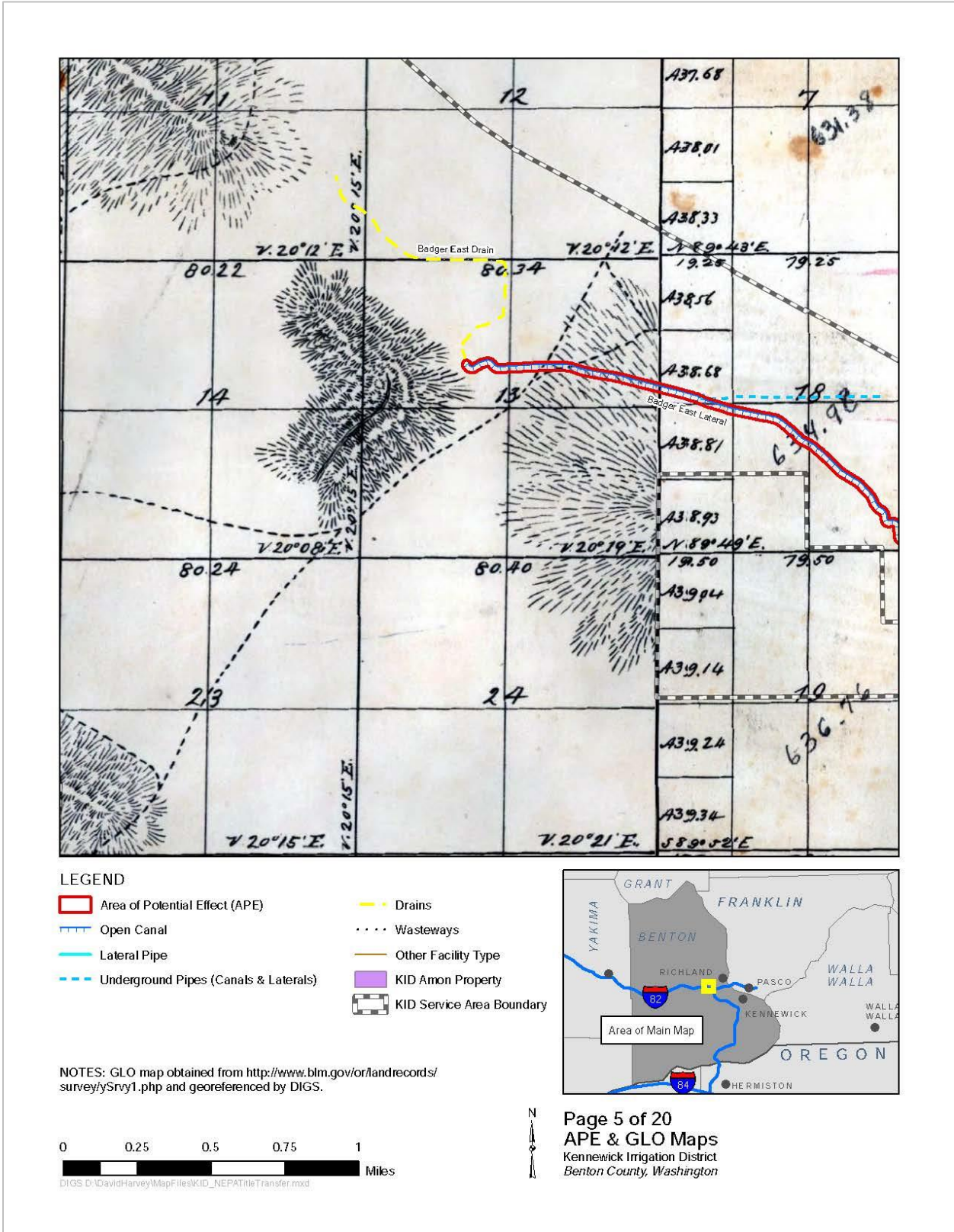


Figure B-5. Badger East Lateral, GLO Map

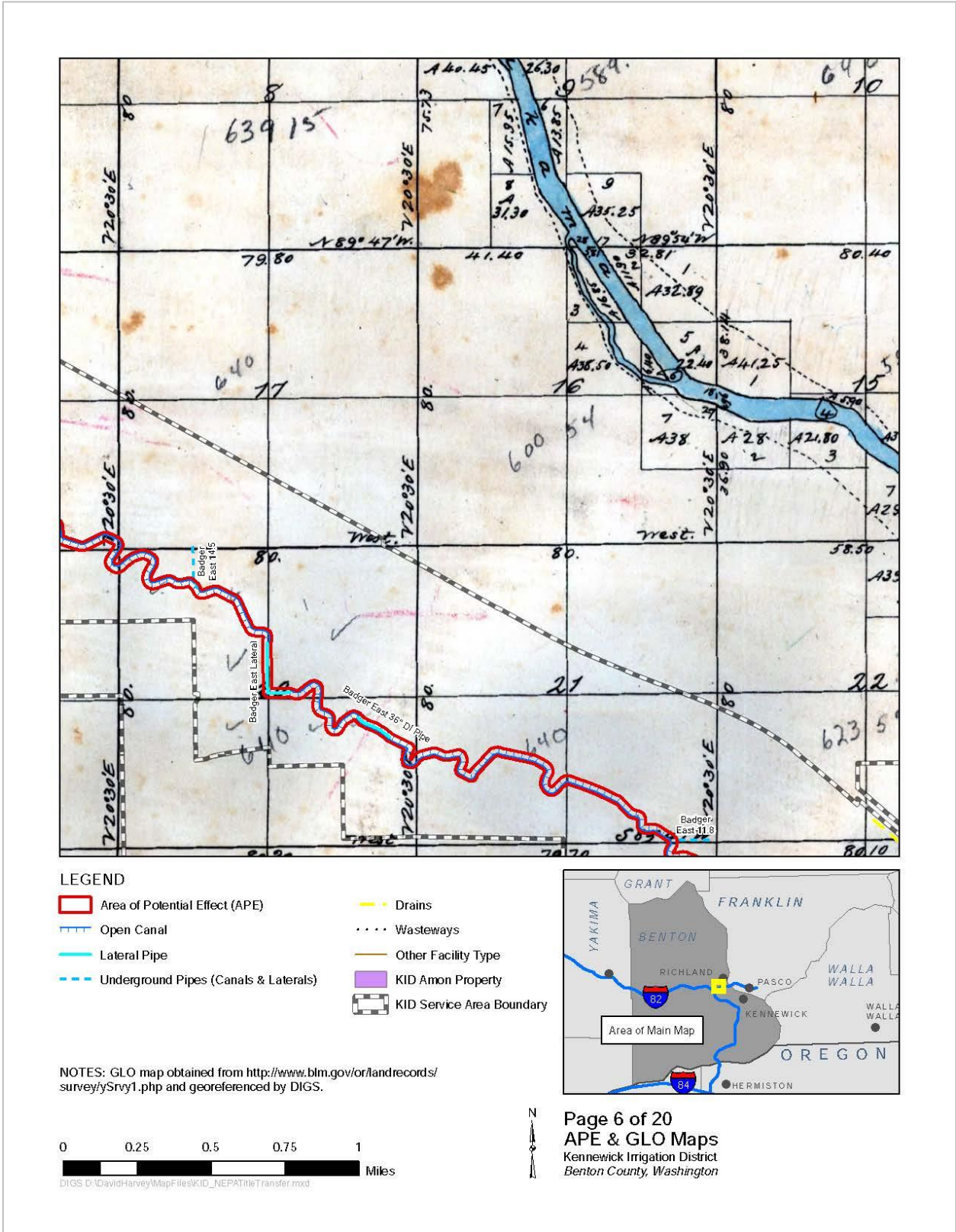


Figure B-6. Badger East Lateral, MP 11.8 to 14.5, GLO Map

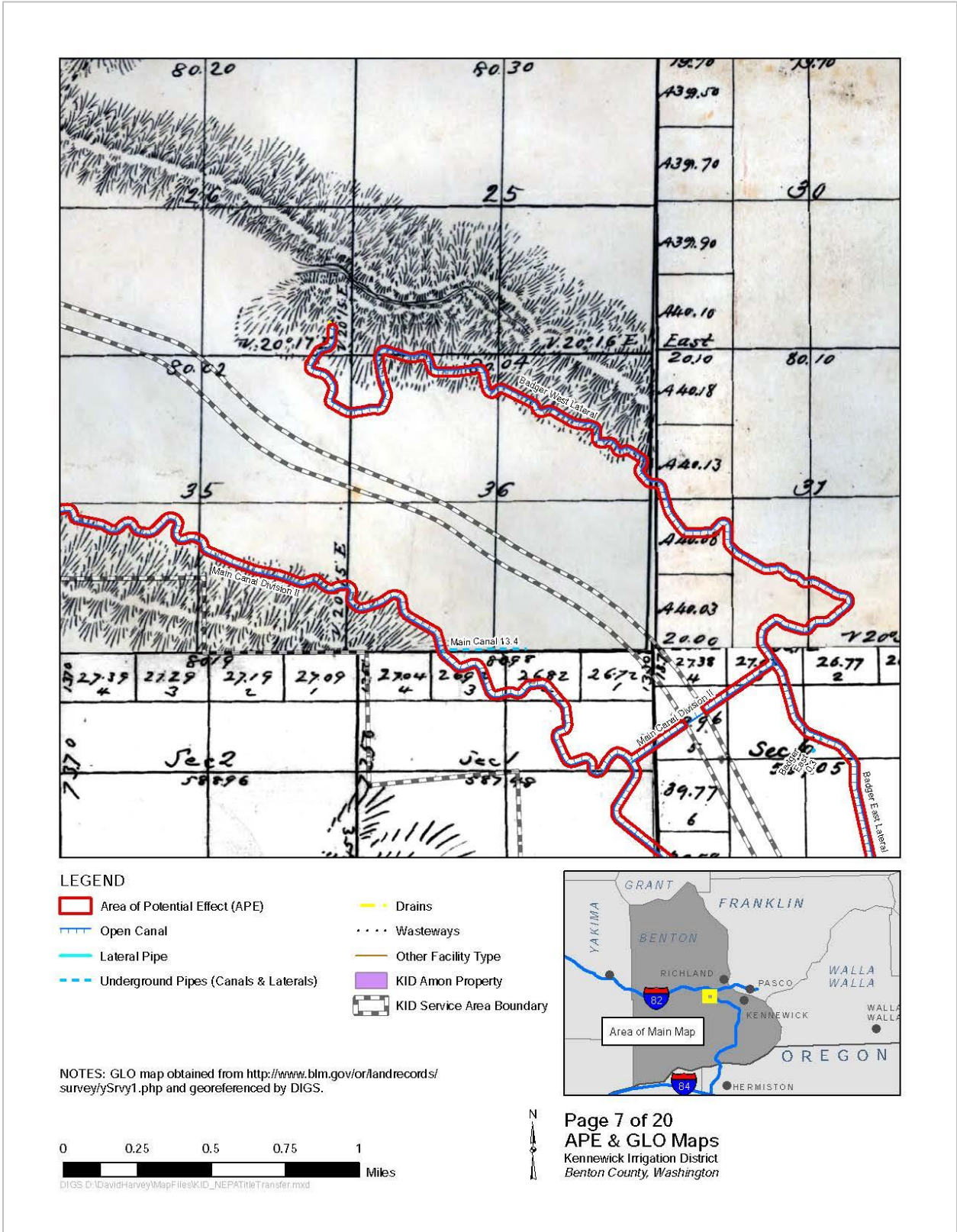


Figure B-7. Kennewick Main Canal Division II and Badger West and East Laterals, GLO Map

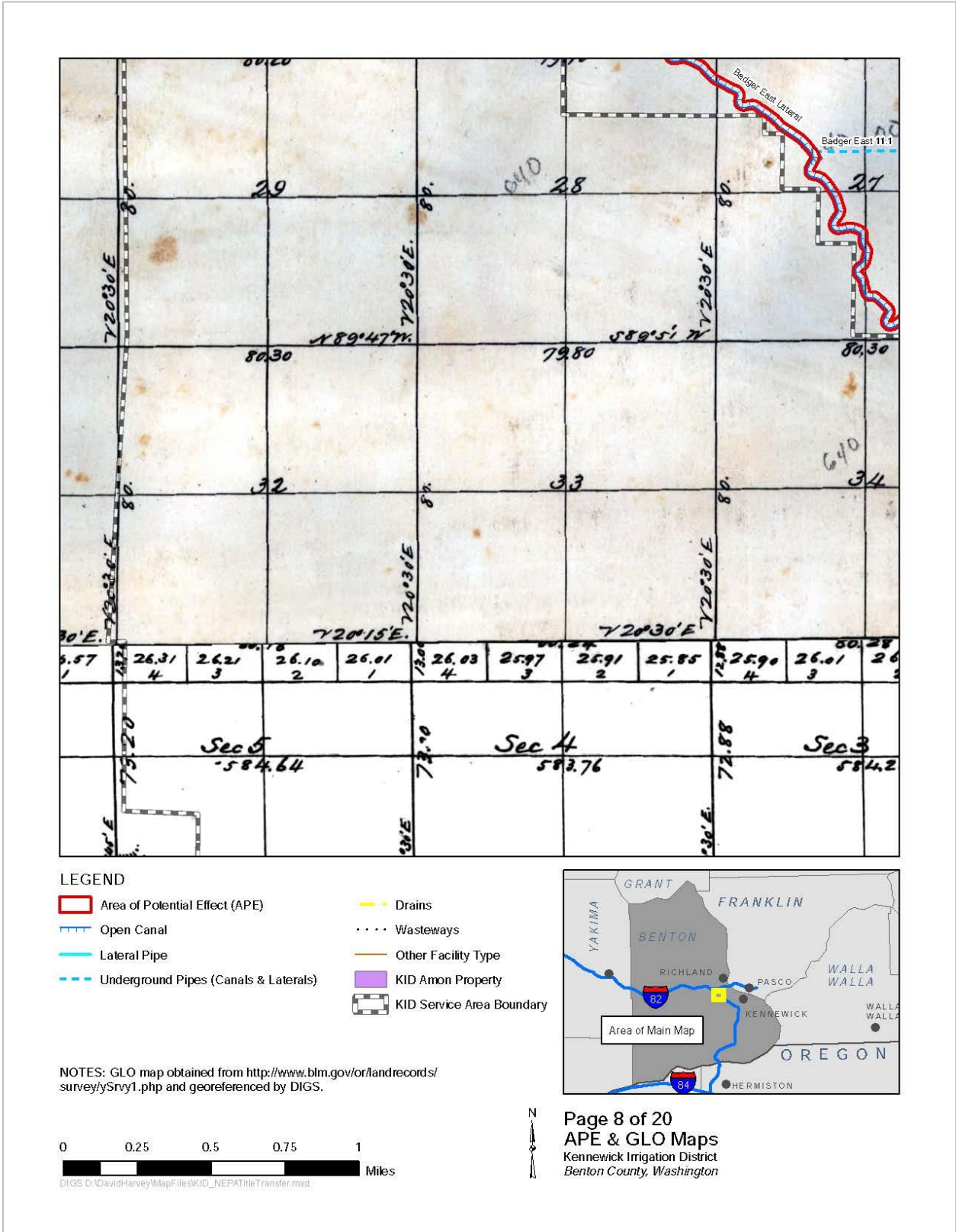


Figure B-8. Badger East Lateral, GLO Map

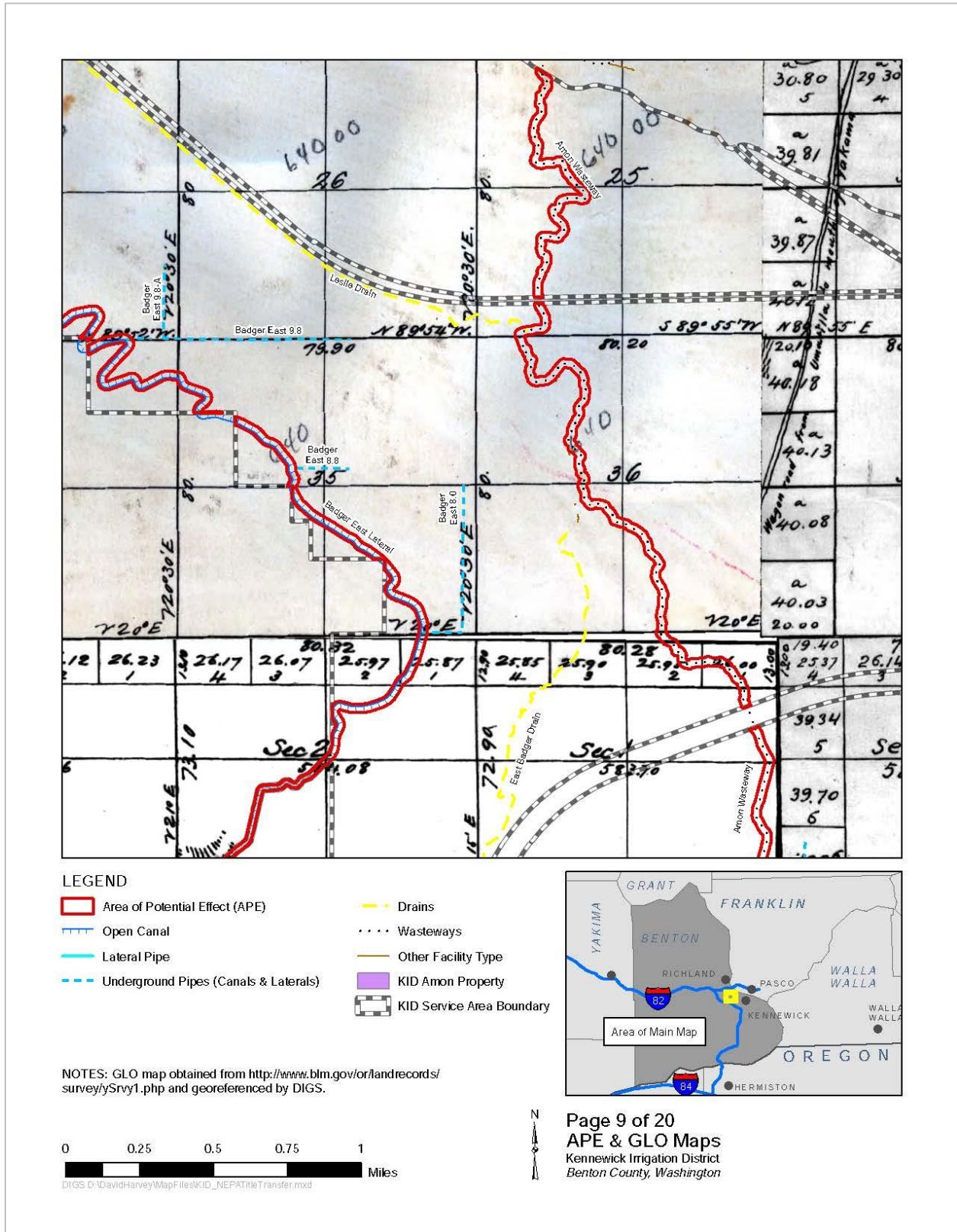


Figure B-9. Badger East Lateral and Amon Wasteway, GLO Map

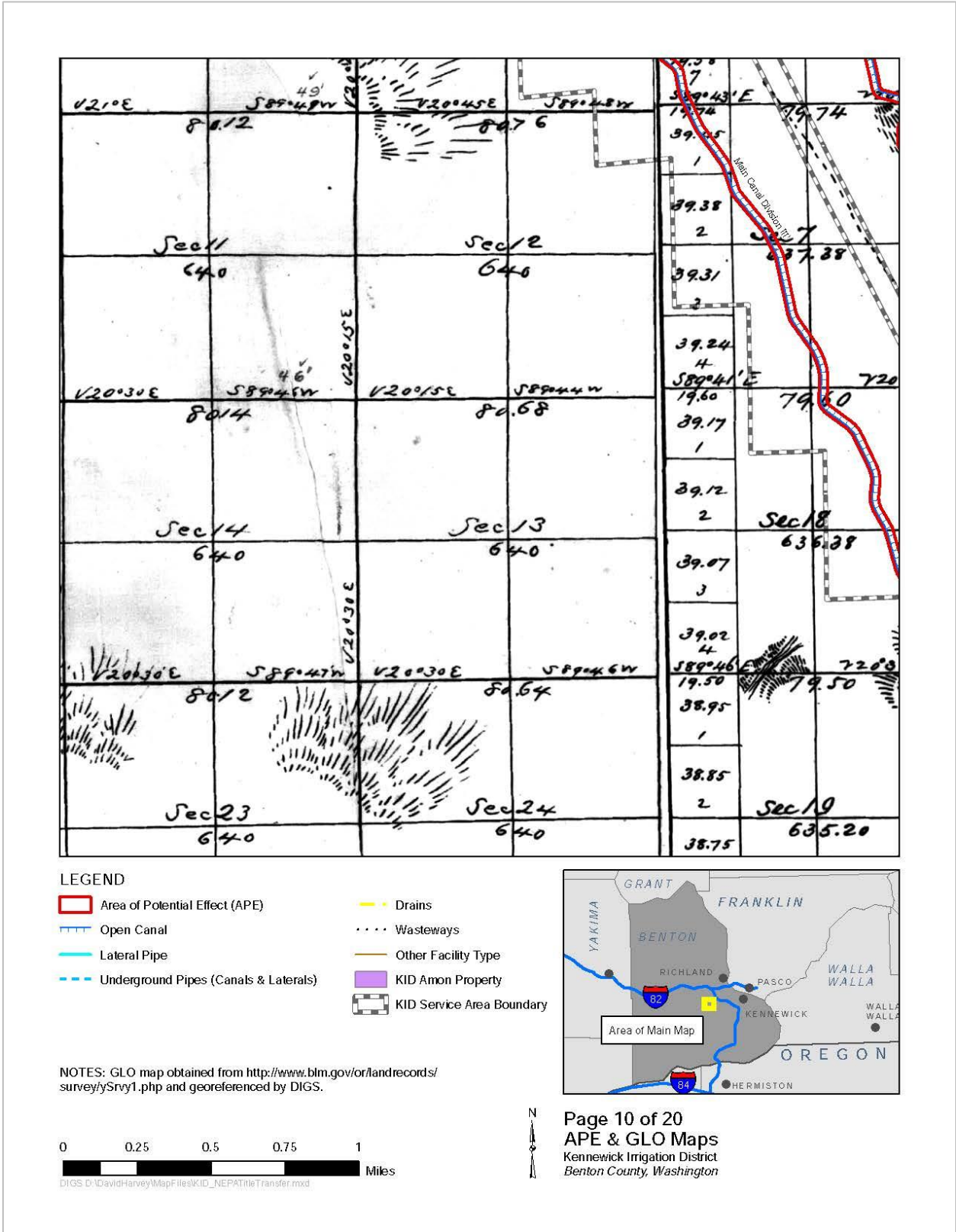


Figure B-10. Kennewick Main Canal Division III, GLO Map

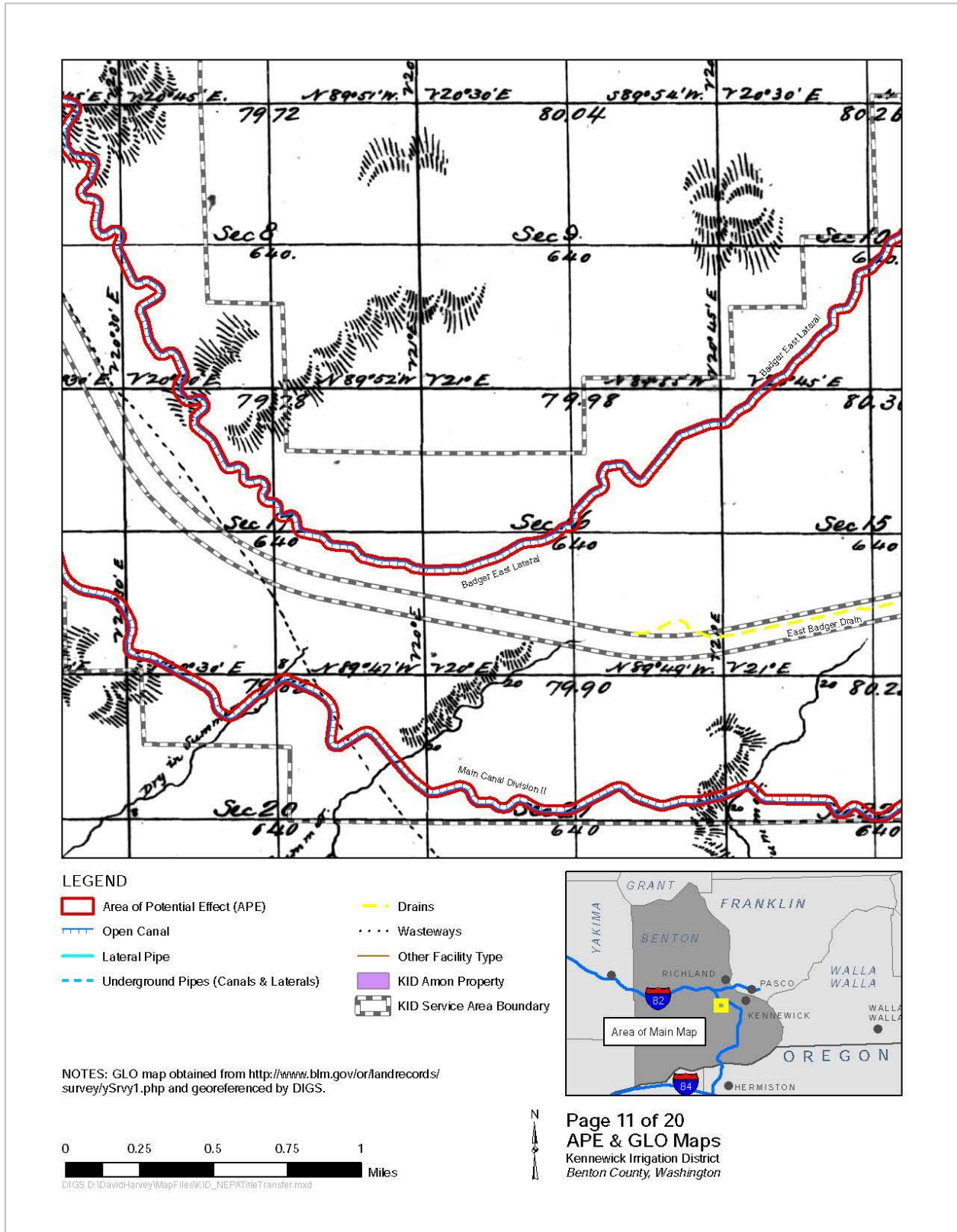


Figure B-11. Kennewick Main Canal Division II and Badger East Lateral, GLO Map

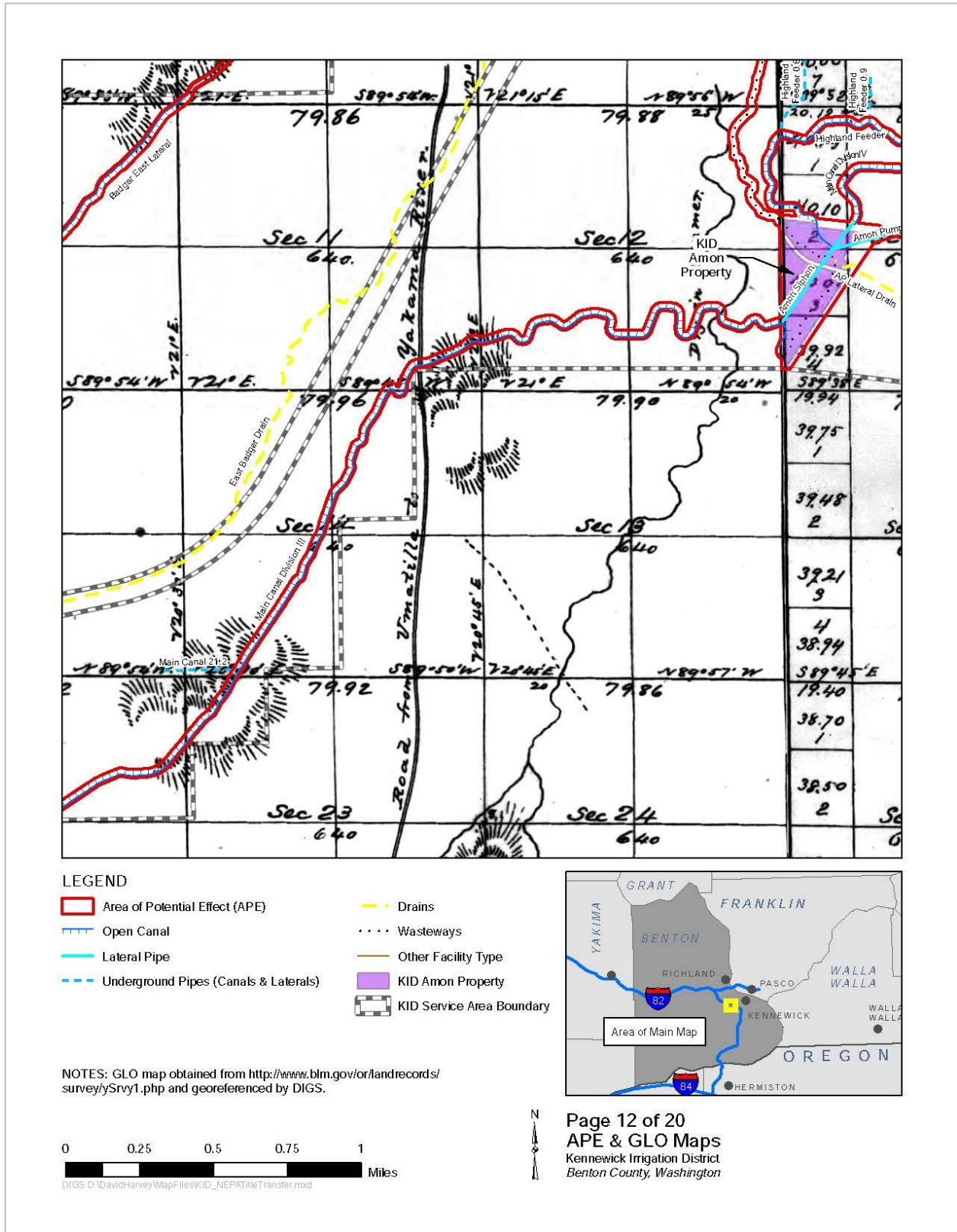


Figure B-12. Kennewick Main Canal Division III and IV, Baadger East Lateral, Highland Feeder Canal, Amon Pump Lateral, AP Lateral Drain, Amon Siphon, and KID Amon Property, GLO Map

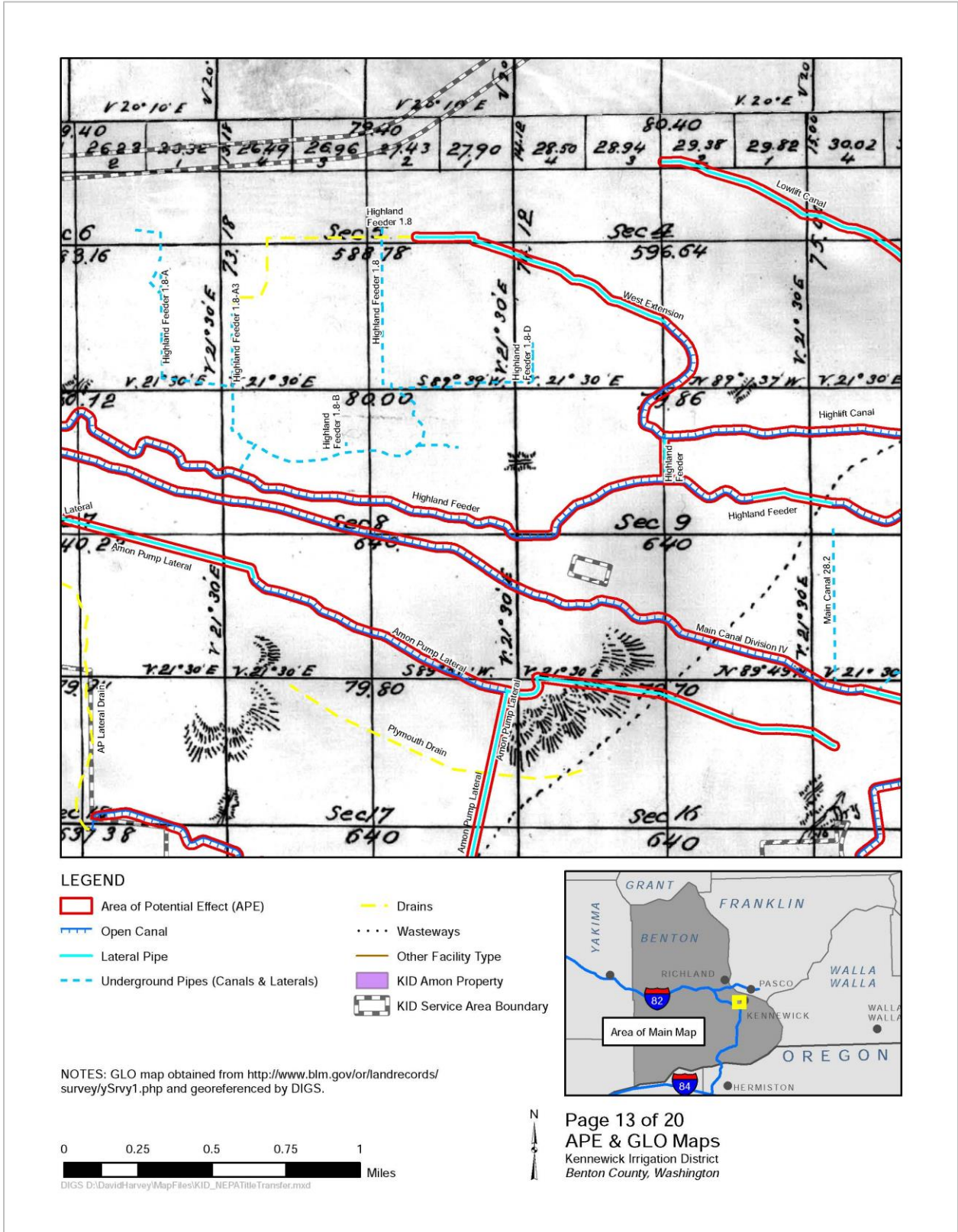


Figure B-13. Kennewick Main Canal Division IV, West Extension, Plymouth Drain, Amon Pump Lateral, Highland Feeder Canal, and Highlift and Lowlift Canals, GLO Map

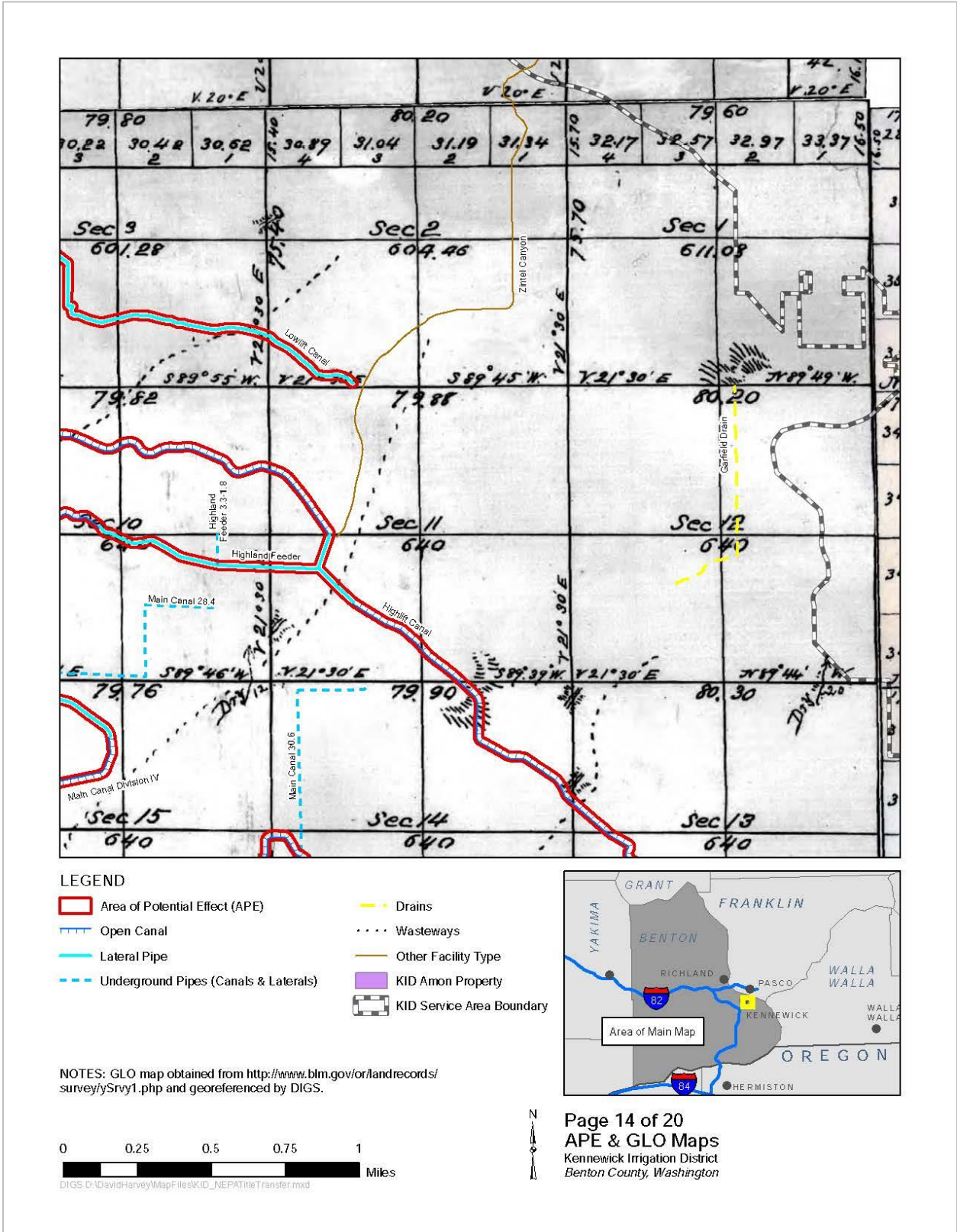


Figure B-14. Kennewick Main Canal Division IV, Highland Feeder Canal, Highlift and Lowlift Canals, GLO Map

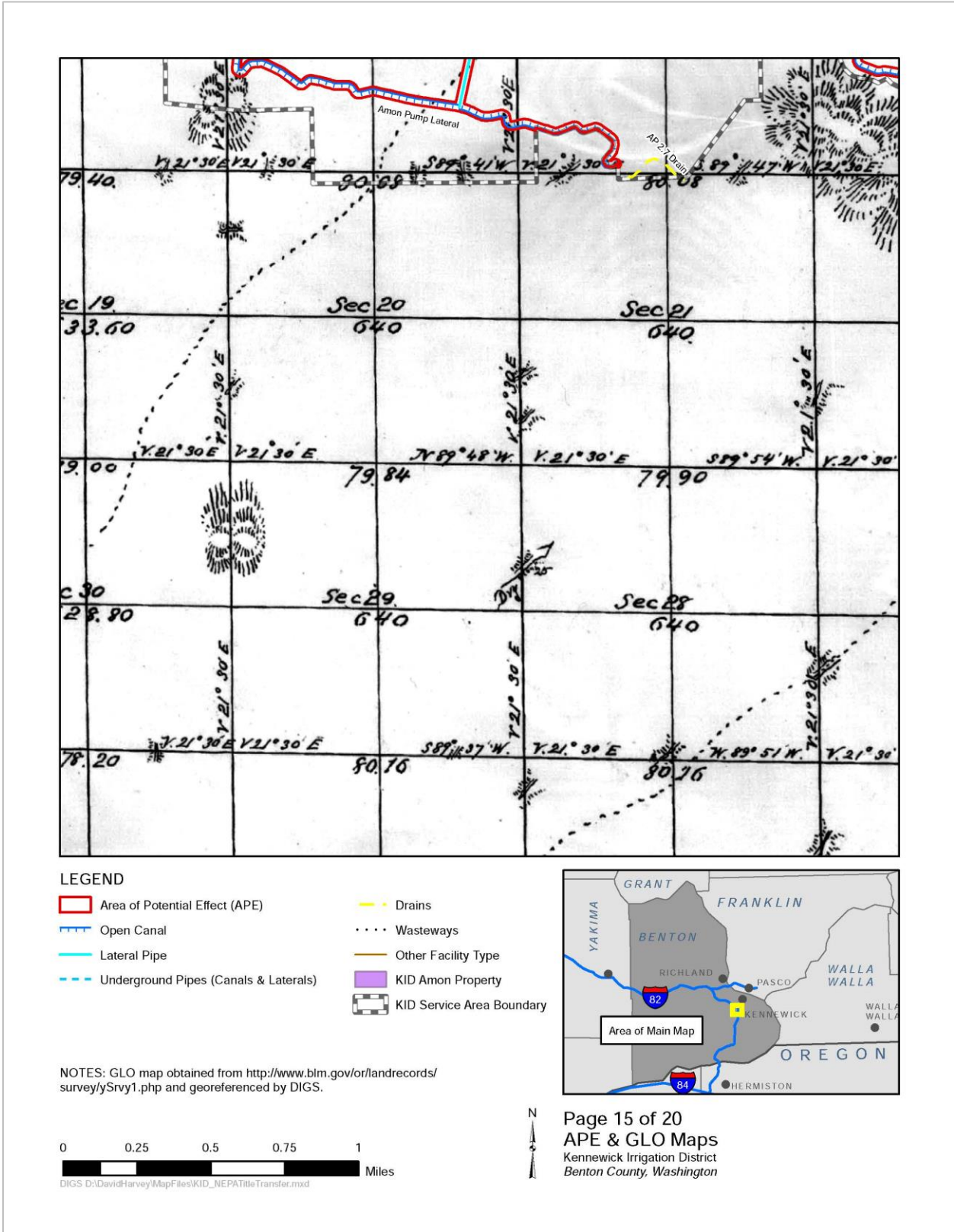


Figure B-15. Amon Pump Lateral, GLO Map

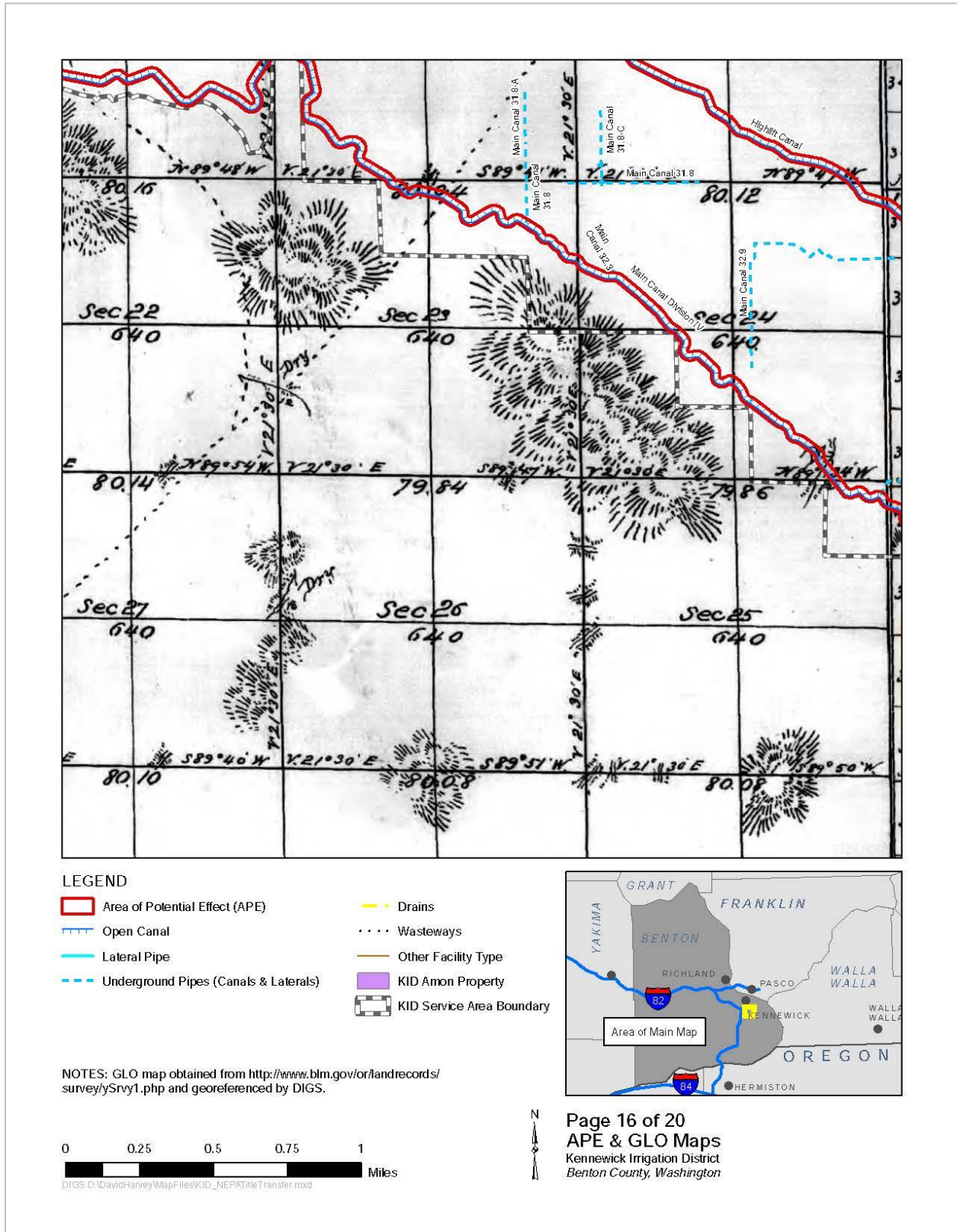


Figure B-16. Kennewick Main Canal Division IV and Highlift Canal, GLO Map

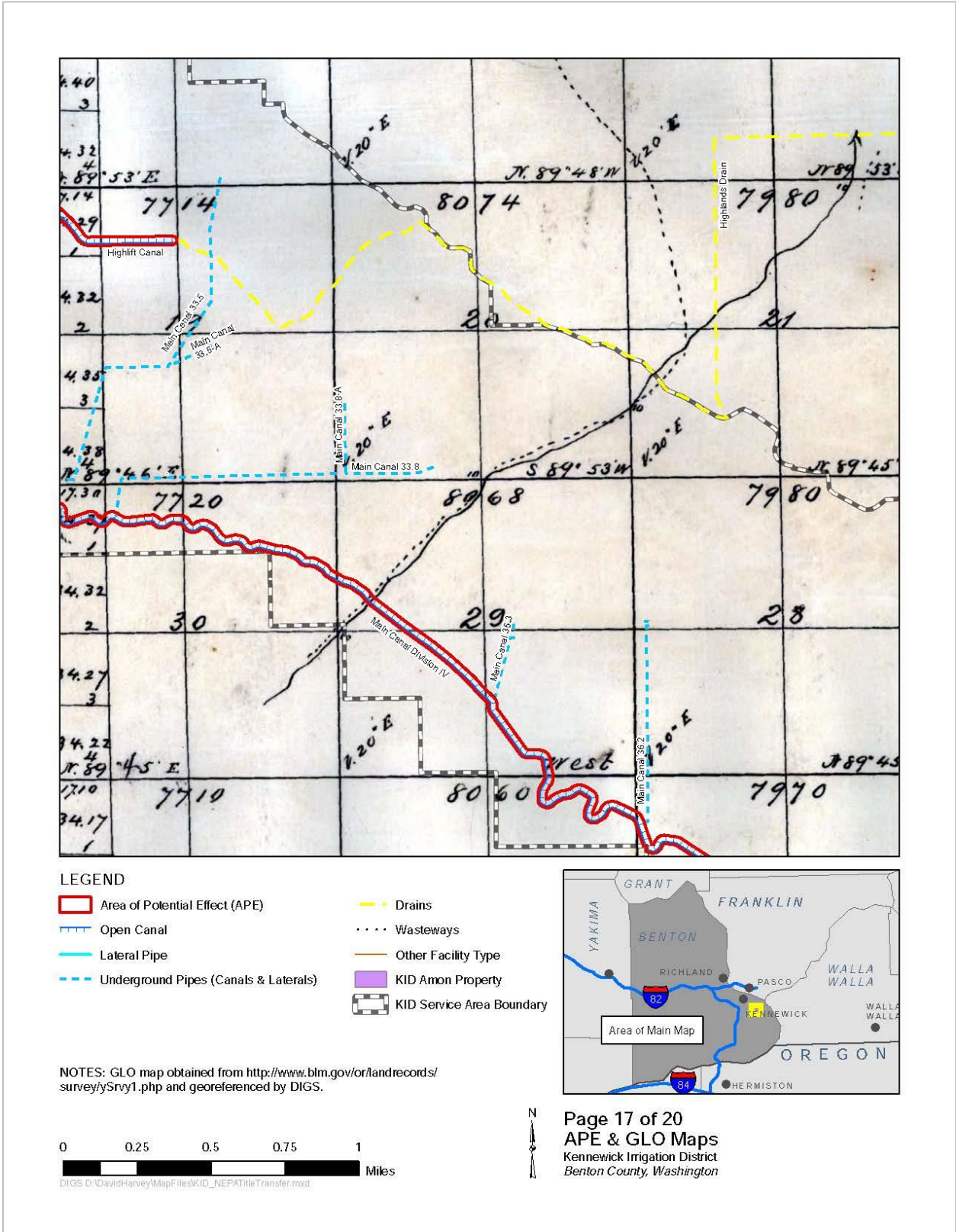


Figure B-17. Kennewick Main Canal Division IV and Highlift Canal, GLO Map

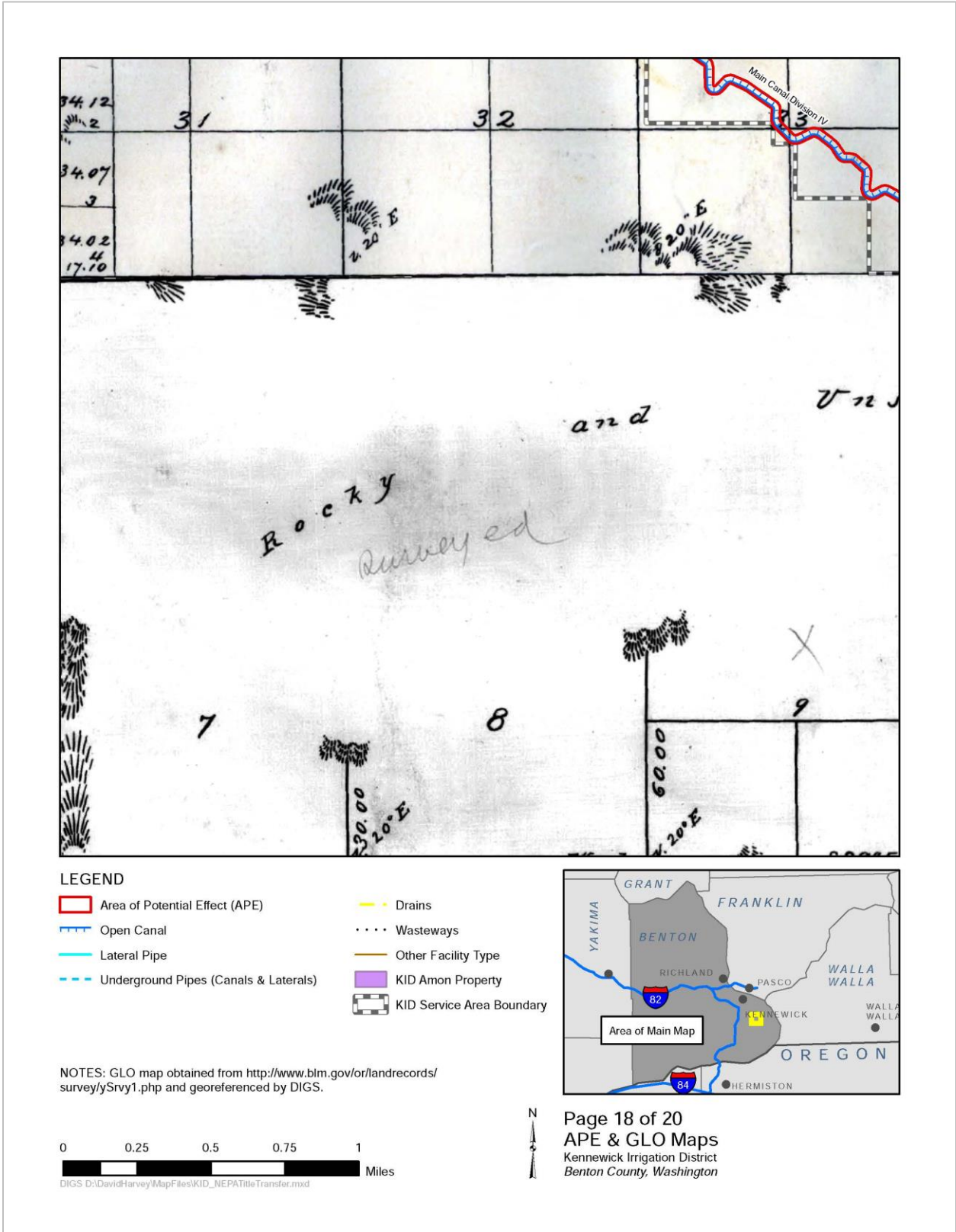


Figure B-18. Kennewick Main Canal Division IV, GLO Map

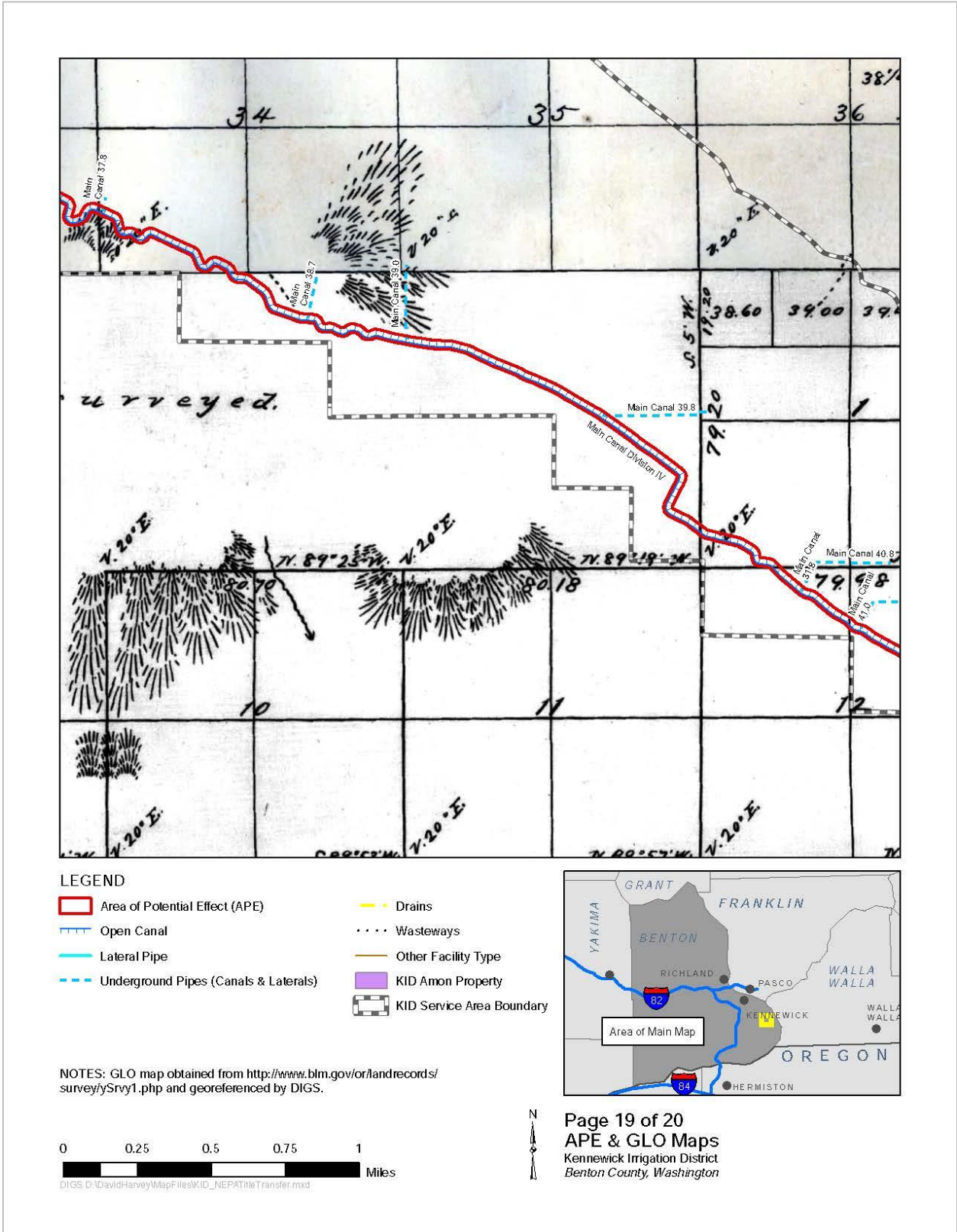


Figure B-19. Kennewick Main Canal Division IV, MP 37.8 to 41.0, GLO Map

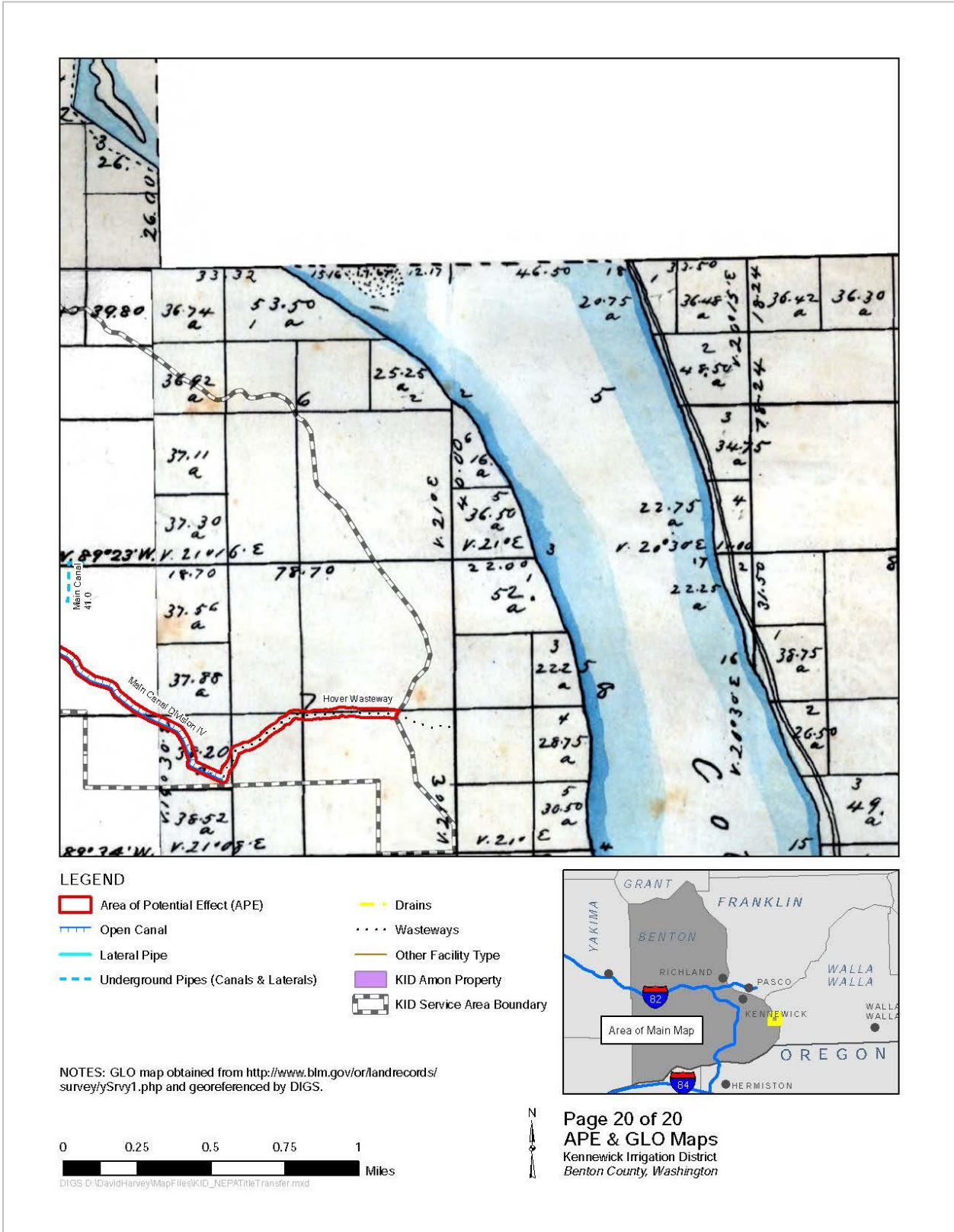


Figure B-20. Kennewick Main Canal Division IV and Hover Wasteway, GLO Map

Appendix C – The Project APE Historic Topographic Map Book

This Appendix provides the 1917 historic topographic maps for the Project APE within the title transfer area.

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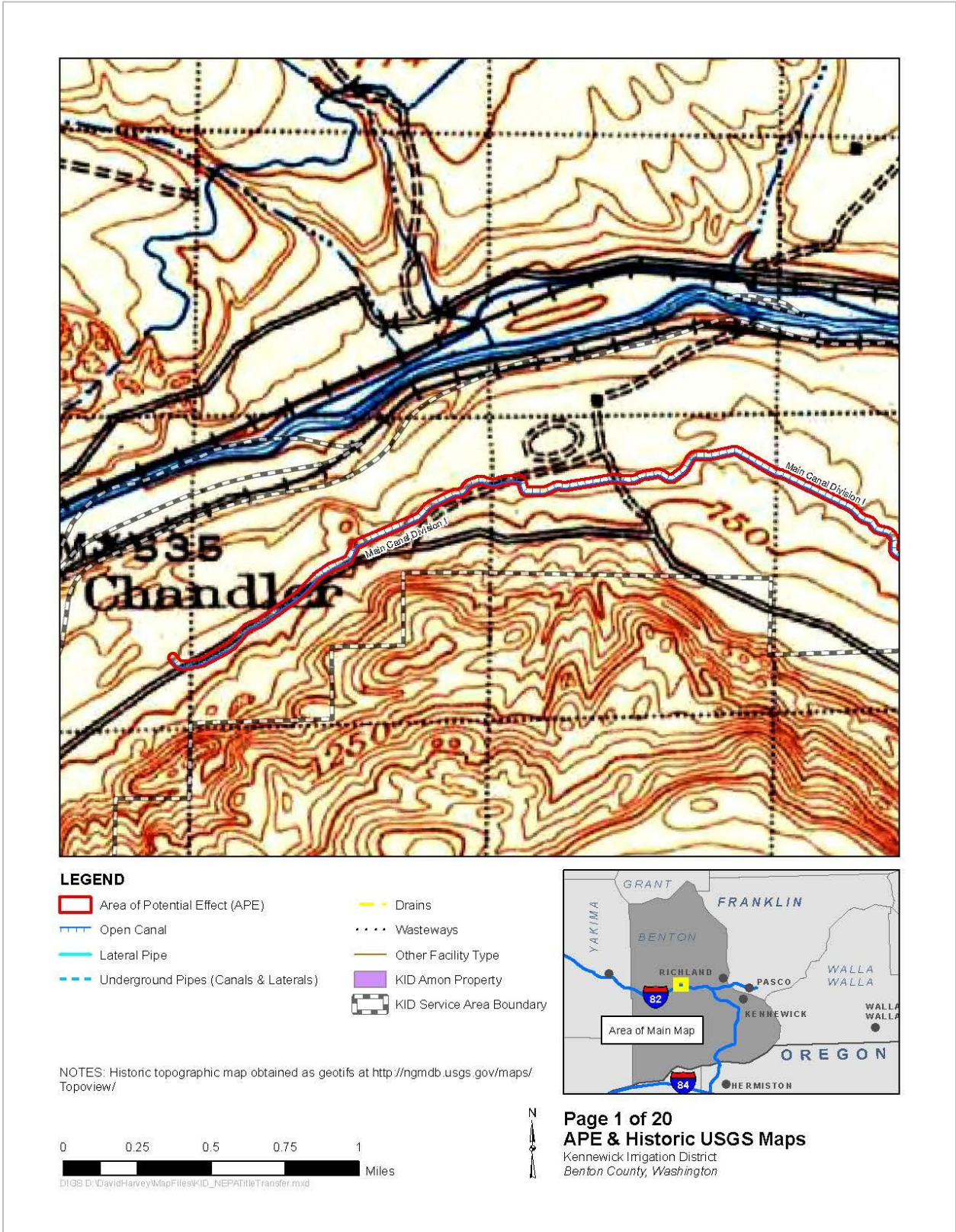


Figure C-1. Kennewick Main Canal Division I, Historic Map

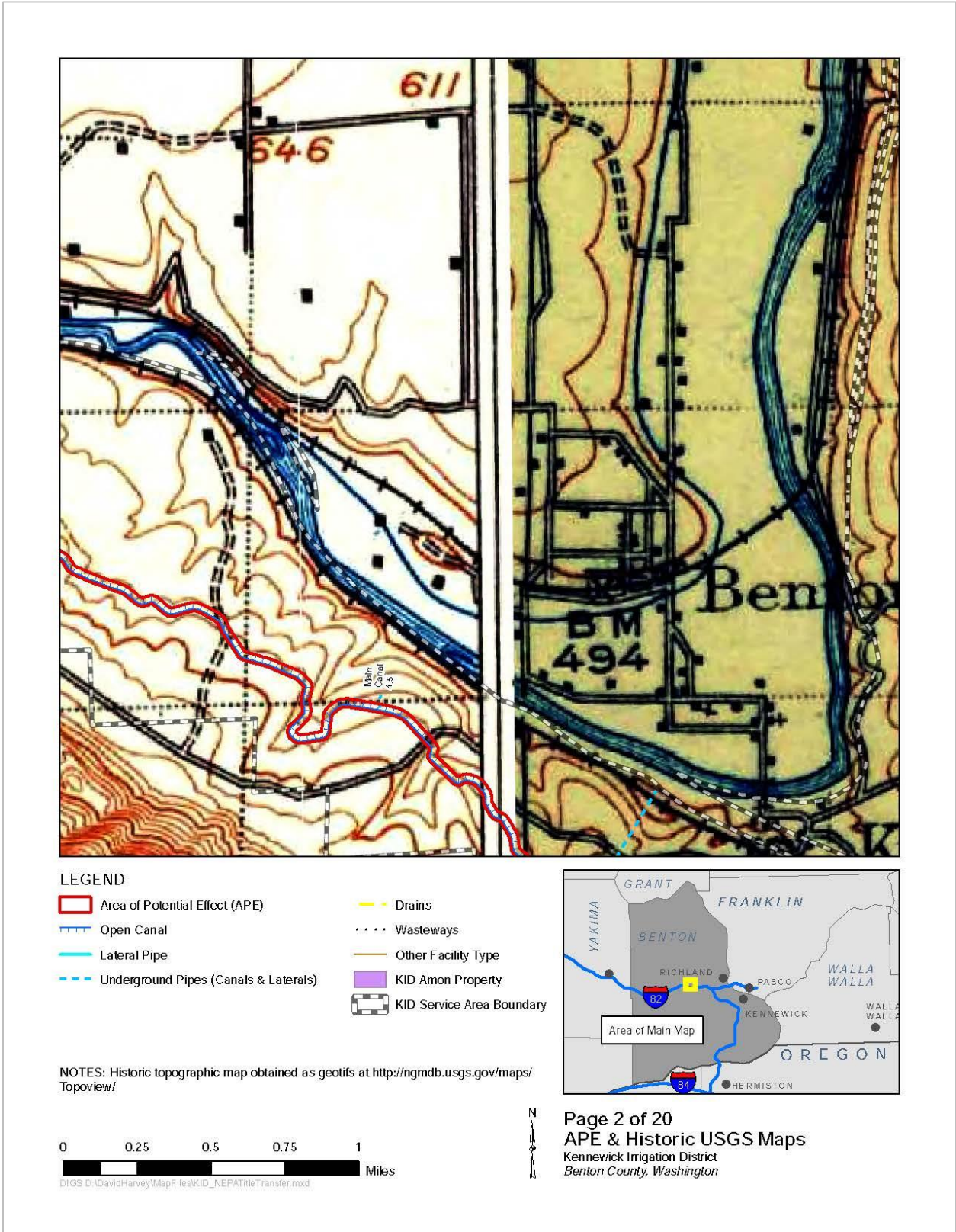


Figure C-2. Kennewick Main Canal Division I, MP 4.5, Historic Map

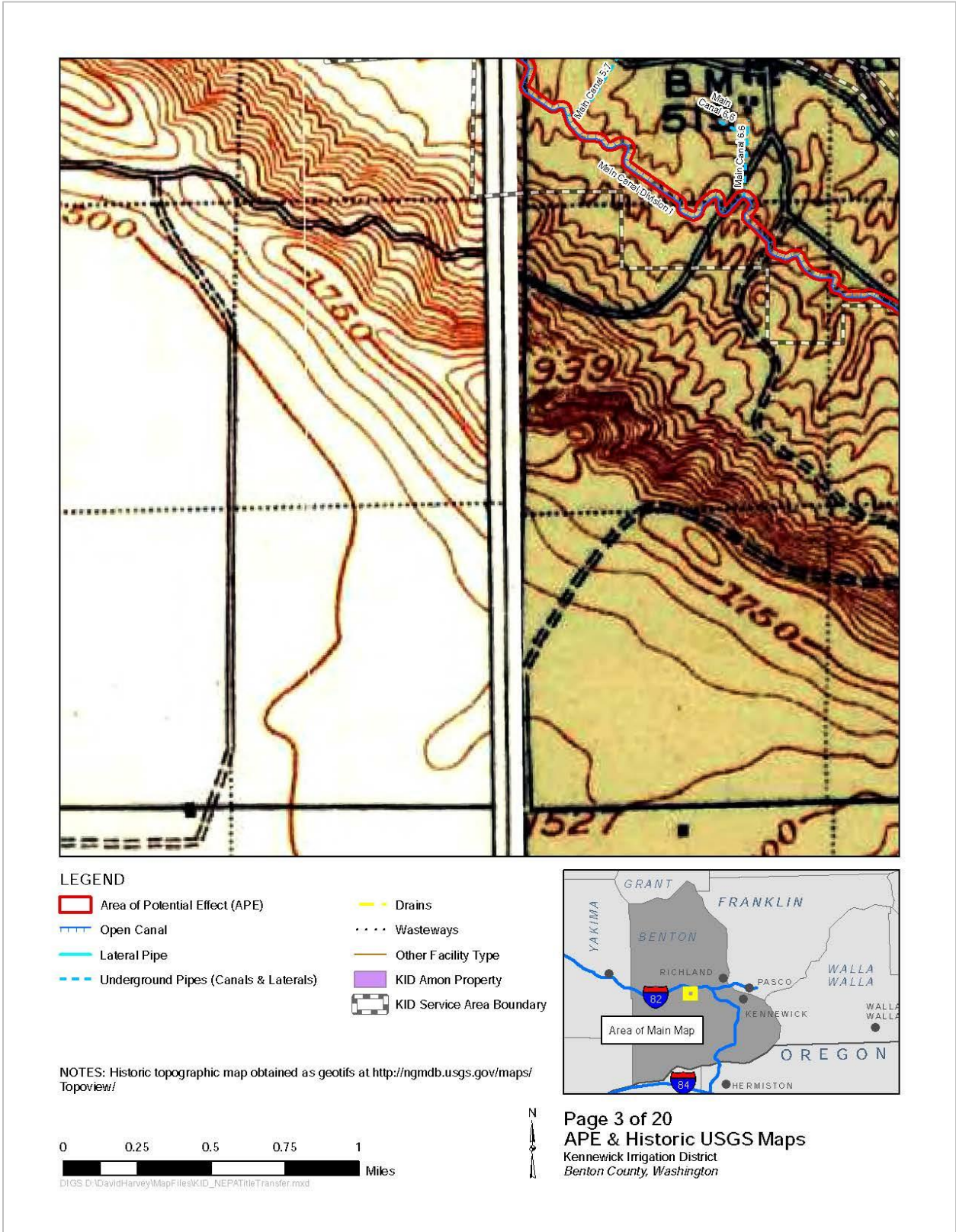
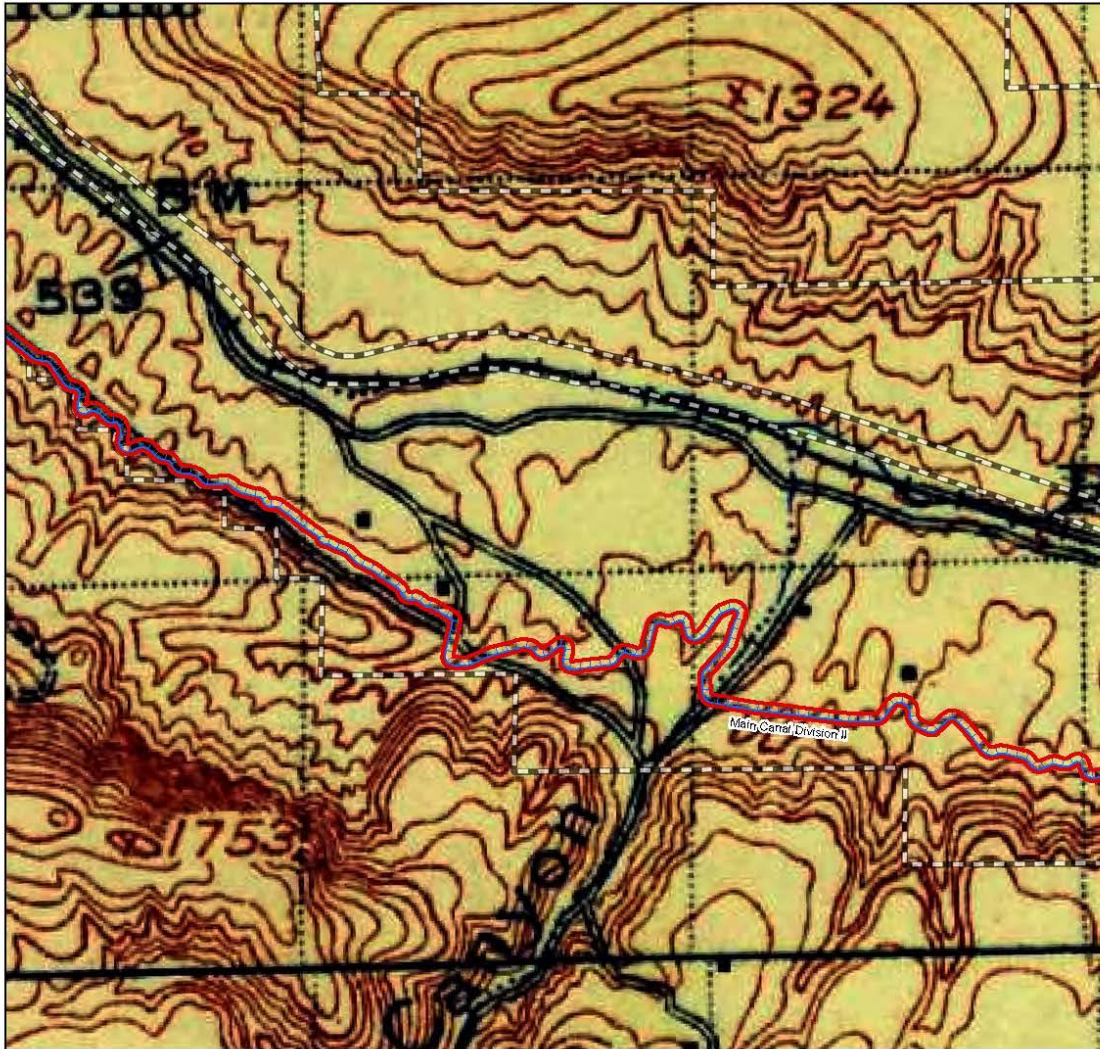


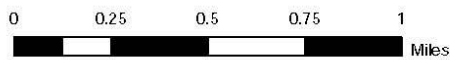
Figure C-3. Kennewick Main Canal Division I, MP 5.7, Historic Map



LEGEND

- Area of Potential Effect (APE)
- Open Canal
- Lateral Pipe
- Underground Pipes (Canals & Laterals)
- Drains
- Wasteways
- Other Facility Type
- KID Amon Property
- KID Service Area Boundary

NOTES: Historic topographic map obtained as geotifs at <http://ngmdb.usgs.gov/maps/Topoview/>

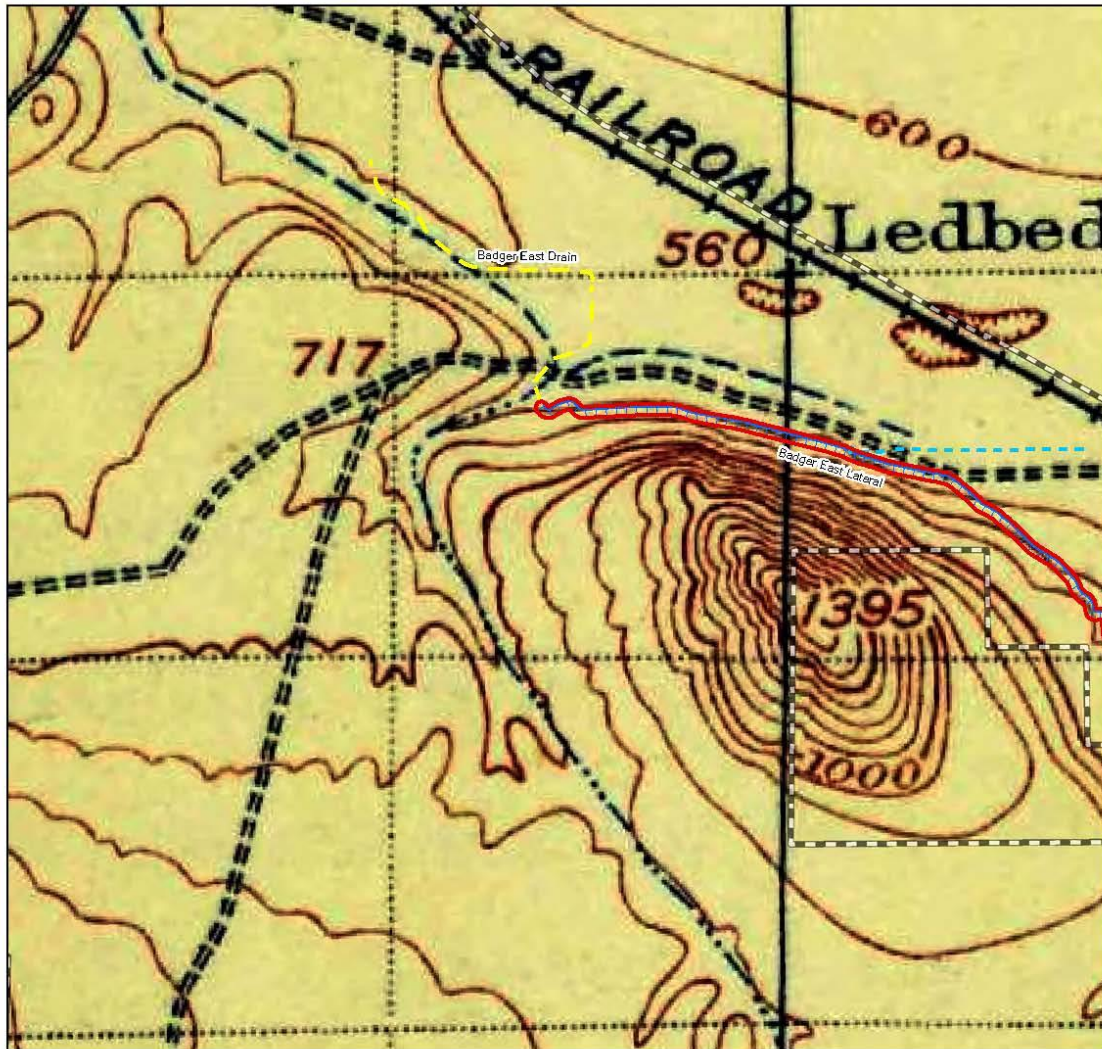


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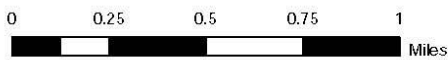
Figure C-4. Kennewick Main Canal Division II, Historic Map



LEGEND

- Area of Potential Effect (APE)
- Open Canal
- Lateral Pipe
- Underground Pipes (Canals & Laterals)
- Drains
- Wasteways
- Other Facility Type
- KID Amon Property
- KID Service Area Boundary

NOTES: Historic topographic map obtained as geotifs at <http://ngmdb.usgs.gov/maps/Topoview/>

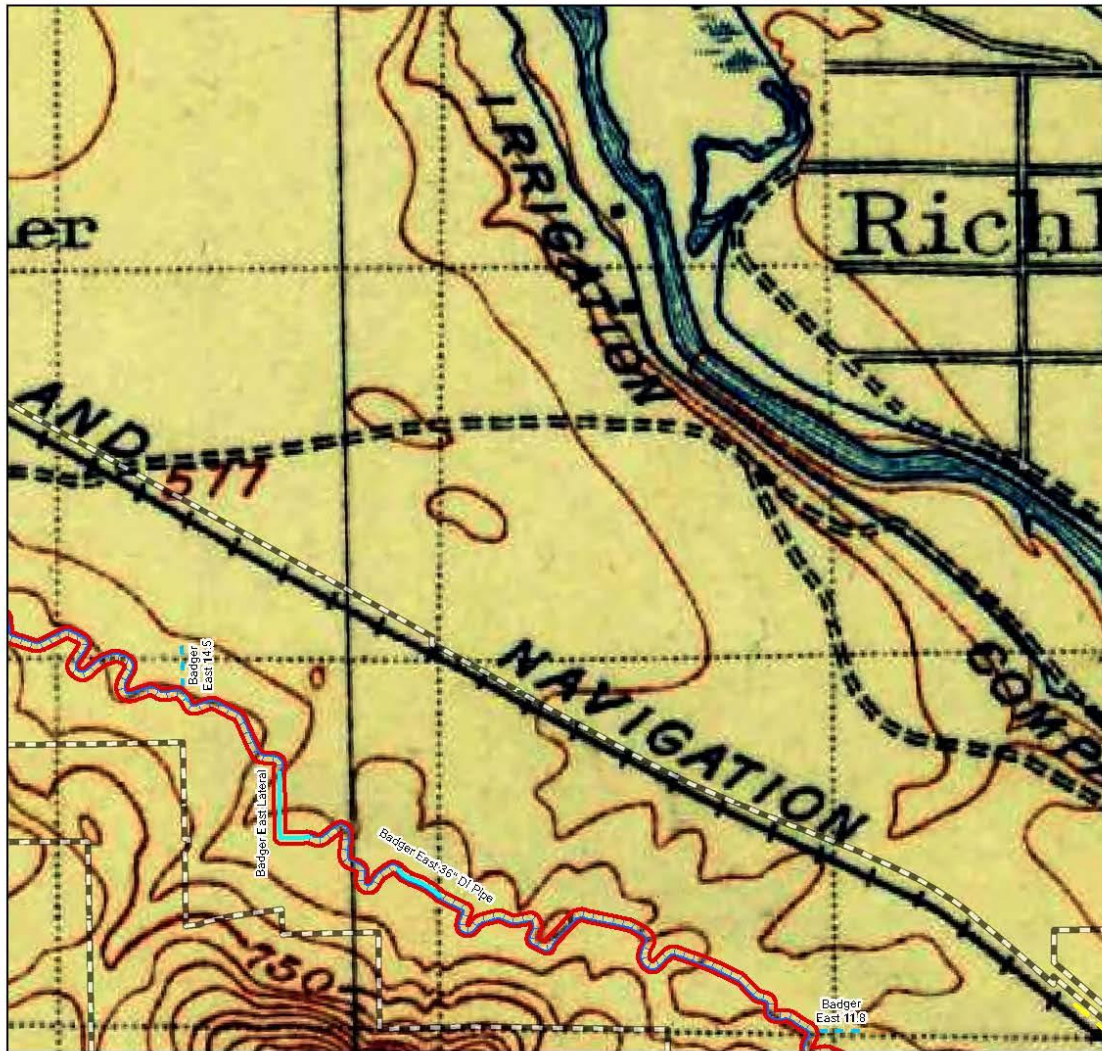


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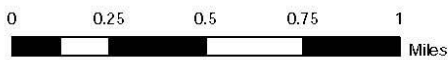
Figure C-5. Badger East Lateral, Historic Map



LEGEND

- Area of Potential Effect (APE)
- Open Canal
- Lateral Pipe
- Underground Pipes (Canals & Laterals)
- Drains
- Wasteways
- Other Facility Type
- KID Amon Property
- KID Service Area Boundary

NOTES: Historic topographic map obtained as geotifs at <http://ngmdb.usgs.gov/maps/Topoview/>



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Figure C-6. Badger East Lateral, MP 11.8 to 14.5, Historic Map

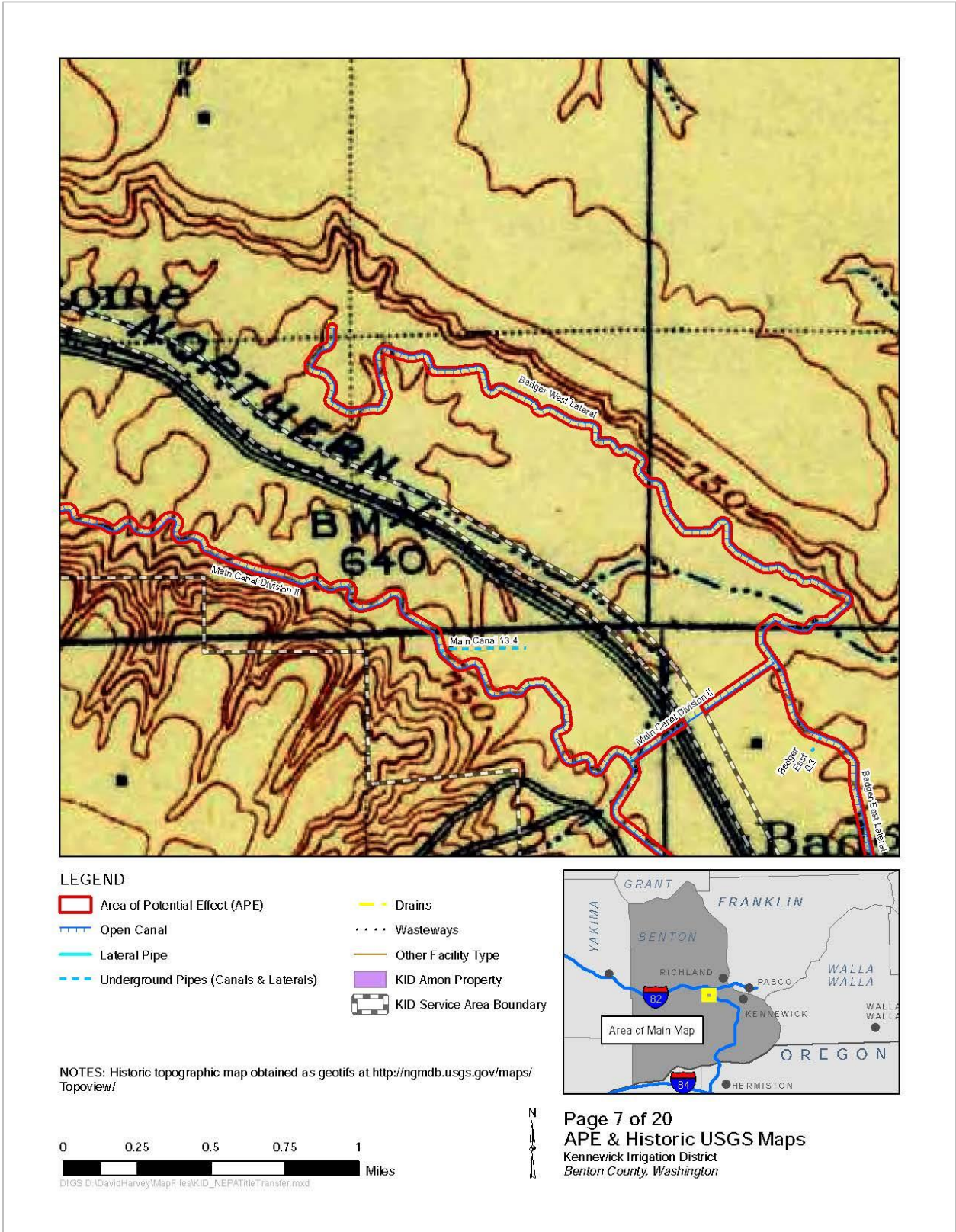


Figure C-7. Kennewick Main Canal Division II and Badger West and East Laterals, Historic Map

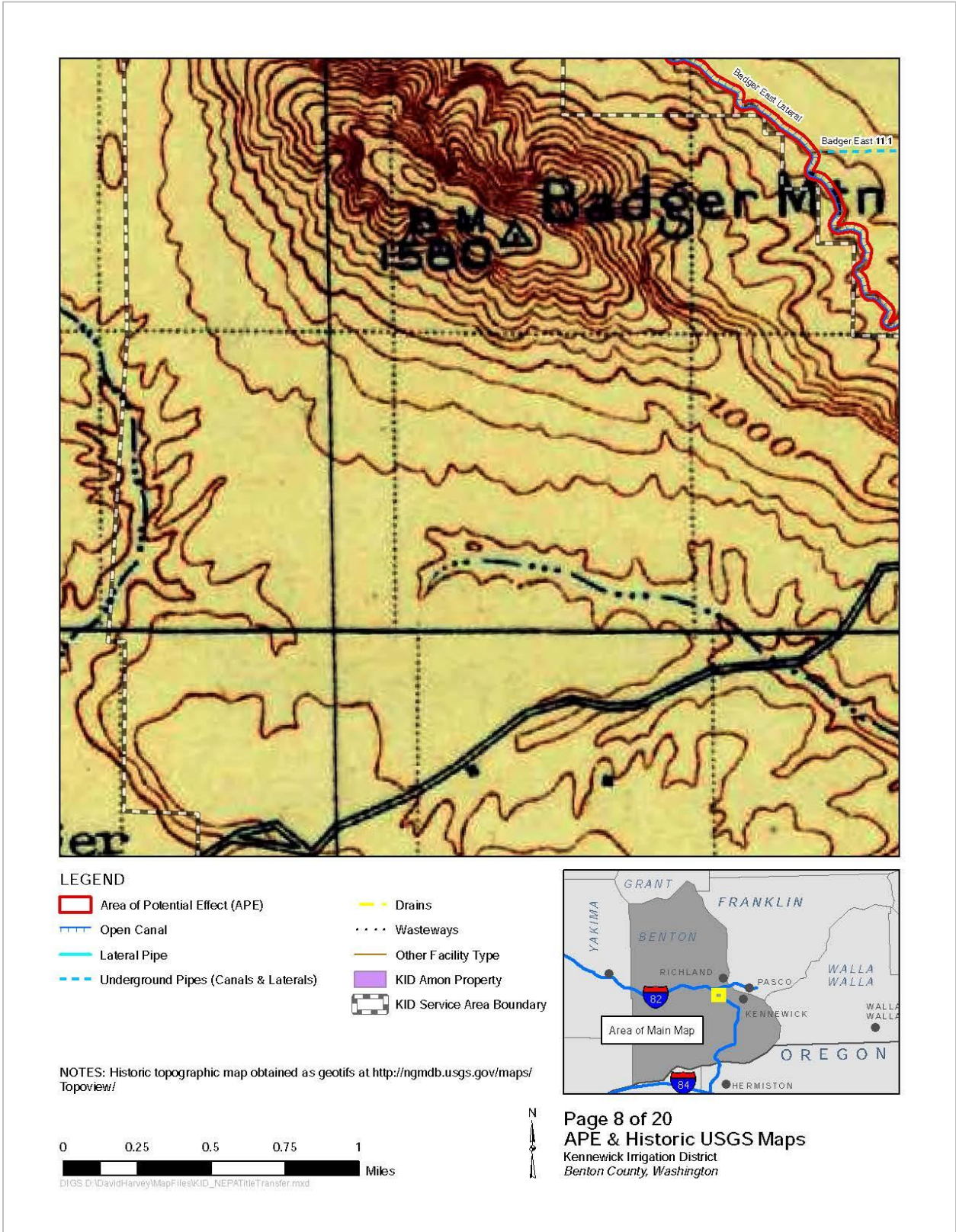
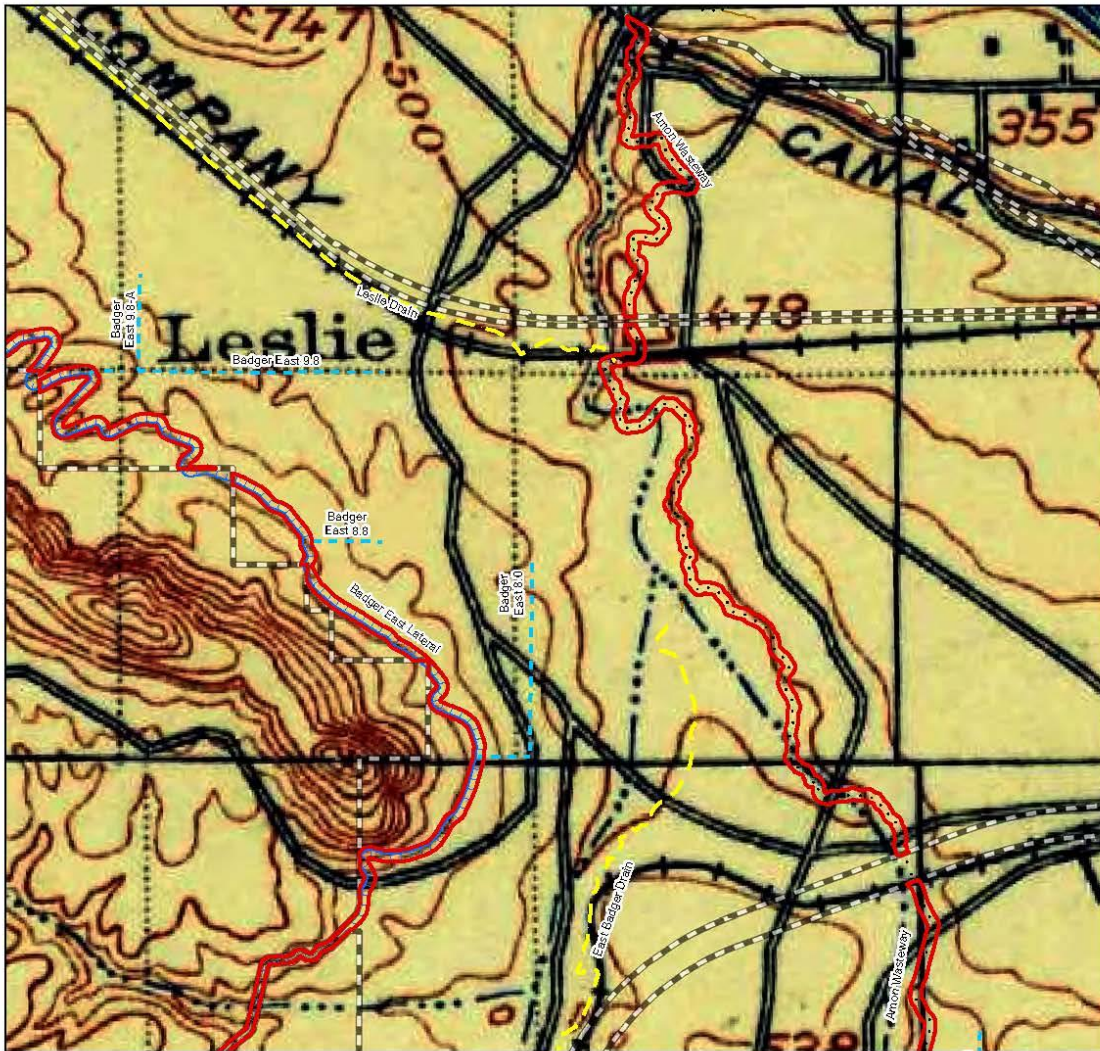


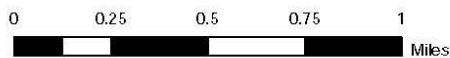
Figure C-8. Badger East Lateral, MP 11.1, Historic Map



LEGEND

- Area of Potential Effect (APE)
- Open Canal
- Lateral Pipe
- Underground Pipes (Canals & Laterals)
- Drains
- Wasteways
- Other Facility Type
- KID Amon Property
- KID Service Area Boundary

NOTES: Historic topographic map obtained as geotifs at <http://ngmdb.usgs.gov/maps/Topoview/>

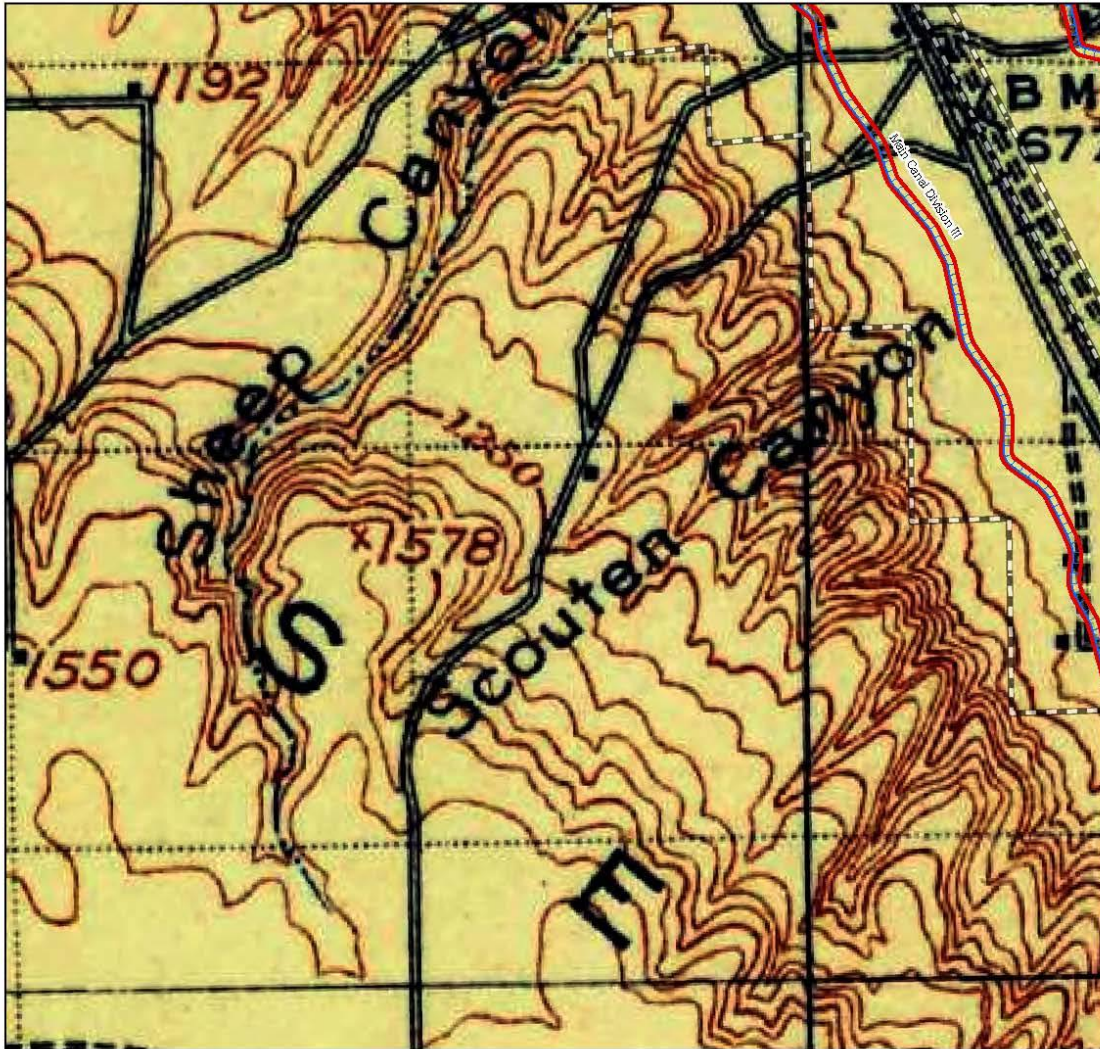


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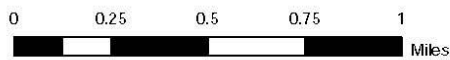
Figure C-9. Badger East Lateral and Amon Wasteway, Historic Map



LEGEND

- Area of Potential Effect (APE)
- Open Canal
- Lateral Pipe
- Underground Pipes (Canals & Laterals)
- Drains
- Wasteways
- Other Facility Type
- KID Amon Property
- KID Service Area Boundary

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Figure C-10. Kennebec Main Canal Division III, Historic Map

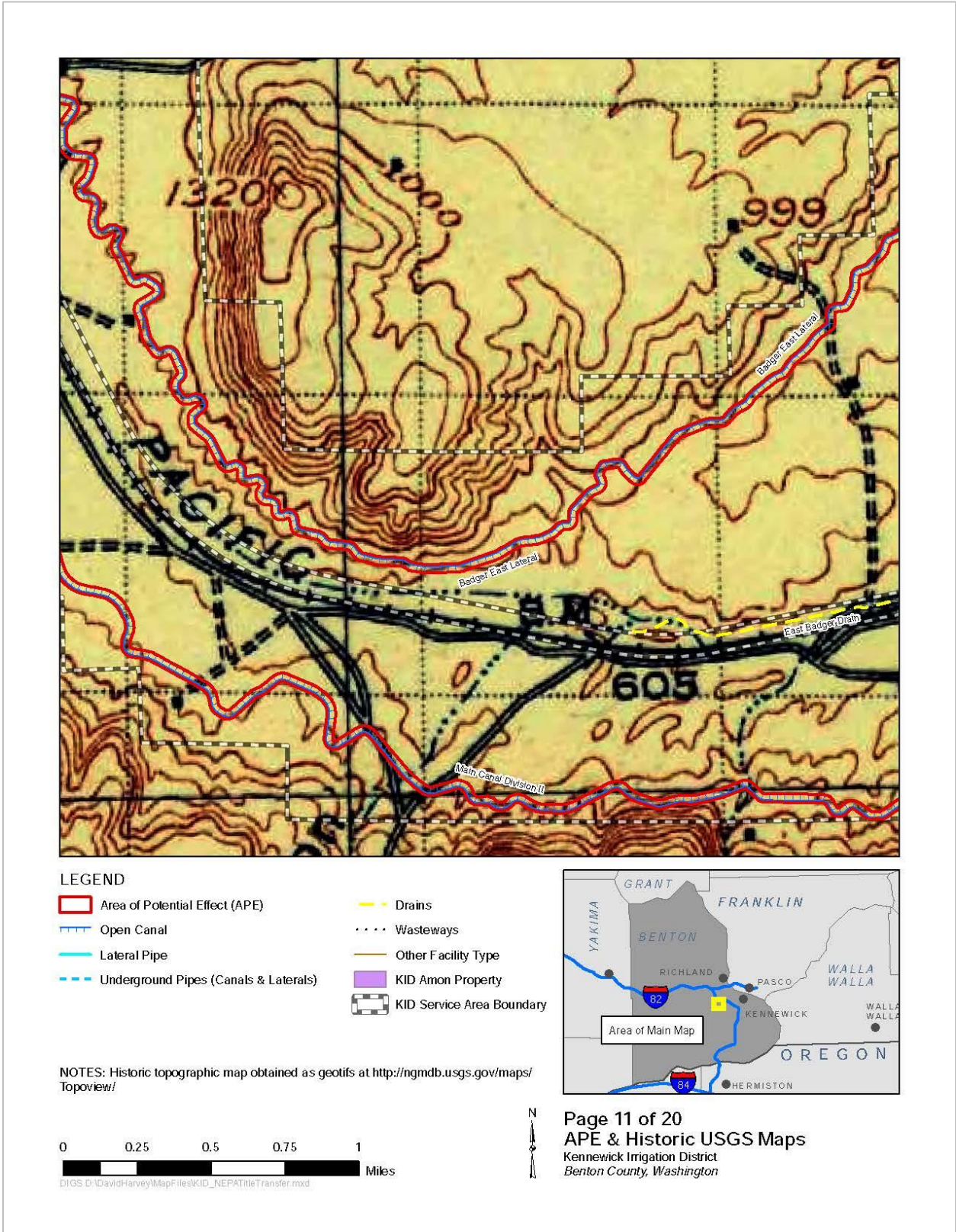


Figure C-11. Kennewick Main Canal Division II and Badger East Lateral and Drain, Historic Map

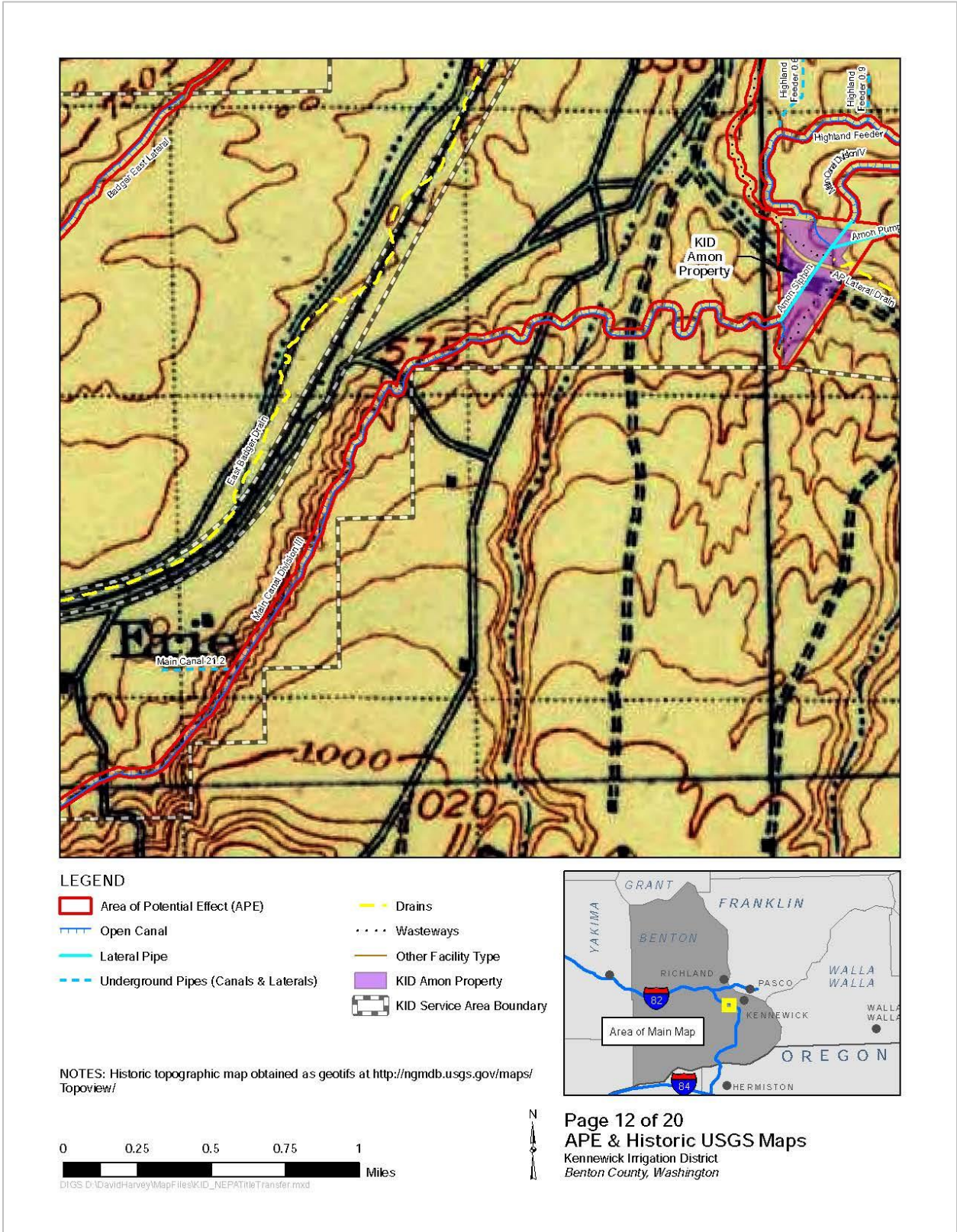


Figure C-12. Kennewick Main Canal Division III and IV, Badger East Lateral and Drain, Highland Feeder Canal, Amon Pump Lateral, AP Lateral Drain, Amon Siphon, and KID Amon Property, Historic Map

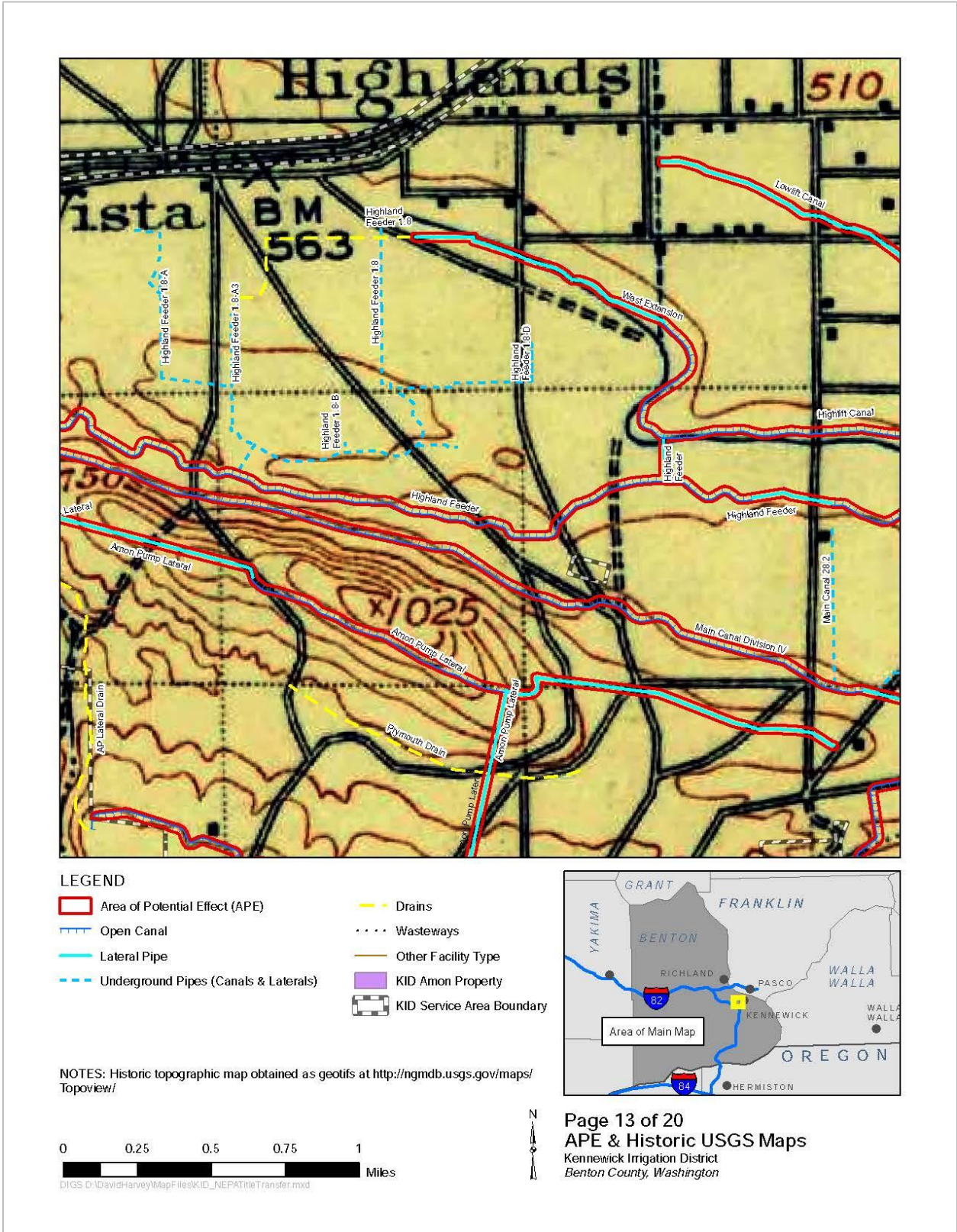


Figure C-13. Amon Pump Lateral, Highland Feeder Canal, Highlift and Lowlift Canals, West Extension, AP Lateral Drain, and Plymouth Drain, Historic Map

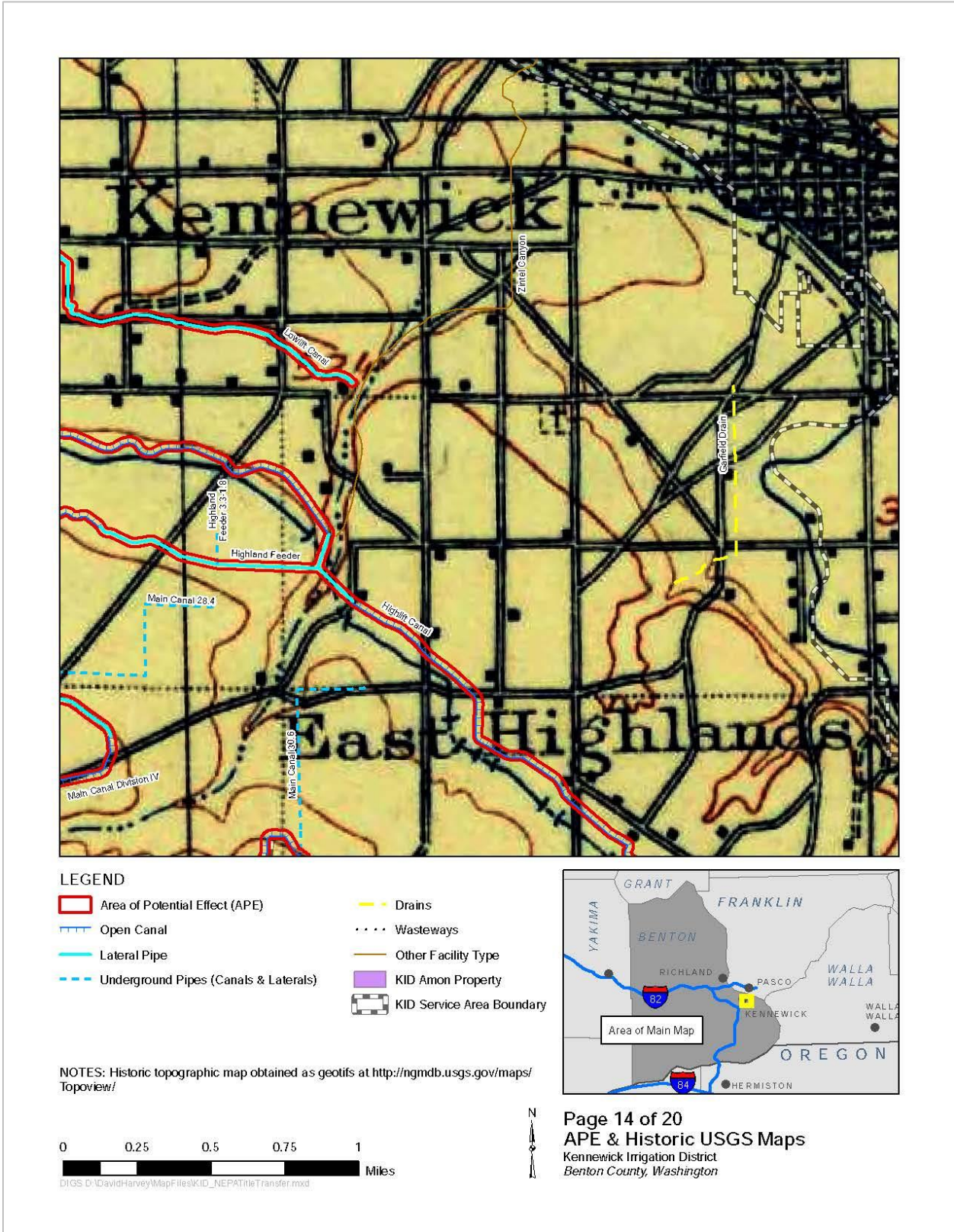


Figure C-14. Kennewick Main Canal Division IV, Highland Feeder Canal, Highlift and Lowlift Canals, and Garfield Drain, Historic Map

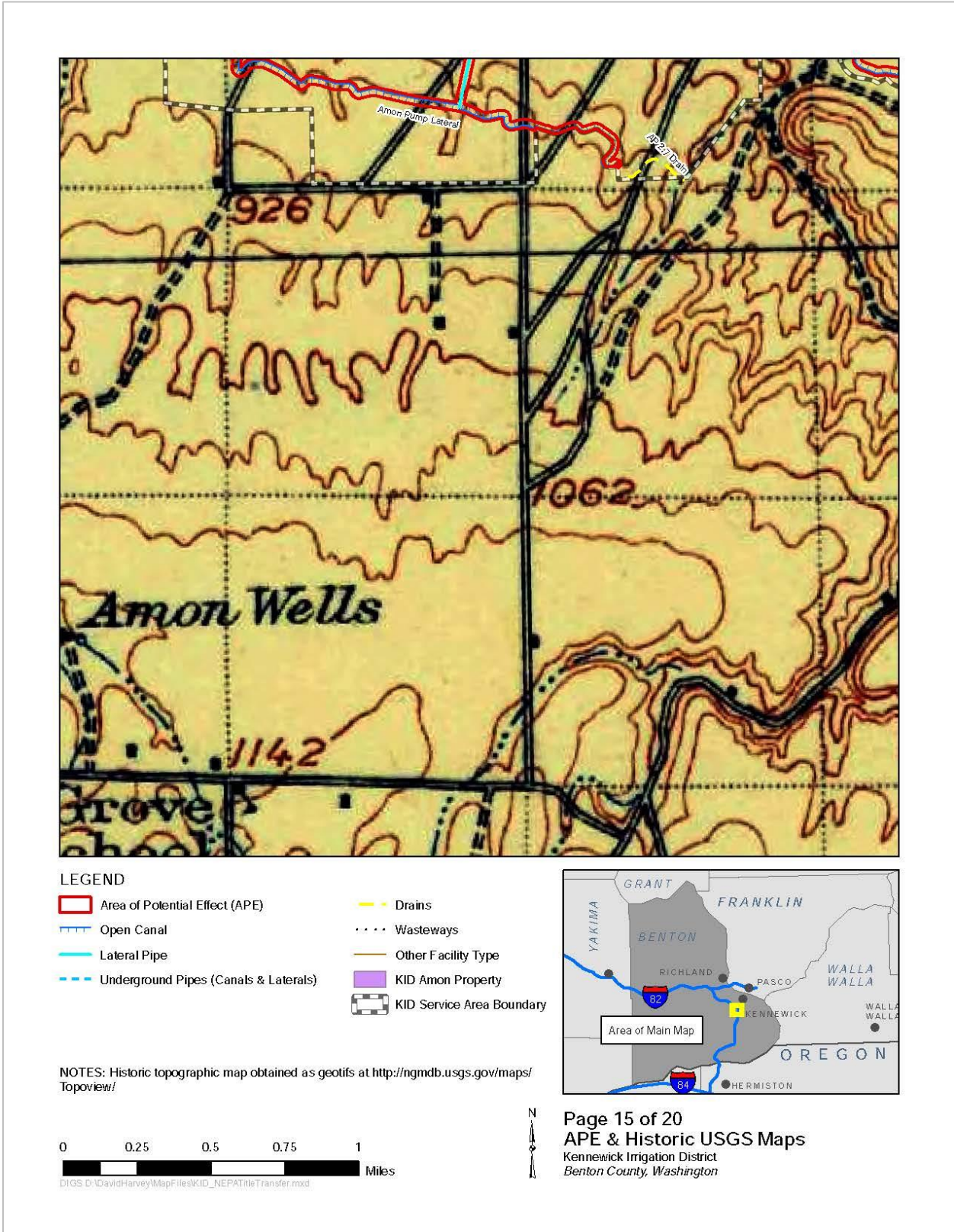
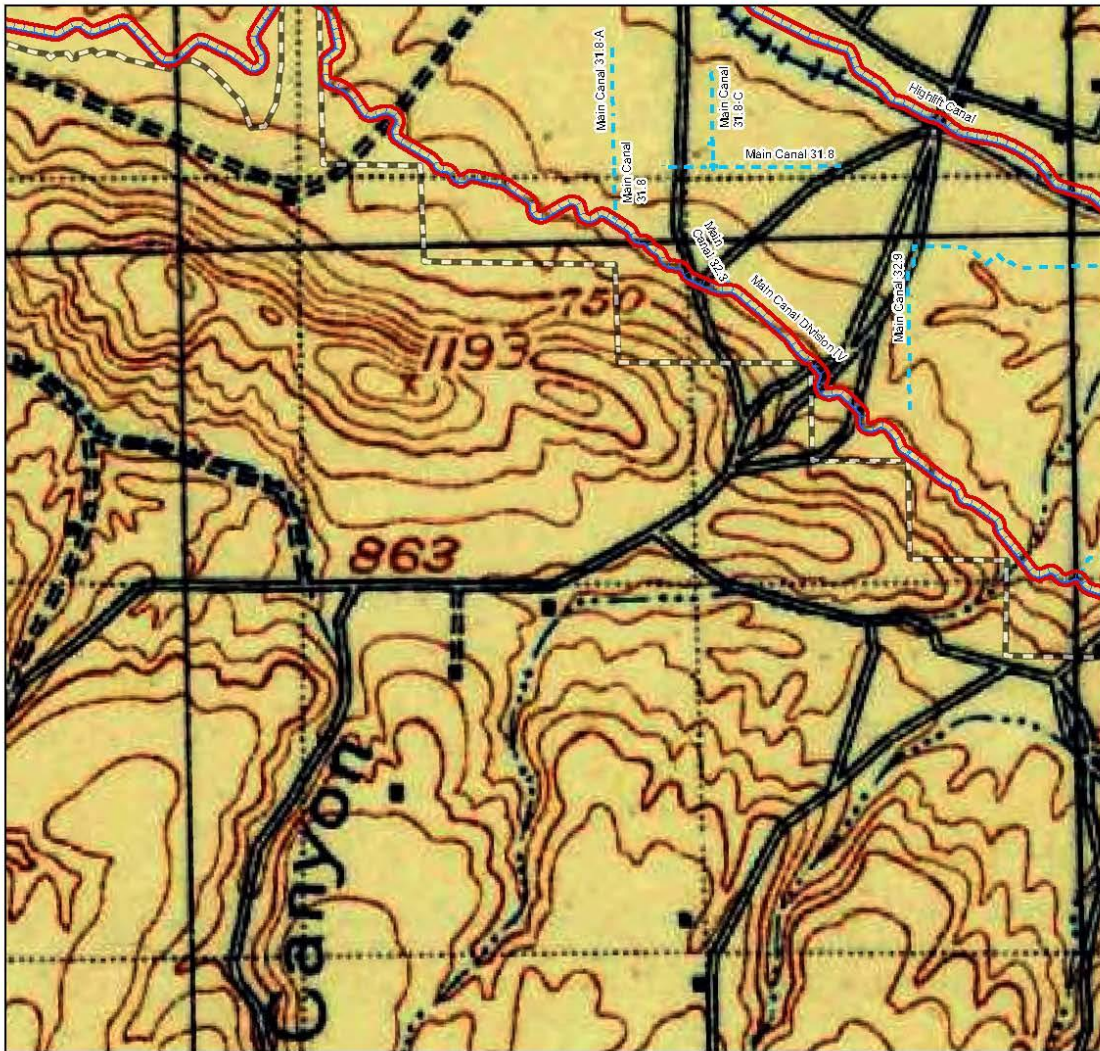


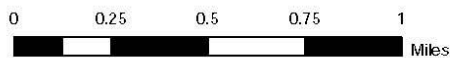
Figure C-15. Amon Pump Lateral and AP 2-7/8 Drain Historic Map



LEGEND

- ▭ Area of Potential Effect (APE)
- ▭ Open Canal
- ▭ Lateral Pipe
- ▭ Underground Pipes (Canals & Laterals)
- ▭ Drains
- ▭ Wasteways
- ▭ Other Facility Type
- ▭ KID Amon Property
- KID Service Area Boundary

NOTES: Historic topographic map obtained as geotifs at <http://ngmdb.usgs.gov/maps/Topoview/>



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Figure C-16. Kennewick Main Canal Division IV and Highlift Canal, Historic Map

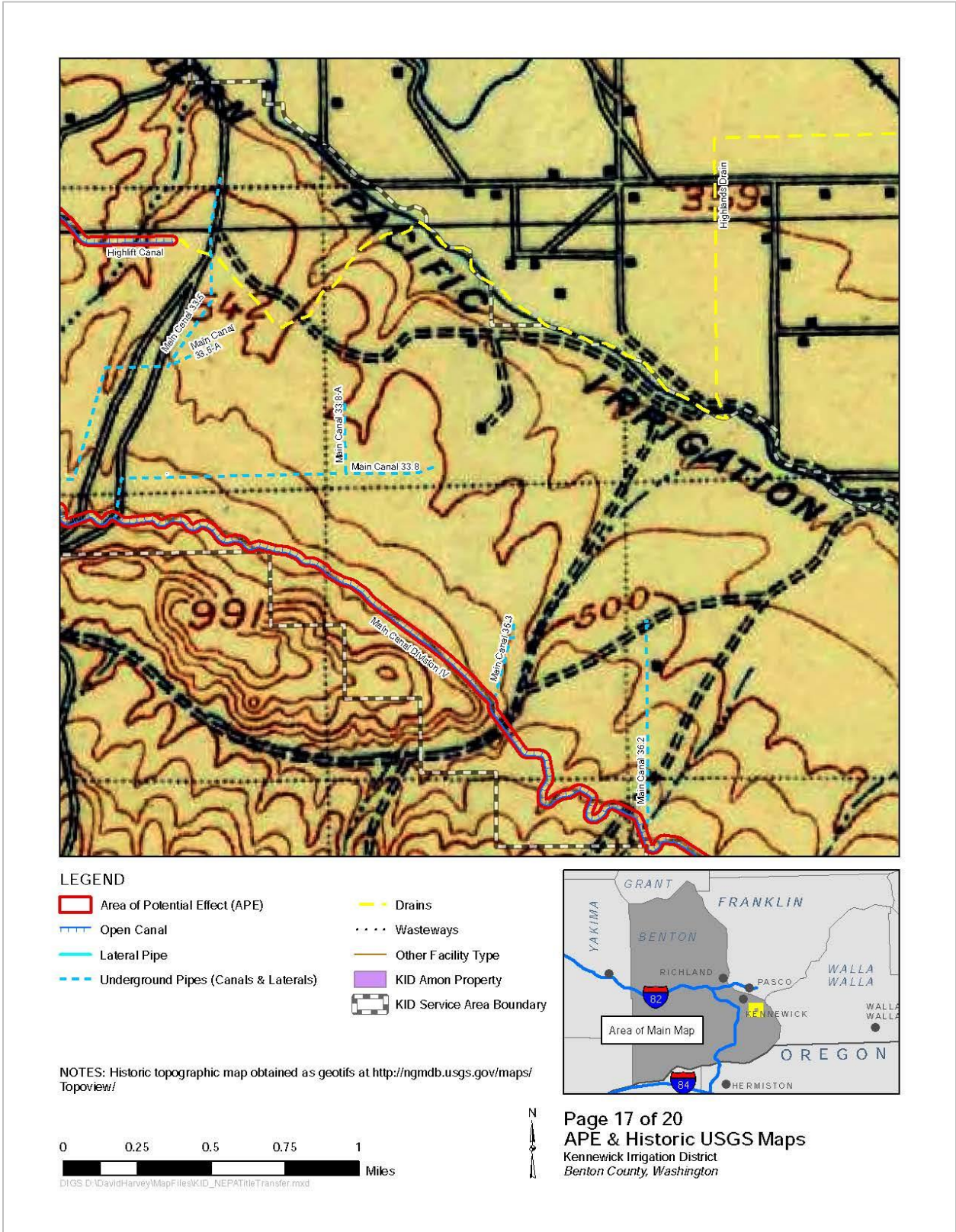
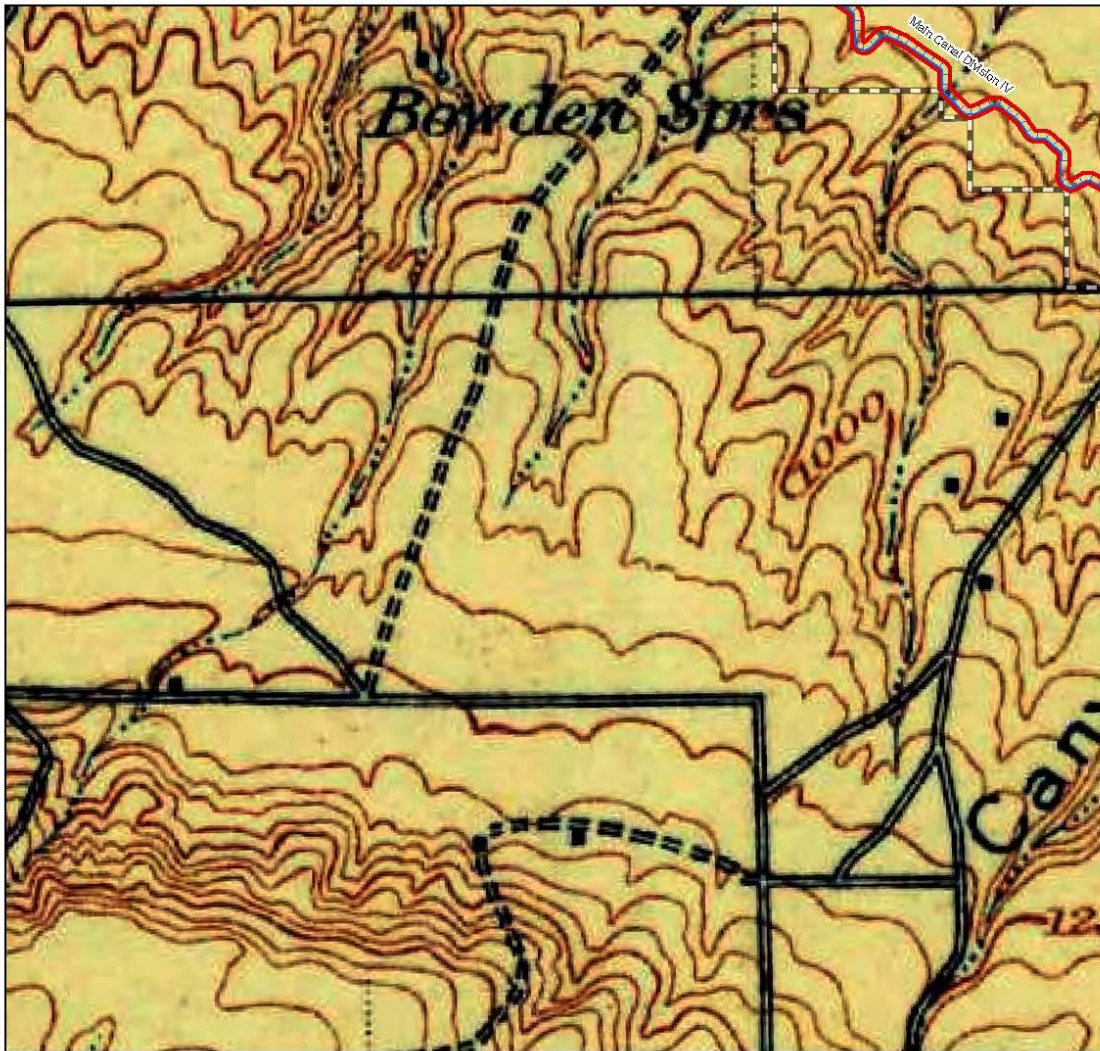


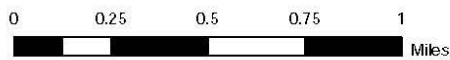
Figure C-17. Kennewick Main Canal Division IV and Highlift Canal, Historic Map



LEGEND

- Area of Potential Effect (APE)
- |||| Open Canal
- Lateral Pipe
- Underground Pipes (Canals & Laterals)
- Drains
- Wasteways
- Other Facility Type
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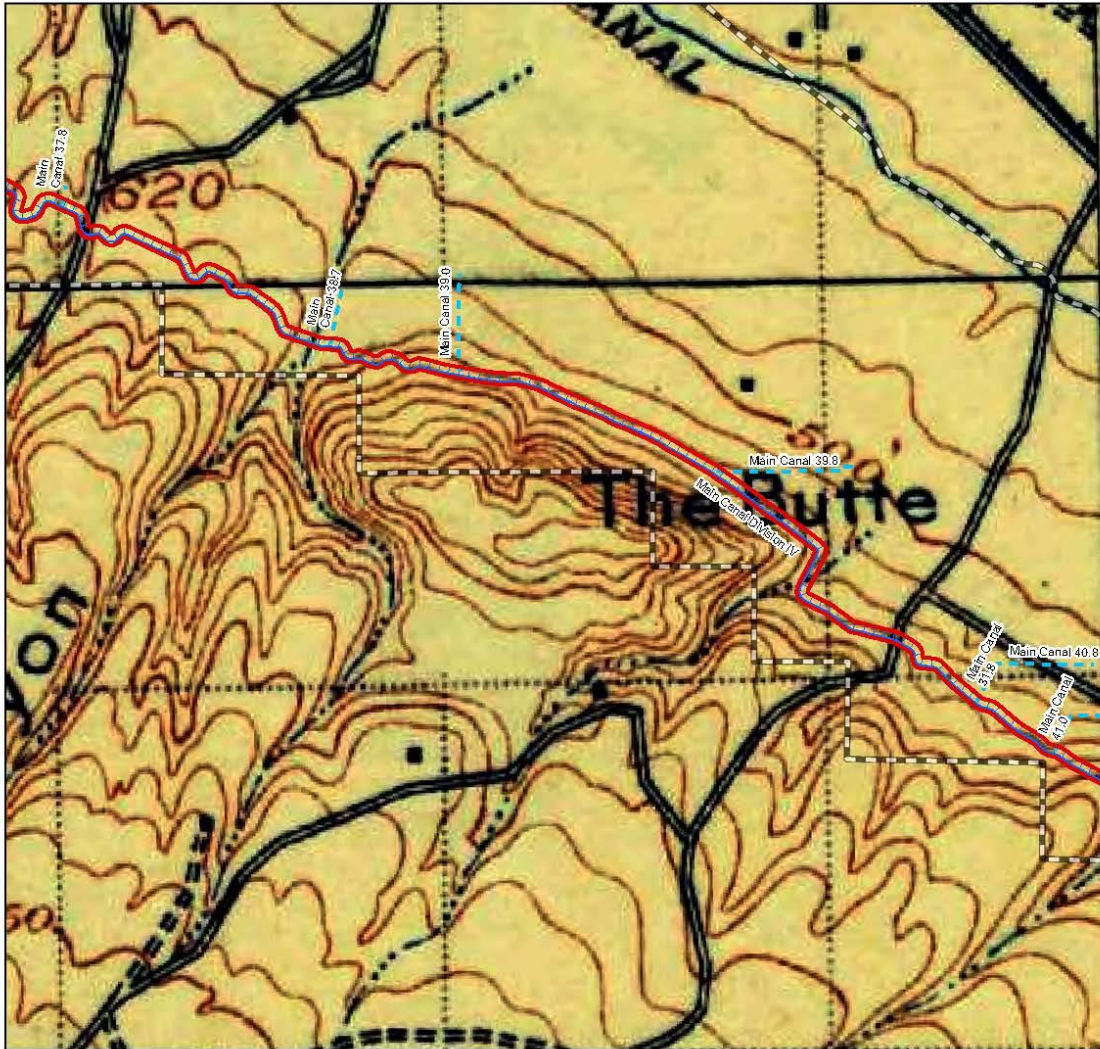


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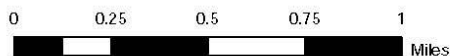
Figure C-18. Kennebec Main Canal Division IV, Historic Map



LEGEND

- Area of Potential Effect (APE)
- Open Canal
- Lateral Pipe
- Underground Pipes (Canals & Laterals)
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- Wasteways
- Other Facility Type
- KID Amon Property
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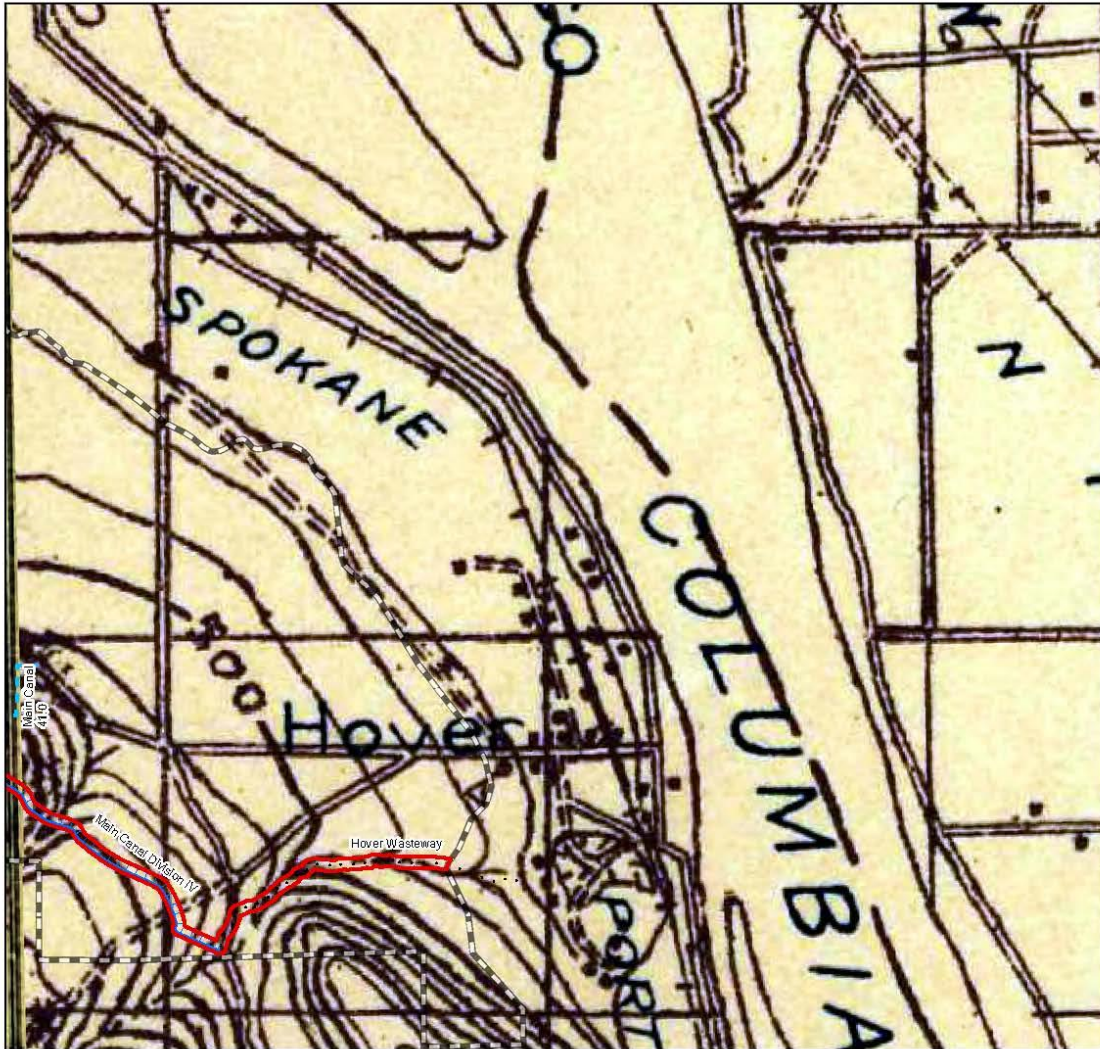


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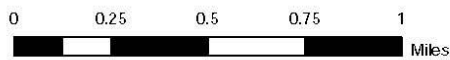
Figure C-19. Kennewick Main Canal Division IV, MP 37.8 to 41.0, Historic Map



LEGEND

- Area of Potential Effect (APE)
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Figure C-20. Kennebec Main Canal Division IV and Hover Wasteway, Historic Map