Water Resources Assessment

Ashley Valley Watershed Flood & Irrigation Project

Uintah County, Utah

Prepared for

Natural Resources Conservation Service

Prepared by

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Appendices

1 Introduction

J-U-B ENGINEERS, Inc. (J-U-B) conducted a water resources assessment (WRA) on August 27 and 28, 2019 and April 15, 2020 for the proposed Ashley Valley Watershed Flood & Irrigation Project (Proposed Project). The Proposed Project occurs within the cities of Vernal and Naples, and within portions of unincorporated Uintah County. The Proposed Project is contained within Sections 7, 8, 16, 18, 21, 22, 27, 28, and 35, Township 4 South, Range 21 East; Sections 1 and 2, Township 5 South, Range 21 East; and, Sections 5 and 6, Township 5 South, Range 22 East Salt Lake Base and Meridian (Vicinity Map, Appendix A).

The purpose of the Proposed Project is to enhance flood control in the Ashley Valley and to improve irrigation water delivery and efficiency by reducing water loss to seepage and evaporation. It is estimated that the Proposed Project would conserve approximately 4,400 acre-feet of water annually. This WRA was prepared on behalf of the Uintah County and Ashley Central Irrigation Company (ACIC) for the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS). Uintah County and ACIC secured funding for the Proposed Project through the Watershed Protection and Flood Prevention Act [Public Law (PL) 83-566]. The objective of this WRA was to document Waters of the U.S., including wetlands, if present within the Proposed Project Action Area (Action Area). The NRCS project covers 9.6 miles, however 2.5 miles of the project alignment were originally slated for U.S. Bureau of Reclamation (USBR) funding but were subsequently funded under the NRCS. An initial WRA was completed for the 2.5 miles. Therefore, this WRA describes 7.1 miles of the alignment and the supporting WRA addresses the remaining 2.5 miles and is located in Appendix B.

1.1 Description of the Proposed Action

The Proposed Project would involve the construction of two large detention basins to serve as flood control in the Coal Mine and Yellow Hills sub-basins located northeast of Vernal City. Additionally, the Proposed Project would pipe and pressurize approximately 7.1 miles of the Ashley Central Canal with 14-inch to 48-inch High-Density Polyethylene (HDPE) pipe and fittings, replace 38 turnout meters, and install two screening structures. The canal would be regraded and would then function as a floodwater conveyance facility (including piping the lower 1,500 feet). At the northern end of the alignment, the Ashley Central Canal is already piped from the Ashley Creek diversion to where the irrigation pipe transitions to the open, earthen Ashley Central Canal. This piped segment crosses under Ashley Creek and the Proposed Project would replace this segment of pipe, by slipping new pipe via the old existing pipe. No ground disturbance would occur in Ashley Creek, however ground disturbance within the existing canal alignment would occur adjacent to the creek. All appropriate best management practices would be in place to avoid impacts to the creek channel and water quality. Additional elements of the Proposed Project would include the installation of approximately 3 miles of pedestrian and recreation trails along the Steinaker Service Canal, which would provide biking and walking access to educational, recreational, and commercial facilities (Project Exhibits, Appendix A). Backhoes, excavators, haul trucks, and other smaller construction vehicles and equipment would be used to complete the Proposed Project. Construction is projected to begin in fall 2021 and is estimated to complete by summer 2024, with construction activities taking place outside of the irrigation season.

1.2 Landscape Setting

The Proposed Project is located within the Lower Green-Diamond Sub-Basin (HUC 14060010) of the Ashley Valley within the Lower Green Basin. The Lower Green-Diamond Sub-Basin is spread across Uintah County and encompasses the cities of Vernal and Naples. Steinaker Reservoir and Ashley Creek are the primary

hydrologic features in the Lower Green-Diamond Sub-Basin. The Proposed Project elements are situated within two 12th-order subwatersheds – Coal Mine Basin-Ashley Creek Subwatershed (HUC 140600100902) and City of Vernal-Ashley Creek Subwatershed (HUC 140600100903). These subwatersheds cover a combined area of approximately 45,907 acres (USGS 2021).

The Ashley Central Canal originates in the northwestern portion of the Ashley Valley, where it receives water from Ashley Creek. The headwaters of Ashley Creek are located north of the valley on the south slope of the Uinta Mountains. The upper, northwestern segment of the Ashley Canal is already piped and Ashley Creek flows beside the Ashley pipe alignment. Once the alignment opens into a canal, Ashley Creek flows away from the canal to the south along the east side of the valley before discharging to the Green River at the valley's southeast end. The Ashley Central Canal conveys irrigation water to 38 turnouts along its length as it flows south and west through the valley. Additional inputs to the canal occur at two locations from the Steinaker Reservoir via the Steinaker Canal, as well as stormwater runoff that enters the canal via surface flow.

The climate within the Action Area is considered arid, with little annual precipitation each year. In 2020, Vernal City received approximately 4.9 inches of precipitation. The average temperature is 46.5°F, with average highs reaching 89.5°F in the summer and average lows falling to 7.9°F in the winter months. The Vernal, Utah weather station typically receives 18.8 inches of snowfall annually (FIPS 49047; NOAA Regional Climate Centers 2021).

Land use in the Action Area consists of agricultural, residential, and undeveloped land uses. The beginning and end of the open portions of the Ashley Central Canal are at an elevation of approximately 5,610 feet above mean sea level (AMSL) and 5,175 feet AMSL, respectively. The Ashley Central Canal and Steinaker Service Canal are unlined open canals that flow along agricultural, residential, and undeveloped properties, as well as along the city roads. The proposed location of the Coal Mine and Yellow Hills Basins are on the northwest side of the Ashley Valley, approximately 4.3 miles west of Vernal in the foothills below Little Mountain. The basins would be situated in undeveloped areas that are dominated by a desert-scrub landscape. The proposed locations for both detention basins are at approximately 5,740 feet AMSL. All Proposed Project staging areas would be located in an upland position and generally within a disturbed setting (i.e., residential property, agricultural fields, paved or gravel parking lots). For representative photos of the Action Area, refer to the included Photo Inventory (Appendix C).

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) for the Action Area, portions of the Proposed Project are situated within Zone A (special flood hazard area), however the majority of the Action Area is contained within Zone X (area of minimal flood hazard) (FEMA FIRMs, Appendix D). The segments of the Proposed Project within Zone A include: the detention basins, the Ashley Central Canal (northern portion), and the Steinaker Service Canal (proposed recreational trail).

1.3 Vegetation

Vegetation throughout the Action Area is consistent with the agricultural and residential land uses that constitute Ashley Valley. Dominant vegetation is listed in Tables 1.1 – 1.4 and are broken down into the following sections: Ashley Canal, Steinaker Canal, Coal Mine and Yellow Hills Detention Basins, and Project Staging Areas.

The Proposed Project would be constructed within the existing Ashley Central Canal alignment. Vegetation along the Ashley Central Canal consisted of a mix of trees, shrubs, and herbaceous plants. See Table 1.1 for a list of species observed and their wetland indicator status.

Table 1.1 – Ashley Central Canal Alignment – Dominant Vegetation

Stratum	Common Name	Scientific Name	Indicator Status
Tree	Narrowleaf Cottonwood	*Populus angustifolia*	FACW
	Russian Olive	*Elaeagnus angustifolia*	FAC
	Thinleaf Alder	*Alnus tenuifolia*	UPL
	Fremont cottonwood	*Populus fremontii*	UPL
	Crabapple Tree	*Malus sylvestris*	UPL
	Slippery Elm	*Ulmus rubra*	FAC
Shrub	Geyer's Willow	*Salix geyeriana*	OBL
	Coyote Willow	*Salix exigua*	FACW
	Red Osier Dogwood	*Cornus alba*	FACW
	Wood's Rose	*Rosa woodsii*	FACU
	Mountain Snowberry	*Symphoricarpos oerophilus*	UPL
	Gooseberry	*Ribes uva-crispa*	UPL
Herb	Sunflower	*Helianthus* sp.	-
	Goldenrod	*Solidago gigantea*	FACW
	Scouring Rush	*Equisetum hyemale*	FACW
	Curlycup Gumweed	*Grindelia squarrosa*	FACU
	Smooth Brome	*Bromus inermis*	FACU
	Prickly Lettuce	*Lactuca serriola*	FACU
	Common Mullein	*Verbascum thapsus*	FACU
	Hound's Tongue	*Cynoglossum officinale*	FACU
	Field Horsetail	*Equisetum arvense*	FAC
	White Sweet Clover	*Melilotus albus*	FACU
	Timothy-Grass	*Phleum pratense*	FACU
	Field Thistle	*Cirsium discolor*	UPL
	Showy Milkweed	*Asclepias speciosa*	FAC
	Western White Clematis	*Clematis ligusticifolia*	FAC
	Yellow Sweet Clover	*Melilotus officianalis*	FACU
	Broom Snakeweed	*Gutierrezia sarothrae*	UPL
	Stinging Nettle	*Urtica dioica*	FAC
	Desert Globemallow	*Sphaeralcea ambigua*	UPL
	Perennial Ryegrass	*Lolium perenne*	FAC
	Baltic Rush	*Juncus balticus*	FACW
	Purple Nut Sedge	*Cyperus rotundus*	FAC
	Field Bindweed	*Convolvulus arvensis*	UPL
	Cheatgrass	*Bromus tectorum*	UPL
	Curly Dock	*Rumex crispus*	FAC
	Reed Canary Grass	*Phalaris arundicacea*	FACW

The Steinaker Service Canal flows through agricultural fields and along city roads. Vegetation along the Steinaker Service Canal was similar to the Ashley Central Canal, though large woody vegetation was not observed. See Table 1.2 for a list of the dominant species and their wetland indicator status.

Table 1.2 – Steinaker Canal – Dominant Vegetation

Stratum	Common Name	Scientific Name	Indicator Status
Herb	Sunflower	*Helianthus* sp.	-
	Scouring Rush	*Equisetum hyemale*	FACW
	Curlycup Gumweed	*Grindelia squarrosa*	FACU
	Smooth Brome	*Bromus inermis*	FACU
	Prickly Lettuce	*Lactuca serriola*	FACU
	Perennial Ryegrass	*Lolium perenne*	FAC
	Reed Canary Grass	*Phalaris arundicacea*	FACW
	Canada Thistle	*Cirsium arvense*	FACU
	Alfalfa	*Medicago sativa*	UPL
	Crested Wheatgrass	*Agropyron cristatum*	UPL
	Indian Ricegrass	*Achnatherum hymenoides*	UPL
	Groundsel	*Senecio vulgaris*	FACU

The proposed location of the Coal Mine and Yellow Hills detention basins are on the northwest side of the Ashley Valley, approximately 4.3 miles west of Vernal in the foothills of Little Mountain. The detention basins would be situated in undeveloped areas that are dominated by a desert-scrub landscape. Vegetation at the two detention basin sites was similar. See Table 1.3 for a list of the dominant species and their wetland indicator status.

Table 1.3 – Coal Mine and Yellow Hills Detention Basins – Dominant Vegetation

Stratum	Common Name	Scientific Name	Indicator Status
Tree	Utah Juniper	*Juniperus osteosperma*	UPL
Shrub	Big Sagebrush	*Artemisia tridentata*	UPL
	Greasewood	*Sarcobatus vermiculatus*	FACU
Herbs	Pepperweed	*Lepidium latifolium*	FAC
	Russian Thistle	*Salsola tragus*	FACU
	Plains Prickly Pear	*Opuntia polycantha*	UPL
	Sunflower	*Helianthus* annuus	FACU
	Four-Wing Saltbush	*Atriplex canescens*	UPL
	Shadescale	*Atriplex confertifolia*	UPL
	Crested Wheatgrass	*Agropyron cristatum*	UPL
	Cheatgrass	*Bromus tectorum*	UPL

All Proposed Project staging areas would be located in an upland position and generally within a disturbed setting (i.e., residential property, agricultural fields, paved or gravel parking lots). Staging areas were dominated by weedy, upland and agricultural species. No hydrophytic vegetation was observed in the staging areas. See Table 1.4 for a list of the dominant species and their wetland indicator status.

Table 1.4 – Project Staging Areas – Dominant Vegetation

Stratum	Common Name		Scientific Name	Indicator Status
Shrub	Rubber Rabbitbrush		*Ericameria nauseosa*	UPL
Herbs	Sunflower		*Helianthus* sp.	-
	Prairie Sunflower		*Helianthus petiolaris*	UPL
	Prickly Lettuce		*Lactuca serriola*	FACU
	Perennial Ryegrass		*Lolium perenne*	FAC
	Alfalfa		*Medicago sativa*	UPL
	Field Thistle		*Cirsium discolor*	UPL
	Cheatgrass		*Bromus tectorum*	UPL

1.4 Soils

A variety of soils are found throughout the Action Area. Soils in the Action Area are predominantly loamy in texture. Most of the soils in the Action Area are not hydric (rating of 0 out of 100) (see Table 1.5 below and Soils Maps, Appendix E).

Table 1.5 – NRCS Soil Types Mapped within the Survey Area

Soil Series Name	Hydric	Percent of Survey Area
Ashley loam, 0 to 2 percent slopes	No - 0% hydric	0.1%
Dumps Blackston loam, 0 to 2 percent slopes	No - 0% hydric	2.8%
Boreham loam, 0 to 2 percent slopes	No - 0% hydric	6.4%
Crib loam, 1 to 3 percent slopes	No - 0% hydric	9.4%
Green River loam, 0 to 2 percent slopes, rarely flooded	Yes – 5% hydric	0.0%
Greybull loam, 4 to 8 percent slopes	No - 0% hydric	1.4%
Lind loam, 0 to 2 percent slopes	No - 0% hydric	0.1%
Lind loam, 2 to 4 percent slopes	No - 0% hydric	2.4%
Nolava-Nolava, wet complex, 0 to 2 percent slopes	No - 0% hydric	19.9%
Nolava-Nolava, wet complex, 2 to 4 percent slopes	No - 0% hydric	6.7%
Robido-Uver complex, 1 to 4 percent slopes	Yes – 6% hydric	5.3%
Shotnick-Walkup complex, 0 to 2 percent slopes	No - 0% hydric	13.3%
Tipperary loamy fine sand, 1 to 8 percent slopes	No - 0% hydric	1.9%
Turzo-Umbo complex, 0 to 2 percent slopes	Yes – 4% hydric	15.4%
Umbo clay loam, 0 to 2 percent slopes	Yes – 8% hydric	12.7%
Wyasket loam, 0 to 2 percent slopes	Yes – 85% hydric	2.4%
Total		**100%**

The NWI data suggests that several wetlands are located within the Action Area. For example, the NWI indicates that the Ashley Central Canal contains a combination of riverine (R4SBCx, R4SBC), freshwater forested/shrub (PFOAx, PSSAx), and freshwater emergent (PEM1Cx, PEM1A) habitat along the alignment of the Canal. The NWI mapper tool also shows Steinaker Service Canal as containing riverine (R4SBCx) habitat. According to the NWI data, riverine (R4SBC) habitat crosses through the Yellow Hill Basin and Coal Mine Basin Action Area (NWI Maps, Appendix F). However, the field survey did not identify potential wetlands within the Action Area of the piping alignment or detention basins. Hydrophytic vegetation was

present along the steep slopes within the canal, however no other wetlands were identified adjacent to the canal or within the identified staging areas.

Given Ashley Central Canal's connectivity with Ashley Creek, a tributary to the Green River, Ashley Central Canal likely can be considered jurisdictional waters. Outside the irrigation season, water does not flow in the canal.

2 Methods

The WRA was conducted in accordance with the 1987 U.S. Army Corps of Engineers' *Wetland Delineation Manual* (USACE, 1987) and the *Arid West Region (Version 2.0) (USACE, September 2008)*. Based on aerial imagery, the U.S. Fish and Wildlife Service's (USFWS) National Wetlands Inventory (NWI), and site conditions in the field, any location with the potential to contain Waters of the U.S., or to support wetlands, was surveyed further. The following procedures were implemented at each sample point to determine the presence of wetland indicators and the information was recorded on Arid West Supplement data forms (see attached data forms). Photographs were taken to document each sample point (see attached Photo Inventory).

2.1 Vegetation

All plant species within a 5-foot radius of the sample point were identified and recorded unless trees and woody shrubs/ vines were present; in which case, a 30-foot radius was used. The relative percent cover for each species was determined by estimating aerial cover. The indicator status of each species was determined using the Arid West 2016 Regional Wetland Plant List (USACE, 2016). Dominant vegetation status was determined following the guidelines of the USACE 50/20 rule. If more than 50 percent of the dominant plant species had an indicator status of obligate wetland species (OBL), facultative wetland species (FACW), or facultative species (FAC), the sample point met the hydrophytic vegetation parameter.

2.2 Soil

A soil pit was dug to a depth of at least 14 inches to assess soil characteristics and water conditions. A profile of the soil pit was used to determine soil color, texture, and moisture at different depths within the soil profile. Colors of the soil profile and any redox features were identified by comparing a moistened sample to the Munsell® Soil Color Charts (Munsell® 2009 printed in 2018). Soil textures and moisture were determined by feeling the soil samples. The 2008 Arid West Regional Supplement (USACE, 2016) was used to determine the presence or absence of hydric soil conditions.

2.3 Hydrology

Each soil pit was also examined for the presence or absence of hydrologic indicators. These hydrologic indicators are described in the 2008 Arid West Regional Supplement (USACE, September 2008). If it was determined that at least one primary hydrologic indicator, or two or more secondary hydrologic indicators were present, the sample point would meet the hydrologic parameter.

2.4 Wetland Boundary Delineation Procedure

Sample points that met all three parameters (hydrophytic vegetation, hydric soils, and wetland hydrology) were classified as occurring in a wetland. A second sample point, located in the adjacent upland, was then documented for the presence of the three indicators. If the point did not meet all three parameters, the point was classified as occurring in an upland. The next step was to define the wetland boundary occurring between the wetland sample point and the upland sample point. The boundary was based on information

gathered from the two sample points and observable changes in elevation and plant communities. The wetland boundary and sample points were surveyed using a handheld Trimble GeoXH 6000 global positioning system (GPS) receiver. The survey data was downloaded into ArcMAP to produce a map that shows delineated wetland boundaries and sample point locations. The acreages for each wetland polygon were calculated in ArcMAP and included on the map. The Cowardin Classification (Cowardin 1979) was used to designate the wetland type.

2.5 Delineation Methodology for Non-wetland Waters of the U.S.

Non-wetland waters of the U.S. (WOTUS) were delineated by using USACE guidelines for the identification of the ordinary high water mark (OHWM) (USACE, August 2008). An OHWM datasheet was completed for each of these waters. Non-wetland WOTUS within the survey area were identified and the OHWM for these waters was surveyed using a handheld Trimble GeoXH 6000 GPS receiver. The survey data was downloaded into ArcMAP to produce a map that depicts the delineated WOTUS. The acreage for each WOTUS within the survey area was calculated using ArcMAP and included on the map.

3 Delineation Results

Two wetlands encompassing 0.35 acres, one freshwater pond totaling 2.02 acres, two canals totaling 47,877 Linear Feet, and multiple ephemeral channels totaling 10,897 Linear Feet were identified within the Action Area. Table 2 summarizes the results for all delineated waters of the U.S., including wetlands.

Table 2.1 – Aquatic Resources within the Survey Area

Aquatic Resource Name	Aquatic Resources Classification		Aquatic Resource Size (acre) Required for all resources	Aquatic Resource Size (linear feet) Only required for stream channels
	Cowardin	Sample Point		
Asheley Central Calnal	-	1, 2, 3, 4, 5, 6, 7, 8, 11, 14, 16, 24, 26, 27, 28	9.04	40,177
Steinaker Service Canal	-	29, 32, 33	3.48	7,600
Emergent Marsh	PEM1Kx	30	0.35	-
Freshwater Pond	L2UB3Kx	30	2.02	-
Coal Mine Ephemeral Channel	-	SC4, SC5, P1	-	3,935
Yellow Hills Ephemeral Channel	-	SC1, SC2, SC3,	-	6,962
Total			**14.89**	**58,674**

Ashley Central Canal

The Ashley Central Canal originates directly north of Maeser, Utah, receiving its water from Ashley Creek. The Ashley Central Canal is piped for 1,174 linear feet from its source before daylighting. In total, the canal stretches for 39,003 linear feet or 7.74 miles within the Action Area. No wetlands were observed within or adjacent to the Ashely Central Canal. See Table 2.2 for a list of the dominant species and their wetland indicator status.

Table 2.2 – Ashley Central Canal – Dominant Vegetation

Stratum	Common Name	Scientific Name	Indicator Status
Tree	Narrowleaf Cottonwood	*Populus angustifolia*	FACW
	Russian Olive	*Elaeagnus angustifolia*	FAC
	Thinleaf Alder	*Alnus tenuifolia*	UPL
	Fremont cottonwood	*Populus fremontii*	UPL
	Crabapple Tree	*Malus sylvestris*	UPL
	Slippery Elm	*Ulmus rubra*	FAC
Shrub	Geyer's Willow	*Salix geyeriana*	OBL
	Coyote Willow	*Salix exigua*	FACW
	Red Osier Dogwood	*Cornus alba*	FACW
	Wood's Rose	*Rosa woodsii*	FACU
	Mountain Snowberry	*Symphoricarpos oerophilus*	UPL
	Gooseberry	*Ribes uva-crispa*	UPL
Herb	Smooth Brome	*Bromus inermis*	FACU
	Field Horsetail	*Equisetum arvense*	FAC
	Cheatgrass	*Bromus tectorum*	UPL
	Reed Canary Grass	*Phalaris arundicacea*	FACW

Steinaker Service Canal

Within the Action Area the Steinaker Service Canal stretches for 7,600 linear feet or 1.44 miles. Vegetation along the Steinaker Service Canal was similar to the Ashley Central Canal, though large woody vegetation was not observed. No wetlands were observed within or adjacent to the Steinaker Service Canal. See Table 2.2 for a list of the dominant species and their wetland indicator status.

Table 2.3 – Steinaker Canal – Dominant Vegetation

Stratum	Common Name	Scientific Name	Indicator Status
Herb	Sunflower	*Helianthus* sp.	-
	Scouring Rush	*Equisetum hyemale*	FACW
	Curlycup Gumweed	*Grindelia squarrosa*	FACU
	Smooth Brome	*Bromus inermis*	FACU
	Prickly Lettuce	*Lactuca serriola*	FACU
	Perennial Ryegrass	*Lolium perenne*	FAC
	Reed Canary Grass	*Phalaris arundicacea*	FACW
	Canada Thistle	*Cirsium arvense*	FACU
	Alfalfa	*Medicago sativa*	UPL
	Crested Wheatgrass	*Agropyron cristatum*	UPL
	Indian Ricegrass	*Achnatherum hymenoides*	UPL
	Groundsel	*Senecio vulgaris*	FACU

Emergent Marsh Wetland – PEM1Kx (*Palustrine, Emergent, Persistent, Artificially Flooded, Excavated*)
Two emergent marsh wetlands, totaling 0.35 acres, were delineated as part of the field survey. These palustrine wetlands experience persistent wet conditions and are artificially flooded by water from the Steinaker Canal. One sample point was analyzed for these wetlands (Sample Point 30) which demonstrated characteristics of hydrophytic vegetation, hydric soils, and wetland hydrology. Vegetation was dominated by *Juncus balticus, Phalaris arundinacea,* and *Schoenoplectus acutus.* Soils were saturated to the surface and emitted a distinct hydrogen sulfide odor.

Freshwater Pond – L2UB3Kx (*Lacustrine, Littoral, Unconsolidated Bottom, Mud, Artificially Flooded, Excavated*)
One freshwater pond, totaling 2.02 acres, was delineated as part of the field survey. This freshwater pond experiences flooded conditions for extended periods of time during the year and is artificially flooded by water from the Steinaker Canal. It appears the pond is used to irrigate adjacent farmland with none of the water returning to the canal through open channels or culverts.

Ephemeral Channels
Multiple ephemeral channels were identified within the Action Area totaling 10,897 Linear Feet. Field evaluations determined that these ephemeral channels lacked indicators for an OHWM, i.e., no change in sediment texture, no change in vegetation species or cover, and no break in bank slope. These features appear to receive water only during major storm events and do not contain water for prolonged durations or on a frequent enough basis to form an OHWM.

4 Summary

The Proposed Project would construct two large detention basins to serve as flood control in the Coal Mine and Yellow Hills sub-basins. The Proposed Project would also pipe and pressurize approximately 7.1 miles of the Ashley Central Canal with 16-inch to 48-inch HDPE pipe and fittings, replace 38 turnout meters, and install two screening structures. The canal would be backfilled to cover the irrigation pipe and then left open to be utilized by the County to convey stormwater. Additional elements of the Proposed Project would install approximately 3 miles of pedestrian and recreation trails along Steinaker Service Canal to provide biking and walking access to educational, recreational, and commercial facilities. Once implemented, the Proposed Project is projected to conserve approximately 4,400 acre-feet of water annually.

Surface hydrology associated with Ashley Central Canal and Steinaker Service Canal was observed in the Action Area. Potential wetlands were observed in the vicinity of the northern portion of the Action Area, however, all construction activities and staging areas would be situated to avoid impacts to wetlands and Ashley Creek. Ashley Central Canal and Steinaker Service Canal likely can be considered jurisdictional waters, given their connectivity with Ashley Creek and the Green River. However, the Proposed Project would only pipe Ashley Central Canal when irrigation waters are not present and would not completely fill the canal after dewatering and piping is complete.

The Proposed Project is not anticipated to impact Waters of the U.S., including wetlands because the Action Area would avoid impacts to potential wetland features, and because construction would occur outside of the irrigation season when the canal does not contain irrigation water. Therefore, the Proposed

Project would not be anticipated to require a permit under the Clean Water Act (CWA). However, given the proximity of piping activities to Ashley Creek at the northern end of the alignment, it is anticipated that a stream alteration permit from the Utah Division of Water Rights may be necessary. It should be noted that the final authority regarding impacts to Waters of the U.S., and permit authorizations rests with the appropriate regulatory agencies.

If you have any questions regarding this report, please contact Autumn Foushee. She may be reached at afoushee@jub.com, or on her office phone at 801-886-9052.

5 References

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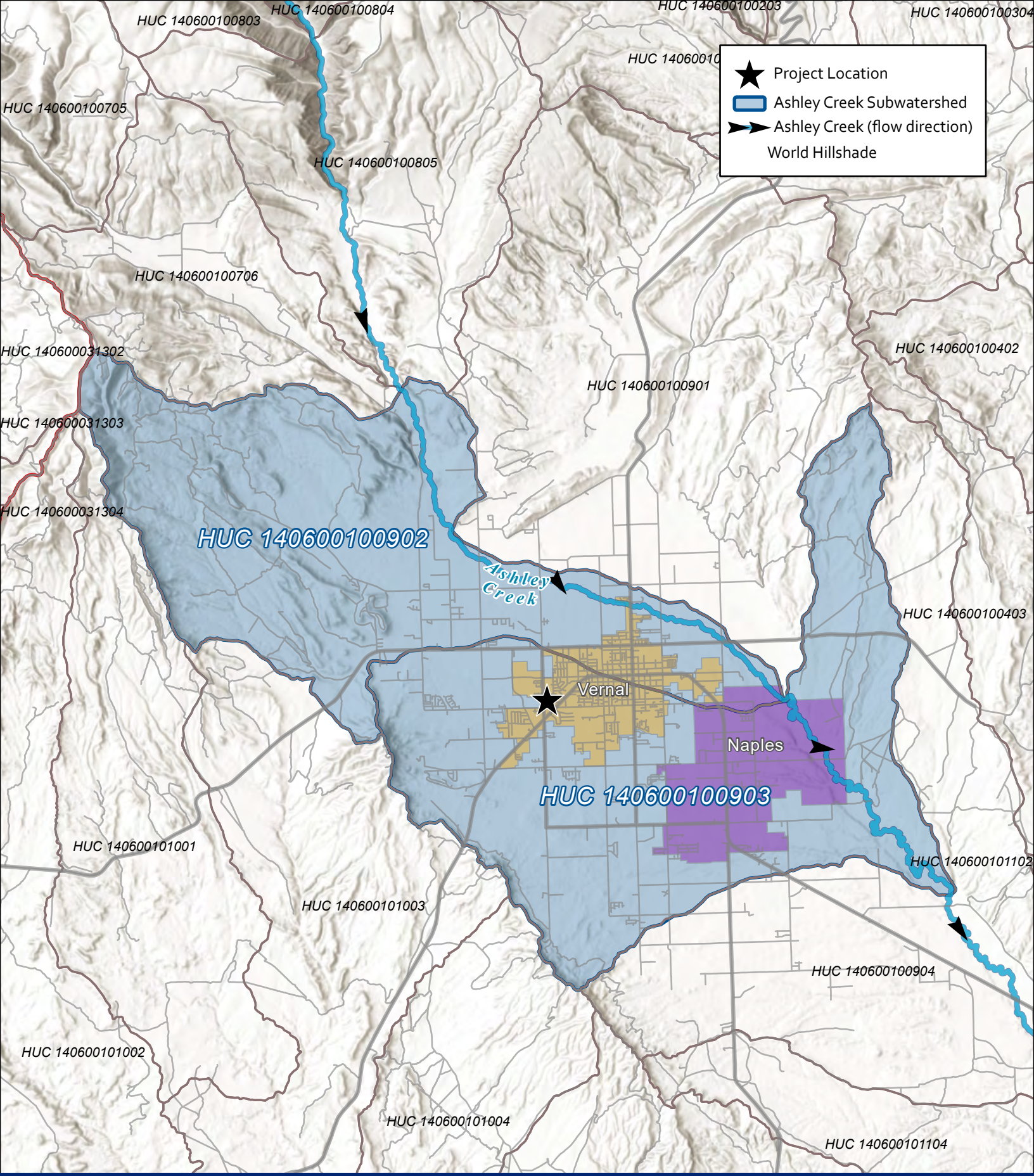
Appendix A – Vicinity Map & Project Exhibits

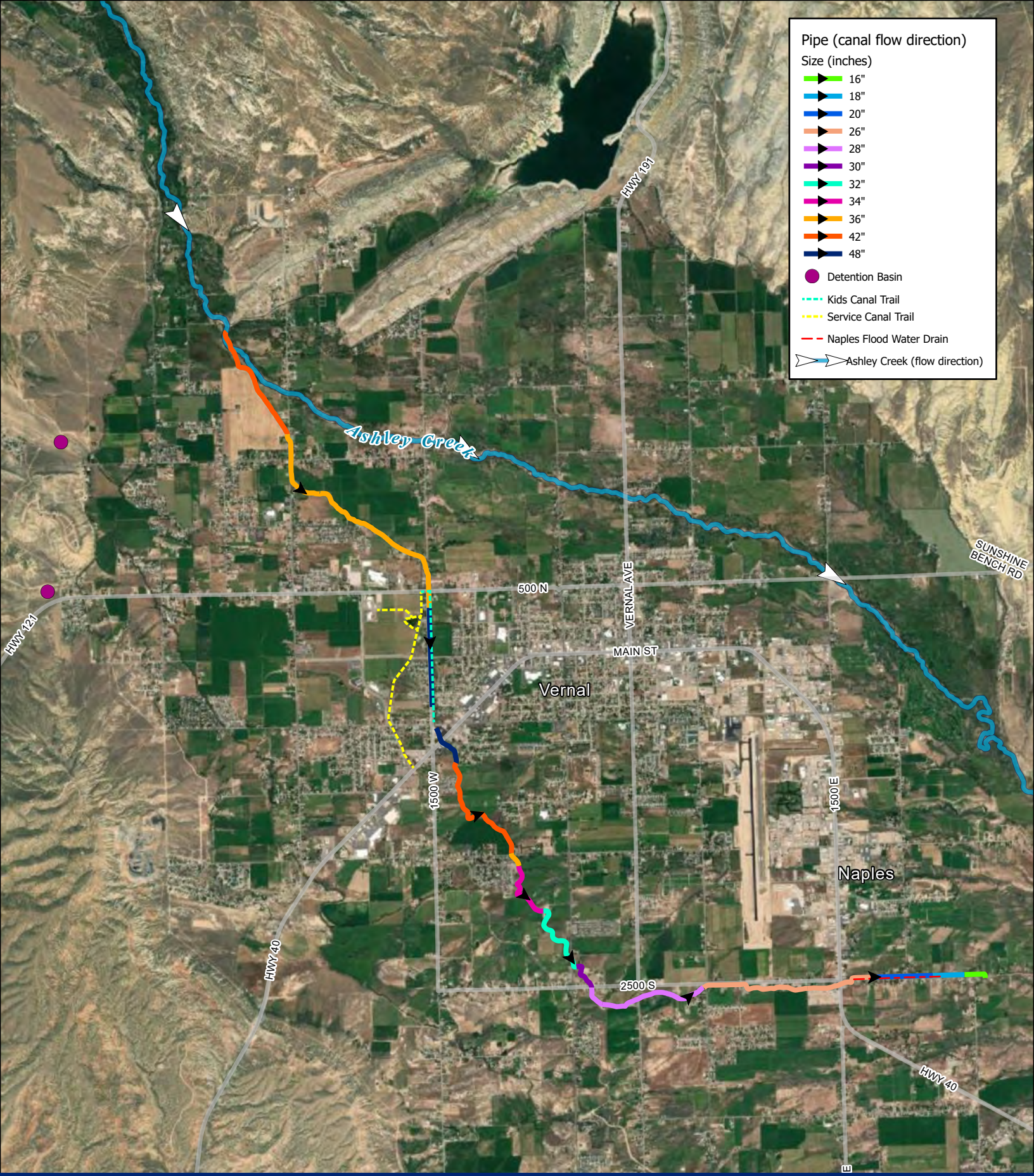


ASHLEY VALLEY WATERSHED

Ashley Valley Watershed Plan EA

0 0.5 1 Miles

N



ASHLEY VALLEY PREFERRED ALTERNATIVE

Ashley Valley Watershed Plan EA

0 0.5 1 Miles

N

Appendix B – Ashley Central Canal Enclosure Project Phases I-III

Water Resources Assessment

Water Resources Assessment

Ashley Central Canal Enclosure Project Phases I – III

Uintah County, Utah

Prepared for

U.S. Department of the Interior
Bureau of Reclamation
Upper Colorado Region
Provo Area Office
Provo, Utah

Prepared by

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Appendices

1 Introduction

J-U-B ENGINEERS, Inc. (J-U-B) conducted a water resources assessment (WRA) on August 27 and 28, 2019 for the proposed Ashley Central Canal Enclosure Project Phases I – III project (Proposed Project). The Proposed Project occurs in Vernal City and within unincorporated areas of Uintah County, Utah. The Proposed Project is contained within Sections 27 and 34, Township 4 South, Range 21 East in Uintah County, Utah (see Vicinity Map and Project Exhibit in Appendix A).

The purpose of the Proposed Project is to improve water efficiency by reducing water loss to seepage and evaporation. It is estimated that the Proposed Project would conserve 3,907 acre-feet of water annually. This WRA was prepared on behalf of the Ashley Central Irrigation Company (ACIC) for the U.S. Department of the Interior's Bureau of Reclamation (Reclamation). The Proposed Project was originally evaluated as a separate Reclamation project but will ultimately be funded by the U.S. Department of Agriculture Natural Resources Conservation Service (Public Law 83-566), as part of the Ashley Valley Watershed Flood & Irrigation Project. The objective of this WRA was to document the Waters of the U.S., including wetlands, if present within the Proposed Project Action Area (Action Area).

Description of the Proposed Action

The Proposed Project would pipe approximately 2.5 miles of the Ashley Central Canal located in Vernal City, in Uintah County, Utah (Appendix A). The Proposed Project would pipe and pressurize the Ashley Central Canal with 32- to 48-inch High-Density Polyethylene (HDPE) pipe; the canal would not be filled after dewatering. The Proposed Project would also construct a screening/overflow structure at the head of the Action Area and construct irrigation turnouts with gated and metered turnouts designed for telemetry. Backhoes, excavators, haul trucks, and other smaller construction vehicles and equipment would be used to complete the Proposed Project. Construction is projected to begin in fall 2021 and is anticipated to be complete by fall 2023, with construction activities taking place outside of the irrigation season.

2 Methods

The WRA was conducted in accordance with the 1987 U.S. Army Corps of Engineers' *Wetland Delineation Manual* and the *Arid West Region* (Version 2.0). Based on aerial imagery, the U.S. Fish and Wildlife Service's (USFWS) National Wetlands Inventory (NWI), and site conditions in the field, any location with the potential to contain Waters of the U.S., or to support wetlands, was surveyed further. The entire Action Area was assessed based on topography, presence or absence of dominant hydrophytic vegetation and surface hydrology. If vegetation indicated any potential for hydric conditions, a soil pit sampling was conducted and the results documented in accordance with the U.S. Army Corps of Engineers' *Arid West Region Supplement*.

3 Environmental Setting & Evaluation

The Proposed Project is located within the Lower Green-Diamond Sub-Basin (HUC 14060010) of the Ashley Valley within the Lower Green Basin. The Lower Green-Diamond Sub-Basin is spread across Uintah County and encompasses the cities of Vernal and Naples. Steinaker Reservoir and Ashley Creek are the primary hydrologic features in the Lower Green-Diamond Sub-Basin. The Proposed Project is situated within the 12th-order subwatershed: City of Vernal-Ashley Creek Subwatershed (HUC 140600100903). This subwatershed covers an area of approximately 24,327 acres (USGS 2021).

The Ashley Central Canal originates in the northwestern portion of the Ashley Valley, where it receives water from Ashley Creek. The headwaters of Ashley Creek are located north of the valley on the south slope of the Uinta Mountains. The upper, northwestern segment of the Ashley Canal is already piped and Ashley Creek flows beside the Ashley pipe alignment. Once the alignment opens into a canal, Ashley Creek flows away from the canal to the south along the east side of the valley before discharging to the Green River at the valley's southeast end. The Ashley Central Canal conveys irrigation water to 38 turnouts along its length as it flows south and west through the valley. Additional inputs to the canal occur at two locations from the Steinaker Reservoir via the Steinaker Canal, as well as stormwater runoff that enters the canal via surface flow.

The Proposed Project would be contained to the existing alignment of the Ashley Central Canal. Staging areas would be placed in upland agricultural fields, gravel lots or along the canal right-of-way (ROW). Land use in the Action Area consists of primarily agricultural and residential uses. The Proposed Project ranges in elevation from approximately 5,405 feet above mean sea level (AMSL) at the downstream end of the Proposed Project, to approximately 5,422 feet AMSL at the upstream end of the Proposed Project. For representative photographs of the Action Area, see the included Photo Inventory (Appendix B).

The climate within the Proposed Project is considered arid, with little annual precipitation each year. In 2020, Vernal City received approximately 4.9 inches of precipitation. The average temperature is 46.5^{o}F, with average highs reaching 89.5^{o}F in the summer and average lows falling to 7.9^{o}F in the winter months. The Vernal, Utah weather station typically receives 18.8 inches of snowfall annually (FIPS 49047; NOAA Regional Climate Centers 2021).

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM), the Action Area is within Flood Zone X (Appendix C). Flood Zone X corresponds to areas that have been determined to have minimal flood potential and are outside of the 500-plus year flood.

The vegetative community along the canal was dominated by reed canarygrass (*Phalaris arundinacea*), Johnsongrass (*Sorghum halepense*), orchardgrass (*Dactylis glomerata*), Russian olive (*Elaeagnus angustifolia*), and boxelder maples (*Acer negundo*). All Proposed Project staging areas would be located in an upland position within a disturbed setting (i.e. residential property, agricultural fields, paved or gravel parking lots). Staging areas were dominated by weedy, upland and agricultural species such as: alfalfa (*Medicago sativa*), *Halogeton glomeratus*, field bindweed (*Convolvulus arvensis*), and ornamental grasses.

A variety of soils are found throughout the Action Area. Soils in the Action Area are predominantly loamy in texture. The dominant soil types in the Action Area are Nolava-Nolava, wet complex, 0 to 2 percent slopes (20.9%), Green River loam, 0 to 2 percent slopes, rarely flooded (18.2%), Nolava-Nolava, wet complex, 2 to 4 percent slopes (17.7%), Shotnick sandy loam, 2 to 4 percent slopes (10.2%), and Wyasket loam, 2 to 4 percent slopes (10.2%) (Soils Maps, Appendix D). Most of the soils in the Action Area are not hydric (rating of 0 out of 100). Approximately 28.1% of the soils have a hydric rating between 4 and 8. The remaining soils (10.3%) are considered hydric, with a rating of 85 out of 100.

The USFWS NWI suggests that the Action Area may contain riverine wetlands (R4SBCx and R5UBFx), freshwater forested/shrub wetlands (PSSAx), and freshwater emergent wetlands (PEM1A) (see USFWS NWI, Appendix E). Additionally, NWI data indicates that the staging areas could occur adjacent to or within wetland habitat. According to the NWI mapper, staging areas 8 and 9 could be situated adjacent to

freshwater forested/shrub (PSSAx) wetlands. NWI data also suggests that staging areas 10, 11, 12, 13, and 14 could be adjacent to riverine habitat (R4SBCx) and staging areas 13 and 15 may cross through riverine habitat (R4SBC and R4SBCx, respectively).

The NWI was inconsistent with field conditions, as no riverine, freshwater forested/shrub, or freshwater emergent wetlands were observed within the Action Area. Hydrophytic vegetation was present along the steep slopes within the canal, however no other wetlands were identified adjacent to the canal or within the identified staging areas. The field visit determined that the Action Area does not contain wetlands, or other Waters of the U.S.

Given Ashley Central Canal's connectivity with Ashley Creek, a tributary to the Green River, Ashley Central Canal likely can be considered a jurisdictional water. Outside the irrigation season, water does not flow in the canal.

4 Summary

The Proposed Project would pipe approximately 2.5 miles of the Ashley Central Canal located in Vernal City, Uintah County, Utah. The purpose of the Proposed Project is to conserve water by preventing water loss due to seepage and evaporation. Approximately 3,907 acre-feet of water would be conserved annually from Proposed Project's implementation.

Surface hydrology associated with Ashley Central Canal was observed in the Action Area, though no wetlands were present. Ashley Central Canal may be considered jurisdictional waters given its connectivity with Ashley Creek, however the canal was not a piped tributary so may not fall under USACE jurisdiction. Nevertheless, the Proposed Project would only pipe the canal when irrigation waters are not present and would not violate the restrictions outlined under USACE RGL 07-02 for *Exemptions for Construction or Maintenance of Irrigation Ditches and Maintenance of Drainage Ditches Under Section 404 of Clean Water Act*.

The Proposed Project is not anticipated to impact Waters of the U.S., including wetlands because the construction would occur outside of the irrigation season when the canal does not contain irrigation water. Based on the fact that piping the canal likely would be considered a maintenance activity or agriculturally exempt and because construction activities would occur outside of the irrigation season when the canal is dry, the Proposed Project would not be anticipated to require a permit under the Clean Water Act (CWA). It should be noted that the final authority regarding impacts to Waters of the U.S., and permit authorizations rests with the appropriate regulatory agencies.

If you have any questions regarding this report, please contact Autumn Foushee. She may be reached at afoushee@jub.com, or on her office phone at 801-886-9052.

5 References

Federal Emergency Management Agency (FEMA). 2010. Flood Insurance Rate Map 49047C0660D. https://msc.fema.gov/portal/home. Accessed November 11, 2019.

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USACE. 2008. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)*. Vicksburg, MS: Environmental Laboratory (U.S.).

U.S. Department of Agriculture (USDA)-Natural Resources Conservation Service (NRCS). 2019. Web Soil Survey. https://websoilsurvey.sc.egov.usda.gov/. Accessed August 21, 2019.

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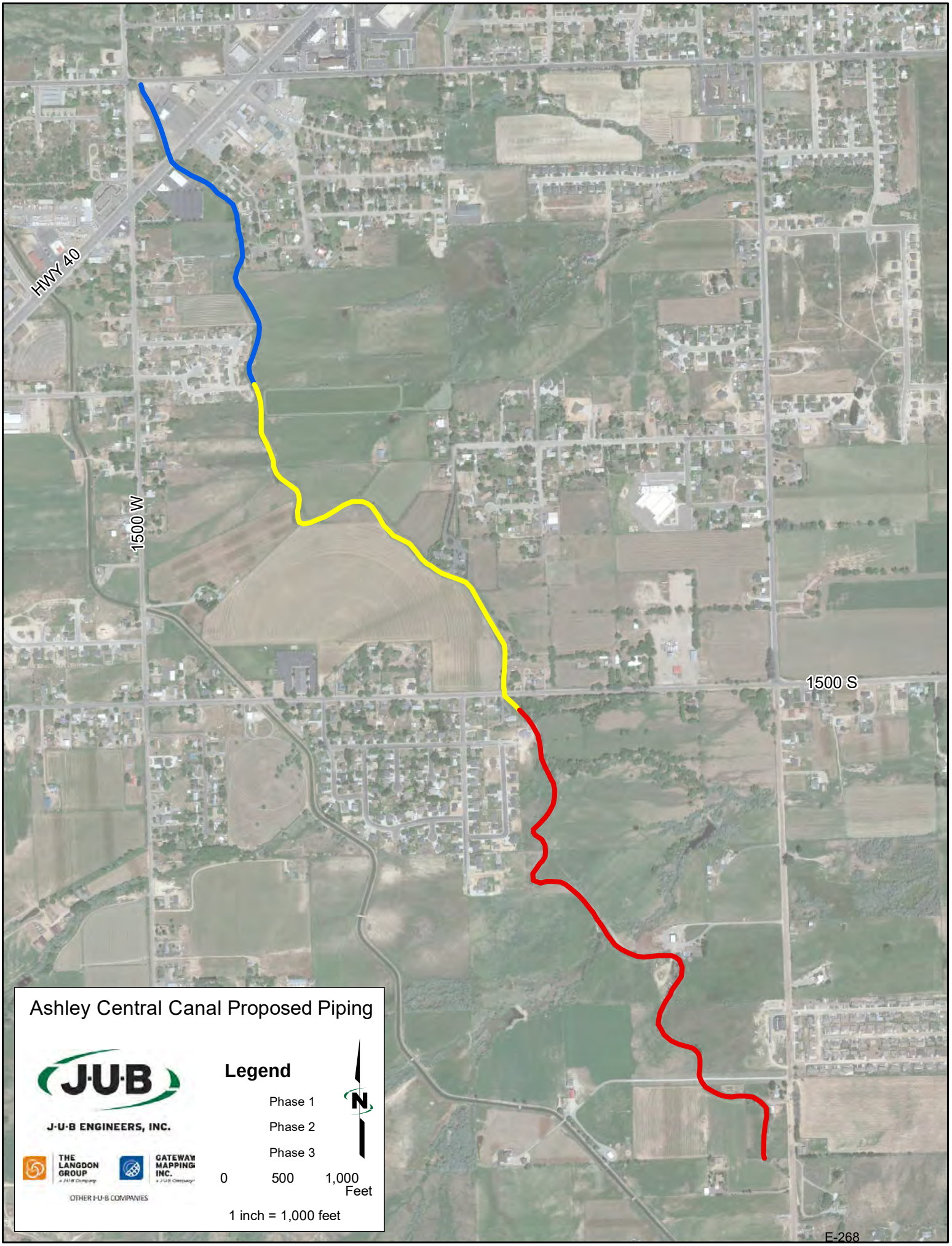
U.S. Geological Survey (USGS). 2021. Watershed Boundary Dataset. Accessed January 11, 2021. https://www.arcgis.com/home/webmap/viewer.html?useExisting=1&layers=4c08f2e2b13741da96ad4a8f6aa5e36a.

Appendix A – Vicinity Map & Project Exhibits



Ashley Central Canal Proposed Piping

J·U·B ENGINEERS, INC.

THE LANGDON GROUP

GATEWAY MAPPING INC.

OTHER J-U-B COMPANIES

Legend

Phase 1

Phase 2

Phase 3

N

0 500 1,000 Feet

1 inch = 1,000 feet

Ashley Valley Canal Piping Project

1 inch equals 750 miles

Potential Pipe Alignment

Staging Areas

Ashley Valley Canal Piping Project

1 inch equals 750 miles

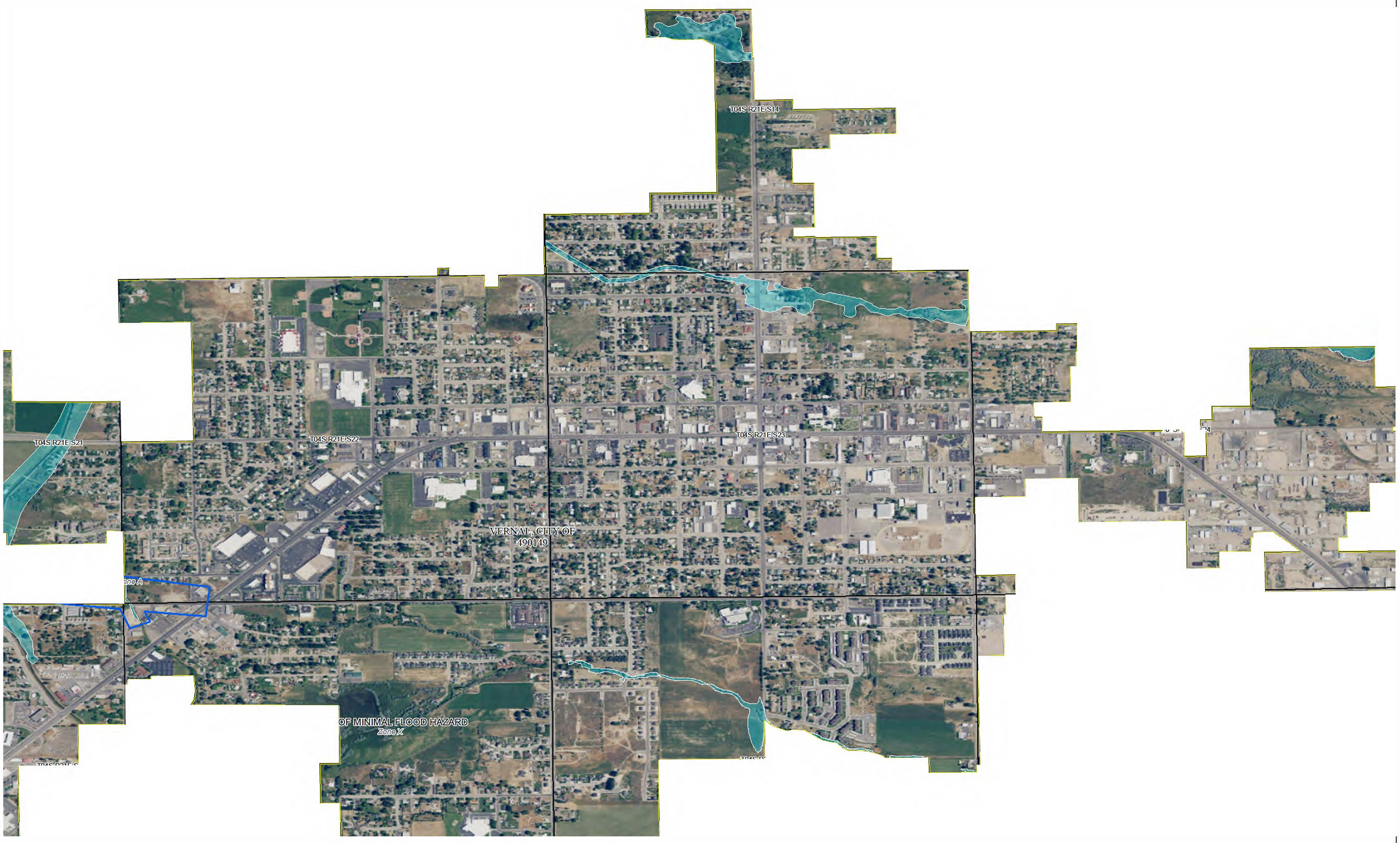
Potential Pipe Alignment

Staging Areas

Appendix B – FEMA FIRMs

40°29'28.02"N

109°33'46.00"W



109°29'58.03"W

40°25'16.38"N

FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary

NOTES TO USERS

For information and questions about this Flood Insurance Rate Map (FIRM), available products associated with this F RM, including historic versions, the current map date for each FIRM panel, how to order products, or the National Flood Insurance Program (NFIP) in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Flood Map Service Center website at http //msc.fema gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can beordered or obtained directly from the website.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Flood Map Service Center at the number listed above.

For community and countywide map dates refer to the Flood Insurance Study Report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

Basemap information shown on this F RM was provided in digital format by USDA, Farm Service Agency (FSA). This information was derived from NAIP, dated April 11, 2018.

This map was exported from FEMA's National Flood Hazard Layer (NFHL) on **11/7/2019 6 17 33 PM** and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time. For additional information, please see the Flood Hazard Mapping Updates Overview Fact Sheet at https://www.fema.gov/media-library/assets/documents/118418

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date.

SCALE

N

Map Projection:
GCS, Geodetic Reference System 1980;
Vertical Datum: NAVD88
For information about the specific vertical datum for elevation features, datum conversions, or vertical monuments used to create this map please see the Flood Insurance Study(FIS) Report for your community at https://msc.fema.gov

1 inch = 1,000 feet 1:12,000

0 500 1,000 2,000 3,000 4,000 Feet

0 105 210 420 630 840 Meters

FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

UINTAH COUNTY, UTAH AND INCORPORATED AREAS

PANEL 660 OF 2450

Panel Contains:

COMMUNITY	NUMBER	PANEL
UINTAH COUNTY UTAH	490147	0660
VERNAL, CITY OF UTAH	490149	0660

MAP NUMBER
49047C0660D
EFFECTIVE DATE
10/06/2010