Draft Spring City Watershed Plan and Environmental Assessment

Sanpete County, Utah

Sponsoring Local Organizations:
Spring City
Horseshoe Irrigation Company

Lead Federal Agency:
U.S. Department of Agriculture
Natural Resources Conservation Service

Cooperating Agencies:
Environmental Protection Agency
U.S. Forest Service

January 2025

Draft
Watershed Plan and Environmental Assessment (Plan-EA)
For
Spring City
of the
Spring City Watershed
Sanpete County, Utah

Prepared By:
United States Department of Agriculture, Natural Resources Conservation Service,
Environmental Protection Agency, and
United States Department of Agricultural, Forest Service

In Cooperation With:
Spring City and Horseshoe Irrigation Company as co-sponsors

Authority

This Plan-EA has been prepared under the authority of the Watershed Protection and Flood Prevention Act of 1954 (public Law 83-566) as amended.

Abstract

This Plan-EA was developed to assess the impacts of the proposed flood prevention and irrigation improvements (Proposed Project). The primary purpose of this project is to provide flood prevention and flood damage reduction for the downstream community of Spring City and surrounding farmland, as well as an efficient and reliable agricultural water delivery system to agricultural and residential secondary irrigation water users. The Proposed Project is needed to prevent excess runoff and reduce sediment that is filling open channels within the City, causing them to overtop during high water flows and flood residential, commercial, and agricultural properties. The Proposed Project is also needed to address water loss from the irrigation canal system by piping the canal to conserve water lost to seepage, evaporation, and inefficient irrigation delivery systems. It is estimated that annual water losses from open ditches equal 2,421 acre-feet per year. The City has experienced years of extreme flooding in the watershed and understands the impact this has on residents of the watershed. Any Proposed Project measures would protect residents, homes, commercial properties, roads, and other critical infrastructure such as the community's power substation. The Proposed Project would also provide additional recreational opportunities to residents of the area by constructing recreational facilities accessible to the public. The total project installation cost would be $29,350,529. The estimated amount to be paid by the NRCS Public Law 83-566 is approximately $25,090,974. This Draft Plan-EA was developed pursuant to the requirements of the National Environmental Policy Act (NEPA) and is intended to be considered for authorization of Public Law 83-566 funding.

Comments and Inquires

Comments and inquiries must be received by March 28, 2025. Comments may be mailed or emailed to the below address or submitted during the public open house. Comments may also be hand delivered to Spring City's City Hall Building:

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Mail: Spring City Watershed Plan
Attn: The Langdon Group
392 E Winchester Street # 300
Salt Lake City, UT 84107

Email: springcity@utwatershed.com

Phone: (435) 213-2872

Drop-Off: Spring City Town Hall
150 East Center
Spring City, UT 84662

Further information on this project may also be obtained by contacting: Connor Benfield, Field Watershed Coordinator at (801) 524-4406 125 South State Street Room 6416, Salt Lake City, Utah, 84138

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WATERSHED PLAN AGREEMENT

(TO BE INCLUDED IN FINAL PLAN-EA)

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Summary Draft Watershed Plan-Environmental Assessment Document

For
Spring City Watershed
Sanpete County, Utah
Congressional District 2

S.1 Authorization

Public Law (PL) 83-566 Stat. 666 as amended (16 U.S.C. Section 10001 et Seq.) 1954

S.2 Sponsoring Local Organizations

Spring City and Horseshoe Irrigation Company (HIC), as co-sponsors; U.S Department of Agriculture (USDA) – National Resources Conservation Service (NRCS) as lead agency; U.S. Environmental Protection Agency (EPA); United States Department of Agriculture Forest Service (USFS) as cooperating agencies.

S.3 Title of Proposed Action

Spring City Watershed Plan and Environmental Assessment (Plan-EA)

S.4 Purpose and Need for Action

The primary purpose of the flood prevention and irrigation improvements (Proposed Project) is to provide flood prevention and flood damage reduction while other eligible purposes of the project include improvement of agricultural water management, and to provide additional recreation in the project area by modernizing the irrigation system, metering water usage, providing separate water storage facilities for agricultural and secondary water use, and providing recreational facilities for Spring City residents, HIC, and the surrounding areas of Sanpete County. The Proposed Project is needed to prevent flood runoff, erosion, and sediment damage in the areas downstream of the project area and in the San Pitch Subbasin, as well as to address water loss in the canal system and the conservation of water lost to seepage and evaporation and provide for recreational needs in the project area.

S.5 Description of the Preferred Alternative

The Preferred Alternative would construct a new Reservoir and new day-use recreational facilities; install a new Oak Creek diversion structure and a new flood channel to the Reservoir; restore and stabilize the Mill Race Flood Ditch, replace the North Fields Ditch and Point Ditch irrigation piping; construct a new city regulating pond; replace the Oak Creek Upper Diversion; rehabilitate the Chester Ponds; install new secondary water meters; and replace diversion structure throughout the system.

S.6 Resource Information

Table S- 1 lists the relevant resource information for the Proposed Project.

Table S- 1. Existing Resource Information

Resource	Description
Latitude/Longitude	39.482651, -111.496064 (Spring City) 39.474021, -111.434991 (Reservoir) 39.488886, -111.534381 (Chester Ponds)
Hydrologic Unit Number – Hydrologic Unit Code (HUC)	HUC 16030004 (San Pitch subbasin) • HUC 160300040302 (Upper Oak Creek) • HUC 160300040301 (Canal Creek) • HUC 160300040207 (Cedar Creek)

Resource	Description
	• HUC 160300040304 (Cottonwood Creek) Total – 33,267 acres
Climate	Summer Average: 75°F Winter Average: 43°F
Topography	Mountainous foothills, pinyon-juniper woodlands, and open pastureland
Annual Precipitation/Snowfall	10.2 inches / 33.8 inches
Land Uses (Sanpete County)***	Developed lands (1,436.69 acres), forested lands (18,795.34 acres), shrub/scrub lands (7,545.23 acres), hay pasture lands (1,880.65 acres), and cultivated crop lands (2,921.90 acres) make up the majority of land uses in Sanpete County. The remainder of land use in Sanpete County consists of open water (38.77 acres), barren land (12.40 acres), herbaceous land (71.44 acres), woody wetlands (28.8 acres), and emergent herbaceous wetlands (71.44 acres).
Land Ownership	Federal, including USFS managed lands (54.48%), State/Local (2.72%), Private (42.80%)
Population (Sanpete County) *	29,850
Demographics (Sanpete County) *	White: 88.5% Hispanic or Latino: 6.7% Asian: 1.0% Two or More Races: 1.4% Native Hawaiian and Other Pacific Islanders: 0.5% American Indian and Native Alaskan: 1.1% African American: 0.7%
Farms Present (Sanpete County) **	1,003
Land in Farms (Sanpete County) **	301,691 acres
Average Farm Size (Sanpete County) **	301 acres

* Based on 2019 U.S. Census Bureau Census Data (Census, 2019).
** Based on 2017 NRCS Census of Agriculture (USDA, 2017).
*** Extracted from National Land Cover Database (NLCD) (MRLC, 2023).

S.7 Alternative Plans Considered

Alternatives that were considered in this Draft Plan-EA include the future without federal investment (FWOFI) (No Action Alternative) and the future with federal investment (FWFI) (Action Alternative). All reasonable alternatives including non-structural alternatives, are evaluated to determine the locally preferred alternative, environmentally preferred, and national economic efficiency (NEE) alternative. See Section 3.4 for more information on alternatives considered as part of this Plan-EA.

- Under the No Action Alternative, the Reservoir and Regulating Pond for residential use would not be constructed, secondary water use would not be metered, existing diversions ditches would not be repaired, and no new recreational facilities would be built. Flooding would continue throughout Spring City during high water events and the irrigation system would continue to lose approximately 2,563 acre-feet (ac-ft) of water annually. The existing infrastructure would remain the same. The alternative would not result in any additional costs beyond annual maintenance costs of the existing system and would result in average annual damages of $977,900.
- The Action Alternative would construct a new 1,034 ac-ft Freeman Allred Reservoir, a new open concrete Flood Channel & Oak Creek Diversion structure, and outlet pipeline to divert

water into and away from the reservoir; pipe the existing open earthen irrigation ditches within the Point Ditch and North Field Ditch systems, replace the existing deteriorated diversions, and upsize 11 culvert road crossings to improve flood flows throughout Spring City; restore and stabilize the existing Mill Race Ditch system; add meters to 502 secondary water users; construct a new Regulating Pond to allow for separate water storage for residential users; replace the existing Oak Creek Upper Diversion piping for the Spring City hydroelectric plant; dredge the existing Chester irrigation ponds and install a new diversion and pipeline from Oak Creek to the Chester ponds; and install day use recreation facilities at the Freeman Allred Reservoir. The Action Alternative would result in approximately $165,274 in annual operating and maintenance costs. The Action Alternative is the NEE Alternative and the Preferred Alternative.

Another alternative was considered during the planning phase but was eliminated from detailed analysis due to the high cost. This alternative would have been similar in scope to the Action Alternative, including the construction of a detention basin and regulating pond at different locations, piping the open ditches to Oak Creek, and constructing recreational facilities. It would have also added flood control and irrigation storage on Canal Creek. With the additional design, land acquisition needs, and new rights-of-way requirements, this alternative was estimated to cost $31,179,447, and was therefore not carried forward in the analysis.

Mitigation measures and BMP will be implemented during and post-construction to minimize impacts, as discussed in Section 7.4 and Appendix E.

S.8 Project Costs and Funding Source

A breakdown of the estimated project cost for the Preferred Alternative is summarized in Table S-2. NRCS design engineering, construction management, and NRCS incurred administration costs are not cost-shared by the sponsor. Any costs incurred for administration by the sponsor would not be cost-shared by NRCS.

Table S- 2. Estimated Project Costs (Dollars) 1/

Works of Improvement	Public Law 83-566 Funding	Other 2/	Total
Flood Prevention	$1,342,972	$8,912,683	$10,255,654
Agricultural Water Management	$14,605,169	$4,046,804	$18,651,973
Public Recreation	$249,150	$193,750	$442,900
Total	$25,090,974	$4,259,554	$29,350,528

1/ Base price: 2022. Prepared March 2022.

S.9 Ecosystem Services Framework

The Ecosystem Services Framework that is used to evaluate benefits and costs for the Proposed Project uses federal water resource project and NRCS guidelines, relying primarily on the Principles, Requirements and Guidelines (PR&G) (NRCS, 2014a), the NRCS Natural Resources Economics Handbook (NRCS, 1998), and the National Watershed Program Manual (NWPM) (NRCS, 2014b).

With the federal law passage of the 2007 Water Resources Development Act, Congress directed the federal government to update and consolidate its past guidance on evaluating the costs and benefits of federal investments. The original Principles and Guidelines was replaced by PR&G as of April 2009. The PR&G allow for:

> *…maximizing public benefits (of all types) relative to costs, the use of quantified and unquantified information in the tradeoff analysis, flexibility in decision making*

> *to promote localized solutions, ability to rely on the best available science and objectivity, and advance transparency for Federal investments in water resources (NRCS, 2017).*

The PR&G further state:

> *Federal investments in water resources as a whole should strive to maximize public benefits, with appropriate consideration of costs. Public benefits encompass environmental, economic, and social goals; include monetary and non-monetary effects; and allow for the consideration of both quantified and unquantified measures (NRCS, 2017).*

The PR&G also require benefits and costs to be evaluated in an ecosystem service framework. An ecosystem is a natural unit of living and non-living things that function together to create goods and services valued by people (Olander et al., 2016). Ecosystem services is a broad term used to describe the benefits humanity receives from ecosystems as a byproduct of their functioning.

By putting nature at the center, ecosystem service frameworks give economic, social, and environmental costs and benefits equal standing in decision making processes, and therefore, help to accomplish the federal objective of maximizing NEE, helping to ensure federal investments protect and restore ecosystem functions and values, and avoid irreversible impacts (NRCS, 2014a). Economic efficiency requires that resources are used in their highest valued use. Projects that create more benefits than costs utilize resources more efficiently than baseline conditions and therefore, increase NEE.

The four-category ecosystem framework adopted in the PR&G includes the following service types: provisioning, regulating, cultural, and supporting services. See Section 2.1 for more information on the ecosystem services breakdown and the guiding principles of the watershed approach.

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Table S- 3 summarizes the ecosystem services evaluates as part of the NEE benefit-cost analysis.

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Table S- 3. Summary of Project Alternatives and Associated Ecosystem Services Evaluated as Part of the NEE Benefit-Cost Analysis (2022 $)

	Alternatives	
	FWOFI	**Action Alternative[1]**
Alternatives		
Locally Preferred	The FWOFI would maintain the existing conditions and would not improve flood control, agricultural water, of public recreational infrastructure that would benefit the community in the project area.	The FWFI is locally preferred as the community in the project area is agriculturally focused therefore, flood control and agricultural infrastructure improvements would provide the greatest benefit to the community.
Non-structural2	The FWOFI is the non-structural alternative. The FWOFI would maintain the existing conditions and would not implement any structural changes.	The FWFI would implement structural changes.
NEE	The FWOFI would require no project investment.	The FWFI would require an investment of $893,900, provide $1,143,100 in net benefits, and represent a benefit to cost ratio of 1.3.
Environmentally Preferable	The FWOFI would maintain existing conditions in the project area. Flood risks would not be reduced, and vital irrigation water would continue to be lost.	The FWFI is the environmentally preferred alternative. The FWFI would conserve approximately 2,563 ac-ft of irrigation water and would not result in significant human health or environmental impacts.
Guiding Principles		
Healthy and Resilient Ecosystems	Under the FWOFI, flood risks would not be reduced, and vital irrigation water would continue to be lost.	The FWFI would conserve approximately 2,563 ac-ft of irrigation water and reduce flooding risks, thereby restoring the functions of ecosystems in the project area.
Sustainable Economic Development	The FWOFI would not provide an economic investment for flood control or agricultural water infrastructure in the project area.	An Economic analysis was performed to ensure the FWFI encourages sustainable economic development. The FWFI would provide better flood control, agricultural water management, and public recreational opportunities in the project area, while also being considered the NEE alternative.
Watershed Approach	The FOWFI was analyzed using a complete watershed approach.	The FWFI was analyzed using a complete watershed approach.
Environmental Justice (EJ)	The FWOFI would have continued negative impacts on environmental justice or civil rights. Continued flooding damages,	The FWFI would have no long-term adverse effects on environmental justice communities because no long-term

	Alternatives	
	FWOFI	**Action Alternative[1]**
	increased water losses, the loss of locally produced electricity, and inefficient agricultural practices could have ongoing and long-term impacts to low-income or minority populations in the area.	adverse environmental or human health effects are anticipated to occur as a result of implementing the FWFI.
Public Safety	The FWOFI would not alter existing conditions. However, the FWOFI would also not address any existing safety concerns in the project area.	The FWFI would reduce flooding risks and address concerns regarding public health and safety. The FWFI would reduce the risk to people from natural events.
Floodplains	The FWOFI would not invest federal funds in the development of flood prone areas.	The FWFI would occur within areas of minimal flood hazard except the existing irrigation system, which is located within the 100-year floodplain. The FWFI would not result in a net rise in the floodplain or create vulnerabilities in the project area and would reduce flood risks in the project area.
Total Project Investment (Annualized Average	$-	$893,900
Monetized Net Benefits (Annualized Average)	-$1,149,600	$1,143,100
Provisioning Services (Annualized Average)		
Farm income	$-	$143,100
Regulating Services (Annualized Average)		
Property-related damages	-$842,700	$658,400
Farm income damages	-$2,500	$2,500
Power income damages	-$42,600	$42,600
Municipal water supply expenses	-$90,300	$90,300
Municipal water supply expenses	-$171,500	$171,500
Cultural Services (Annualized Average)		
Recreation Values	$-	$34,700

1. Note that all costs and benefits for Action Alternative are compared to the FWOFI here and elsewhere in this document. Benefits and costs were calculated over a 100-year analysis period using a discount rate of 2.25 percent. All values reposted in 2022 dollars.
2. Non-structural alternatives, if they exist, may be included in the final analysis (see Section 6C(2)(c) pf PR&G) (NRCS, 2014a). Non-structural alternatives were eliminated from detailed study because none were brought forward that would meet the purpose and need of the project.
3. Annualized costs for the Action Alternative include design, engineering, administration, permitting, construction, and operations and maintenance (O&M).
4. The net benefits of the FWOFI are negative to reflect the annualized damages and expenses in the study area due to flood events and monetary expenditures.

S.10 Project Benefits

Average annual benefits from avoided property-related damage from flooding are $658,400. Average annual benefits to agricultural use include avoided farm income damages of $2,500, $143,100 of increased farm income. Secondary irrigation average annual benefits include $90,300 in avoided municipal water supply expenses. Other average annual benefits include avoided power income damages of $42,600 and added recreation values of $34,700. The Preferred Alternative would provide flood damage reduction for Spring City, HIC, and Sanpete County by preventing runoff, erosion, and sediment damage in the Project Area and in areas downstream of the subbasin. The specific monetary value of damage reduction benefits is described in Table S- 4. In the event of a 100-year storm event, the Preferred Alternative would protect 281 structures, including 157 homes, numerous public roadways, and 73 acres of agricultural land downstream of Spring City. Additionally, 502 residents of Spring City would be protected from flooding with the implementation of the Proposed Action.

Piping of the existing open ditch irrigation system is projected to conserve 2,563 ac-ft of water annually. Ultimately, the results from implementation of the Preferred Alternative would improve water quality and quantity, public health and safety, and farmer profitability. The installation of recreational facilities, including picnic pavilions, restrooms, parking, and non-motorized boat launching ramps, would also benefit residents by offering additional safe recreational facilities in the area.

S.11 Net Economic Benefits

The estimated annual project economic benefits are summarized in Table S- 4 below. The Preferred Alternative will be the NEE alternative, per PR&G (NRCS, 2014a) and consistent with economic requirements per sections 505.2 and 505.35.B(1)(iv) of the NWPM (see also Section 3.5) (NRCS, 2014b).

The Action Alternative Proposed Project improvements in the watershed would generate economic returns in excess of the upfront installation and ongoing management costs compared to the No Action Alternative. Under the No Action Alternative, average annual economic damages and expenses are approximately $977,900. These damages are the result of expenses residents of the watershed face to provide municipal water, repair property-related damages as well as damages to farmland and infrastructure. The Action Alternative would invest an average annual amount of $893,900 in built infrastructure to avoid these damages and expenses, thereby avoiding damages and expenses and enhancing farm incomes and recreational opportunities in the watershed. The annualized discounted value of the enhanced regulating, provisioning and cultural service benefits generated by the project amount to $1,143,100, outweighing the Action Alternative's annualized expense.

In all cases, the benefits of each Proposed Project measure outweigh their respective costs. In total, the benefit-cost ratio (BCR) of the Action Alternative was estimated to be 1.3. The BCRs for each work of improvement ranged from a low of 1.0 for the Oak Creek Upper Diversion piping replacement work to a high of 2.6 for the secondary water meter work and the Freeman Allred Day Use recreational area (see Table S- 4 below and Table 43 of the Benefit-Cost Analysis [BCA] in Appendix E).

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Table S- 4. Comparison of Annual NEE Benefits and Costs (Dollars) 1/

	Agricultural Related						Non-agriculture Related			
Works of Improvement 2/	**Reduced Property-Related Damages**	**Reduced Farm Income Damages**	**Reduced Power Income Damages**	**Increased Farm Income**	**Reduced Road Damages**	**Avoided Municipal Water Supply Expenses**	**Recreation Values**	**Average Annual Benefits Total**	**Average Annual Costs**	**Benefit Cost Ratio**
A3			$42,600					$42,600	$41,600	1.0
F1, F2, F3, A4, A5, A7, A6	$658,400	$2,500			$171,500			$832,400	$668,100	1.2
A1, A2, A9, A10				$143,100				$143,100	$136,300	1.1
R1							$34,700	$34,700	$13,400	2.6
A8						$90,300		$90,300	$34,600	2.6
Total	$658,400	$2,500	$42,600	$143,100	$171,500	$90,300	$34,700	$1,143,100	$893,900	1.3

1/ Price base: 2022. Calculated using FY 2022 Water Resources Discount Rate (2.25%) and 102-year period of analysis. Prepared August 2022.

2/ Works of Improvement:

- Flood Control and Detention
  - F1/A7 – Freeman Allred Reservoir and Debris Basin
  - F2 – Concrete Flood Channel to Reservoir
  - F3 – Mill Race Flood Ditch Channel Restoration and Bank Stabilization
- Agricultural Water Management
  - A1 – North Fields Ditch Piping
  - A2 – Point Ditch Piping
  - A3 – Oak Creek Upper Diversion Replacement
  - A4 – Oak Creek Outlet Piping
  - A5 – Oak Creek Diversion Structure Replacement
  - A6 – Regulating Pond
  - A8 – Secondary Water Meters
  - A9 – Oak Creek Bypass Piping
  - A10 – Chester Ponds Capacity Restoration
- Recreation
  - R1 – Freeman Allred Day Use Area

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S.12 Period of Analysis

The period of analysis for all alternatives is 102 years, accounting for a 100-year project life and 2-year installation period.

S.13 Project Life

The life of the Preferred Alternative is estimated to be 100 years.

S.14 Environmental Impacts

Table S- 5 lists the resources of concern and impacts associated with the Preferred Alternative. Resources that would not be impacted by the Preferred Alternative are not listed in this table. Best Management Practices (BMPs), such as Temporary Erosion and Sediment Controls (TESCs) would be implemented during and post-construction to minimize impacts from construction activities. See Section 7.4 and Appendix E for more details.

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Table S- 5. Summary of Resource Concerns and Impacts

Resource of Concern	Summary of Concern	Effects Summary for Preferred Alternative
Soils & Geology		
Upland Erosion & Sedimentation	Soil disturbance from the Preferred Alternative actions. The detention basin must provide adequate sediment capacity in the event of a major flood event.	The Preferred Alternative would have minor, temporary impacts to upland erosion and sedimentation during construction of due to soil disturbance and exposure of bare soils to erosion potential (water, wind, etc.). The Preferred Alternative would construct a reservoir and detention basin, which would also settle out suspended sediment and debris present in runoff.
Prime & Unique Farmlands	Soil disturbance from the Preferred Alternative actions. There are 613 acres of Prime Farmland, if Irrigated and 2,650 acres of Farmland of Statewide Importance in the project area.	The Preferred Alternative is not anticipated to disturb any Farmlands of Statewide Importance during construction activities due to their location; no Prime and Unique Farmlands are located within the project area.
Water Resources		
Surface & Groundwater Quantity & Quality	Preferred Alternative actions occur within and adjacent to potential jurisdictional waters. Existing irrigation distribution system is inefficient and leads to water loss and excess water application and water conflict when water supply is limited.	The Preferred Alternative may temporarily impact surface water quality during construction. The Preferred Alternative is projected to conserve approximately 2,563 ac-ft of irrigation water annually through decrease water loss and improved water use efficiency.
Clean Water Act (CWA) / Waters of the U.S. (WOTUS), including Wetlands	Preferred Alternative actions occur within and adjacent to potential jurisdictional waters. Flood flows in the watershed produce high volume flows that transport significant volume of sediment and lead to sedimentation issues in downstream area including Spring City.	The Preferred Alternative may have indirect beneficial impacts to nearby WOTUS by increasing beneficial water flows as a result of the proposed water conservation measures. Temporary, indirect impacts to wetlands may occur as a result of construction activities due to noise and increased traffic in the area. Construction activities would occur within the existing canal system easement. The use of designed ditches, pipes, and reservoirs/ponds would reduce sediment load during flood events and lead to decreased sedimentation in the watershed.
Regional Water Management Plans	The Sevier River Basin has fully allocated available water for irrigation and water loss through seepage and excess water use from irrigation system is a current water management issue.	The Preferred Alternative would have permanent beneficial impacts to regional water management plans as it aligns with regional water management goals and objectives by improving water use efficiency in the irrigation system, reducing sediment loading, improving water quality, and addressing recreational, environmental, and other needs

Resource of Concern	Summary of Concern	Effects Summary for Preferred Alternative
		as outlined in the Sevier River Basin Water Plan, the regional Water Management Plan for the Area (UBWR, 1999).
Floodplain Management	Preferred Alternative actions occur within the 100-year floodplain. The planned installation of the 1,034 ac-ft Reservoir and associated floodways to deliver floodwater to the reservoir would minimize flood risks within and in areas surrounding Spring City.	The Preferred Alternative is expected to result in no adverse direct or indirect impacts for floodplain areas in the project area. Cumulative net positive impacts are anticipated due to reduced flooding and reduced sediment erosion within the project area and surrounding areas. The Preferred Alternative includes measures in areas designated as the 100-year floodplain. The detention basin would decrease the risk of flooding in the event of a 100-year storm. The Project team would coordinate with Sanpete County and other local jurisdictions and will obtain any necessary floodplain development permits prior to any construction within the floodplain.
Air Quality		
Clean Air Act (CAA) / National Ambient Air Quality Standards (NAAQS)	Temporary air emissions from construction activities would occur.	The Preferred Alternative would cause temporary, localized increases in emissions with construction activities. With the implementation of BMPs, construction activities are not anticipated to violate air quality standards.
Climate & Greenhouse Gases (GHG)	Temporary air emissions from construction equipment.	The Preferred Alternative would cause temporary increases in GHG emissions during construction. With the implementation of BMPs, construction activities are not anticipated to exceed air quality standards.
Plants		
Special Status Plant Species	Potential disturbance to federally listed plant species and habitat based on U.S. Fish and Wildlife Service (USFWS) guidance.	A Biological Evaluation (BE) was completed for the Proposed Project that determined the Proposed Project would have no effect on any Endangered Species Act (ESA) listed species or habitat and therefore is in compliance with Section 7 of the ESA (Appendix E). Given the no effect determination, consultation with USFWS was not necessary for compliance with Section 7 of the ESA.
Noxious Weeds & Invasive Plants	Increased potential for introduction of noxious weeds and invasive plants.	Construction BMPs would be implemented to minimize and prevent the introduction and establishment of noxious weeds and invasive plant species.
Riparian Areas	Preferred Alternative activities would occur in or near riparian areas.	The Preferred Alternative would have minor, temporary impacts to riparian areas during construction as a result of noise and increased traffic. The Preferred Alternative would have permanent impacts to riparian areas during construction due to vegetation removal and

Resource of Concern	Summary of Concern	Effects Summary for Preferred Alternative
		piping of the existing open canal system. The loss of seepage water from piping the ditch systems would result in the permanent removal of riparian vegetation within the ditch system and at the immediate edge of the ditches. No loss of vegetation outside the ditch prism, nor loss of vegetation supported by irrigation is anticipated. Disturbed areas would be reseeded and restored to pre-construction conditions.
Forest Resources	Preferred Alternative activities would impact forest resources and adjacent wildlife habitat in the project area.	The Preferred Alternative would have minor, temporary impacts to forest resources during construction of approximately 1.72 acres of Manti-La Sal National Forest lands due to land disturbances, noise, and increased traffic. Approximately 0.24 miles of forest lands would be permanently removed from public use due to the installation of the Oak Creek Flood Channel.
Animals		
Wildlife & Wildlife Habitat	Preferred Alternative activities would impact wildlife and adjacent wildlife habitat in the project area.	The Preferred Alternative would have minor, temporary impacts to wildlife and wildlife habitat during construction due to land disturbances, noise, and increased traffic in the area. Temporarily disturbed areas would be restored following the completion of construction. The Preferred Alternative would have permanent impacts to wildlife and wildlife habitat due to the removal of trees and vegetation from the riparian fringe associated with open earthen portions of the ditches, as well as the North Fields and Point Ditch piping of the existing irrigation systems. Hydrophytic vegetation associated with the ditches would likely be lost due to the loss of seepage water within the ditches, which may permanently remove nesting, foraging, and breeding habitat for waterfowl species and small mammals. An incidental nest survey would be completed prior to removing any large trees or dense, shrubby vegetation.
Special Status Animal Species	Potential disturbance to federally listed species and habitat.	The Preferred Alternative would have minor, temporary impacts to special status animal species during construction due to land disturbances, noise, and increased traffic in the area. No permanent impacts are anticipated. The BE for the Proposed Project determined the Proposed Project would have no effect on any ESA-listed species or habitat and therefore is in compliance with Section 7 of the ESA (Appendix E). Given the no effect determination, consultation with

Resource of Concern	Summary of Concern	Effects Summary for Preferred Alternative
		USFWS was not necessary for compliance with Section 7 of the ESA.
Migratory Birds / Bald and Golden Eagles	Potential disturbance to migratory birds and protected raptors in the project area.	The Preferred Alternative would have permanent impacts to migratory birds and raptor species in the area due to the removal of trees and other vegetation in the ditch prism due to the piping of the existing North Fields and Point Ditch irrigation systems, permanently removing a source of water for vegetation along the ditch system, which would likely result in the loss of hydrophytic vegetation, including trees, that may be used by migratory birds. Construction of the Preferred Alternative would permanently remove trees from the riparian fringe along the open earthen portion of the ditch systems. An incidental nest survey would be completed prior to removing any large vegetation to help minimize potential impacts to nesting or breeding pairs, if present. If any nests are observed, the NRCS Biologist would be contacted, and construction would pause to determine the appropriate course of action.
Human		
Socioeconomics	Socioeconomic impacts to the population in the project area.	The Preferred Alternative is anticipated to have a net beneficial impact on socioeconomics by conserving an estimated 2,563 ac-ft of water per year, reducing flood damage to 502 people, 292 structures, including 157 homes and 11 commercial buildings, and resulting in approximately $84,000 annually in flood reduction savings, improving agricultural profitability, decreasing operation and maintenance costs, and temporarily creating jobs within the project area during construction.
EJ & Civil Rights	Protected populations are present within the project area; approximately 11% of the population in Spring City area a minority. Approximately 6.8% of the households in Spring City are below the federal poverty level (see Section 3.6.2).	The Preferred Alternative would have minor, temporary impacts during construction due to noise and increased traffic in the area. No permanent disproportionately high and adverse environmental or human health effects on low-income or minority populations are anticipated to occur because adverse environmental effects are not anticipated from implementation of the Preferred Alternative.
Cultural & Historic Resources	Potential for impacts to historic and cultural resources in the area of potential effect (APE). There are 180 historic structures within the 100-year flood	The NRCS State Conservationist, in consultation with the Utah SHPO, Tribes/THPOs, and other agencies, determined that the project would result in an Adverse Effect to Historic Properties (36 CFR 800.5(b). A Memorandum of Understanding (MOU) is being

Resource of Concern	Summary of Concern	Effects Summary for Preferred Alternative
	inundation zone that would be adversely impacted from flooding under the No Action Alternative.	prepared as part of the cultural mitigation for the Proposed Project. Tribal consultations with the Navajo Nation and Ute Indian Tribe of the Uintah and Ouray Reservation have been completed (see Table 6-1 for details). A SHPO concurrence letter is located in Appendix A.
Hazardous Materials	Hazardous materials associated with construction (fuel, oil, etc.) would be present in the project area.	The Preferred Alternative would have no temporary or permanent impacts to hazardous materials in the project area.
Public Health & Safety	Historical flooding in the watershed has had impacts upon public health and safety in the project area.	Although the Preferred Alternative would be classified as a high hazard dam and there is a risk of a dam breach, the Preferred Alternative would have a net beneficial impact on public health and safety by decreasing the population at risk for flooding damages and loss of life. The Preferred Alternative would provide flood damage reductions, increased water storage for long-term irrigation use, and recreational facilities for public use.
Recreation	Recreational opportunities in the watershed area are currently limited.	The Preferred Alternative would have permanent impacts on unofficial and dispersed public recreation opportunities in the area due to the installation of the proposed Freeman Allred Reservoir. The Preferred Alternative would have minor, temporary impacts to recreational resources during construction of approximately 1.72 areas of Manti-La Sal National Forest lands due to land disturbances, noise, and increased construction traffic. Approximately 0.24 miles of forest lands would be permanently removed from public use due to the installation of the Oak Creek Flood Channel. The Preferred Alternative would improve recreation in the project with the installation of picnic pavilions, restrooms, parking area, and non-motorized boat launching ramps.
Land Use	The potential for land use changes from the installation of Proposed Project components.	The Preferred Alternative would result in minor, permanent impacts to land use due to the construction of the proposed Reservoir and Regulating Pond. Agricultural and grazing lands in the locations of the Reservoir and Regulating Pond would be converted to open water for water storage. Land for the proposed Reservoir and Regulating Pond are currently on lands owned by the irrigation company and private land. A small portion (0.24 miles) of USFS land would be removed from public land, would require an

Resource of Concern	Summary of Concern	Effects Summary for Preferred Alternative
		easement, and would necessitate a land use change for the construction of the Oak Creek Flood Channel. Portions of the Oak Creek Upper Diversion Pipeline are also located on USFS lands and would be temporarily impacted by construction activities.
Visual Resources & Scenic Beauty	Potential to cause temporary disturbance from construction equipment in the project area. Piping and filling the ditches may alter visual aspects of the of the ditch system.	The Preferred Alternative would have permanent, minor impacts to visual resources and scenic beauty due to the construction of the proposed Reservoir and Regulating Pond, as well as the piping of the existing open water irrigation channels. The Preferred Alternative would also result in minor, temporary impacts to visual resources associated with construction disturbance due to the presence of construction equipment and ground disturbances. The Preferred Alternative may result in minor long-term visual impacts from the direct and indirect removal of an open water source and large overstory trees within the corridor during construction and from the loss of seepage water, respectively.
Transportation & Infrastructure	Transportation in the project area could be disrupted during project construction activities. The Preferred Alternative would also improve irrigation infrastructure and install recreational facilities.	The Preferred Alternative would have minor, temporary impacts to transportation during construction of Preferred Alternative. Replacing culverts at road crossings will require a traffic management plan. The Preferred Alternative would improve the irrigation infrastructure under roads and install picnic pavilions and non-motorized boat launching ramps in the area.
Noise	Temporary construction noise impacts. Change in noise levels during operation of irrigation infrastructure.	The Preferred Alternative would result in temporary, short-term noise impacts associated with construction. There would be no change in ambient noise levels during normal operation of the infrastructure.
Energy		
Energy	The existing Oak Creek Upper Diversion pipeline, which supplies water from Oak Creek to Spring City's hydroelectric plant is aged and in poor condition. The Preferred Alternative activities would utilize energy resources during project construction.	The Preferred Alternative would have a net beneficial impact on energy use in the area. Post construction, the Preferred Alternative is anticipated to improve water efficiency and conserve irrigation water by facilitating a change to more efficient irrigation practices as well as decrease maintenance needs for the irrigation system. Replacement of the Oak Creek Upper Diversion Pipeline would allow Spring City to continue to produce power from their hydroelectric plant. No additional energy sources would be required in the operation of the installed infrastructure.

S.15 Major Conclusions

The Action Alternative (Preferred Alternative) is the most feasible, practical, economical, and environmentally conscious alternative. This alternative is considered both the Preferred Alternative and the NEE Alternative.

S.16 Areas of Controversy and Issues to be Resolved

Public involvement for the Proposed Project is discussed in the Public Scoping Report. During the public scoping period, two comments were received. The Scoping Report is included in Appendix A. The Proposed Project was evaluated to determine and address public concerns, including for the following topics:

- Construction impacts
- Drought impacts
- Historic flood impacts
- Potential impacts to water rights, water shares, and water rates.

S.17 Evidence of Unusual Congressional or Local Interest

There is no evidence of unusual congressional or local interest for the Proposed Project.

S.18 In Compliance

In this report in compliance with executive orders, public laws, and other statutes governing the formulation of water resource projects? ___X__ YES _____NO

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Chapter 1 Purpose and Need

The USDA-NRCS, with Spring City and HIC as project sponsors, and the USFS and EPA as cooperating agencies, propose to use federal funds to implement the Spring City Flood Prevention and Irrigation Improvement Project (Proposed Project). The planned components of the Proposed Project would be funded through the provisions of the Watershed and Flood Prevention Operations (WFPO) Program to address flood control, water conservation, water delivery efficiency and reliability, and recreational use.

1.1 Purpose and Need

The primary purpose of the Proposed Project is to provide flood protection and flood damage reduction, while other eligible purposes of the project are to improve agricultural water management and provide additional recreational opportunities in the project area. The Proposed Project is needed to reduce and prevent damages caused by flood runoff, erosion, and sediment downstream of the project area and in the San Pitch Subbasin; address water loss in the canal system and the conservation of water lost to seepage and evaporation; and provide for recreational opportunities in the project area. During a 100-year storm event, flood models show approximately 202 homes, 12 commercial buildings, 175 structures, including 646 people who reside in the homes, 3.1 miles major highways and 7 culverts, and 135.5 acres of agricultural land would experience flooding under the existing conditions. The authorized purposes of this project are flood prevention (flood damage reduction); agricultural water management; and public recreation, per the authorized uses outlined in Section 500.3(B) of the NWPM (NRCS, 2014b).

The issues facing Spring City include past flood events that have had debris flows with one to three ft of mud in City streets; flash floods have destroyed bridges along Canal Creek; renewed torrential rainfall or rapid spring snowmelt has caused additional debris to remain in the canyon in the form of timber and exposed soils on canyon slopes, and boulders in colluvium and stream deposits. Debris enters the stream through landslides and may cause debris dams which can induce breakout floods caused by the blocked stream flow in Oak and Canal Creeks. Sediment and debris build-up in the creeks and diversion structures can produce restriction of surface water flows, backing up of surface waters and bring about on-going maintenance issues for HIC as the debris dams require removal from the canals. Currently, the subwatershed also has no irrigation storage or flood storage facilities available for flow mitigation or supplementation.

Additionally, extensive open-earthen ditches related to the transport of water from Oak Creek and Canal Creek have a large amount of seepage loss during their use. These ditches include the Point Dich, North Field Ditch, and Mill Race Ditch systems. It is estimated that annual water losses from open ditches equal 2,421 ac-ft per year. Other issues include the shared agricultural irrigation and residential secondary water delivery system. The shared water system causes tension between the secondary water users and the irrigation companies and agricultural producers over managing water use. Agricultural water users do not get their full appropriated water share, especially in drought years, as secondary water use is not metered. Irrigation water overuse by secondary water users causes annual water loss estimated at 142 ac-ft. The estimated total water loss of 2,563 ac-ft annually. The water losses can lead to water shortages for agricultural irrigation users.

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1.2 Project Background

The Proposed Project is located within the Upper Colorado Region, specifically the San Pitch subbasin (HUC 16030004) of the Sanpete Valley within the Lower Great Basin. The San Pitch subbasin is spread across Sanpete County and encompasses Spring City. The project area, which encompasses all the Proposed Project components, staging areas, and access roads is contained within Sections 18, 19, 20, 29, 31, 32, 33, 34, 35, and 36, Township 15 South, Range 4 East; Sections 24, 25, and 26, Township 15 South, Range 3 East; and Sections 1 and 2 Township 16 South Range 4 East Salt Lake Base and Meridian. The project area is situated within portions of four Subwatersheds – Upper Oak Creek Subwatershed (HUC 160300040302), Canal Creek Subwatershed (HUC 160300040301), Cottonwood Creek Subwatershed (HUC 160300040304), and Cedar Creek Subwatershed (HUC 160300040207). These watersheds cover an area of approximately 33,267 acres. The watershed boundary of this Plan-EA is shown in Appendix B – Watershed Map.

In accordance with Section 106 of the National Historic Preservation Act (NHPA), 36 Code of Federal Regulations (CFR) 800, and Utah Code Section 9-8-404, the APE delineated for several resources under evaluation, including cultural and paleontological, has been set at approximately 1,610 acres and matches the boundaries for the Proposed Project, as designated above. Henceforth, the APE will be referred to as the project area.

Sanpete County has a long history of settlement. It is believed hunter/gatherer groups and other mobile groups may have inhabited the early as 4,000 years ago. The area was inhabited by several bands of Utes, who are known to have been in the area since at least the early 1770s. The area around Spring City has been continuously inhabited since 1849, when expansion into Sanpete County began. Spring City was first settled in 1852, then called the Allred Settlement. It is believed the earliest irrigation ditches were built around this time as well. The settlement's name was eventually changed to Spring City as the population grew. Water rights for irrigation water were granted in 1870 for Canal, Oak, and Cedar creeks. Spring City was listed on the National Register of Historic Places (NRHP) as a National Register Historic District in 1980 due to its architectural significant and historic town planning (NPS, 1990). Several of the area's irrigation ditches are also considered historic, including the Mill Race Ditch and the Penstock Aqueduct.

Spring City and the surrounding areas risk being flooded by Oak Creek and Canal Creek. These creeks flood regularly, and Spring City has faced floods since its earliest times. Long-time residents of Spring City have described floods from their memories dating back to 1934, when a severe snowmelt flood inundated Spring City for about two weeks. Another snowmelt flood struck the city in 1952 and again in 1983. Numerous landslide areas have formed above both Oak Creek and Canal Creek in 1983 and have continued to threaten Spring City residents and agricultural areas around the creeks. In 1998, a flash flood caused landslides high up in the Oak and Canal Creek canyons which produced mud flows up to three feet (ft) in depth and extensive debris within Spring City. Spring City sustained massive damage to the water, power, and pressurized secondary irrigation systems, including destruction of a county bridge. Several thousand acres of farmland and farming operations had substantial flood damage as well. The flood at Oak and Canal Creek in 1998 resulted in about $2.5 million in city-wide damages.

Chapter 2 Scope of the Plan-EA

The scope of the Plan-EA is considered to be the range of actions, alternatives, and impacts to be considered in an Environmental Impact Statement (EIS) (40 CFR Section 1508.25). Three types of actions (connected actions, cumulative actions, and similar actions), three alternatives, and three types of impacts will be considered in this Plan-EA. Specific actions are discussed in Chapter 4. For this Plan-EA, the alternatives analyzed include the No Action Alternative and the Action Alternative. Direct, indirect, and cumulative impacts are discussed in Chapter 5.

Under the Watershed Protection and Flood Prevention Act (WPFPA), the WFPO Program provides for cooperation between the federal government and the states or their political subdivisions for preventing erosion, floodwater and sediment damage and furthering conservation development, use and disposal of water in authorized watersheds (NRCS, 2018). An approved watershed plan must be in place prior to the initiation of any Proposed Project receiving assistance through the WFPO.

The NRCS offers financial and technical assistance to cooperating entities to protect and restore watershed up to 250,000 acres through this program, as authorized through the WPFPA. NRCS evaluated the Proposed Project and determined it was eligible to receive funding through the WPFPA. Given there is currently no watershed plan in place for Spring City, and that the Proposed Project would address flood prevention, irrigation water delivery and efficiency issues, and recreational facilities it was determined that a Plan-EA would be necessary for the project.

Since the Proposed Project is eligible for funding under the WFPO, adequate National Environmental Policy Act (NEPA) analysis is required. This Plan-EA adheres to NRCS procedures and formatting requirements in the NWPM Part 501 (NRCS, 2014b) and the National Watershed Program Handbook (NWPH) Part 601 (NRCS, 2014a), which provide a framework that ensures compliance with the NEPA of 1969 and its implementing regulations, which are set forth in the Council on Environmental Quality (CEQ) regulations 40 CFR Parts 1500-1508; the Economic and Environmental Principles and Guidelines (P&G) for Water and Related Land Resources Implementation Studies (March 10, 1983) established pursuant to the Water Resources Planning Act of 1965 (Public Law [PL], 89-80), as amended by Executive Order (E.O.) 12322 (September 17, 1981), the Principles, Requirements and Guidelines (PR&G) (NRCS, 2014a), and NRCS policy and guidelines (NRCS, 2010 and 2016). This Plan-EA is also in compliance with Section 106 of the NHPA and 36 CFR Part 800 regulations.

NRCS must identify the federally assisted alternative with the greatest net benefits, as applicable under the NEE plan. NRCS must also decide if the Preferred Alternative would or would not constitute a major federal action significantly affecting the quality of the environment. If NRCS determines that the selected alternative (the Preferred Alternative) would not significantly affect the quality of the environment, NRCS would then prepare and sign a Finding of No Significant Impact (FONSI) and the project may proceed. If NRCS determines that the selected alternative would significantly affect the quality of the environment, then an EIS and Record of Decision (ROD) must be prepared and signed before the project can proceed.

To assist in this process, a scoping process was performed to identify relevant resources or environmental concerns to be analyzed in detail and to determine which, if any, could be eliminated from further analysis. Resource concerns were identified for the Proposed Project based on scoping requirements outlined in the NWPM Section 501.24B (NRCS, 2014b) and from any additional

concerns identified by the public, Sanpete County, or agencies during the scoping meeting and/or other planning or public meetings.

A virtual scoping meeting was held on October 22, 2020 via Zoom. The meeting provided an opportunity for the public, Sanpete County, Spring City, state and tribal historic preservation offices, federally recognized tribes, and other stakeholders to express specific concerns and their relevance to the Proposed Project. Two comments were received during the public comment period (October 22, 2020 through November 21, 2020) for the project. A Scoping Report was prepared and is available in Appendix A.

A summary of resource concerns developed during scoping and their relevance to the Proposed Project is provided in Table 2-1. Relevant resource categories are included in detailed studies that are described in Chapter 3 of this Plan-EA.

In accordance with CEQ regulations 1500.1(b), 1500.2(b), and other sections, the NRCS eliminated the following resource categories from further analysis because the Proposed Project would result in negligible or no impact to these resource areas. Other than the information contained in the list below and Table 2-1, this Plan-EA provides no additional information for the resource issues eliminated from consideration, including the following:

- Coastal Zone Management Areas
- Wild & Scenic Rivers
- Sole Source Aquifer
- Natural Areas
- Essential Fish Habitat
- Coral Reefs
- Invasive Animal Species
- Parklands
- Ecologically Critical Areas
- National Parks, Monuments, & Historical Site
- Scientific Resources

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Table 2-1. Resource Concerns Summary

Concern	Relevant to the Proposed Project?		Rationale
	Yes	No	
Soils & Geology			
Upland Erosion & Sedimentation	X		Potential for erosion and sediment transport in the watershed due to flooding. Construction activities may have the potential to temporarily increase erosion or sediment transport.
Prime & Unique Farmland	X		Prime land, if Irrigated (613 acres) and farmlands of statewide or local importance (2,650 acres) are present in the project area. Construction activities may have the potential to temporarily disturb these soil types and increase erosion or sediment transport from the disturbed areas.
Water Resources			
Surface & Ground Water Quality & Quantity	X		Piping of the existing open ditch systems would allow for future on-farm improvements that could reduce agricultural runoff and improve downstream water quality. Piping would eliminate vertical transport or salts and agricultural fertilizers via seepage and infiltration. Seepage and flood irrigation methods likely influences groundwater recharge in the project area through deep percolation, though the extent to which seepage influences groundwater recharge is unknown because there is no current, available data evaluating direct groundwater recharge sources and volumes.
CWA & WOTUS, including Wetlands	X		Oak Creek and Canal Creek may be considered jurisdictional waters given its connectivity to the San Pitch River. Small pockets of wetlands were identified within the project area with some being considered jurisdictional.
Regional Water Management Plans	X		The project area is managed under the Utah State Water Plan, specifically the Sevier River Water Management Plan (UBWR, 1999).
Coastal Zone Management Areas		X	There are no coastal zone management areas within the Project Area.
Floodplain Management	X		The purpose of the Reservoir is for flood control and prevention.
Wild & Scenic Rivers		X	No wild or scenic rivers are in or near the project area according to the National Wild and Scenic Rivers System Map (Wild and Scenic Rivers, 2014). No “Outstandingly remarkable” river segments are in or near the project area according to the Nationwide Rivers Inventory System Map (NPS, 2023).
Sole Source Aquifer		X	No sole source aquifers are in or near the project area (EPA, 2019).
Air Quality			

Concern	Relevant to the Proposed Project?		Rationale
	Yes	No	
CAA /NAAQS	X		Temporary construction activities would be exempt from air permitting and reporting requirements.
Climate & GHGs	X		Temporary, minor increase in localized emissions during construction activities would be anticipated.
Plants			
Special Status Plant Species	X		No suitable habitat for Ute Ladies'-tresses (ULT), an ESA and state sensitive plant species exists in the project area (See BE Report and ULT Memo in Appendix E).
Noxious Weeds & Invasive Plants	X		Construction disturbances increase the risk of introduction and establishment of noxious weeds and invasive plant species.
Natural Areas		X	There are no designated Natural Areas within the project area.
Riparian Areas	X		The HIC System is a set of irrigation ditch systems with a controlled water regime that supports a narrow strip of riparian vegetation along its immediate edges. The ditch systems are diverted from both Oak Creek and Canal Creek, both natural streams. Piping the ditch systems would permanently remove a source of water for riparian vegetation, likely resulting in the loss of riparian vegetation, including trees, along the ditch. There are no riparian areas with special designations located within the project area.
Forest Resources	X		Potential for land and wildlife disturbances during construction activities for portions of the Proposed Project that overlap forest lands.
Animals			
Essential Fish Habitat		X	There is no essential fish habitat located in or near the project area (NOAA, 2017).
Wildlife & Wildlife Habitat	X		Potential disturbance to wildlife and adjacent wildlife habitat is anticipated during construction. There are no State Wildlife Management Areas or Federal Wildlife Refuges in or near the project area.
Coral Reefs		X	There are no coral reefs in or near the Project Area.
Special Status Animal Species	X		Southern leatherside chub has a known extant population in Canal Creek, which is part of the Project Area. The chub is listed as a species of greatest conservation need by Utah Wildlife Action Plan.
Invasive Animal Species		X	No potential for introduction of invasive animal species.
Migratory Birds & Bald and Golden Eagles	X		Potential for migratory birds and eagles to be present in the project area.
Humans			

Concern	Relevant to the Proposed Project?		Rationale
	Yes	No	
Socioeconomics	X		Project elements would reduce the risk of flood damage for the communities.
EJ & Civil Rights	X		Project elements would reduce the risk of flood damage for the communities.
Cultural & Historic Resources	X		Cultural and historic resources are present in the APE.
Hazardous Materials	X		Mechanical equipment and associated fuels and lubricants would be stored and used on site during construction.
Public Health & Safety	X		Project elements would reduce the risk of flood damage and eliminate a source of open water in residential areas that could pose safety risks.
Recreation	X		Project elements would create new opportunities for public recreation. No other designated recreation areas or trails are located in the project area.
Land Use	X		Property acquisition and easements would be required prior to construction.
Visual Resources & Scenic Beauty	X		Potential permanent visual impacts from construction of the Reservoir, Regulating Pond, and piped ditch systems. Temporary visual impacts from construction equipment (active and parked) and ground disturbance in the Project Area during construction.
Parklands		X	No national or state parks are within the Project Area. The closest designated parkland is Palisade State Park, approximately 20 miles south of the Project Area.
Transportation & Infrastructure	X		Project elements would reduce flood damage to existing transportation infrastructure. The existing irrigation infrastructure would be improved.
Noise	X		Temporary construction noise would impact residential and commercial areas. The project would be implemented in compliance with all applicable noise ordinance laws.
Ecologically Critical Areas		X	No ecologically critical areas are located within the project area.
National Parks, Monuments, & Historical Sites		X	No national parks, monuments, or historical sites are in or immediately hear the project area based on National Natural Landmarks Maps (NPS, 2018) and National Parks Maps (NPS, 2019).
Scientific Resources		X	No known scientific resources are present within the project area.
Energy			
Energy	X		The project would improve energy efficiency both in the irrigation system and in the generation of electricity for Spring City residents. The replacement of the Oak Creek Upper Diversion pipeline to Spring City's hydroelectric plant would provide a continued, reliable source of water for energy production.

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2.1 Ecosystem Services & Guiding Principles

The Ecosystem Services Framework that is used to evaluate benefits and costs for the Proposed Project uses federal water resource project and NRCS guidelines for the evaluation of benefits and costs for the No Action and Action Alternatives, relying primarily on the PR&G (NRCS, 2017), the NRCS Natural Resources Economics Handbook (NRCS, 1998), and the NWPM (NRCS, 2014b).

The PR&G require benefits and costs to be evaluated in an ecosystem service framework. An ecosystem is a natural unit of living and non-living things that function together to create goods and services valued by people (Olander et al., 2016). Ecosystem services is a broad term used to describe the benefits humanity receives from ecosystems as a byproduct of their functioning.

By putting nature at the center, ecosystem services frameworks give economic, social, and environmental costs and benefits equal standing in decision-making processes and therefore help to accomplish the federal objective of maximizing NEE, ensuring federal investments protect and restore ecosystem functions and values and avoid irreversible impacts (NRCS, 2017). Economic efficiency requires that resources are used in their highest valued use. Projects that create more benefits that costs utilize resources more efficiently than baseline conditions and therefore increase the NEE. The four-category ecosystem framework adopted in the PR&G, and utilized in this report, is shown in Table 2-2.

Table 2-2. Ecosystem Services Framework Used to Evaluate Benefits and Costs

Service Type	Examples
Provisioning	The supply of food, fuel, fiber, water, timber, and genetic resources
Regulating	The regulation of air, climate, natural hazards, water quality, pests, and disease
Cultural	Services that enhance cultural values, like aesthetics, recreation, tourism, and spiritual or religious values
Supporting	Nutrient cycling, soil formation, and primary production

Source: USDA, 2017

In addition to requiring projects to be evaluated using an ecosystem service framework, the PR&G also seek to promote projects that fulfill guiding principles related to federal investments in water resources. These include:

- Healthy and Resilient Ecosystems – Federal investments in water resources should protect and restore functions of ecosystems and mitigate any unavoidable damage to these natural systems.
- Sustainable Economic Development (SED) – Federal investments in water resources should encourage SED that improve the economic well-being of the Nation for present and future generations through the sustainable use and management of water resources.
- Floodplains – Federal investments in water resources should avoid the unwise use of flood prone-areas and avoid and minimize adverse impacts and vulnerabilities in any case in which a flood-prone area must be used. Federal investments should seek to reduce the Nation's vulnerability to floods and storms.
- Public Safety – Federal investments in water resources should avoid, reduce, or mitigate risks to people, including both loss of life (LOL) and injury, from natural events.
- EJ – Federal investments in water resources should ensure that disproportionately high and adverse public safety, human health, or environmental burdens of projects on tribal, minority, or low-income populations are identified, mitigated, or eliminated.

- Watershed Approach – Federal investments in water resources should use a watershed approach that properly frames a problem by evaluating it on a systems level that identified root causes and interconnectedness of watershed problems that enables the design of solutions that considers the benefits of water resources for a wide range of stakeholders within and around the watershed.

The Plan-EA for the Proposed Project considered these principles in the characterization of flood risks and water management challenges faced by stakeholders in the watershed and the formulation of solutions as defined in the Action Alternative.

2.1.1 NRCS National Planning Procedures

This Plan-EA adheres to the planning procedures identified in the NRCS National Planning Procedures Handbook (NPPH). Specifically, Section 600.50 in the NPPH has been considered in the development of this Plan-EA.

Watershed Plans are voluntary, comprehensive plans for a watershed of other large geographic areas. NRCS areawide conservation planning policy requires consideration of all natural resources within a planning area, as well as social and economic considerations. Watershed Plans are developed through a voluntary locally led effort to achieve the following:

- Assess natural resource conditions and needs
- Set goals
- Identify programs
- Alternative actions and other resources to solve those needs
- Develop proposals and recommendations to solve those needs
- Implement solutions
- Measure success.

The NRCS planning process consists of nine steps, divided into three phases, which cover development, implementation, and evaluation of an Areawide Conservation Plan. The three phases and nine steps are identified below:

Phase 1 – Collection and Analysis
Step 1 – Identify problems and opportunities
Step 2 – Determine objectives
Step 3 – Inventory resources
Step 4 – Analyze resource data
Phase 2 – Decision Support
Step 5 – Formulate alternatives
Step 6 – Evaluate alternatives
Step 7 – Make decisions
Phase 3 – Application and Evaluation
Step 8 – Implement the plan
Step 9 – Monitor the plan

The nine step NRCS planning process for Watershed Plans is considered and incorporated into this Plan-EA as follows:

Planning Step	NEPA Requirement	Chapter in Plan-EA
Identify Problems and Opportunities	Purpose and Need	Chapter 1.2 Purpose and Need
Determine Objectives	Purpose and Need	Chapter 1.2 Purpose and Need
Inventory Resources	Affected Environment	Chapter 3 Affected Environment
Analyze Resource Data	Affected Environment	Chapter 3 Affected Environment
Formulate Alternatives	Alternatives	Chapter 4 Alternatives
Evaluate Alternatives	Environmental Consequences	Chapter 5 Environmental Consequences
Make Decisions	Preferred Alternative & Decision Document	Chapter 7 Preferred Alternative
Implement Plan	Mitigation & Monitoring	Chapter 7.4 Mitigation and Appendix E
Monitor Plan	Supplemental Plan-EA (Adaptive Management)	N/A

2.2 Document Organization

This Plan-EA has been organized into the following chapters:

- Summary Watershed Plan-EA – This chapter presents a summary of the entire document and the Proposed Project.
- Chapter 1: Purpose and Need – This chapter describes the purpose and need for the Proposed Project and background information pertaining to the Proposed Project.
- Chapter 2: Scope of the Plan-EA - This chapter describes the scope of the Plan-EA, summarizes resource concerns, describes the ecosystem services framework used to evaluate benefits and costs for the Proposed Project, and details the document's organization.
- Chapter 3: Affected Environment – This chapter contains the past and current conditions of the project area and describes relevant environmental resources that would be affected by the alternatives.
- Chapter 4: Alternatives – This chapter provides a summary of the alternatives considered for detailed study as well as alternatives considered for the Proposed Project that were eliminated from the study. It also describes the Proposed Project actions and provides a resource impact comparison of all considered alternatives.
- Chapter 5: Environmental Consequences – This chapter describes the analysis of impacts to resources from each of the alternatives considered for study. These impacts include direct, indirect, and cumulative impacts.
- Chapter 6: Consultation, Coordination, and Public Participation – This chapter summarizes steps taken to involve agencies, tribes, and the public in the Proposed Project. It also summarizes the anticipated permits and approvals required prior to the start of construction that should be obtained outside of the NEPA process.
- Chapter 7: Preferred Alternatives – This chapter describes the preferred alternative for the Proposed Project and presents the economic evaluation.
- Chapter 8: References – This chapter lists the references used in support of the information presented in this document.
- Chapter 9: List of Preparers – This chapter contains a list of the document preparers, their respective agency or company, and their associated qualifications.
- Chapter 10: Distribution List – This chapter lists the government entities that the local notice of availability for this document was distributed for comment.

- Chapter 11: Acronyms, Abbreviations, and Short Forms – This chapter defines the acronyms, abbreviations, and short forms used in this report.
- Appendices – This chapter provides supporting documentation for the information presented in the report.

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Chapter 3 Affected Environment

The purpose of this section is to describe the resources that could be affected by the proposed alternatives. The purpose of describing the affected environment is to define the context in which the impacts could occur. The environmental analysis process has been conducted in compliance with applicable federal, state, and local regulations. The project area is identified in the Project Map in Appendix B. The Proposed Project is located with four subwatersheds covering approximately 33,267 acres. Table 3-1 summarizes the physical setting of the project area.

Table 3-1. Physical Setting Summary

Physical Setting Information		Information Sourc
Location		
The project area is situated between the San Pitch Mountains and the Manti-La Sal National Forest, approximately 45 miles southeast of Utah Lake. The HIC ditch systems runs north-south and east-west throughout Spring City, as well as south of the proposed Reservoir. The ditch systems crosses both Pigeon Hollow Road/Main Street and U.S. Hwy 89. The Reservoir, Oak Creek Diversion, and the Flood Channel are located approximately 2.5 miles east of Spring City, in the Freeman Allred Meadow area. The Oak Creek Diversion and Flood Channel connected to the Reservoir cross Spring City Canyon Road. The Chester Ponds are located west of Spring City between Spring City and the Town of Chester. The Regulating Pond is located southeast of Spring City, off 500 E.		NA
Topography		
Study Area Elevation Range	Approx. 5,640 – 7,150 ft above mean sea level (AMSL) (NAVD88)	Unites States Geologic Survey (USGS, 2020b)
Geology		
Study Area	See Section 2.1	Chronic et al. 2014
Soil Characteristics		
Soil Type	See Section 2.1	Web Soil Survey (NRCS, 2019)
Description		
Land Information		
Land Ownership	Private; Public; Federal	Appendix C
Land Use	Forested; residential, commercial, and industrial developed lands; agricultural lands	

An ecosystem services framework is required by the PR&G and provides for an integrated approach that allows consideration and transparent evaluation of the benefits (both tangible and intangible) and trade-offs of potential alternatives. Four categories of ecosystem services are described in PR&G and are included in Section 2.1 above.

The resources of concern considered in the analysis and the existing conditions of these resources have been described in this chapter. Each resource of concern (or ecosystem service) is grouped into four service categories, shown below in Table 3-2. Ecosystem service flows are both monetary and non-monetary and appropriate metrics should be based on current methodology to quantify impacted services over time and project- and regional-specific information and values.

Table 3-2. Categories of Ecosystem Services

Category	Resource
Provisioning Services	Erosion and Sedimentation (Soils & Geology)

Category	Resource
	Prime and Unique Farmland
	Threatened and Endangered Species
	Migratory Birds/Bald and Golden Eagles
Regulating Services	Water Quality
	Regional Water Management Plans
	Floodplain Management
	Streams and Riparian Habitat
	Wetlands
	Flood Damages
	Public Health and Safety
	Climate Change
	Land Use
	Fish and Wildlife Habitat
Cultural Services	Historic and Cultural Properties
	Environmental Justice

3.1 Soils and Geology

The Sanpete Valley is a north-south-trending, Y-shaped valley bordered on the east by the Wasatch Plateau and on the west by the San Pitch Mountains. The San Pitch River begins on the Wasatch Plateau north of Fairview and flows south through the Sanpete Valley. The Sanpete valley floor ranges in elevation from 7,400 ft near the northern end to about 5,040 ft where the San Pitch River meets the Sevier River. The project area sits on the east side of the valley and on the western edge of the Wasatch Plateau. Elevations for the nearby mountain ranges vary from over 11,000 ft AMSL for peaks in the Wasatch Plateau on the eastern side to 9,700 ft AMSL on the western side San Pitch Mountains (UDEQ, 2003).

The San Pitch watershed is in the Basin and Range-Colorado Plateau transition zone (UDEQ, 2017). Geologic units in the Sanpete Valley range from Jurassic to Quaternary in age with the Wasatch Plateau consisting of Tertiary to Jurassic-aged sedimentary rocks. The dominant lithology of the Wasatch Plateau includes sandstone, siltstone, and shale (Spieker, 1946). The Sanpete Valley fill thickness range from approximately 100-350 ft in the Mt. Pleasant- Fairview area and wells in the project area are reported to be under water table conditions with numerous reported areas of seepage and recharge (UDEQ, 2003).

Soils information presented in this section has been summarized from the NRCS Web Soil Survey data (Table 3-3; NRCS, 2019). The soils listed in Table 3-3 are the dominant soil type present in the project area, having a total land area represented of at least 2% of the total project area. A complete listing of all soil types present in the project area is included in Appendix C. The soils of the project area are dominated by loam soils present in either alluvial fans or flats with medium to low erosion hazards. Most soils are not considered prime farmland. Nearly one third of the lands in Sanpete County are used for agriculture; the principal crops are corn, wheat, barley, and oats. Sanpete County also contains numerous cattle, hog, sheep, and chicken operations (USDA, 2017).

Table 3-3. Soil Classification Summary

Soil Unit Name	Landform	Slope (%)	Percent (%) Project Area	Erosion Hazard Rating	Prime / Unique Farmland
Arapien fine sandy loam	Alluvial fans	1-2	2.9	Slight	No

Soil Unit Name	Landform	Slope (%)	Percent (%) Project Area	Erosion Hazard Rating	Prime / Unique Farmland
Atepic very cobbly silty clay loam	Hills	8-40	26.8	Moderate	No
Borvant-Doyce complex	Ridges, alluvial fans, swales	2-10	7.8	Slight	No
Clegg loam	Flats, alluvial fans	3-10	13.4	Moderate	No
Deer Creek stony silt loam	Mountain slopes	6-30	4.5	Severe	No
Deer Creek-Mower complex	Swales, ridges	25-50	5.0	Severe	No
Fluvaquents	Floodplains	0-1	18.7	Slight	No
GeB	Alluvial flats, alluvial fans	0-2	2.8	Slight	Farmland of statewide importance
Pavant-Doyce complex	Alluvial fans, swales	2-8	2.8	Moderate	No

3.1.1 Upland Erosion and Sedimentation

Soil erosion is a natural process where water, wind, or gravity cause the breakdown and detachment of soil particles. Sedimentation is the process of transporting and redistributing the eroded soil particles. Although erosion and sedimentation are natural processes, human activities such as ground disturbance (e.g., construction activities), vegetation removal, unsustainable agricultural practices (e.g., overgrazing, deep plowing, lack of crop rotation, monocropping, or chemical applications), and streambank alteration (e.g., channelization, confinement or realignment, or riparian vegetation removal), can play a role in accelerating erosion and sedimentation. Potential implications of soils erosion include degradation of water, air, and soil quality, impacts to biological processes, and reduced crop productivity.

Soil in the project area consists of both coarse- and fine-grained formations that mostly have a low to moderate erodibility. However, some of the soils, particularly those located within the proposed reservoir, Oak Creek diversion, and Oak Creek Upper Diversion replacement, are classified as high erodibility. Currently, the existing water management infrastructure does not have capacity to carry flood flows from high intensity storms and heavy spring runoff, causing frequent flooding and contributing to erosion and sedimentation in the project area. Areas of severe erodibility are located upstream and at the head of the HIC irrigation system, causing sedimentation and buildup to occur within the HIC system, causing erosion issues within USFS lands, and creating sediment loading downstream.

3.1.2 Prime and Unique Farmlands

The Federal Farmland Protection Policy Act (FPPA) [Subtitled I of Title XV, Section 1539-1549 of the Agricultural and Food Action of 1981 (PL, 97-98)] requires federal agencies to “minimize the extent to which federal programs contribute to the unnecessary and irreversible conversion of farmland to nonagricultural uses and ensures that federal programs are administered in a manner compatible with state, local, and private programs and policies to protect farmland.” Farmland for

the FPPA includes prime farmland, unique farmland, and land of statewide or local importance. Farmlands of statewide importance are defined as "Land that is of statewide importance for the production of food, feed, fiber, forage, and oilseed crops. It has the soil quality, growing season, and moisture supply needed to economically produce sustained yields of crops when treated and managed… Farmland of statewide importance is land that is available for farming, but could currently be cropland, pastureland, rangeland, forestland, or other land, but not urban built-up land or water" (NRCS, 1981).

Prime Farmlands, if Irrigated and Farmlands of Statewide Importance are located in the Project Area. A total of 613 acres of Prime Farmland has been mapped in the project area. Additionally, a total of 2,650 acres of Farmland of Statewide Importance have also been identified in the project area. The land in the vicinity of the reservoir and regulating pond are currently undeveloped and are used primarily as agricultural land, therefore meeting the criteria for (Prime Farmland or Farmland of Statewide Importance). However, impacts to this adjacent land are not anticipated during construction or after project completion, and the (Prime Farmland or Farmland of Statewide Importance) in this area would be anticipated to remain in their current state.

Prime Farmland and Farmland of Statewide Importance located within Spring City have been previously disturbed by urban development and are not actively used for farming. As such, the FPPA would not apply to these lands despite the Soil Survey designation of farmlands of statewide importance.

3.2 Water Resources

The northeastern corner of Utah is hydrologically within the Great Basin Region. The Great Basin Region is categorized into sub-regions, accounting units (e.g., basins), cataloguing units (e.g., subbasins), watersheds, and subwatersheds (USGS, 2020a). As defined by the U.S. Geological Survey (USGS) Watershed Boundary Dataset (WBD), the Proposed Project is situated in the Escalante Desert-Sevier Lake basin. The Escalante Desert-Sevier Lake Basin encompasses approximately 10,543,993 acres; nearly the entire basin is contained in Utah (USGS, 2021). Sanpete County falls within the boundaries of several subbasins, including the San Pitch subbasin (HUC 16030004). The project area is situated within all or portions of several subwatersheds, all of which are located inside of the San Pitch subbasin, including the Upper Oak Creek Subwatershed (HUC 160300040302), the Canal Creek Subwatershed (HUC 160300040301), the Cottonwood Creek Subwatershed (HUC 160300040304), and the Cedar Creek Subwatershed (HUC 160300040207), which cover a combined area of approximately 33,267 acres (USGS, 2021).

3.2.1 Surface & Groundwater Quantity & Quality

Utah is considered the second driest state in the U.S., according to the Utah Department of Public Safety (UDPS, 2024). The San Pitch subbasin is a natural drainage and has several surface water features present in the project area. Oak Creek and Canal Creek are natural perennial streams that meander through the east side of Sanpete Valley and meet with the San Pitch River. The EPA WATERS GeoViewer illustrates that Canal Creek flows into Oak Creek at the Chester Ponds, west of Spring City. The two creeks are the primary source of natural hydrology for the HIC system, which are fed by surface runoff from the mountain range located on the east side of Sanpete County. Oak Creek flows south and joins with the San Pitch River west of the Town of Ephraim, approximately 7.8 miles southeast of Spring City. According to the Aquatic Resource Delineation (ARD) report (J-U-B, 2022), Oak Creek and Canal Creek exhibit indicators of an ordinary high-water mark (OHWM) and are considered WOTUS and are therefore considered jurisdictional.

Other freshwater emergent wetlands and intermittent streams totaling 15.250 acres within the project area were assessed as not connecting to a WOTUS and are therefore not considered jurisdictional.

3.2.1.1 Surface & Groundwater Quantity

Excess water such as ponding, flooding, seasonal high-water tables, seeps, or drifted snow is not a major problem for the agricultural fields within and adjacent to the project area. However, a large storm event does have the potential to flood the project area because of flash flood conditions caused by soils with poor absorption capacity, which pose risk of having significantly damaging effects to residential and agricultural infrastructure, as the area has experienced in the past. Additionally, the current design of the HIC irrigation system is causing inefficient flood irrigation methods to be used throughout the project area, and a substantial amount of water lost from the HIC system is lost due to seepage and evaporation due to the open ditch system design.

3.2.1.2 Surface & Groundwater Quality

Farming activities on the associated agricultural land in the project area likely contribute to excess salt accumulation and transport to surrounding water, while also presenting the potential for contamination by petroleum, heavy metals, or other pollutants from agricultural equipment. The application of organic and inorganic nutrients and use of pesticides on agricultural lands in the project area, coupled with the use of flood irrigation and large storm events has led to agricultural runoff into the open irrigation system and subsequent surface water quality degradation once those waters reach Oak Creek. No point-source discharges were observed in the project area during the field surveys.

Total Dissolved Solids (TDS) are the "sum of all substances, organic and inorganic, dissolved in water" (USGS, 2019). TDS is a concern in waters with agricultural uses because of its negative effects on crop production. One of the components of TDS is high salinity (dissolved salts), which reduces crop growth by reducing the plant root's ability to absorb water. According to the USGS, TDS concentrations can cause salts and other dissolved organics to build up in soil and can eventually make the land unsuitable for growing crops (USGS, 2019). Excess irrigation (caused by flooding methods or by seasonal flooding of the area) can wash dissolved salts and other organic and inorganics from irrigation lands into local waterways, including nearby creeks, irrigation ditches, and groundwater aquifers (USGS, 2019). According to the NRCS's 2017 Agricultural Census, there are approximately 301,000 acres of farmland and more than 3,000 farms in Sanpete County (USDA, 2017), which makes high TDS in the water a significant concern for HIC and the surrounding area.

The middle and lower San Pitch River, of which Oak Creek is a tributary, were 303(d) listed for TDS impairment in 2000, with a total maximum daily load (TMDL) developed in 2003. In January 2006, the San Pitch River Watershed Stewardship Group and the Sanpete County Soil Conservation District, in conjunction with the Utah Department of Environmental Quality (UDEQ), published the San Pitch River Watershed Water Quality Management Plan, which was developed to recommend and implement management strategies to reduce water quality impairments within the San Pitch River (San Pitch, 2006). According to the water quality management plan, the Middle San Pitch River's two chief concerns are high salinity values and stream erosion, which are negatively affecting beneficial uses downstream. TDS data used to develop the water management strategies in the San Pitch River Watershed Water Quality Management Plan show that testing west of Chester (located approximately 1.6 miles downstream of the Chester Ponds) had a mean TDS of 569 mg/L

with an overall minimum TDS of 312 mg/L and a maximum TDS of 914 mg/L (over 35 samples); testing in Oak Creek at Spring City had a mean TDS of 219 mg/L with an overall minimum TDS of 182 mg/L and a maximum TDS of 274 mg/L (over 15 samples) (San Pitch, 2006).

One of the objectives developed for the San Pitch River is to reduce TDS loading by working with locals (including individual landowners and irrigation managements) to improve irrigation water management and efficiency of the irrigation systems.

The San Pitch River Watershed Water Quality Management Plan also identified stream bank erosion as a chief impairment to the water quality in the system. Inefficient irrigation practices, like flood irrigation methods, can contribute to soil erosion in agricultural fields, which can also exacerbate TDS impairment. Utah antidegradation policy (UAX R317-2-3; State of Utah, 2019) does not prohibit degradation of water quality, unless the Water Quality Board has previously considered the water to be of exceptional recreational or ecological significance (Category 1 or Category 2 waters). Neither Oak Creek nor Canal Creek are listed as Category 1 or Category 2 waters.

3.2.2 Clean Water Act / Waters of the U.S., including Wetlands

An ARD was conducted on multiple dates (August 9-10, October 18, November 2, 2022) by J-U-B Engineers, Inc. (J-U-B) for the Proposed Project (Appendix E). The ARD was prepared in accordance with the 1987 U.S. Army Corps of Engineers (USACE) *Wetland Delineation Manual* and the *Arid West Region Supplement* (Version 2.0). The project area was assessed for water resources based on topography, presence or absence of dominant hydrophytic vegetation and/or surface hydrology. Where vegetation indicated any potential for hydric soils, soil pit sampling was conducted, and the results were documented in accordance with the USACE *Arid West Region Supplement.* In areas of the survey where access was not available, wetland status was determined based on the presence of hydrophytic vegetations as determined through photo interpretation of similar field verified wetlands in the Survey Area, landscape position and/or adjacency to verified wetlands. All plant species within a 5-foot radius of a sampling point were recorded for each point. The relative percent cover for each species was determined by estimating aerial cover. The indicator status of each species was determined using the *2018 National Wetland Plant List* (J-U-B, 2022).

The objective of the ARD is to document the WOTUS, including wetlands located within the Proposed Project Survey Area (Survey Area). As part of the ARD, the USFWS National Wetlands Inventory (NWI) was referenced as a preliminary desktop assessment of the project area prior to field assessment. The NWI data indicated that up to 44.37 acres of freshwater emergent wetlands, 33.87 acres of freshwater ponds, 19.39 acres of riverine, and 0.38 acres of freshwater forested/shrub wetland features may be found throughout the project area (USFWS, 2020a).

Field delineations were completed in August and November 2022. A total of 2.503 acres of emergent marsh wetlands (PEM1B), 33.060 acres of freshwater emergent wetlands (PEM1E), 16.615 acres of scrub-shrub wetlands (PSS1E), 0.51 acres (487 Linear Feet [LF]) of upper perennial stream (R3UB1), 0.562 acres (5,568 LF) of lower perennial stream (R2UB1 and R2UB3), 0.279 acres (3,099 LF) of intermittent stream (R4SB3), 0.287 acres (5,273 LF) of ephemeral stream, 2.619 acres (41,323 LF) of canal, 2.046 acres of lakebed, and 12.917 acres of reservoirs (RU09, RU21, RU22, RU23) were delineated within the Survey Area for the project. Isolated aquatic features, 14.157 acres of isolated freshwater emergent wetlands (PEM1E) and 0.015 acres (531 LF) of isolated intermittent stream were also identified in the Survey Area. No other wetlands or WOTUS were identified within the Survey Area. With the exception of 14.157 acres of isolated

freshwater emergent wetlands and 0.015 acres (531 LF) of isolated intermittent stream, all other wetlands identified in the WRA would be considered jurisdictional.

3.2.3 Regional Water Management Plan

The Utah Department of Natural Resources (UDNR), Utah Division of Water Resources (UDWR) is responsible for comprehensive water planning in Utah. Between 1972 and 1985, the UDWR prepared a series of six comprehensive water planning documents entitled, "The State of Utah Water." These documents discussed water supply and use estimates in the state, as well as potential uses for Utah's unused water supplies. As a result of UDWR water planning efforts, the Utah State Water Plan was prepared in 1990, and later updated in 2001. The Utah State Water Plan is currently undergoing another update that is expected to be complete in 2021. The State Water Plan is a comprehensive water planning document that provides a statewide resource inventory, as well as guiding principles to water planning in Utah. In order to address the changing needs of water planning in Utah, the guiding principles are evaluated and revised as part of State Water Plan updates.

In addition to the State Water Plan, subsequent plans were prepared for the state's 11 river basins (UDNR, 2021). The Proposed Project falls within the Sevier River Basin Plan (UBWR, 1999). According to the Plan, the Sevier River basin is one of the most utilized river systems in the nation and is highly influenced by regional weather patterns. The Sevier River Basin covers approximately 6.8 million acres of land across portions of central and southern Utah. Spring City is located in the northeast corner of the Sevier River Basin boundary, within the San Pitch sub-area. Specific goals and objectives outlined in the Sevier River Basin Plan that are relevant to this Plan-EA include the need for real-time monitoring of water-user groups (such as irrigation companies), improving and maintaining water quality, providing adequate water supply, the need for develop more water storage to provide better water management, the need to increase agricultural water efficiencies and reduce erosion and sedimentation, the need for water management and conservation plans, and the need to use more secondary water.

3.2.4 Floodplain Management

In recent years, several high intensity storms and flash floods have highlighted deficiencies in flood protection that have caused severe damage to developed areas and agricultural lands throughout the County. The San Pitch Subbasin is situated in the middle of Sanpete County and the Sanpete Valley. Several times, Spring City and the wider Sanpete Valley has experienced several damaging flood events. High intensity runoff events have overwhelmed the existing irrigation system that meanders through populated areas of the valley, flooding and compromising the structural integrity of the canals and creating further flood damage potential.

Under E.O. 11988, federal agencies must avoid adversely impacting floodplains, directly or indirectly. Floodplains are "lowland and relatively flat areas adjoining inland and coastal waters including flood prone areas of offshore islands, including at a minimum, that area subject to a 1-percent or greater chance of flooding in any given year" (E.O. 11988 Section 6(c)). The Federal Emergency Management Agency (FEMA) is responsible for identifying and categorizing flood hazard areas throughout the county. Often flood hazard areas are discussed in relation to special flood hazard areas (SFHA), which have a 1-percent annual chance of flood. The 1-percent annual chance of flood is also known as the base flood, or 100-year flood. Activities in the 100-year floodplain can threaten human safety and property, if not properly mitigated. Floodplain protection

is essential to ensure that the flood carrying capacity is sufficient, and that flooding does not extend beyond designated flood hazard areas.

FEMA develops Flood Insurance Rate Maps (FIRMs) that illustrate the various flood hazard areas in a location, Examples of some SFHAs are Zone A, Zone V, Zone VE, and Zones V1-V30. Areas that have a 0.2 percent annual chance of flooding are referred to as the 500-year flood. Moderate flood hazard areas are areas between the 100-year floodplain boundary and the 500-year floodplain boundary (Zone B and Zone X – shaded). If an area is outside of the 100-year flood and above the 500-year flood elevation there is a minimal flood hazard risk (Zone C or Zone X – unshaded).

The FEMA FIRM Panels #49039C0480C, 49039C0476C, and 49039C0475C for the project area indicate that Oak Creek, Canal Creek, Mill Race Ditch, and the detention basins are within the 100-year floodplain (Zone A; FEMA, 2012). However, much of the project area is situated in an area of minimal flood hazard (Zone X; FEMA, 2012). Existing flood inundation maps for the 100-year and 500-year floodplain are shown in Figures 1 and 3 of Technical Memo (TM) 001 (see Appendix E).

3.3 Air Quality

3.3.1 Clean Air Act / National Ambient Air Quality Standards

Pursuant to requirements of the CAA (CAA; 42 U.S.C. 7401 et seq), the EPA has established health-based NAAQS for six pollutants considered harmful to human health and the environment, known as criteria pollutants. Criteria pollutants include carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM), sulfur dioxide (SO_2), and lead (Pb). Monitoring NAAQS in Utah is delegated to the Utah Division of Air Quality (UDAQ). The UDAQ has an ambient air monitoring network consisting of 23 air monitors across the state. There are no monitors located in Sanpete County. The closest two monitoring station are located at approximately 36 miles east at 351 South 2500 East, Price, UT in neighboring Carbon County and approximately 43.5 miles north at the Spanish Fork Airport in Spanish Fork, Utah County. The Price monitoring station is equipped with sensors for continuous monitoring for O_3, and NO_2 NAAQS, while the Spanish Fork Airport monitoring station is equipped with sensors for continuous monitoring of O_3 and PM NAAQS.

Sanpete County is considered an attainment area by UDAQ and annually complies with all NAAQS requirements (UDEQ, 2018). Under Title R307 of the Utah Administrative Code (UAC), emissions inventories must be undertaken to further characterize Utah's air quality. Emission inventories are conducted every three years, during which the UDAQ collects information about the source and quantity of emissions released across the state. Sources can be categorized as point source (large stationary industrial or commercial facilities), area sources (a combination of smaller stationary sources assessed as a group), or mobile sources (personal or commercial vehicles). The 2017 triennial inventory is the most recent state-wide inventory available. It covers over 360-point sources, 194 area categories, and 12 on- and off-road source categories and is used to review trends over time and manage the air quality program. Results in tons of compound emitted per year for Sanpete County are shown in Table 3-4.

Table 3-4. 2017 Emissions Inventory (tons/year) for Sanpete County (DEQ, 2018)

CO	NO_2	PM_{10}	$PM_{2.5}$	NH_3	SO_2	VOC
6,996	1,017	4,913	660	1,334	16	16,994

PM_{10}= Inhalable PM
$PM_{2.5}$= Fine inhalable PM
VOC= Volatile Organic Compound

3.3.2 Climate & Greenhouse Gases

Gases that trap heat in the atmosphere are called GHGs. Data regarding GHGs, regulations and emissions sources are summarized from the EPA website (EPA, 2017). GHGs include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and fluorinated gases such as hydrofluorocarbons (HFC), perfluorocarbons (PFC), and sulfur hexafluoride (SF_6). These GHGs are introduced into the atmosphere by a variety of sources, including production of electricity, private and commercial transportation, oil and gas production, commercial and residential practices, and agriculture. No GHG emission producing activities, including oil and gas extraction activities, are present in the project area and GHGs are not regulated in the project area.

3.4 Plants

A site visit was conducted on July 12-13, 2021 by J-U-B. During this site visit, the dominant plant species were identified throughout the project area. The project area surveyed totaled 586 acres and occurred within Spring City limits as well to the east and west of Spring City. The project area encompasses the Proposed Project footprint and all staging areas. The project area occurs in three separate ecoregions within the Wasatch and Uinta Mountains and include the Wasatch Mountain Zone, Semiarid Foothills, and Mountain Valleys (Woods et al., 2001). The project area includes foothills and mountainous areas on the eastern side and flat agricultural areas on the western side of the Sanpete Valley with elevations in the project area ranging from 5,640 ft to 7,150 ft AMSL. Undisturbed forest, shrubland, and grassland occur on the eastern portion of the project area. Residential, industrial, commercial, and agricultural areas occur in the central portion of the project area and agricultural, stream, and pond areas occur on the western portion of the project area.

It was reported in the BE that six vegetation communities occur in the project area, including sagebrush shrub, woodlands, wetland, riparian, grasslands, and forest (J-U-B, 2021; Appendix E). Dominant species found by community type are identified in Table 3-5.

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Table 3-5. List of Dominant Vegetation

Common Name	Scientific Name	Area Observed					
		Sagebrush scrub	Woodland	Wetland	Riparian	Grassland	Forest
Great Basin sagebrush	Artemisia tridentata	X					
Smooth brome	Bromus inermis	X				X	
Kentucky bluegrass	Poa pratensis					X	
Cheatgrass	Bromus tectorum	X				X	
Gambel oak	Quercus gambelii		X				
Pinyon pine	Pinus edulis		X				
Utah juniper	Juniperus osteosperma		X				
Salt grass	Distichlis spicata			X			
Orchard Grass	Dactylis glomerata					X	
Narrowleaf willow	Salix exigua			X	X		
White willow	Salix alba				X		
Balsam poplar	Populus balsamifera				X		
Baltic rush	Juncus balticus			X			
Sedge	Carex sp.			X			
Hardstem bulrush	Schoenoplectus acutus			X			
Evening primrose	Oenothera rosea			X			
Nebraska sedge	Carex nebrascensis			X			
Utah serviceberry	Amelanchier utahensis		X				
Black hawthorn	Amelanchier utahensis		X				
Reed canarygrass	Phalaris arundinacea			X	X		
Douglas fir	Pseudotsuga menziesii						X
White fir	Abies concolor						X

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3.4.1 Special Status Plant Species

The ESA was established in 1973 with the intention of protecting and conserving endangered and threatened species and their habitat. Federal agencies must comply with the regulations set forth in the ESA. A field survey was performed by J-U-B on July 12-13, 2021 to assess the degree to which the Proposed Project may affect: federal threatened or endangered species, or species proposed for listing; designated and proposed critical habitat; and state sensitive species and those species managed under conservation agreements (J-U-B, 2024).

To identify special status plant species within the project area, an official species list was obtained from the USFWS Information for Planning and Consultation (IPaC) database (see BE in Appendix E). According to the IPaC Report (dated: June 18, 2024), one ESA plant species was identified as potentially occurring within the project area: the federally threatened ULT (*Spiranthes diluvialis*) (USFWS, 2024). The UDNR Utah Natural Heritage Program (UNHP) Online Species Search was also consulted to determine ESA-listed and state sensitive species occurrence in the vicinity of the project area. The UNHP Online Species Search Report identified no specific State sensitive plant species in the project area. No ESA species were identified by the UNHP as occurring in or near the project area (UDNR, 2024).

ULT is a native orchid species designated as threatened under the ESA. This plant is found in wetland and riparian areas, including spring habitats, mesic meadows, river meanders, and floodplains. They require open habitats, and populations decline if trees, shrubs, and aggressive herbaceous species invade the habitat. The elevation ranges in which populations have been found vary from 750 to 7,000 ft, with most populations existing above 4,000 ft. They are not tolerant of permanent standing water and do not compete well with aggressive species, such as reed canary grass.

Due to the general geographic location of the Proposed Project, a ULT survey was conducted to evaluate habitat suitability for the species within the project area. A ULT survey memo is included in the BE in Appendix E. A rare plant survey was conducted by a qualified biologist on August 6, 2021 to determine if the Proposed Project would affect the species or any suitable habitat (BE - Appendix E). The USFWS *Utah Field Office Guidelines for Conducting and Reporting Botanical Inventories and Monitoring of Federally Listed, Proposed, and Candidate Plants* (2011) and the USFWS *Interim Survey Requirements for Ute Ladies'-tresses Orchid* (1992) provided guidance for the survey.

The field survey results indicated that no suitable habitat for ULTs occurs in the project area and no ULT individuals were observed in the project area. The Proposed Project would also remove vegetation along multiple portions of the ditch alignment; however, this vegetation removal would occur in areas that do not currently support suitable habitat for ULT given the presence of dense vegetation dominated by Kentucky bluegrass, bromes, reed canary grass, and other aggressive grasses and shrubs. The Proposed Project is anticipated to have No Effect on the ULT given the lack of suitable habitat and lack of occurrence records for the species in the vicinity.

3.4.2 Noxious Weeds and Invasive Plants

E.O. 13112 states that a federal agency shall "not authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species." Noxious weeds and invasive plants are non-native species whose introduction does or is likely to cause economic or environmental harm or harm to human health. Utah has designated 54 plant species as

noxious weeds under the Utah Noxious Weed Act (Utah Code §4-17-101 et seq.). Of these, 16 are known to occur in Sanpete County (Sanpete, 2021), and include the following:

- Russian Knapweed
- Spotted Knapweed
- Scotch Thistle
- Canada Thistle
- Perennial Pepperweed
- Diffuse Knapweed
- Buffalo Bar
- Yellow/Dalmatian Toad Flax
- Squarrose Knapweed
- Whitetop/Hoary Cress
- Burdock (Wild Morning Glory)
- Black Henbane
- Dyer Woad
- Musk Thistle
- Houndstongue
- Curly Dock

Within Utah, counties are given the responsibility to oversee weed management programs on state and county property. The Sanpete County Weed Department has developed an integrated weed management plan to increase cooperative control of noxious weeds within the county. The County Weed Department and County Weed Board goals include the responsibility for public relations, education, and training, weed eradication, fostering sound and desirable means of weed control, and assisting landowners and county officials through communication.

3.4.3 Riparian Areas

Riparian areas are located adjacent to water bodies and can be described as a transitional zone between wet conditions and dry upland conditions. Riparian plant communities are distinct form upland plant communities due to the improved soil conditions and increased water availability, compared to that of upland areas. Riparian plant communities play an important role in bank stabilization, flood water dispersion, maintaining groundwater levels, trapping sediment, and maintaining biological diversity.

Riparian habitat of varying quality exits within the project area, specifically along the entire length of the existing open ditch irrigation system and around the Chester Ponds, as well as along portions of both Oak Creek and Canal Creek. The hydrophytic vegetation along the irrigation ditch system is supported by the presence of the irrigation water during the growing season and some surface flows during spring runoff and rain events. The vegetation along Oak Creek and Canal Creek is supported by natural flows in the creeks and any surface flows from storm events.

3.4.4 Forest Areas

The USFS manages nearby forest areas, including the Manti-La Sal National Forest, portions of which are located east of the project area (the Manti Division). The USFS also manages lands in the vicinity of the project area, including portions of the flood channel and diversion structure, Oak Creek Upper Diversion pipeline, and Oak Creek flood channel. The Manti-La Sal National Forest is a large forest covering approximately 1.4 million acres in central and southern Utah and Southern Colorado, including the San Pitch Mountains, the Wasatch Mountains, and areas surrounding Moab and Monticello in southern Utah and Colorado.

The Manti-La Sal National Forest currently operates under a Forest Plan finalized in 1986 and is undergoing revisions as a result of the 2012 Planning Rule. The USFS does not have an anticipated date for the draft EIS. The 1986 Forest Plan includes several goals relevant to this Plan-EA, including vegetation management, development of a broad range of dispersed recreational opportunities, protection of wilderness characteristics, maintenance and improvement of wildlife habitat, maintenance of satisfactory watershed conditions and favorable water flows, improvement

of deteriorated watershed conditions, protection of riparian areas, consideration of special use land applications that benefit public or individual needs, and suppress wildfire risks (USFS, 1986).

3.5 Animals

3.5.1 Wildlife & Wildlife Habitat

Given the developed residential and agricultural land uses within the project area, wildlife species in the vicinity likely include a range of native and non-native migratory birds, resident birds, small mammals, deer, and reptiles. The project area is largely outside suitable habitat for elk and the greater sage-grouse.

3.5.2 Special Status Animal Species

A BE was prepared for the Proposed Project that discussed species characteristics, habitat requirements, and potential impacts that may result to special status animal species from implementation the Proposed Project. The USFWS IPaC database (see BE in Appendix E) identified one ESA animal species was identified as potentially occurring within the project area: the candidate species monarch butterfly (*Danaus plexippus*) (USFWS, 2024). Utah does not contain any Essential Fish Habitat as defined in the Magnuson-Stevens Act, and no proposed or designated critical habitat is located within the project area.

The UDNR UNHP Online Species Search was also consulted to determine if any ESA-listed and state sensitive species records of occurrence are located in the Proposed Project's vicinity, as shown on Table 3-6.

Table 3-6. Species of Concern with Potential to Occur in the Project Area

Common Name	Scientific Name	Critical Habitat in Project Area
Bald eagle	*Haliaeetus leucocephalus*	No
Northern leopard frog	*Lithobates pipiens*	No
Golden eagle	*Aquila chrysaetos*	No
Southern leatherside chub	*Lepidomeda aliciae*	No

According to the UNHP Online Species Search, there are historic records of northern leopard frog (2002) and the bald eagle (2003) within a ½ mile radius of the project area, as well as northern leopard frog (2010) and southern leatherside chub (2010) and golden eagle (2003) within a 2-mile radius of the project area. The northern leopard frog is a Petitioned Species, meaning it was reviewed for potential ESA listing, and the southern leatherside chub is a Utah species of concern and a Conservation Agreement species, meaning Utah has a state-wide conservation agreement in place to protect the species and critical habitat to eliminate its need to be ESA-listed. The Conservation Agreement was prepared in 2010 by the UDNR. The bald and golden eagle are both classified as species of concern in Utah and federally protected, as discussed below. There is no critical habitat located within or adjacent to the Proposed Project for either species. The greater sage grouse (*Centrocercus urophasianus*) is considered a Utah state sensitive species but is not federally listed. The project area is not located within a designated Sage-Grouse Management Areas (SGMAs) or leks.

3.5.3 Migratory Birds / Bald and Golden Eagles

Under the Migratory Bird Treaty Act (MBTA) (16 U.S.C. 703-12), it is considered "illegal to take, possess, import, export, transport, sell, purchase, barter, or offer for sale, purchase, or barter, any

migratory bird, or the parts, nest, or eggs of such a bird except under the terms of a valid permit issued pursuant to Federal regulations." The Bald and Golden Eagle Protection Act of 1940 (BGEPA) forbids anyone from taking bald eagles, including their parts, nests, or eggs; take is defined as "pursue, shoot at, poison, wound, kill, capture, collect, molest, or disturb" (USFWS, 2016).

According to the USFWS IPaC database, there are 12 migratory birds and avian species protected under the BGEPA that may occur in the project area (see Table 3-7).

Table 3-7. Protected Avian Species that May Occur in the Project Area

Common Name	Scientific Name
American avocet	*Recurvirostra americana*
Bald eagle	*Haliaeetus leucocephalus*
Broad-tailed hummingbird	*Selasphorus platycerus*
California gull	*Larus californicus*
Cassin's finch	*Carpodacus cassinii*
Clark's nutcracker	*Nucifraga columbiana*
Evening grosbeak	*Coccothraustes vespertinus*
Golden eagle	*Aquila chrysaetos*
Northern harrier	*Circus hudsonius*
Olive-sided flycatcher	*Contopus cooperi*
Rufous hummingbird	*Selasphorus rufus*
Sage thrasher	*Oreoscoptes montanus*

Field investigations found no active nests for raptors or migratory species during the site visit. The UDNR UNHP online Species Search identified historic records of bald eagles in both ½ mile and 2-mile radius of the project area; the last observation year for both radii was 2003. The golden eagle was also identified in a 2-mile radius, the last observation year was 2018. The project area and the surrounding area could provide suitable habitat for the species, therefore, protected avian species have the potential to be present within, or in the vicinity of, the project area.

3.6 Human

3.6.1 Socioeconomics

The Project area is situated within Spring City and unincorporated portions of Sanpete County, Utah. The following sections describe the current socioeconomic conditions of Spring City and Sanpete County, as compared to the State of Utah; the current demographic, employment, income, and economic conditions are presented for these two areas.

3.6.1.1 Population and Demographics

Population and demographic estimated for Spring City, Sanpete County, and the State of Utah are described in Table 3-8. Percentages for gender, age, and race in Spring City are similar and consistent with Sanpete County and Utah.

Table 3-8. Demographic Profile Comparison

Socioeconomic Criteria		Spring City	%	Sanpete County	%	Utah	%
Total Population		949	100	28,437	100	3,271,616	100
Gender[1]	Female	541	48.8	13,491	46.8	1,664,683	49.2
	Male	567	51.2	15,325	53.2	1,716,117	50.8

Age[1]	Under 18	252	22.7	7,152	24.8	935,997	28.5
	18 & Over	856	77.3	21,664	75.2	2,347,812	71.5
Race[2]	White	851	89.7	24,277	85.3	2,573,413	78.7
	Black or African American	0	0	224	0.8	40,058	1.2
	American Indian or Alaskan Native	0	0	307	1.1	41,644	1.3
	Asian	2	0.2	171	0.6	80,438	2.5
	Native Hawaiian or Other Pacific Islander	6	0.6	247	0.9	36,930	1.1
	Two or More Races	72	7.6	1,395	4.9	279,013	8.5
	Other	18	1.9	1,816	6.4	220,120	6.7
Ethnicity[3]	Latino/Hispanic	72	7.6	3,043	10.7	492,912	15.1
	Not Latino/Hispanic	877	92.4	25,394	89.3	2,778,704	84.9

Notes: Totals may not equal 100 due to rounding

Source: Census 2024

[1] Table S0101, 2022 American Community Survey (ACS) 5-Year Estimate

[2] Table P1, 2020 Decennial Census

[3] Table P9, 2020 Decennial Census

According to the estimates from the Census, Spring City has grown approximately 7.4% since 2010. The population is anticipated to continue growing in the years to come. Past, current, and future population estimates for Spring City, Sanpete County, the State of Utah, and the United States are summarized in Table 3-9.

Table 3-9. Past, Current, and Future Population

Population Year	Sanpete County	Utah	United States
Total Population 1990[1]	12,451	1,729,266	249,622,818
Total Population 2000[1]	14,373	2,246,214	282,171,954
Total Population 2010[1]	27,822	2,774,283	309,719,749
Total Population 2020[2]	28,437	3,271,616	331,449,281
Projected Population 2040	34,693[3]	4,440,560[3]	380,219,000[4]

[1] Census, 2010

[2] Table P1, 2020 Decennial Census

[3]Kem, 2022

[4]Colby, et al., 2015.

3.6.1.2 Employment and Income

The 2013-2017 American Community Survey 5-year estimates for employment and income status in Spring City, Sanpete County, and State of Utah are provided in Table 3-10. Spring City has a higher percentage of unemployment compared to Sanpete County and the state-wide average.

Table 3-10. Employment and Income Status

Characteristics	Spring City	Sanpete County	Utah
Population 16 years and older[1]	891	20,272	2,412,320
Civilian labor force[1]	467	12,579	1,680,155
Employed[1]	411	12,023	1,624,460

Unemployed[1]	56	556	55,695
Percent unemployed	12.0%	4.4%	3.3%
Median household income[2]	$62,679	$64,356	$68,374
Mean household income[2]	$76,263	$81,805	$87,053
Families below poverty level[3]	0.9%	8.4%	5.6%

Source: Census 2023

[1] Table S1701

[2] Table S1901

[3] Table S1702

The median household income in Spring City is $62,679, this is lower than the Sanpete County and state median household income (see Table 2-10; Census, 2023). Therefore, Spring City has limited capital to invest in improvement projects, to address flooding incidents, or to apply towards maintenance of infrastructure like reservoirs or recreational amenities. The inability to invest capital in infrastructure and improvement projects also has implications on agricultural profitability in Spring City.

3.6.2 Environmental Justice and Civil Rights

E.O. 12898 requires federal agencies to "make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority population and low-income populations." A minority population is a person who identified as black or African American, Hispanic or Latino, Asian American, American Indian or Alaskan Native, and Native Hawaiian or Other Pacific Islander. Low-income is defined as a person whose household income is at or below the U.S. Department of Health and Human Services (HHS) poverty guideline.

Environmental justice has its legislative roots in Title VI of the Civil Rights Act of 1964, which states that "no person in the United States shall on the ground of race, color, or national origin by excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance."

The demographics and socioeconomic analysis demonstrate that approximately 10% of the population in Spring City can be considered a minority. Therefore, a portion of the population in the project area are considered minority communities.

3.6.3 Cultural and Historic Resources

Several federal statutes and E.O.s direct the protection and consideration of cultural and historic resources, namely NEPA and the NHPA. Under NEPA, federal agencies must consider the effect of federal actions upon historical, archaeological, and paleontological resources. In addition, Section 106 of the NHPA requires federal agencies to consider the effects of their actions on historic properties. NHPA defines a historic property as "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the NRHP…" (36 CFR 800.16). Pursuant to Section 106 of the NHPA, the Advisory Council on Historic Preservation (ACHP), State Historic Preservation Office (SHPO), Tribal Historic Preservation Officer (THPO), and federally recognized tribes must be consulted at all steps of the Section 106 process.

Per 36 CFR 800.3, the project team identified the SHPO, THPO, and federally recognized Tribes for the project. the project team also prepared a public participation plan to include Tribes, the public, and other stakeholders in the process.

Per 36 CFR 800.4, the NRCS State Conservationist initiated consultation. The project team provided opportunity for comment and participation in developing the scope of the Plan-EA in coordination and in consultation with Tribes, the public, and other stakeholders, including the following Tribes: the Ute Indian Tribe of the Uintah & Ouray Reservation, Utah; the Northern Ute Tribe; the Paiute Indian Tribe of Utah; and the Hopi Tribe of Arizona. A scoping meeting was held virtually on October 21, 2020. The scoping report can be found on page A-2 of Appendix A.

In accordance with Section 106 of the NHPA, 36 CFR 800, and Utah Code Section 9-8-404, the APE has been set at 1,610 acres and matches the boundaries of the Proposed Project. All proposed project components are located within this APE boundary, including all staging areas and access roads. The No Action Alternative APE is defined and discussed in Section 5.6.3. See Cultural Resources Area /Area of Potential Effect in Appendix B for details. The ACHP defines the APE as "the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist" (36 CFR 800.16(d)). The inventory was conducted on 1,610 acres.

A literature review and Class III Cultural Resources Inventory was completed for the Proposed Project's APE by Cottonwood Archaeology, LLC (Cottonwood) in June 2022, whose archaeologists meet the Secretary of the Interior's archaeological qualifications per 36 CFR Part 61. Of note, Spring City is listed on the NRHP (as discussed below). The survey identified five previously recorded sites, 32 newly recorded sites, and 16 isolated finds. Of these sites, 16 are eligible for listing on the NRHP. See Table 3-11 for a summary of the identified sites. Details can be found in the redacted Cultural Resources Survey Report, located in Appendix E.

Table 3-11. Identified Cultural Resources Within APE

Site Summary	Site Description	Eligibility Determination
42SP437	Mill Race Ditch (irrigation ditch)	Eligible under Criterion A
42SP615	Point Ditch (irrigation ditch)	Ineligible
42SP621	Highway 89 (historic road)	Ineligible
42SP1098	Spring Canyon Road (historic road)	Eligible under Criterion A
42SP1105	Historic Penstock Aqueduct	Eligible under Criterion A
42SP1206	Multicomponent Historic Site	Ineligible
42SP1207	Historic Homestead	Ineligible
42SP1208	Log Granary	Eligible under Criterion D
42SP1209	Historic Dump Site	Ineligible
42SP1210	Concrete Sidewalk	Ineligible
42SP1211	Sparse Historic Scatter	Ineligible
42SP1212	Historic Trash Scatter	Ineligible
42SP1213	Historic Artifact Scatter	Ineligible
42SP1214	Interconnecting Pastoral Structures	Ineligible
42SP1215	Sparse Lithic Scatter	Eligible under Criterion D
42SP1216	Precontact Temporary Camp	Eligible under Criterion D
42SP1217	Multicomponent Site	Ineligible
42SP1218	Multicomponent Site	Eligible under Criterion D
42SP1219	Sparse Artifact Scatter	Ineligible
42SP1220	Sparse Lithic Scatter	Ineligible
42SP1221	Wooden Lean-to Animal Shelter	Ineligible
42SP1222	Water Impoundments	Eligible under Criterion A
42SP1223	Historic Pond	Eligible under Criterion A

42SP1224	Historic Pond	Eligible under Criterion A
42SP1225	Lithic Scatter	Ineligible
42SP1226	Multicomponent Site	Eligible under Criterion D
42SP1227	Sparse Lithic Scatter	Eligible under Criterion D
42SP1228	Multicomponent Site	Eligible under Criterion D
42SP1229	Multicomponent Site	Ineligible
42SP1230	Carved Arborglyphs	Ineligible
42SP1231	Big Ditch (irrigation ditch)	Eligible under Criterion A
42SP1232	Sidewalk	Ineligible
42SP1233	Sidewalk	Ineligible
42SP1234	Sidewalk	Ineligible
42SP1235	Sidewalk	Ineligible
42SP1236	Sidewalk	Ineligible
42SP1237	Spring City Power Plant Road (historic road)	Eligible under Criterion A
Isolated find	Small artifact concentrations	Ineligible
Isolated find	Artifact	Ineligible
Isolated find	Small wooden structure	Ineligible
Isolated find	Projectile point	Ineligible
Isolated find	Flake scatter	Ineligible
Isolated find	Lithic artifacts	Ineligible
Isolated find	Historic scatter	Ineligible
Isolated find	Flake pile	Ineligible
Isolated find	Flakes	Ineligible
Isolated find	Flakes	Ineligible
Isolated find	Tin ointment canister	Ineligible
Isolated find	Artifact	Ineligible
Isolated find	Historic posts	Ineligible
Isolated find	Lithic scatter	Ineligible
Isolated find	Flakes	Ineligible
Isolated find	Historic scatter	Ineligible

Due to Spring City's listing as a Historic District, all of the NRHP eligible and listed properties within 50 feet of any of the Proposed Project components and all NRHP eligible and listed properties within the Historic District were evaluated as part of the Section 106 consultation. The redacted Cultural Resources Report is located in Appendix E.

NRCS NHPA Section 106 consultation with SHPO, Tribes/THPOs, and concurrence from SHPO are discussed in detail in Section 5.6.3 and Chapter 6. Tribes/THPOs were contacted regarding the Proposed Project in October 2020. Per 36 CFR 800.4, NRCS sent out Section 106 consultation letters on August 16, 2024 when copies of the cultural resources report and NRCS determination of eligibility were sent to representatives of the Ute Indian Tribe of the Uintah & Ouray Reservation, Utah; Navajo Nation in Utah and Arizona; Paiute Indian Tribe of Utah; and Hopi Tribe of Arizona. Follow up was completed in October 2024. To date, only the Paiute Indian Tribe of Utah has responded, indicating they have no comments for the project. NRCS initially contacted SHPO on August 16, 2024. NRCS contacted the Advisory Council on October 14, 2024, Advisory Council review is in progress. Copies of all Tribal consultation and SHPO concurrence are located in Appendix A. A copy of the redacted Cultural Resource Survey Report is located in Appendix E.

NRCS also considers resources that do not contain cultural material, but are valuable for other reasons, such as paleontological resources. The NRCS Title 190 National Cultural Resources Procedures Handbook Part 601, Subpart G, Section 601.70 describes paleontological resources as "plant and animal fossils that may be the original preserved organisms, molds, and casts that have been completely replaced by minerals, and secondary fossils such as animal footprints and preserved burrows. The rocks surrounding important paleontological sites are also significant resources because the rocks provide information about the environment in which the ancient plants and animals lived."

The UDNR was contacted regarding the presence of paleontological resources in the project area. According to the UDNR, no paleontological localities have been recorded in the project area and the quaternary and recent alluvial deposits in the project area have a "low to moderate potential for yielding significant fossil localities" (see Paleontological Clearance letter in Appendix A).

3.6.4 Hazardous Materials

The Resource Conservation and Recovery Act (RCRA) is the primary statute established with the purpose of providing a structure for hazardous waste management. For a substance to be considered a hazardous waste, it must first be classified as a solid waste under RCRA. Any material that is abandoned, inherently waste-like, discarded military munition, or recycled in certain ways is considered a solid waste and is subject to RCRA. Hazardous waste is defined as any liquid, solid, gas, or sludge that poses a hazard to human health or the environment because of its quantity, concentration, or physical or chemical characteristics. A review of the UDEQ Environmental Interactive Map was conducted to determine the presence of hazardous or solid waste disposal sites in the proximity of the project area.

Using the UDEQ's Environmental Interactive Map, a polygon was applied 0.5 miles around the area of the Proposed Project; this search area encompassed all components of the Proposed Project, as well as the entire boundary of Spring City. Two facilities were identified within the search area. The facilities and sites identified by the UDEQ Environmental Interactive Map were associated with one or more of the following categories: environmental incidents, underground storage tanks (USTs), and hazardous waste and used oil.

Both facilities identified are located within the boundaries of Spring City but do not fall within any lands that will be disturbed by the Proposed Project: one facility with USTs and one hazardous waste site.

3.6.5 Public Health and Safety

Spring City risks being flooded by Oak Creek and Canal Creek. These creeks flood regularly. In 1998, a flash flood caused landslides high up in the Oak and Canal Creek canyons which produced mud flows up to three ft and extensive debris. Spring City sustained massive damage to the City's water, power, and pressurized secondary irrigation systems. Several thousands of acres of farmland and farming operations had substantial flood damage as well. Historic Spring City has faced floods since its earliest times, but the "old-timers" describe flood from their memories dating back to 1934, when a severe snowmelt flood inundated Spring City for about two weeks. Another snowmelt flood struck the city in 1952 and again in 1983. The flash flood at Oak and Canal Creek in 1998 resulted in about $2.5 million in city-wide damages and destroyed a county bridge. Numerous landslides formed above both Oak Creek and Canal Creek in 1983 and have continued to threaten Spring City

residents and agricultural areas around it. It has been estimated through modeling that in a 100-year flood, 646 people in Spring City are at risk from a flood event of this magnitude.

3.6.6 Recreation

There are no designated parks and recreation areas present in the project area. The Manti-La Sal National Forest is located to the east of the project and provides a diverse landscape for camping, fishing, and hiking activities. The subbasins contains public lands that offer dispersed recreational opportunities. Within the watershed, numerous recreational opportunities exist, including camping, fishing, and hunting, which are managed by various state or federal agencies.

3.6.7 Land Use

The project area contains a variety of land uses, including forested; residential, commercial, and industrial developed lands, and agricultural lands.

Zoning in the project area is managed by Sanpete County and Spring City. Zoning outside of the boundaries of Spring City is managed by Sanpete County and consists of the following zones: Residential-Agricultural (RA-2), Business/Commercial (BC), Agricultural, and Sensitive Lands (SL). The proposed locations for the Oak Creek Diversion, the Flood Channel, and the Oak Creek Upper Diversion Pipeline are located on land currently zoned as SL with a small section of the Oak Creek Upper Diversion Pipeline falling within land currently zoned as BC. The proposed locations for the 20 ac-ft Regulating Pond, Reservoir, and Recreation Area are on land designated as Agricultural. The Proposed locations for the Mill Race Flood Ditch restoration work and the North Fields Ditch Piping fall within lands currently zoned as Agricultural and RA-2. Spring City is zoned as mixed residential, agricultural and transportation. According to the Spring City master Plan (Spring City, 2017), residential areas take up 42.8 percent of the area within the city boundaries and agriculture and vacant lands account for another 34.5 percent with transportation corridors taking up 20.3 percent. The remining 2.4 percent of the area is comprised of commercial and public spaces. Spring City reports that they have no established industrial areas.

Land ownership within the watershed boundary consists mainly of private land. Spring City owns the majority of the land within the Proposed Project area. Some land acquisition and easements will be necessary. Federal land, managed by the USFS, is located to the southeast portion of the watershed boundary. Portions of the Oak Creek Upper Diversion Pipeline, the Oak Creek Diversion, and the Flood Channel are located on USFS land. Land ownership is shown on the Watershed Map in Appendix B.

3.6.8 Visual Resource and Scenic Beauty

Spring City is a National Register Historic District, with an abundance of well-preserved architecture of religious buildings, homes, and small commercial establishments that predate World War I.

The project area contains natural areas, residential, agricultural, and transportation infrastructure. The surrounding landscape is natural hills with sagebrush, mountains with forests, pastures, and farmlands. The irrigation ditch system meanders through many of these land types in the project area.

The U.S. Bureau of Land Management (BLM) manages public lands to ensure the scenic value of those lands is considered and retained. The BLM's Visual Resource Management (VRM) system provides an inventory of scenic values and sets management objectives for those values. The project

area itself is not within a BLM VRM class, however, the surrounding area, and portions of the watershed being evaluated, is composed of Class III and IV lands (BLM, 2020) based on an assessment of scenic quality and visual sensitivity in the project area. Class III lands aim for the following visual resource objectives: to partially retain existing character of landscape, allow for moderate level of change, ensure that management activities do not dominate the view and that changes blend with the natural landscape. Class IV lands aim for the following visual resource objectives: develop provisions for any management activities that require major modifications to existing character of landscapes, allow for high level of change, and some activities may dominate the view.

The Manti-La Sal National Forest lands located east of the project area provide above-average views at higher elevation plateaus but below average views in the flatter areas of sagebrush (USFS, 1986). The Manti Division is considered visually sensitive because of the number of recreation-oriented visitors. Land in the Manti Division of the Manti-La Sal National Forest are ranked as either Class A ("unique, distinctive or outstanding landscape variety"), Class B ("prevalent, usual, or widespread variety"), of Class C ("little or no visual variety") scenic quality lands (USFS, 1986). The USFS also measures visual quality of USFS managed lands into five categories: preservation, retention, partial retention, modification, and maximum modification based on the visual landscape characteristics, including existing vegetation, water landform line, form, color, and texture. The Manti Division lands are classified as retention, partial retention, modification, or maximum modification (USFS, 1986).

3.6.9 Transportation and Infrastructure

Existing infrastructure in the project area includes linear transportation facilities, irrigation features, and residential structures. The major roads present in the project area that the Proposed Project would intersect, if implemented include U.S. Highway 89, State Highway 117/N. Main Street, Pigeon Hollow Road/S. Main Street and Spring Canyon Road. Irrigation infrastructure includes the Mill Race Ditch, Point Ditch, and North Field Ditch piping systems. The existing irrigation infrastructure is shared between irrigators and secondary water users. This shared irrigation system loses approximately 2,421 ac-ft of water from seepage and evaporation and another 142 ac-ft due to secondary water users, which produces a total water loss of 2,563 ac-ft annually and water shortages for irrigators, especially during water years when irrigation water is limited.

3.6.10 Noise

Various factors influence the perception of noise, such as volume, frequency, atmospheric conditions, background noise, and the nature of the activity generating the noise. Background noise (ambient noise) in the project area is associated with road traffic and the use of agricultural equipment. When discussing noise, special consideration must be given to noise sensitive areas and noise sensitive receptors within and adjacent to the Proposed Project. In these quiet areas, noise impacts are viewed as more substantial. Numerous noise sensitive receptors (i.e. local parks, schools, and residential areas) are scattered throughout the vicinity of the project area.

3.7 Energy

Energy usage and efficiency of the existing irrigation systems is an issue that currently impacts agricultural producers within the Sanpete Valley and the immediate project area. The existing unpressurized canals such as the North Field Ditch Piping and Point Ditch Piping required irrigators in the project area to use flood irrigation methods to irrigate crops and pastures. Flood irrigation

applies excess amounts of irrigation water to fields to raise the water table within or near the plant root zone. The flood irrigation method is much less efficient than other methods, such as sprinkler irrigation, and may rely on the use of energy resources to pump and disperse irrigation waters. Because the flood irrigation method requires large amount of water to be applied before it becomes effective, energy requirements for this method can be much greater than the more efficient sprinkler irrigation. The current irrigation system does not achieve the County's objectives for water efficiency or energy conservation.

DRAFT

Chapter 4 Alternatives

4.1 Project Scoping

Early in the Proposed Project development, comments were requested and received from the public, as well as local, state, and federal government agencies. A scoping letter was mailed to federal, state, tribal, and local agencies on October 14, 2020, to inform the agencies of the project and request comments (see Appendix A). A public scoping meeting was held on October 21, 2020 to engage the public in the planning of the Proposed Project and to request feedback on the Proposed Project. Comments were accepted at the meeting or subsequently by mail or email during the scoping period. NRCS began Tribal consultation during the scoping process. Scoping letters were sent to the Ute Indian Tribe of the Uintah & Ouray Reservation, Utah; the Northern Ute Tribe; the Paiute Tribe; and the Hopi Tribe on October 27, 2020 (see Appendix A). A detailed description of the scoping process is in Section 1.3 and included in the Scoping Report (Appendix A).

4.2 Formulation Process

Proposed Project measures were developed by considering the technical merits and drawbacks of potential solutions while also considering Sponsor preferences. The proposed measures for the Plan-EA are only those that met some general requirements. The sponsors indicated that flood damage reduction and agricultural water management were their top concerns and objectives for the PL 83-566 project. Areas of flooding concern (i.e., areas where flood damage happens most often and at the largest cost for repairs) were identified by the project sponsors and were prioritized for inclusion into the Plan-EA. The secondary goal for project sponsors was agricultural water management. Areas of operational concern (i.e., infrastructure where irrigation operations could be jeopardized if appropriate measures were not taken) were identified by project sponsors and also prioritized for inclusion into the Plan-EA. Improvement measures on the selected infrastructure are expected to meet the thresholds for what the sponsors are comfortable undertaking at this time. For this reason, additional infrastructure improvements within the watershed were excluded from consideration. The third goal for project sponsors was recreational opportunities. Recreational opportunities were identified by project sponsors that could be added or incorporated and prioritized for inclusion into the Plan-EA.

Alternatives were formulated that addressed the purpose and need of the project, the project objectives, and the Federal Objective as listed in PR&G 1.2. Additionally, alternatives were formulated with consideration to four criteria: 1) completeness, 2) effectiveness, 3) efficiency, and 4) acceptability. Individual and combinations of project measures were selected with regard to achieving the purpose and need, balancing engineering complexity and feasibility, minimizing economic and environmental impacts, and adhering to budgetary constraints. Table 4-1 illustrates the objectives and benefits that were considered during the alternative formulation process, and the hierarchy in which those objectives and benefits were considered.

Table 4-1. Hierarchy of Objectives for Alternative Formulation

Objectives/Benefits		Priority/ Hierarchy	Required for Consideration
Sponsor Objectives	Flood Damage Reduction	1	**Yes (minimum of 1 objective)**
	Agricultural Water Management	2	
	Recreational Opportunities	3	

Objectives/Benefits		Priority/ Hierarchy	Required for Consideration
Federal Objectives	PL 83-566 Authorized Purposes	4	**Yes**
Ecological Benefit		5	**Yes**
Economically Feasible		6	
Positive Social Benefit		7	

As part of the formulation of alternatives process, an Ecosystem Services Framework is used to evaluate benefits and costs for the Proposed Project that uses federal water resource project and NRCS guidelines for the evaluation of benefits and costs of the no action and action alternatives, relying primarily on the PR&G (USDA, 2017), the NRCS Natural Resource Economics Handbook (NRCS, 1998), and the NWPM (NRCS, 2015). The PR&G requires benefits and costs to be evaluated in an ecosystem service framework, as described in Section 2.1 and shown in Table 2-2.

The Plan-EA for the Proposed Project considered these principles in the characterization of agricultural water management challenges faced by stakeholders in the watershed and the formulation of solutions as defined in the Action Alternative (FWFI).

4.3 Alternatives and Options Considered but Eliminated from Detailed Study

In accordance with NEPA (40 CFR 1502.14), some initial alternatives were eliminated from further analysis due to high cost, logistics, environmental reasons, or other critical factors. Several alternatives and design options were considered for study early in the project formulation phases. The alternatives considered were the No Action Alternative, and variations of the Action Alternative (Alternative 1 and Alternative 2). Of these alternatives, Alternative 2 was eliminated from detailed study because it was not feasible due to engineering complexity and costs.

4.3.1 Alternative 2

Alternative 2 would include the construction of two detention basins, pipe the open ditches to Oak Creek, construct recreational facilities, and would add additional flood control and irrigation water storage on Canal Creek. Alternative 2 was estimated to cost $31,179,447.

Alternative 2 was eliminated from detailed study due to economic impacts, complexity involving the distribution of water throughout the water system and the availability of property for additional water storage. Alternative 2 was considered unfeasible and dismissed from further study.

4.3.2 Mill Race Piping

An alternative was considered that would have piping the existing Mill Race Ditch system. Since the existing Mill Race Ditch system currently both conveys irrigation water and stormwater through Spring City, the alternative design included installing new piping in half the existing ditch prism to convey irrigation water and leav8ing the other half of the prism open to continue to collect floodwater and street runoff from Spring City's streets. The floodwater would then be conveyed to Oak Creek. This dual use design would allow Spring City to continue utilizing the ditch prism for existing floodwater benefits while also providing a new benefit in efficient agricultural water management. This alternative was dismissed from further study because a poll conducted during a public HIC water meeting indicated that the majority of Spring City residents would prefer to see the Mill Race Ditch system remain open.

4.4 Alternatives Considered for Detailed Study

Alternatives considered for the Proposed Project include:

- The No Action Alternative/Future Without Federal Investment (FWOFI)
- Action Alternatives/Future With Federal Investment (FWFI)
    - Non-structural Alternatives
        - "A non-structural alternative may not be included in final analysis: Alternative plans, strategies, or actions that can effectively address a problem through the use of non-structural approaches, if they exist, must be fully considered and carried to the final array of solutions. Non-structural measures include, but are not limited to, modifications to public policy, regulatory policy, and pricing policy, as well as management practices, including the use of green infrastructure" (see Section 6c(2)(c) of PR&G) (NRCS, 2017). Non-structural alternatives were eliminated from detailed study because none were brought forward that would meet the purpose and need of the Project.
    - Locally Preferred Alternative
        - "In cooperation with local interests that have oversight or implementation authorities and responsibilities, agencies may identify a 'locally preferred' alternative. This alternative may emerge from the collaborative process during agency and public scoping (see Section 6b(4)3 of PR&G) (NRCS, 2017). The Action Alternative was created and supported through a public and local stakeholder process per PR&G. As part of the process, the public and other stakeholders were invited to provide comment and input into the design and evaluation of the Action Alternative. As a result of this input, the Action Alternative is the locally preferred alternative.
    - Environmentally Preferred
        - The Preferred Alternative will be the environmentally preferred alternative as defined in Section 101 of NEPA.
    - NEE
        - The preferred Alternative will be the alternative that increase NEE (see Section 2.1 for more information about additional information regarding ecosystem services).

4.4.1 No Action Alternative

Under this alternative, the sponsor would not construct the multi-purpose reservoir, would not pipe the irrigation canals, and would construct the recreational facilities. If the No Action Alternative were implemented, the existing infrastructure would remain the same and capital investment or alternative funding would be required to address floodwater risk and concerns with irrigation water delivery efficiency.

4.4.2 Action Alternative

The Action Alternative would plan to construct the 1,034 ac-ft (231 ac-ft of flood water, 703 ac-ft of irrigation water storage, and 100 ac-ft of debris and sediment storage) multipurpose Reservoir to provide critical flood control, agricultural water management, and public recreation benefits. Currently, the proposed reservoir site is owned by HIC and the site is a meadow of sufficient area to

accommodate the size of the planned reservoir. The construction would also include the installation of an open trapezoidal concrete Flood Channel (5,850 ft) in an existing ditch easement to provide a means of transporting flood water and debris out of Oak Creek and into the planned reservoir. The Flood Channel would provide critical flood control benefits by conveying 421 ac-ft of flood water and debris from Oak Creek through an upgraded existing diversion structure located on Oak Creek, called the Oak Creek Diversion. The open concrete ditch has been designed to convey flood flows of a 500-year flood to accommodate the conveyance of debris and sediment into the Reservoir. As part of the multi-purpose use of the Reservoir, the Freeman Allred Day Use Area would be constructed at the Reservoir, including picnic facilities and pavilions, 6,500LF of gravel walking trail, and a small craft boat launch area. Construction of the day use area would provide significant public recreational benefits for Spring City and nearby communities. The construction of the Reservoir and Flood Channel are estimated to cost approximately $16,847,308. The construction of the day use area is estimated to cost approximately $442,900.

The Action Alternative would construct a new pipeline of approximately 7,830 ft (1.5 miles) in length to transport water away from the Reservoir back to both Oak Creek and the Last Chance diversion, which would provide critical flood control benefits, as well as a more efficient agricultural water management system. The flood water would be released back into the existing creek channel at a prescribed release rate and additional irrigation water continues in a smaller pipeline to the Last Chance diversion structure. The construction of the transmission pipeline from the Reservoir is estimated to cost approximately $1,848,385.

The Action Alternative would pipe approximately 27,960 LF (5.3 miles) of existing open ditch irrigation systems within the North Fields (21,070 LF) and Point Ditch (6,890 LF) irrigation systems, replace existing deteriorated diversions, and upsize 11 culvert road crossings to improve flood flows throughout Spring City. Currently, the ditch irrigation systems convey irrigation and agricultural water for the City a and surrounding agricultural lands. The existing ditch systems consist of earthen open ditches that are highly susceptible to water losses due to infiltration and evaporation. The new design will create safer conveyance for irrigation water that are easier and less expensive for the City to maintain, as well as reduce water losses that can be used. Construction at the North Fields and Point Ditch systems is estimated to provide an estimated 2,421 ac-ft of water savings annually and provide efficient agricultural water delivery benefits to the system. The construction work is estimated to cost approximately $1,529,422.

Additionally, the Action Alternative would rehabilitate the existing Mill Race channel irrigation system (11.570 LF), by stabilizing the banks and restoring the channel. Currently, the Mill Race Ditch system conveys irrigation and agricultural water through Spring City, as well as collecting floodwaters from city streets. As part of the Mill Race Ditch improvement design, the proposed action would dredge the existing channel to remove sediment and debris. Additionally, bank stabilization techniques would be employed to reduce sedimentation and erosion but installing either native vegetation and coir logs or rock rip rap to the sides of the channel. The channel restoration and bank stabilization would be completed in the late summer or early fall when the channel is dry so work would not interfere with agricultural water delivery. The large trees and vegetation along the banks of the existing channel would not be removed. This work would allow Spring City and HIC to continue utilizing the ditch prism for existing floodwater benefits while also maintaining the existing system and reducing maintenance costs. Construction at the North Fields, Point Ditch, and Mill Race ditch systems is estimated to provide an estimated 2,421 ac-ft of water

savings annually and provide efficient agricultural water delivery benefits to the system. The construction work is estimated to cost approximately $1,117,078.

Other project components would replace approximately 8,450 ft (1.6 miles) of the Oak Creek Upper Diversion from Oak Creek to the Spring City hydroelectrical power plant. This pipeline is sometimes referred to as the 'Penstock Piping' colloquially. This piping delivers approximately 25% of the entire system's irrigation water and the infrastructure is aging and in poor condition. The replacement of the existing piping is an action that is critical to continued operation of both the Spring City hydroelectric plant and to provide a reliable source of water for agricultural users. The existing piping delivers water through the Spring City Hydroelectric Plant before joining the rest of the irrigation system, making it dual-use infrastructure. Loss of this piping through a failure as a result of its deteriorated condition would have a significant impact on agricultural water delivery as well as the City's ability to generate inexpensive power for the City's power grid. Replacement of the piping would provide more efficient agricultural water management as well as ongoing, continuous power generation. Construction of the Oak Creek Upper Diversion is estimated to cost approximately $1,442,449.

Another key component of the project is a new 20 ac-ft Regulating Pond, located adjacent to an existing regulating pond, that will serve only residential secondary water users of Spring City. The existing regulating pond will only be used in the future to serve agricultural users. The purpose of the new Regulating Pond is to set the hydraulic grade at an appropriate elevation to deliver customers an acceptable pressure range. The storage volumes in the pond provide flexibility to water users and allow the system to operate properly under peak water usage. The pond inflow will be relatively constant; however, the pond outflow may vary to meet peak demands. The new Regulating Pond provides a method for accurately measuring water usage for each group, residential and agricultural, and eliminating conflict over water consumption, particularly during dry years. The new Regulating Pond will be connected to the existing system in place for the existing regulating pond. In conjunction with the construction of the new Regulating Pond, the Action Alternative will also add meters to 502 secondary water users. The installation of residential secondary water meters is a mandate by the State of Utah and provides a valuable water conservation benefit, particularly on larger residential lots in Spring City. Installation of the residential secondary water meters is estimated to conserve 142 ac-ft of water annually. The construction of the Regulating Pond and installation of the secondary water meters is estimated to cost approximately $2,786,379.

Finally, the Chester Irrigation Company, west of Spring City, owns and maintains a series of ponds known as the Chester Ponds. These ponds are near the lower end of the Oak Creek and Canal Creek drainages. As a result, they are subject to significant debris and sediment deposition, which is difficult to control and remove, causing the storage capacity of the ponds to decrease, impacting the total storage available to the irrigation company. The Action Alternative would dredge the four existing ponds to depths of 2.5 ft to 5 ft (161,333 cubic ft) in order to regain approximately 1,000 ac-ft of water storage. The dredged or excavated material will be hauled away and spread in nearby open pasture or unused land. In conjunction with the work on the Chester Ponds, the Action Alternative would construct an approximately 5,330 LF pipeline, called the Oak Creek Bypass Piping. This work would provide a more efficient agricultural water management system and increase water storage capacity at the ponds. Dredging of the Chester Ponds and installation of the bypass piping is estimated to cost approximately $2,453,128.

The Action Alternative provides important flood protection and water savings that is recognized as a critical component of Utah's long-term water resource planning. The Action Alternative is estimated to cost $10,255,655 for flood prevention projects, $18,651,974 for agricultural water management projects, and $442,900 for recreation projects for a total project cost of $29,350,529.

Access to the project area can be achieved at numerous places using public roads. A map of the project components, including staging areas, is included in Appendix B – Project Map.

Construction for the Proposed Project is anticipated to start in 2024 and be completed in 2026, with construction activities taking place outside of the irrigation season. Backhoes, excavators, haul trucks, and other smaller construction vehicles and equipment would be used to complete the Action Alternative.

4.5 National Economic Efficiency

The NEE Alternative is the alternative or combination of alternatives that reasonably maximizes the net benefit of the project while protecting sensitive environmental resources. The net economic benefit is the benefit minus the cost of the project. According to the NWPM, when human life is potentially at risk, the NEE Alternative is defined as the federally assisted alternative with the greatest net economic benefit [Section 502.2 and 5035B(1)(iv)].

With the federal law passage of the 2007 Water Resources Development Act, Congress directed the federal government to update and consolidate its past guidance on evaluating the costs and benefits of federal investments. The original Principles and Guidelines was replaced by PR&G as of April 2009. The PR&G allow for:

> *…maximizing public benefits (of all types) relative to costs, the use of quantified and unquantified information in the tradeoff analysis, flexibility in decision making to promote localized solutions, ability to rely on the best available science and objectivity, and advance transparency for Federal investments in water resources (NRCS, 2017).*

The PR&G further state:

> *Federal investments in water resources as a whole should strive to maximize public benefits, with appropriate consideration of costs. Public benefits encompass environmental, economic, and social goals; include monetary and non-monetary effects; and allow for the consideration of both quantified and unquantified measures (NRCS, 2017).*

4.6 Summary and Comparison of Alternative Plans

The No Action Alterative and Action Alternative have been compared against each other to discern the merits and disadvantages of each alternative, as shown in Table 4-2.

Table 4-2. Summary of Alternatives

	Item or Concern	No Action Alternative (FWOFI)	Action Alternative (FWFI/NEE Recommended)
	Measures to address: - Flooding - Ag. Water Mgmt. - Recreation	- Continued periodic flood damage recovery actions including: o Structure repairs o Sediment and debris removal - Continued water loss from seepage - Continued poor water quality - Residents continue to travel outside area for recreational opportunities.	- Construct 1,034 ac-ft multi-purpose reservoir and diversion/return structures and 20 ac-ft regulating pond - Install 11,570 LF of piping to direct flood waters - Pipe 36,410 LF of open irrigation ditches - Increase irrigation pond storage capacity - Install 502 secondary water meters - Construct recreational day facilities
Installation Costs	NRCS Contribution: SLO Contribution: Total:	$0 $0 $0	$25,090,974 $4,259,554 $29,350,529
NEE Account	Avg. Annual Cost Installation: O, M, & R: Total	 $0 $0 $0	 $733,444 $160,493 $893,900
	Annual Benefits ($)	-	$1,143,100
	Annual Costs ($)	-	$893,900
	Annual Net Benefits ($)	-	$249,200
	Annual Remaining Flood Damage	$977,900	$84,000
Environmental Quality (EQ) Account	*Soils & Geology* Erosion and Sedimentation Prime Farmlands	 Continued bank erosion and sedimentation during flooding events No change	 Reduction of erosion due to sediment detainment in multi-purpose reservoir. Protection of 613 acres of Prime Farmlands and 2,650 acres of Farmlands of Statewide Importance.
	Water Resources Surface & Groundwater Quantity and Quality WOTUS & Wetlands Regional Water Mgmt. Plans	 Sediment, nutrients, pathogens, pesticides, and other pollutants to 303(d) listed surface waters No change No change	 Reduction of seepage loss by 2,563 ac-ft; improved water quality, and reduced degradation of streambanks. Improved water quality in downstream 303(d) listed surface waters (San Pitch River). Alignment with Sevier River Basin Water Plan.

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	Item or Concern	No Action Alternative (FWOFI)	Action Alternative (FWFI/NEE Recommended)
	Floodplain Mgmt.	Continued risk for flood hazards and property damage.	Protection from flood damage.
	Air Quality	No change	No change
	Plants		
	Special Status Plant Species	No change	No change
	Noxious Weeds	No change	No change
	Riparian Areas	Benchmark conditions may degrade water quality and wildlife benefits due to erosion of the banks during storm events.	Improvement of water quality & quantity and improvement of riparian areas by reducing flood impacts and sediment load. The loss of water from piping irrigation ditches would remove vegetation permanently.
	Forest Resources	No change	Removal of USFS lands from public use for the installation of Oak Creek Diversion and replacement of Oak Creek Upper Diversion Pipeline.
	Animals		
	Wildlife & Wildlife Habitat	No change	Permanent removal of water source due to piping irrigation.
	Special Status Animal Species	No change	No change
	Migratory Birds	No change	Large trees removed during construction. Permanent removal of water source due to irrigation piping.
	Human Environment		
	Socioeconomics	Continued capital and labor required due to flooding and aging infrastructure.	Conserve 2,563 ac-ft water per year, prevent $875,000 in flood-related damages, $143,100 in improved agricultural profitability, and $90,300 in decreased O&M costs.
	EJ & Civil Rights	No change	No change
	Cultural & Historic Resources	Flooding could cause continued risk to potential cultural and historic resources, including 180 historic structures.	Flood damage prevention to existing cultural and historic resources. An MOU is being prepared as part of the cultural mitigation.
	Hazardous Materials	No change	No change
	Public Health & Safety	Continued flooding risks	Reduced flooding risks

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	Item or Concern	No Action Alternative (FWOFI)	Action Alternative (FWFI/NEE Recommended)
	Recreation	No change	$43,700 is increased recreational values due to trail construction and increased recreational opportunities.
	Land Use	No change	Use change to agricultural and grazing lands for the multi-purpose reservoir and regulating pond. Easements necessary for pipeline replacements. USFS easement necessary for Oak Creek Diversion and Oak Creek Upper Diversion Pipeline.
	Transportation & Infrastructure	Risks of road damage and/or closure from flooding	Reduced risk of road damage or closure
	Noise	No change	No change
	Energy	Continued risk to agricultural lands due to flooding; continued deterioration of hydroelectric plant and reduced output due to aging equipment.	Increase in agricultural profitability, continued use of hydroelectric plant
Other Social Effects (OSE) Account	Visual resources	No change	Permanent changes due to irrigation piping, construction of multi-purpose reservoir and regulating pond, & loss of vegetation and trees.
	Tribal, religious, sacred, or cultural sites	Continued flooding risk to cultural and historic resources.	Flood damage prevention and protection of cultural and historic resources
Regional Economic Development (RED) Account	Local jobs during construction	0	15
	Annual jobs from recreation	0	2
	Beneficial Effect Annualized Region Rest of Nation	 $0 N/A	 $1,143,100 N/A
	Adverse Effect Annualized Region Rest of Nation	 $977,900 N/A	 $84,000 N/A

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Chapter 5 Environmental Consequences

Under NEPA, the NRCS is required to identify and address environmental and human health effects that may occur from implementing the No Action Alternative and the Action Alternative. The purpose of this chapter is to describe the potential impacts of each alternative on the environmental and human health resource categories defined in Chapter 3. Three types of effects may occur and are used in this chapter:

- Direct Effect: Effects from a proposed action that occur at the same time and same place.
- Indirect Effect: Effects from a proposed action that occur later in time, at some distance from the project, and are changes dur to cause and effect relationships.
- Cumulative Effect: Past, present, and reasonably foreseeable/probable effects from the proposed action, or other activities regardless of agency.

Other projects that recently have taken place or are believed to take place in the near future that will be evaluated in the cumulative effects for each resource include the following:

- Spring City Healthy Forest Restoration Act Project – in accordance with section 602(b) and 602(c) of the Healthy Forest Restoration Act, the project would authorize the USFS to used prescribed burning or mechanical thinning methods on approximately 2,277 acres of Manti-La Sal National Forest land above Spring City. This project was designed to reduce wildfire risks, strengthen watershed resilience, and improve wildlife habitat in the Manti-La Sal National Forest. This project was authorized in 2022 and implementation was scheduled to being in 2023 (USFS, 2022).

Section 501.38 of the NWPM outlines that the environmental consequences section must discuss the significance of all effects and include context and intensity of impacts (NWPM, 2014b). For the purposes of this chapter, the following definitions are used:

- Effects: “Effects or impacts means changes to the human environment from the proposed action or alternatives that are reasonably foreseeable and have a reasonably close causal relationship to the proposed action of alternative, including those effects that occur at the same time and place as the proposed action or alternatives and may include effects that are later in time or farther removed in distance from the proposed action or alternatives. (1) Effects include ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic (such as the effects on employment), social, or health effects. Effects may also include those resulting from actions that may have both beneficial and detrimental effects, even if on balance the agency believes that the effect will be beneficial” (as defined in 40 CFR 1508.1) (e-CFR, 2023).
- Beneficial: A favorable or advantageous outcome
- Adverse: “An undertaking [that] may alter, directly or indirectly, any of the characteristics…[of a resource] in a manner that would diminish [a resource]” (as defined in 36 CFR Section 800.5(a)(1) (e-CFR, 2023).
- Context: The relationship of an effect or impact to its environment, including short and long-term effects (as defined in 40 CFR 1508.27) (BLM, 2009).

- Intensity: The severity or extent of the impact on a resource (as defined in 40 CFR 1508.27) (BLM, 2009).

In Sections 5.1 through 5.9, below, the context and intensity of potential effects, both beneficial and adversarial, are discussed for each relevant resource category, as determined in Table 2-1.

5.1 Soils & Geology

5.1.1 Upland Erosion & Sedimentation

5.1.1.1 No Action Alternative

The current erosion and sedimentation caused by flood events would continue if the No Action Alternative were implemented, causing permanent significant impacts to the project area and downstream areas. This level of flood flows, erosion and sedimentation would continue to impact Spring City and Sanpete County infrastructure, water quality, and public safety during storm events. Cumulative impacts of continued erosion and sedimentation are anticipated to result in continued water quality concerns, flooding damage costs, and public safety concerns in Spring City and downstream areas of both Oak Creek and the San Pitch River.

5.1.1.2 Action Alternative

Under the Action Alternative, minor, temporary impacts to upland erosion and sedimentation would occur during construction due to soil disturbance and exposure of bare soils to erosion potential (water, wind, etc.). Long-term, erosion and sedimentation would be reduced by detaining flood waters in the new sediment basin upstream of the Reservoir and the settling out of suspended sediment while the velocity of the flood flow is reduced. The reservoir would be designed to hold 1,034 ac-ft, of which 231 ac-ft would be used for flood storage, 703 ac-ft of irrigation water storage with an additional 100 ac-ft reserved for debris and sediment. Erosion and sedimentation would be controlled at the outlets for the structure. During final design for the reservoir, an O&M plan would be developed for the reservoir according to NRCS Practice Codes, in which strategies to address loss capacity due to sedimentation would be developed, and a schedule of regular inspection, maintenance, and periodic removal would be outlined. The sediment basin upstream of the reservoir will need to be cleaned and maintained annually. It is anticipated that the reservoir would need sediment removed on a 5-year cycle. The O&M plan would include guidelines for emergency inspections and sediment or debris removal in the event of a major storm.

Given that histosols are not present in the project area, and the Action Alternative would not result in soil compaction issues or salinity/sodicity problems, impacts to soil quality or degradation of agricultural lands, specifically subsidence, compaction, and concentration of salts, is not anticipated. Additionally, no impacts to risk factors for landslides, and no impacts to risks related to seismology are expected under the Action Alternative.

BMPs, as described in Section 7.4 and Appendix E would be implemented to avoid and minimize construction related impacts. Planned design features of the reservoir would use existing natural berms and swales to enclose the reservoir. Any spoil piles from the excavation of the center of the reservoir would be placed on existing berms and swales to enhance storage volume. The reservoir is estimated to have an embankment that would be 2,382 ft in length at a height of 52 ft.

The Action Alternative is anticipated to have an overall beneficial impact on erosion and sedimentation due to the construction of the reservoir by providing water storage for flood waters and allowing suspended sediment to settle out. Currently, there are no known projects in the recent

past, present, or foreseeable future that are anticipated to result in impacts to soils and geology in the project area. Cumulative beneficial impacts are anticipated to result from implementation of the Action Alternative due to the reduced long-term erosion and sedimentation risks in the project area and downstream.

5.1.2 Prime & Unique Farmlands

5.1.2.1 No Action Alternative

Under the No Action Alternative, no new impacts to prime and unique farmlands would occur due to construction activities. Prime farmland in the project area totals 613 acres and is not directly located near any planned component of the Proposed Project. The project area also has 2,650 acres of soils of Statewide Importance. However, flooding conditions have the potential to negatively impact any prime farmlands in downstream areas of the project area from possible erosion effects from flood flows. Cumulative impacts are anticipated to continue as flooding and high suspended solids would continue to permanently have a negative impact prime and unique farmlands under the No Action Alternative.

5.1.2.2 Action Alternative

The Action Alternative is not anticipated to disturb and prime and unique farmlands of any farmlands of statewide importance. Approximately 101 acres of Farmlands of Statewide Importance are located adjacent to the project, including around the Reservoir, Regulating Pond, and around the Chester Irrigation Ponds. The Action Alternative is not anticipated to disturb these Farmlands of Statewide Importance during construction activities due to their location. No Prime and Unique Farmlands are located within the Proposed Project area.

BMPs, as described in Section 7.4 and Appendix E would be implemented to avoid and minimize construction related impacts. Under the Action Alternative, the Reservoir would be built to contain a large flood event, reducing possible future impacts to prime and unique farmlands in the area. Additionally, existing open ditches would be piped to provide efficient agricultural irrigation water supply, further reducing future impacts to prime and unique farmlands.

No direct and indirect impacts are anticipated to result from implementation of the Action Alternative. Currently, there are no known projects in the recent past, present, or foreseeable future that are anticipated to result in impacts to soils and geology in the project area. Cumulative beneficial impacts are anticipated to result from implementation of the Action Alternative due to the reduced flooding risks to agricultural lands in and surrounding the project area.

5.2 Water Resources

Activities related to water resources are regulated by the EPA, the USACE, the Utah Division of Water Rights (UDWRi), and the Utah Division of Water Quality (UDWQ). Permits would need to be obtained for any activities regulated by the CWA, and include the following:

- Section 402 of the CWA for construction activities: National Pollutant Discharge Elimination System (NPDES) permit for construction projects disturbing more than one acre, as administered by the UDWQ and in compliance with the provisions of the Utah Water Quality Act.
- Section 404 Permit for any discharge of fill into WOTUS, as administered by the USACE.

- Stream alteration permit from the UDWRi may be required for any planned action that would be adjacent to or in the channel of Oak or Canal Creek (construction activities occurs within 30 ft of the channel). The USACE issued Programmatic General Permit 10 (PGP-10) which allows an applicant to obtain both UDWRi approval and authorization under Section 404 of the CWA.

5.2.1 Surface & Groundwater Quantity & Quality

5.2.1.1 No Action Alternative

The No Action Alternative would continue significant permanent negative impacts on water resources in the area, resulting in the continued degradation of surface water quality throughout the watershed because there would be no improvements in the reduction of sedimentation, nutrients, pathogens, pesticides, and other pollutants transported to surface waters. Groundwater recharge to the shallow aquifer through seepage from the 39,530 ft (7.5 miles) of earthen canals would continue to supply water directly to the shallow unconfined aquifer. Surface water discharge would remain the same due to continued flood irrigation entering natural waterways. Surface water would continue to seep into the groundwater system from the earthen canals at a rate of approximately 2,563 ac-ft per year. Cumulative impacts are anticipated to continue as water quality in the area continues to degrade and water resources continue to be lost.

5.2.1.2 Action Alternative

The Action Alternative is anticipated to have a significant and permanent beneficial impact on water resources in the project area, as it would maintain or improve water quality and water quantity in the project area. The piped irrigation ditches are expected to eliminate water lost to seepage and evaporation and is anticipated to conserve 2,563 ac-ft of water in the watershed per year. This water conservation would temporarily decrease the amount of water available for groundwater recharge. Once the water is used for irrigation, however, it will infiltrate into the groundwater aquifer again. The Preferred Alternative would improve water quality in Oak and Canal Creek downstream of the Reservoir and Regulating Pond. The new Reservoir would reduce sediment loads in the surface waters and would have a direct impact to surface water quality within the project area. Water would be diverted to the new multi-purpose reservoir during flood conditions by the proposed Oak Creek Diversion and Flood Channel, allowing sediment to fall out prior to water being returned to natural drainages via the proposed water transmission pipeline. By diverting water during high flows, streambank erosion and sedimentation in Oak are reduced. A reduced sediment load in Oak and Canal Creek would also improve surface water quality in downstream areas and in the downstream receiving waterbodies including the San Pitch and Sevier Rivers.

Water conserved by the Action Alternative would remain in the watershed during the early irrigation season until water is needed. Efficiency gains by the new system would maintain early season flows and allow water storage present in the reservoir to last longer into the irrigation season. Agricultural producers and City residents would have more availability to irrigation water throughout the growing season because of implementing the Preferred Alternative. The increased water supply may cause minor impacts to downstream water quality due to increased agricultural runoff; however, these impacts are anticipated to be negligible in the context of the Sanpete Valley, one of the state's most productive agricultural areas.

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No construction activities would occur within the active channel of Oak and Canal Creeks, as such, short-term or long-term impacts to Category 1 water are not anticipated. Project design elements to reduce the quantity of sediment flowing downstream in Oak and Canal Creek drainages are required to remain in compliance with federal and state water quality regulations. The Action Alternative is not anticipated to violate Utah's antidegradation policy because the Proposed Project includes BMPs to protect surface water quality within the project area and downstream surface waterbodies. BMPs, as described in Section 7.4 and Appendix E would be implemented to avoid and minimize construction related impacts.

Water conserved by the Action Alternative is anticipated to improve water efficiency and agricultural water management in the project area. Therefore, the Action Alternative is expected to result in net positive cumulative impacts to surface water quantity and quality in the project area. Direct positive cumulative impacts are expected by reducing the sediment load in Oak Creek, Canal Creek, and downstream areas. Indirect cumulative impacts may occur from increased agricultural runoff during summer month when water is actively being applied to agricultural lands, however this impact would be negligible given the amount of agricultural production in the region and the industry practices to reduce these impacts. Overall, the Action Alternative is expected to result in net positive cumulative impacts to water quality in the project area and in areas downstream.

5.2.2 Clean Water Act / Waters of the U.S., including Wetlands

5.2.2.1 No Action Alternative

The No Action Alternative would have no direct impacts on resources protected under the CWA, i.e., WOTUS., including wetlands. However, if the No Action Alternative were implemented, the existing irrigation system would continue to lose water due to seepage and evaporation, which could indirectly impact WOTUS, such as Oak Creek, Canal Creek, and the downstream San Pitch River, by reducing available water flow. Flood flows that occur within the watershed would continue to transport a high volume of sediment from the nearby headwaters and deposition would continue to occur in the lower gradient portions of the WOTUS such as wetlands as well as irrigation ditches and canals. Flood events therefore could have an indirect effect upon wetlands when the high flow events do occur but may be limited by flood flows velocity, suspended sediment volumes, and exposed or disturbed soils in the drainage. Cumulative impacts are anticipated from long-term water losses due to seepage and evaporation, as well as from a long-term build-up of sediment in wetlands and irrigation ditches.

5.2.2.2 Action Alternative

Oak Creek and Canal Creek are considered WOTUS due to their connectivity to the San Pitch River, a jurisdictional WOTUS. Refer to Section 2.2.2 for existing WOTUS located within the project area. An ARD of the project area dated April 2022 was produced by J-U-B and is included in Appendix E – ARD. The ARD documented the presence of wetlands that totaled four emergent marsh wetlands (2.503 acres), 26 freshwater emergent wetlands (33.060 acres), 15 scrub-shrub wetlands (16.615 acres), 487 LF of upper perennial stream (0.051 acres), 5,568 LF (0.562 acres) of lower perennial stream, 3,099 LF (0.279 acres) of intermittent stream, 5,273 LF (0.287 acres) of ephemeral stream, 41,323 LF (2.619 acres) of canal, five reservoirs (12.917 acres), and one lakebed (2.046 acres) in the project area. The ARD also documented 6 isolated freshwater emergency wetlands (14.157 acres) and 531 LF (0.015 acres) of isolated intermittent stream in the project area.

The Action Alternative is anticipated to have a permanent but indirect beneficial impact on WOTUS and wetlands by conserving approximately 2,563 ac-ft of water in Sanpete Valley, which would increase beneficial water flows in Oak Creek, Canal Creek, and the San Pitch River. The implementation of the Action Alternative is not anticipated to significantly impact nearby WOTUS or wetlands because construction activities would be situated within the canal system easement to avoid impacts to wetlands and Oak and Canal Creeks. Potential incidental affects to wetlands in the vicinity of the project area may occur as a result of piping the existing irrigation system; however, given the canal is below the grade of the surrounding agricultural fields and that a field survey could not determine any extent to which seepage might be influencing groundwater levels in those locations, it is likely that the wetlands are more influenced by irrigation practices rather than ditch seepage. Implementation of the Action Alternative would not preclude irrigation activities; therefore, hydrophytic vegetation associated with potential wetlands outside the project area in irrigated fields is expected to persist.

The Action Alternative is anticipated to result in permanent impacts due to the canal piping portions of the project. The removal of trees and vegetation within the canal prism, as well as the loss of water due to the irrigation piping would potentially impact any wetlands within those specific areas, as well as any downstream WOTUS. While the existing irrigation system may be considered jurisdictional waters given their connectivity with Oak and Canal Creeks, the Action Alternative would only pipe the irrigation system when irrigation waters are not present and would not completely fill the canal after dewatering and piping is complete. Construction would also occur outside of the irrigation season when the canal does not contain irrigation water.

The Action Alternative would have permanent but nonsignificant impacts to wetlands due to the construction of the Reservoir. Based on the findings of the ARD and in preliminary discussions with USACE, there are six non-jurisdictional, isolated wetlands and 531 LF of isolated intermittent stream present in the project area. Due to the isolated nature of these wetlands, the construction activities associated with the Action Alternative are not anticipated to negatively impact jurisdictional wetlands in the Project Area. The Action Alternative would also have permanent beneficial impacts on wetlands and WOTUS as a result of the Reservoir. The Reservoir would allow sediment to settle out in the Reservoir, reducing the sediment load in Oak Creek and the downstream San Pitch River. This would have an indirect net positive impact on downstream wetlands by improving water quality in the system.

It is anticiapted that the piping of the existing irrigation system would qualify for an agricultural exemption under CWA subsection 404(f)(1)(c). Therefore, it is not anticipated that the Action Alternative would require a permit under the CWA for the piping of the irrigation system. However, a stream alteration permit from the UDWRi is an anticipated requirement for any irrigation system improvements that would be directly adjacent to the Oak Creek or Canal Creek channels if construction activities occur within 30 ft of the channels.

Temporary and minor indirect impacts may occur during construction activities due to noise and increased traffic in the area. Construction activities would occur within the existing canal system easements. BMPs would be implemented during construction to protect identified wetlands and WOTUS. See Section 7.4 and Appendix E for details.

At this time, there are no known projects in the recent past, present, or foreseeable future that are anticipated to impact WOTUS, including wetlands, in the project area. Cumulative impacts are anticipated to result from implementation of the Action Alternative, negatively due to the loss of

irrigation water vegetation loss from piping the canal systems, as well as beneficially due to the reduction of sediment load during flood events and the resulting decrease in sedimentation in the downstream watershed wetlands and WOTUS.

5.2.3 Regional Water Management Plan

5.2.3.1 No Action Alternative

According to the Sevier River Plan, the Sevier River basin is one of the most utilized river systems in the nation and is highly influenced by regional weather patterns (UBWR, 1999). Under the No Action alternative, water infrastructure improvements and water conservation measures would not be implemented and water overutilization, inefficiency of application, and conflict among water users would continue to occur, especially in drought conditions. This would have a permanent, negative impact on regional water management plans as it does not align with State or Regional water management goals and objectives. Cumulative impacts are anticipated due to the continued negative impacts to water quality and water losses.

5.2.3.2 Action Alternative

The Action Alternative would have a permanent beneficial impact by conserving water, providing improvements in the efficient delivery of water, improving water quality, providing flood prevention facilities, and creating new recreational opportunities, all of which align with the Sevier River Basin's water management objectives, as outlined in the Sevier River Basin Water Plan (UBWR, 1999). At this time, there are no known projects in the recent past, present, or foreseeable future that are anticipated to impact regional water management plans in the project area. Cumulative impacts are anticipated to result from implementation of the Action Alternative, including the beneficial impacts to water quality and water conservation.

5.2.4 Floodplain Management

5.2.4.1 No Action Alternative

The No Action Alternative would have no direct permanent or temporary impacts on floodplain management. However, if the No Action Alternative were implemented, the project area would continue to be at risk for flooding in the event of a major storm. As shown on the FEMA FIRM Panels, portions of the project area surrounding Oak Creek and the existing irrigation canals are located within the SFHA (Appendix C). Under the No Action Alternative, flood modeling shows that approximately 202 homes, 12 commercial building, 176 other structures and 135.5 acres of agricultural lands would experience flooding in the event of a 100-year storm (see TM 001 in Appendix E). Additionally, 646 people would be impacted from a flood event of this magnitude. The 100-year and 500-year flood inundation maps for the No Action Alternative are shown as Figures 2 and 4 of TM 001 – Hydraulics and Hydrology, located in Appendix E. Cumulative impacts are anticipated due the continue risk of flooding under the No Action Alternative.

5.2.4.2 Action Alternative

Construction activities would occur within areas of minimal flood hazard, except for those areas within the existing irrigation system, which are situated within the 100-year floodplain. The 100-year floodplain associated with the existing irrigation ditch system would be permanently disturbed by piping the irrigation system; however, the existing open Mill Race ditch will remain, which will enable the system to collect and convey runoff through Spring City into Oak Creek at a location that is downgradient of Spring City.

Given the lack of flood protection measures in place within the Subbasins and history of damaging flash floods, the Action Alternative would benefit floodplain management in the project area (see FEMA FIRM panels in Appendix C). Under the Action Alternative, flood modeling demonstrated that approximately 502 people, 157 homes, 124 structures, 2.4 miles of major highways, 3 culverts on Oak Creek, and approximately 73 acres of agricultural land located within the inundation area would be protected from a 100-year flood storm event (See Figures 10 and 12 of Technical Memo 001 – Hydraulics and Hydrology, located in Appendix E for the proposed 100-year and 500-yr flood inundation maps). No increased flood hazard or other adverse effect to the existing natural and beneficial values of the floodplain or lands adjacent or downstream are anticipated since the Project would increase flood and watershed protection in the area.

Installation of the reservoir would affect the FEMA floodplain mapping because the structures would be used for flood protection. Therefore, prior to the construction of these structures, it will be necessary to obtain a Letter of Map Revision (LOMR). The Project team would coordinate with Sanpete County and other local jurisdictions to obtain any necessary floodplain development permits prior to any construction within the floodplain.

At this time, there are no known projects in the recent past, present, or foreseeable future that are anticipated to result in impacts to floodplain management in the project area. Permanent beneficial cumulative impacts are anticipated to result from implementation of the Action Alternative as flooding risks to the floodplains around Oak Creek and the irrigation canals would be reduced.

5.3 Air Quality

5.3.1 Clean Air Act/National Ambient Air Quality Standards, Climate & Greenhouse Gases

5.3.1.1 No Action Alternative

Temporary, minor impacts to air quality would result from periodic equipment operation associated with ongoing maintenance and debris cleanup of the irrigation systems currently present in the watershed. Emissions due to equipment operation (GHGs) and potential dust generation (PM) from land disturbance activities would be anticipated. Impacts would be minimal and would be reduced following maintenance activities. It is currently unknown how often maintenance activities would be completed. Maintenance activities are not expected to violate air quality standards based on the implementation of BMPs and the anticipated short duration of the maintenance activities. The No Action Alternative would not violate the CAA or NAAQS. Cumulative impacts are not anticipated due to the periodic nature of current maintenance equipment use.

5.3.1.2 4.3.1.2 Action Alternative

Sanpete County annually complies with all NAAQS requirements. Construction activities are anticipated to cause short-term, minor increases in emissions during construction from equipment use. These emissions are anticipated to be minor and localized and would not interfere with the area achieving NAAQS. BMPs, as described in Section 7.4 and Appendix E would be implemented to avoid and minimize construction related impacts. Emission rates due to construction equipment are not expected to increase in the project area over the long-term. No equipment use is anticipated long-term as a result of the Action Alternative.

Cumulative impacts from other known projects in the recent past, present, or foreseeable future are anticipated to result in temporary impacts to air quality in the project area. The use of prescribed burning in nearby Manti-La Sal National Forest lands would temporarily increase CO_2, emissions,

an EPA regulated GHG, in the immediate area and areas east of the burning. Wildfire emissions such as CO_2 can increase concentrations of other air pollutants, such as O_3, which is a CAA regulated pollutant (Brey and Fischer, 2016). Although the project area and areas immediately east of the project area do not have high levels of O_3 and other air pollutants, the Uinta Basin Ozone Marginal Nonattainment Area is located approximately 90 miles east of the project area. Although unlikely, the CO_2 releases from the USFS's prescribed burning program could temporarily aggravate elevated air emissions in the Uintah Basin. These increased concentrations would likely occur east of the project area due to jet stream conditions that carry air currents from west to east. The USFS's prescribed burning program is estimated to occur only through the end of 2023 and would be in small, controlled areas so any increases are not anticipated increase air emissions permanently. The Action Alternative is currently anticipated to begin construction in 2026 and be completed in 2027 so its unlikely emissions from the USFS's prescribed burning program and the Action Alternative would overlap. Therefore, although cumulative impacts are anticipated to result from implementation of the Action Alternative, they are anticipated to be temporary and would not raise air emissions rates above Federal or state standards.

5.4 Plants

5.4.1 Special Status Plant Species

5.4.1.1 No Action Alternative

The current practices and conditions in the project area do not have a temporary or permanent impact on special status plant species, therefore, the No Action Alternative would have no impact on special status plant species in the project area. Cumulative impacts are not anticipated.

5.4.1.2 Action Alternative

During the biological field survey, the degree to which the Proposed Project may affect Special Status Plant species was assessed. Section 7(a)(2) of the ESA requires that all federal agencies ensure that their project actions do not jeopardize the continued existence of any threatened or endangered plant species or result in the destruction or adverse modification of their designated or proposed critical habitats. A single ESA species was identified as potentially occurring within the project area, the federally threatened ULT. A rare plant survey was conducted to determine if the Proposed Project would affect the species or any suitable habitat. The results indicated that no suitable habitat for ULTs occurs in the project area and no ULT individuals were observed in the project area. The Proposed Project is anticipated to have No Effect on the ULT given the lack of suitable habitat and lack of occurrence records for the plant. The Action Alternative would also remove large overstory trees along portions of the canal alignment, however the removal of trees would occur in areas that do not currently have suitable habitat for the ULT or other ESA-listed species. No critical habitat identified for the species exists within the project area.

A BE evaluating protected plant species with the potential to occur within the project area was completed and is included in Appendix E. The BE did not identify any State or Federally protected plant species or suitable habitat occurring within the project area. Therefore, no direct or indirect impacts to any State or Federally protected plant species are anticipated and the Proposed Project would have no effect to any ESA-listed species or habitat Therefore, the Proposed Project is in compliance with Section 7 of the ESA (Appendix E). Given the no effect determination, consultation with USFWS was not necessary for compliance with Section 7 of the ESA.

Based on the scope and footprint of the Action Alternative, and the conservation measures proposed to protect any nearby ESA-listed species, the Action Alternative would have no effect on individual plants, nor would it impact the persistence of any ESA-listed species or suitable habitat for any ESA-listed species. At this time, there are no known projects in the recent past, present, or foreseeable future that are anticipated to result in impacts to special status plant species in the project area. Cumulative impacts are not anticipated given the lack of suitable habitat for ESA listed species and the lack of known State or Federally protected species in the area.

5.4.2 Noxious Weeds & Invasive Plants

5.4.2.1 No Action Alternative

The sponsor actively implements invasive species controls to adequately manage and prevent their introduction and establishment through the County weed plan. The No Action Alternative would not alter current invasive species and noxious weed control practices; therefore, the No Action Alternative would have no effect on noxious weeds and invasive plants. Cumulative impacts are not anticipated.

5.4.2.2 Action Alternative

During field surveys, two known noxious weeds species were identified, including Canada Thistle and Whitetop. The Action Alternative has the potential to introduce or spread noxious weeds and invasive plant species due to land disturbance activities related to construction activities, which would potentially have permanent and significant impacts to the area. Construction activities would comply with E.O. 13112 (USDA, 1999) which established the National Invasive Species Council (NISC) to "*prevent the introduction of invasive species and provide for their control and to minimize the economic, ecological, and human health impacts that invasive species cause*."

Current practices to control and prevent the introduction and establishment of noxious weeds and invasive species would continue to occur throughout construction and after reclamation. The Sanpete County Weed Department has issued the Sanpete Integrated Weed Management Plan, which outlines their weed management strategies and acceptable noxious weed treatment methods (Sanpete undated). If any noxious weeds are identified onsite during construction or reclamation, the Sanpete County weed management strategies would be employed to control the spread of the species and assist with the eradication of the species at the site. These methods may include physical or mechanical controls (hand pulling, mowing, tilling, or burning), biological (use of insects, fungi, or grazing methods), chemical (herbicides), or cultural/land use methods (i.e., practices that retain, enhance, or introduce desirable species). BMPs, as described in Section 7.4 and Appendix E would be implemented to avoid and minimize construction related impacts.

At this time, there are no known projects in the recent past, present, or foreseeable future that are anticipated to result in the introduction of noxious weeds or invasive plants in the project area. Additionally, current weed management practices and construction BMPs will be implemented at the site to control and eradicate weeds. Therefore, cumulative impacts are not anticipated to result from implementation of the Action Alternative.

5.4.3 Riparian Areas

5.4.3.1 No Action Alternative

Riparian areas provide important ecosystem services, such as filtering water, decreasing sedimentation in water, and storing nutrients. Erosion, debris damage, and excess sedimentation in

riparian areas from flood events can cause degraded water quality conditions as well as a reduction of wildlife benefits over time. Under the No Action Alternative, flooding of Oak Creek and Spring City would continue, allowing erosion and sediment concerns to continue and permanently impacting water quality. As a result, riparian areas would continue to suffer from degraded water quality.

At this time, there are no known projects in the recent past, present, or foreseeable future that are anticipated to result in impacts to riparian areas in the project area. Cumulative impacts are anticipated as a result of erosion and sedimentation in Oak Creek and the San Pitch River.

5.4.3.2 Action Alternative

Under the Action Alternative, temporary impacts to riparian areas would occur as a result of the removal of large overstory trees and shrubs as a result of piping the North Fields and Point Ditch irrigation systems. Removal of this vegetation would temporarily disturb the herb layer in riparian areas associated directly with the irrigation canal system prism. Piping the these irrigation canal systems would permanently remove a source of water for riparian vegetation within the canal prisms, likely resulting in the permanent loss of riparian vegetation, including trees, along the canal routes. Temporary, minor impacts to riparian areas would occur as a result of construction noise and increased vehicle traffic during the restoration and bank stabilization of Mill Race Ditch. Direct and indirect impacts to riparian areas would be minimized to the extent practicable by implementing BMPs, as described in Section 7.4 and Appendix E.

Although piping the irrigation canal system would directly and indirectly impact riparian vegetation associated with the canals, the Action Alternative, would maintain or improve water quality, water quantity, and fish and wildlife benefits provided by the riparian area by reducing flood impacts and erosion and sediment loading to downstream areas.

At this time, there are no known projects in the recent past, present, or foreseeable future that are anticipated to result in impacts to riparian areas in the project area. The construction and completion of the Action Alternative would result in cumulative impacts to riparian areas associated with the canal prisms in the project area; cumulative impacts to riparian areas would be minimized by implementing BMPs.

5.4.4 Forest Resources

5.4.4.1 No Action Alternative

USFS lands are located east of Spring City, mainly in the Manti-La Sal National Forest. The No Action Alternative would not construct the Oak Creek Flood Channel or replace the Oak Creek Upper Diversion Pipeline; therefore, it would have no effect on forest resources or USFS lands.

At this time, there are no known projects in the recent past, present, or foreseeable future that are anticipated to result in impacts to forest resources in the project area. Cumulative impacts are not anticipated.

5.4.4.2 Action Alternative

The Action Alternative is anticipated to have temporary impacts to forest lands during construction due to land disturbances, noise, and increased vehicle traffic. Additionally, temporary impacts are anticipated to approximately 0.7 miles of USFS lands due to the replacement of the Oak Creek Upper Diversion Piping; approximately 3,485 linear ft of the Oak Creek Upper Diversion Piping is located on USFS lands. Since the location of the existing Oak Creek Upper Diversion Piping will

not change, a land easement would not be required for that component. The Action Alternative would also have minor permanent impacts to approximately 0.24 acres of forest lands as a result of the construction of the southern portion of the Flood Channel and diversion structure, which would also occur on USFS lands. An easement would need to be obtained from the USFS for the installation of approximately 1,116 linear ft (0.24 miles) of the Oak Creek Flood Channel component.

Cumulative impacts from other known projects in the recent past, present, or foreseeable future are anticipated to result in temporary impacts to the Manti-La Sal National Forest. Although the USFS's Healthy Forest Restoration program would result in permanent beneficial impacts to the forest lands, the use of prescribed burning or mechanical vegetation thinning methods in the nearby Manti-La Sal National Forest would temporarily close off sections of the forest during and immediately after the program. This program could temporarily disturb nearby wildlife and negatively impact recreational opportunities in the area. This program is anticipated to occur through the end of 2023. The construction and completion of the Action Alternative would occur in 2026 and 2027, resulting in cumulative impacts to USFS lands by removing approximately 0.24 miles of USFS land from public use due to the installation of the Oak Creek Flood Channel. However, the incremental measures on USFS lands as a result of the Action Alternative would result in net beneficial long-term impacts. The overlap of impacts from the USFS's Healthy Forest Restoration program and the Action Alternative are not currently anticipated. Cumulative impacts to forest resources as a result of the Action Alternative would be minimized by implementing BMPs during construction.

5.5 Animals

5.5.1 Wildlife & Wildlife Habitat

5.5.1.1 No Action Alternative

The No Action Alternative would continue to have a negative impact on wildlife and adjacent wildlife habitat in the project area. Water quality in Oak and Canal Creek would continue to degrade from sedimentation and could indirectly contribute sediment to the San Pitch and Sevier Rivers. Degraded water quality may affect feeding and spawning habitat for aquatic species downstream of Spring City. Cumulative impacts are anticipated due to continued water quality issues, including poor wildlife habitat in Oak Creek and downstream in the San Pitch River.

5.5.1.2 Action Alternative

Under the Action Alternative, temporary, minor disturbances to wildlife and adjacent wildlife habitat are anticipated during construction from equipment operation, noise, and human activity in the project area. This effect would be localized and temporary and be directly related to construction activities. Piping the irrigation system is anticipated to permanently remove a source of drinking water for wildlife that may utilize the area, as well as riparian vegetation that wildlife, such as small mammals, waterfowl, and avian species, may use for forage, shelter, and travel routes. The canal piping would likely result in the permanent loss of riparian vegetation associated with the canal, including trees that may have received supplemental water due to seepage from the canal. Construction of the reservoirs may alter suitable habitat for small mammals, reptiles, and birds. Wildlife may be temporarily impacted during construction due to construction noise and would choose to move to alternate locations while construction activities are present. Construction would be limited to daylight hours, which would reduce impacts to nocturnal wildlife species. BMPs, as

described in Section 7.4 and Appendix E would be implemented to avoid and minimize construction related impacts.

The construction and implementation of the Action Alternative is anticipated to result in the loss of wildlife habitat associated with canals in the project area. However, the Proposed Project would also improve water flows in natural streams within the project area, ultimately improving wildlife habitat in those areas.

Cumulative impacts from other known projects in the recent past, present, or foreseeable future are anticipated to result in temporary impacts to wildlife and wildlife habitat due to the planned thinning in the nearby Manti-La Sal National Forest. Mechanical thinning or prescribed burning methods could temporarily disrupt nearby wildlife, causing the wildlife to move closer to the project area. Although the projects are not anticipated to overlap, wildlife could be further disported by the construction noises from the Action Alternative. However, the Action Alternative would result in positive net cumulative impacts to wildlife habitat associated with surface water features in the project area. Cumulative impacts to wildlife habitat would be minimized by implementing BMPs and indirectly improving habitat within natural streams in the project area.

5.5.2 Special Status Animal Species

5.5.2.1 No Action Alternative

The project area has the capacity to contain the ESA-listed candidate species monarch butterfly, as well as four state sensitive species, the northern leopard frog, the southern leatherside chub, the bald eagle, and the golden eagle. There are historic records of the northern leopard frog and the bald eagle within a ½ mile radius of the project area in 2002 and 2003 respectively, as well as the northern leopard frog (2010), southern leatherside chub (2010), bald eagle (2003), and golden eagle (2018) within a 2-mile radius of the project area. The northern leopard frog's habitat historically includes the majority of the State of Utah. The southern leatherside chub's habitat historically includes the San Pitch River and some of its tributaries, including Oak Creek. Continued poor water quality in the area could be contributing to their lack of suitable habitat within the project area. The No Action Alterative would continue to have a negative effect on special status animal species in the project area by allowing for the continued degradation of potential habitat.

Cumulative impacts are anticipated due to the continued degradation of water quality and nearby wildlife habitat.

5.5.2.2 Action Alternative

The BE also stated that the candidate species monarch butterfly could be present in the project area, but it was not assessed in the BE. No proposed or final designated critical habitat is contained within the project area. Given the lack of suitable habitat conditions within the project area for either the northern leopard frog or southern leatherside chub, it is anticipated that the Action Alternative would have no negative impacts to species protected under the ESA or State protected species managed under conservation agreements. Based on the lack of suitable habitat conditions within the project area for special status animal species, as well as the timing of the Action Alternative and the net positive benefits to water quality and quantity, the BE determined that the Action Alternative would have no effect on any ESA-listed animal species or habitat and therefore, is in compliance with Section 7 of the ESA. Given the no effect determination, consultation with USFWS was not necessary for compliance with Section 7 of the ESA.

While temporary, minor impacts to any potential species in the area, including any potential Federal or State sensitive species, would occur due to noise and increased human activities during construction, the Action Alternative is anticipated to result in net positive benefits to wildlife habitat and special status animal species, including the northern leopard frog and southern leatherside chub from an improvement in water quality and a TMDL reduction from sedimentation and salinity. At this time, there are no known projects in the recent past, present, or foreseeable future that are anticipated to impact special status animal species in the project area. Cumulative net positive impacts are anticipated to result from implementation of the Action Alternative as a result of overall improved water quality in Oak Creek and the downstream San Pitch River.

5.5.3 Migratory Birds / Bald and Golden Eagles

5.5.3.1 No Action Alternative

The No Action Alternative would have no effect on migratory birds, or bald and golden eagles. Cumulative impacts are not anticipated.

5.5.3.2 Action Alternative

The Action Alternative is anticipated to have temporary impacts on migratory birds, or bald and golden eagles. Field investigations found no active nests belonging to raptors or migratory bird species. The project area and the surrounding area could provide suitable perching or foraging habitat for the species, therefore, protected avian species may be present within, or in the vicinity of, the project area. Piping the open North Fields and Point Ditch irrigation canal systems would likely result in the loss of riparian vegetation, including trees, associated with the canals that may be used by resident and migratory birds. The Action Alterative is anticipated to have permanent impacts to migratory birds or other raptor species due to the removal of trees and other vegetation planned as part of the Proposed Project. The Action Alternative would require the removal of some large trees adjacent to the North Fields and Point Ditch irrigation canal systems that could provide suitable habitat for protected avian species. Construction would occur outside of the irrigation season and most construction activities would occur outside of bird migration, breeding, and nesting seasons. However, the project area would be cleared for any migratory bird or eagle nests prior to the removal of any large trees. If a nest were identified within the project area, construction and vegetation clearing would pause and the NRCS Biologist and USFWS would be notified immediately to discuss the appropriate course of action.

Cumulative impacts from other known projects in the recent past, present, or foreseeable future are anticipated to result in temporary impacts to avian species due to the planned thinning in the nearby Manti-La Sal National Forest. Mechanical thinning or prescribed burning methods could temporarily disrupt nearby wildlife, causing the wildlife to move closer to the project area. Although the projects are not anticipated to overlap, wildlife could be further disported by the construction noises from the Action Alternative. Cumulative impacts are not anticipated to result from implementation of the Action Alternative as the projects are not anticipated to overlap and anticipated impacts from the Action Alternative would be temporary. BMPs, as described in Section 7.4 and Appendix E would be implemented to avoid and minimize construction related impacts.

5.6 Human Environment

5.6.1 Socioeconomics

This section details the consequences of each alternative on the social and economic resources within the area surrounding the project area. The impact analysis area for each resource is the project area and those properties immediately adjacent to that footprint. The APE matches the project area for the Proposed Project.

5.6.1.1 No Action Alternative

Under the No Action Alternative, the project area would continue to experience recurrent flooding with the associated damages and would incur additional economic impacts due to irrigation water delivery inefficiency issues. The No Action alternative would result in annual floodwater damages to residential property, commercial property, and crop and pasture. Additionally, Spring City could lose its ability to generate electricity from the existing hydroelectrical plant, meaning customers may have to pay higher prices to purchase electricity elsewhere. Cumulative impacts are anticipated due to the ongoing flooding damages and agricultural damages caused by flooding, the aggregate costs due to irrigation water losses, and the loss of electrical power from the hydroelectrical plant. Additionally poor water quality in the area and downstream may have short-and long-term recreational impacts.

If the No Action Alternative were implemented, capital and labor requirements would continue to increase due to flooding and further deterioration of HIC's system. The impacts from canal seepage and soil saturation on adjacent residential structures, farming, and development would also remain an issue.

At this time, there are no known projects in the recent past, present, or foreseeable future that are anticipated to result in impacts to forest resources in the project area. Cumulative impacts are anticipated as allowing existing issues and concerns to remain would cause continued degradation to water quality and the existing irrigation system, continued damages to the community and agricultural lands, a loss of electrical generation and monetary gains from the generated power, and recreational impacts to the immediate area as well as downstream areas.

5.6.1.2 Action Alternative

The Action Alternative is anticipated to have net beneficial impacts to Spring City's socioeconomics. The construction of the Reservoir and piping of the existing irrigation system is expected to result in a slight increase in agricultural profitability due to the longer irrigation season and transition to efficient irrigation practices. Piping the North Fields and Point Ditch systems would also address the canal seepage issues that have damaged residential structures and precluded farming and development along portions of the canal. The Action Alternative would temporarily create jobs within the project area during construction. Additionally, the Action Alternative is projected to save approximately 2,563 ac-ft of water per year. Assuming the price of $1,000 per ac-ft of water, the Action Alternative is estimated to result in $2,563,000 in water efficiency savings per year (Appendix D). Implementation of the Action Alternative would likely lower annual O&M costs. Piping of the irrigation system is estimated to save approximately 142-ac-ft per year, which would save approximately $92,540 in O&M costs per year. As determined by the economic analysis in Appendix D, the Action Alternative is anticipated to result in $893,900 in annual project investments in built infrastructure to avoid flood damages, compared to the $997,900 in floodwater damages to property, farmlands, and infrastructure under the No Action Alternative. The Action

Alternative would result in savings of approximately $84,000 annually. A comparison of anticipated flood reduction benefits is illustrated in Chapter 6 (Table 6-6).

Water conserved by the Action Alternative is anticipated to improve water efficiency and agricultural profitability in the project area. The Action Alternative and other Proposed Projects in the project area would also temporarily create jobs, lower annual O&M costs, and reduce floodwater damaged in the project area.

Replacement of the Oak Creek Upper Diversion Pipeline would provide a reliable source of water for the hydroelectric plant, ensuring Spring City is able to continue producing approximately 266 kilowatts (kW) of electricity for its existing electrical customers.

At this time, there are no known projects in the recent past, present, or foreseeable future that are anticipated to result in impacts to forest resources in the project area. Therefore, the Action Alternative is expected to result in net positive cumulative impacts to socioeconomics in the project area.

5.6.2 Environmental Justice & Civil Rights

5.6.2.1 No Action Alternative

The No Action Alternative would have continued negative impacts on environmental justice or civil rights. Continued flooding damages, increased water losses, the loss of locally produced electricity, and inefficient agricultural practices could have ongoing and long-term impacts to low-income or minority populations in the area. Cumulative impacts are anticipated as a result of the No Action Alternative as flooding of community and agricultural lands would continue, irrigation losses would continue causing costs to increase, the hydroelectrical plant would lose the ability to produce electricity for existing customers and continued inefficient irrigation practices would cause a reduction of agricultural product. Additionally, continued poor water quality and an increased TMDL could significantly impact soils and agricultural production as well, which could impact low-income or minority populations in the area.

5.6.2.2 Action Alternative

Three fundamental principles inform all environmental justice determinations. To avoid impacts to environmental justice populations, proposed projects must: 1) Avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects on environmental justice populations; 2) Ensure the full and fair participation by all potentially affected communities in decision-making processes; and 3) prevent the denial of, reduction in, or significantly delay in the receipt of benefits by minority populations and low-income populations.

The demographic analysis demonstrated that both minority and low-income populations live and/or work within the project area. Construction activities may result in temporary and minor impacts to those individuals living in the project area. No closure of businesses or loss of access to businesses or residences, and no residential relocations are necessary to implement the Action Alternative. The Action Alternative would benefit all individuals within and surrounding the project area by reducing flood risks, preventing ongoing seepage issues, conserving water, and providing new recreation opportunities.

No long-term adverse effects on low-income and minority populations are anticipated because no long-term adverse environmental or human health effects are anticipated to occur as a result of

implementing the Action Alternative. The Action Alternative meets the provisions of E.O. 12898, as it is supported by Title VI of the Civil Rights Act.

At this time, there are no known projects in the recent past, present, or foreseeable future that are anticipated to impact environmental justice and civil rights in the project area. Therefore, cumulative impacts are anticipated to result in net beneficial effects from implementation of the Action Alternative.

5.6.3 Cultural & Historic Resources

5.6.3.1 No Action Alternative

The No Action Alternative APE in the 100 yr. flood inundation zone for this area, as shown on the Cultural Resource Area/ Area of Potential Effect in Appendix B and consists of approximately 1,760 acres.

Under the No Action Alternative, cultural resources and historic properties may be affected due to flooding risks. Approximately 180 historic structures are located within the No Action Alternative APE, according to the Utah SHPO's Historic Utah Building online database (SHPO, 2023). If flooding is allowed to continue, potential damages to both known and unknown historic resources, including 180 historic structures could occur, causing costly repairs to historic resources in the project area. Cumulative impacts are anticipated as a result of ongoing flooding and the resulting flood damages to historic and cultural resources.

5.6.3.2 Action Alternative

A literature review and Class III Cultural Resources Inventory was completed for the project area in June 2022 by Cottonwood. The purpose of the cultural resource survey was to locate, document, and evaluate buildings, objects, and structures that would be considered cultural sites within the APE to ensure that the proposed undertaking adheres to federal and state laws designed to protect historic properties, including the NHPA of 1966 (amended), the Utah State Antiquities Act of 1973 (amended 1990), and the Utah State Register (R212-6).

The survey identified five previously recorded sites, 32 newly recorded sites, and 16 isolated finds within the APE, as shown on table 3-11. According to the Utah SHPO Historic Utah Building online database, there are 287 historic structures within the APE that are eligible for NRHP (SHPO, 2023). The NRCS State Conservationist, in consultation with the SHPO and applicable Tribes, determined that the Proposed Project would have an Adverse Effect to Historic Properties, per 36 CFR 800.5(b). Recommended mitigation measures for some of the sites, including the historic aqueduct and the historic hydroelectric site include the development of a historical context of all eligible sites, development of interpretative materials, and coordination with the Spring City Museum. Recommended mitigation measures for the identified sites within the footprint of the proposed Freeman Allred Reservoir and appurtances include having a qualified archaeologist and a tribal monitor onsite to monitor ground disturbing activities, developing an ethnographic report, excavation of the sites with obsidian sourcing, and development of an inadvertent discovery plan. The redacted Cultural Resources Survey Report is located in Appendix E.

In a letter dated August 16, 2024, the NRCS submitted their finding of effect with the cultural resources report to the Utah SHPO as well as representatives of the Ute Indian Tribe of the Uintah & Ouray Reservation, Utah; the Navajo Nation in Utah and Arizona, Paiute Indian Tribe of Utah, and Hopi Tribe of Arizona for concurrence on determination of effects. SHPO concurrence was received

on September 25, 2024. To date, only the Paiute Indian Tribe of Utah has responded, indicating they have no comments for the project. See Table 6-1 for details of ongoing consultation with the Tribes. Copies of all consultation with Tribes and SHPO are located in Appendix A. NRCS contacted the Advisory Council on October 14, 2024, Advisory Council review is in progress. A draft Memorandum of Agreement (MOA) has been prepared as part of the mitigation for the Action Alternative. The draft MOA is included in Appendix A. All records associated with Tribal consultations and SHPO concurrence are also located in Appendix A.

If construction activities uncover any materials of cultural or historic significance (i.e., bone fragments, pottery, stone tools, burial features, etc.), construction would halt and procedures outlines in the NRTCS Prototype Programmatic Agreement with the Utah SHPO would be followed. The USFS Inadvertent Discovery Plan (Appendix C of the MOU between the Utah State Historic Preservation Officer and the USDA USFS Intermountain Region regarding Compliance with Section 106 of the NHPA [2019]) shall be followed for any discoveries of USFS lands.

At this time, there are no known projects in the recent past, present, or foreseeable future that are anticipated to impact cultural and historic resources in the project area. Therefore, cumulative impacts are anticipated to result in net beneficial effects from implementation of the Action Alternative due to a reduction of flood risks to cultural and historic resources in the area.

Given the UDNR paleontological file search and recommendations, the Action Alternative is not anticipated to uncover significant fossils. Unless fossils are discovered as a result of construction activities, the Action Alternative is anticipated to have no impact on paleontological resources. At this time, there are no known projects in the recent past, present, or foreseeable future that are anticipated to impact cultural and historic resources in the project area. Therefore, cumulative impacts are not anticipated to result from implementation of the Action Alternative.

5.6.4 Hazardous Materials

5.6.4.1 No Action Alternative

The No Action Alternative would have no impacts on hazardous materials in the project area. UDEQ did not identify any hazardous sites or facilities within the proposed project area. However, cumulative impacts are anticipated as ongoing flooding could disturb existing facilities and environmental incidents, as well as undocumented spills or environmental incidents.

5.6.4.2 Action Alternative

Two environmental incidents, one UST, and one hazardous waste facility have been recorded within the boundaries of Spring City; however, they will not be disturbed by the Action Alternative. UDEQ has no other environmental incidents recorded within 0.5 miles of the Proposed Project. The Action Alternative is not anticipated to impact hazardous materials located in the project vicinity. Furthermore, no hazardous materials would be generated as a result of the Action Alternative.

The contractor would be required to apply for a NPDES Construction Storm Water General Permit (CSWGP), administered by UDEQ's Utah Pollutant Discharge Elimination System (UPDES), prior to construction commencement. As part of this permit, the contractor would also be required to follow an approved Stormwater Pollution Prevention Plan (SWPPP) and Spill Prevention, Control, and Countermeasures (SPCC) Plan, which would be used in the management of construction equipment maintenance and use in the project area. No direct or indirect impacts to hazardous

materials are anticipated to result from the implementation of the Action Alternative because of the implementation of BMPs.

At this time, there are no known projects in the recent past, present, of foreseeable future that are anticipated to impact hazardous materials in the project area. Therefore, cumulative impacts are not anticipated to result from implementation of the Action Alternative.

5.6.5 Public Health & Safety

5.6.5.1 No Action Alternative

Without the protection of the multi-purpose reservoir, the risk and safety concerns associated with continued flooding would remain the same under the No Action Alternative. Therefore, the No Action Alternative would have no change in the impact to public health and safety. Cumulative impacts are anticipated as flooding risks and safety concerns would continue.

5.6.5.2 Action Alternative

The primary purpose of the Action Alternative is to provide flood prevention and flood damage reduction from runoff, erosion, and sediment deposition to areas downstream of the Upper Oak Creek, Canal Creek, Cottonwood Creek, and Cedar Creek Subbasins, and to improve agricultural water management and public safety by piping the North Fields and Point Ditch irrigation systems. Given the lack of flood protection measures in place within the Upper Oak Creek, Canal Creek, Cottonwood Creek, and Cedar Creek Subbasins and history of damaging flash floods, the Action Alternative would provide a significant, permanent improvement to public health and safety in the project area. The Action Alternative is expected to protect 281 homes and structures as well as 502 residents of Spring City during a 100-year flood event. The Action Alternative would also eliminate a source of open water in residential areas that could also pose safety risks.

The project could also have potential negative impacts to public safety and safety as a result of the construction of the Reservoir. The Reservoir would be located approximately 2.6 miles east of Spring City, in an open meadow area owned by HIC (see Project Map in Appendix B). The Reservoir would hold 1,034 ac-ft of water for flood control and irrigation uses, as well as function as a day-use recreational area for local residents. The Reservoir would have a 52 ft high, 2,382 ft long earthen embankment with a piped outlet and an auxiliary spillway and would contain water approximately 47 ft above elevation when full.

A dam breach analysis was conducted for the proposed Reservoir (see TM 002, Appendix E). The structural information for the Reservoir can be found in TM 001 (see Appendix E). Based on the dam breach analysis, failure of the Reservoir would cover approximately 2,114 acres of land downstream of the proposed reservoir, with an average wave depth of 1.9 ft. Due to the natural drainages in the area, most of the water would flow north of Spring City to Oak Creek. The population at risk (PAR) was determined to be 164 people, 30 residential homes, and 2 commercial buildings. The LOL for the same area was determined to be 86 persons. Figure 4-1 shows the breach flood inundation map, completed as part of the dam breach analysis.

As a result of the PAR and LOL of the Reservoir, the NRCS has classified the Reservoir's dam as a high hazard dam; the Utah Division of Dam Safety has also preliminarily classified the dam as a high hazard dam. The Reservoir would need to be permitting through the Utah Division of Dam Safety and have an Emergency Action Plan prepared.

Overall, the Action Alternative would reduce flooding risks, reduce public safety risks, and improve public health and safety in the project area. Although there is a risk of dam breach and flooding caused by the construction and operation of the proposed Reservoir, the dam would be designed and built to current dam safety standards. Additionally, the estimated PAR and LOL of a proposed Reservoir dam breach is significantly fewer than the estimated PAR and LOL of the ongoing flooding Spring City is currently experiencing. At this time, there are no known projects in the recent past, present, of foreseeable future that are anticipated to impact hazardous materials in the project area. Therefore, the Action Alternative is expected to result in net positive cumulative impacts to public health and safety in the project area.

5.6.6 Recreation

5.6.6.1 No Action Alternative

The No Action Alternative would have a potentially negative impact on recreational opportunities in the project area as flooding risks would continue, allowing flooding damages to recreational areas to continue. Cumulative impacts are anticipated as flooding damage and repair costs would continue under the No Action Alternative.

5.6.6.2 Action Alternative

No designated parks or recreation areas exist within the project area. Approximately 1.72 acres of the Manti-La Sal National Forest would be temporarily disturbed for the construction of the Action Alternative, and 0.24 miles of the Manti-La Sal National Forest would be permanently removed from public use due to the installation of the Oak Creek Flood Channel. Although the Action Alternative may impact recreational opportunities due to the installation of flood control structures, the Action Alternative would also provide recreation opportunities for public use by constructing picnic areas and non-motorizing boat launching ramps at the multi-purpose reservoir. Implementation of the Action Alternative would benefit the community within and surrounding the project area by creating this new recreation resource.

There are known projects in the recent past, present, or foreseeable future that are anticipated to impact recreation in the project area, including the USFS's planned thinning of the Manti-La Sal National Forest. The use of mechanical thinning or prescribed burning within the Manti-La Sal National Forest could disrupt recreational opportunities within USFS lands, which could impact nearby recreational opportunities. Although the USFS's planned forest lands thinning is scheduled to occur in 2023 and the Proposed Project isn't scheduled to occur until 2024, recreational impacts could to USFS lands could run over into 2024 as the USFS lands continue to be impacted by thinning into 2024. Therefore, significant cumulative impacts are anticipated to result from implementation of the Action Alternative.

5.6.7 Land Use

5.6.7.1 No Action Alternative

The project area is zoned for agriculture and mixed residential and agricultural uses within the unincorporated areas of Sanpete County and zoned mixed residential, agricultural and transportation within Spring City. According to the Spring City Master Plan (Spring City, 2017), residential areas take up 42.8 percent of the area and agriculture and vacant lands account for another 34.5 percent with transportation corridors taking up 20.3 percent. The remining 2.4 percent of the area is comprised of commercial and public spaces. Spring City reports that they have no

established industrial areas. The No Action Alternative would have no impact on land use designations in the project area. City owned land would not be used for the construction of the Reservoir or the Regulating Pond. However, the No Action Alternative would impact land uses if flooding is allowed to continue, damaging homes, structures, and agricultural lands. Cumulative impacts are anticipated if flooding risks continue.

5.6.7.2 Action Alternative

The project area is zoned for agriculture and mixed residential and agricultural uses within the unincorporated areas of Sanpete County, while zoning within Spring City is mixed residential, agricultural and transportation. Under the Action Alternative, private lands owned by co-sponsor HIC would be used to construct the Reservoir and the Regulating Pond, as well as for portions of the Flood Channel and the Oak Creek Diversion and the Reservoir Outlet Piping associated with the Reservoir. The piping for the irrigation ditches and portions of the Oak Creek Upper Diversion piping would not require any land acquisition.

Portions of the Oak Creek Upper Diversion piping and the Oak Creek Diversion & Flood Channel are located on USFS lands. No additional easement would be required for the replacement of the existing Oak Creek Upper Diversion Piping. An easement would be required for the construction of the portion of the Oak Creek Diversion & Flood Channel components within USFS lands.

Although land used for the Reservoir and Regulating Pond would change from undeveloped agricultural land to water storage, the proposed uses would still be consistent with future land use designations in the project area (i.e., low density/agricultural) as both the Reservoir and the Regulating Pond provide agricultural water benefits. Approximately 0.24 miles of USFS land would change land uses for the Proposed Project and be removed from public land uses. Therefore, the Action Alternative is anticipated to have to significant permanent impact on land use in the project area. At this time, there are no known projects in the recent past, present, or foreseeable future that are anticipated to impact land use in the project area. Cumulative impacts are anticipated from the implementation of the Action Alternative due to change in land uses would occur for portions of the proposed project.

5.6.8 Visual Resources & Scenic Beauty

5.6.8.1 No Action Alternative

The No Action Alternative would have no new impacts to visual resources and scenic beauty in the project area. However, continued flooding of Spring City and nearby agricultural lands would continue, which could cause future changes to visual resources and scenic beauty. Part of the classification of Spring City as a National Historic District is due to the visual resources Spring City's historic buildings and structures provide. Continued flooding damage to historic buildings and structures could impact the pristine historic nature and negatively impact that visual history. Cumulative impacts are anticipated if flooding risks are allowed to continue.

5.6.8.2 Action Alternative

The Action Alternative would permanently eliminate open water in the North Fields and Point Ditch irrigation canal systems, remove large overstory trees, and disturb grasses along the canals. There would also be short-term, minor impacts to visual resources from the presence of construction equipment and construction crews. Appropriate native vegetation would be reestablished in areas disturbed by construction activities. Although the Action Alternative would

not result in long-term impacts on scenic quality along the irrigation ditch system alignments from the removal of the open water feature, there would be vegetation disturbance and some permanent loss of vegetation from the loss of seepage water in these corridors. The construction of the Reservoir and the Regulating Pond would result in new water features that would be permanently cleared of vegetation and embankments constructed that would become part of the visual landscape. The Reservoir embankment would be 52 ft above current topographic elevation. The embankment would be 2,382 ft in length. The Regulating Pond would also have an embankment constructed. The embankment would be 1,060 ft in length at a height of approximately 20 ft above the surrounding area.

Minor, temporary impacts to visual resources and scenic beauty are expected to result from the implementation of the construction of the Action Alternative. Impacts would be minimized by implementing BMPs to encourage the establishment of native vegetation and preserving existing vegetation where possible. Permanent impacts to visual resources and scenic beauty would occur as a result of the piping of irrigation ditches and the resulting loss of vegetation. At this time, there are no known projects in the recent past, present, or foreseeable future that are anticipated to impact visual resources and scenic beauty in the project area. There are no additional cumulative impacts anticipated.

5.6.9 Transportation & Infrastructure

5.6.9.1 No Action Alternative

Existing infrastructure in the project area includes linear transportation facilities, irrigation features, and residential structures. Irrigation infrastructure includes the Mill Race, North Fields, and Point Ditch irrigation systems and 502 secondary users. The existing irrigation infrastructure is deteriorating and required continued labor and capital to perform maintenance activities. The irrigation system is projected to lose approximately 2,563 ac-ft of water annually to evaporation and seepage.

If the No Action Alternative were implemented, the irrigation systems would not be improved and the existing seepage, efficiency losses, and water losses would remain the same. The potential flood zone downstream from the Upper Oak Creek, Canal Creek, Cottonwood Creek, and Cedar Creek Subbasins include multiple improved roads and U.S. Highway 89. If the existing conditions were maintained under the No Action Alternative, road infrastructure and residential development could be damaged and/or closed during a large storm event. Cumulative impacts are anticipated due to ongoing flooding risks and flooding damages to existing infrastructures and transportation corridors.

5.6.9.2 Action Alternative

The Action Alternative would permanently protect existing transportation facilities and infrastructure within inundation areas by providing much needed flood prevention infrastructure in the project area. Piping the various sections of the HIC system would require several road crossings (i.e., excavation within the roadway prism). Spring City would work with HIC, Sanpete County, and the Utah Department of Transportation (UDOT) to obtain all necessary permits and approvals, to establish any new easements, work within the designated State and local rights-of-way (ROW) and implement appropriate traffic control measures during construction to minimize disturbance and reduce impacts to local traffic.

The Action Alternative may have temporary, minor impacts on transportation in the project area due to construction traffic and ROW disturbances. However, the Action Alternative, is anticipated to have a net positive cumulative impact on transportation and infrastructure in the project area by improving pedestrian transportation facilities and protecting existing transportation facilities and infrastructure from future flooding risks and damage.

5.6.10 Noise

5.6.10.1 No Action Alternative

The project area contains mixed agricultural, residential, and commercial land uses. Numerous noise sensitive receptors are present within and surrounding the project area, including local parks, schools, and residential areas, as well as the Spring City National Historic District. Several frequently travel roadways also intersect the project area, including Hwy 89 and State Road 117. Background noise levels are associated with existing traffic and agricultural noise. The No Action Alternative would have no impact on noise levels in the project area. Minor increases in noise may be observed during flood clean-ups due to the use of equipment. However, cumulative impacts are not anticipated.

5.6.10.2 Action Alternative

Temporary, minor increases in noise related to the use of construction equipment and vehicles would result from implementation of the Action Alternative. Backhoes, excavators, haul trucks, and other smaller construction vehicles and equipment would be used to complete the Action Alternative. Noise mitigation measures, such as established daytime working house and the use of properly functioning equipment mufflers, would be implemented during construction to minimize temporary noise impacts. After completion of the Action Alternative, it is anticipated that noise levels would return to background levels. No permanent noise impacts are expected from the Action Alternative. At this time, there are no known projects in the recent past, present, or foreseeable future that are anticipated to impact noise in the project area. Therefore, significant, and permanent cumulative impacts are not anticipated to result from implementation of the Action Alternative.

5.7 Energy

5.7.1 Energy

5.7.1.1 No Action Alternative

The No Action Alternative would have no impact on energy resources or energy in the project area, however the use of fuel and oil for equipment to maintain the irrigation system would increase as the ditch system would continue to have problems with seepage and debris. The use of fuel and oil and equipment to repair flooding damages would also continue to occur. The continued use of Spring City's hydroelectric plant may be at risk with the current state of disrepair of the existing Oak Creek Upper Diversion Pipeline that delivers hydroelectric water supply to the hydropower plant. If the Oak Creek Upper Diversion Pipeline is no longer able to carry water for the hydroelectric plant, Spring City would lose access to approximately 266kW of electricity to its electrical customers. This electricity would need to be purchased from outside sources. Cumulative impacts are anticipated as irrigation system maintenance needs would increase, flooding damages repairs would continue, and hydroelectrical energy would decrease with the implementation of the No Action Alternative.

5.7.1.2 Action Alternative

Piping the North Fields and Point Ditch irrigation system would facilitate the change to more efficient irrigation practices and decrease irrigation system maintenance needs and breakdowns, which would decrease equipment fuel and oil consumption from maintenance equipment. It is expected that irrigators may experience a slight increase in profitability due to an increase in the length of the irrigation season and more efficient irrigation practices coupled with lower maintenance needs. The replacement of the existing Oak Creek Upper Diversion pipeline that delivers hydroelectric water supply to the hydropower plant would allow Spring City to continue to produce an estimated 266 kW of electricity to Spring City's electrical customers. The increased efficiency of the irrigation system as well as the continued operation of the hydroelectric plant would provide a net positive impact for energy from the Proposed Action. At this time, there are no known projects in the recent past, present, or foreseeable future that are anticipated to impact energy in the project area. Therefore, net positive cumulative impacts are anticipated to result from implementation of the Action Alternative.

5.8 Risk & Uncertainty

The cost benefit analysis required by NEPA involves both risk and uncertainty. Conducting an environmental evaluation requires the use of best available science, technology, and information to make well-informed assumptions, or predictions. However, existing conditions may change, the public's opinion of a project could evolve, or unanticipated circumstances with construction, funding, or design may arise. Each of these differences could alter predictions of environmental consequences.

5.9 Irreversible & Irretrievable Resource Commitments

Pursuant to the requirement of NEPA, environmental analysis must identify "…any irreversible and irretrievable commitments of resources, which could be involved in the Proposed Action should it be implemented." Irreversible can be described as a loss of future options; irreversible resource commitments involve the use of natural and human-made resources like metals, building materials, water, fossil fuels, electricity, etc., that cannot be recovered, or take a long time to regenerate. Irretrievable resource commitments generally refer to the alteration or destruction of resources that cannot be restored, such as the extinction of a protected species. Irreversible and irretrievable resource commitments are not mutually exclusive.

5.9.1 No Action Alternative

Under the No Action Alternative, HIC's irrigation systems would continue to deteriorate and require continued maintenance, increasing costs and decreasing the reliability of the irrigation system. In time, the ditch system infrastructure would likely need to be entirely replaced. This consistent maintenance and ultimate replacement would require a range of natural, physical, capital, and labor resource commitments. Similarly, the Upper Oak Creek, Canal Creek, Cottonwood Creek, and Cedar Creek Subbasins and downstream areas would continue to be at risk for flooding in the event of a major storm, putting infrastructure and city residents at risk. With no action, flood damage would persist, capital and labor requirements would increase, and public health and safety would suffer.

5.9.2 Action Alternative

Implementing the Action Alternative would require the immediate and irreversible commitment of natural, physical, capital, and labor resources, including the conversion of agricultural lands to an aquatic land-type associated with the conversion of land after the construction of the Reservoir and the Regulating Pond. Fossil fuels, financial and human resources, and construction materials would be consumed to complete the Action Alternative. Generally, such resources are not considered "reversible." Proceeding with the Action Alternative would benefit the watershed by improving public health and safety, increasing water conservation and water quality, enhancing deteriorating infrastructure, providing an efficient agricultural irrigation system, and creating additional recreational opportunities. When analyzing the value of saving these irreversible resources compared to the benefit of utilizing these resources to construct the Action Alternative, the benefits generally outweigh what would be lost.

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Chapter 6 Consultation, Coordination & Public Participation

This chapter describes the public and agency coordination efforts for the Proposed Project. The intent of the Proposed Project is to implement a solution that would provide flood control, agricultural water management, and recreational opportunities for the project area.

6.1 Consultation

In accordance with E.O. 13175, NRCS is responsible for assessing the impacts of activities, considering Tribal interests, and assuring that Tribal interests area considered in conjunction with Federal activities and undertakings. NRCS recognizes that Tribal governments are sovereign nations located within the U.S. NRCS has responsibility to help fulfill the U.S. government's responsibilities toward Tribes when considering actions that may affect Tribal rights, resources, and assets.

In summary, and in accordance with 36 CFR 800.3-800.5 and Section 106 of NHPA, SHPOs, THPOs, NRHP, and federally recognized Tribes must be consulted at all steps of the process.

Per 36 CFR 800.3, the project team identified the SHPO, THPO, and federally recognized Tribes for the project. The project team also prepared a public participation plan to include Tribes, the public, and other stakeholders in the process.

Per 36 CFR 800.4, the NRCS State Conservationist initiated consultation. The project team provided opportunities for comment and participation in developing the scope of the Plan-EA in coordination and in consultation with Tribes, the public, and other stakeholders, including the following Tribes: the Ute Indian Tribe of the Uintah & Ouray Reservation, Utah; the Northern Ute Tribe; the Paiute Indian Tribe of Utah; and the Hopi Tribe of Arizona. A scoping meeting was held virtually on October 21, 2020. The scoping report can be found on page A-2 of Appendix A.

The project team identified historic properties. A literature review and Class III Cultural Resources Inventory was completed by Cottonwood in June 2022. In accordance with 36 CFR 800.4(b), examination of the area identified 5 previously recorded sites, 32 newly recorded sites, and 16 isolated finds. Of these sites, 16 are eligible for listing on the NRHP, as shown in in Table 3-11.

Per 36 CFR 800.5, the project team consulted with Tribes on the findings and determination of effects. Letters and the cultural resources report were sent to representatives of the Ute Indian Tribe of the Uintah & Ouray Reservation, Utah; the Navajo Nation in Utah and Arizona, Paiute Indian Tribe of Utah, and Hopi Tribe of Arizona on August 16, 2024 and can be found in Appendix A. A complete summary of additional coordination and consultation with Tribes is provided in Table 6-1. To date, only the Paiute Indian Tribe of Utah has responded, indicating they have no comments for the project.

Of the sites identified in the cultural resources survey, 16 are eligible for listing on the NRHP. The NRCS State Conservationist, in consultation with the SHPO and applicable Tribes, determined that the Proposed Project would have an Adverse Effect to Historic Properties, per 36 CFR 800.5(b). Recommended mitigation measures for some of the sites, including the historic aqueduct and the historic hydroelectric site include the development of a historical context of all eligible sites, development of interpretative materials, and coordination with the Spring City Museum.

Recommended mitigation measures for the identified sites within the footprint of the proposed Freeman Allred Reservoir and appurtenances include having a qualified archaeologist and a tribal monitor onsite to monitor ground disturbing activities, developing an ethnographic report, excavation of the sites with obsidian sourcing, and development of an inadvertent discovery plan.

A copy of the cultural resources report and NRCS determination was submitted to the Utah SHPO on August 16, 2024 to comply with Section 106 of the NHPA, with a copy of the Cultural Resource Inventory Addendum submitted to SHPO on September 4, 2024. SHPO concurrence was received on September 25, 2024. SHPO concurrence is located in Appendix A. NRCS contacted the Advisory Council on October 14, 2024, Advisory Council review is in progress. A draft MOA has been prepared as part of the mitigation for the Action Alternative. The draft MOA is included in Appendix A. The USFS Inadvertent Discovery Plan (Appendix C of the MOU between the Utah State Historic Preservation Officer and the USDA USFS Intermountain Region regarding Compliance with Section 106 of the NHPA [2019]) shall also be followed for any discoveries of USFS lands.

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Table 6-1. NRCS Record of Tribal Consultation

NRCS Record of Tribal Consultation											
Project/Reason for Initiating Section 106 Consultation: Spring City Watershed Plan-EA (NEPA)											
Program: NRCS Watershed and Flood Prevention Operations Program											
Tribe Information			**Cons Initiated[1]**	**Cultural Resource Report Consultation Package[2]**			**Consultation Follow Up[2]**				**Tribe Cons Completed (Date)**
Federally Recognized Tribe	**Contact Name**	**Address**		**NRCS Mailed to Tribe**	**Received by Tribe[3]**	**Tribe Response**	**Follow Up #1 Type (Date)**	**Response #1 Type (Date): Response**	**Follow Up #2 Type (Date)**	**Response #2 Type (Date): Response**	
Navajo Nation	Richard M. Begay (THPO & Department Manager)	P.O. Box 4950 Window Rock, Arizona 86515	8/16/2024	8/16/2024	X	-	Cultural Addendum Letter (9/4/2024)	-	Email (10/21/2024) r.begay@navajo-nsn.gov	-	
	Buu Nygran (President)		8/16/2024	8/16/2024	X	-	Cultural Addendum Letter (9/4/2024)	-	-	-	
Navajo Utah Commission	Stephanie Holly (Administration)	P.O. Box 570 Montezuma Creek, Utah 84534	8/16/2024	8/16/2024	X	-	Cultural Addendum Letter (9/4/2024)	-	-	-	
	Clarence Rockwell (Executive Director)		8/16/2024	8/16/2024	X	-	Cultural Addendum Letter (9/4/2024)	-	-	-	
Ute Indian Tribe of the Uintah and Ouray Reservation	Luke Duncan (former Chairman)	P.O. Box 190 Fort Duchesne, Utah 84026	10/27/2020	-	-	-	-	-	-	-	
	Julius Murray (Chairman)		8/16/2024	8/16/2024	X	-	Cultural Addendum Letter (9/4/2024)	-	Email (10/21/2024) juliusm@utetribe.com	-	
	Betsy Chapoose (THPO)		10/27/2020	8/16/2024	X	-	Cultural Addendum Letter (9/4/2024)	-	Email (10/21/2024) betsy@utetribe.com	-	
	Luana Thompson (Natural Resources Director)		8/16/2024	8/16/2024	X	-	Cultural Addendum Letter (9/4/2024)	-	-	-	
Paiute Indian Tribe of Utah	Corrina Bow (Chairperson)	440 North Paiute Drive Cedar City, Utah 84720	8/16/2024	8/16/2024	X	-	Cultural Addendum Letter (9/4/2024)	-	Email (10/21/2024) cbow@utahpaiutes.org	-	
	Dorena Martineau (former Cultural Resources Director)		10/27/2020	-	-	-	-	-	-	-	
	Autumn Gillard (Cultural Resource Director)		8/16/2024	8/16/2024	X	-	Cultural Addendum Letter (9/4/2024)	-	Email (10/21/2024) agillard@pitu.gov	Email (10/21/2024) No Comments on project.	
Hopi Tribe of Arizona	Timothy L. Nuvangyaoma (Chairman)	P.O. Box 123 Kykotsmovi, Arizona 86039	8/16/2024	8/16/2024	X	-	Cultural Addendum Letter (9/4/2024)	-	-	-	
	Stewart B. Koyiyumptewa (THPO)		10/27/2020	8/16/2024	X	-	Cultural Addendum Letter (9/4/2024)	-	Email (10/21/2024) skoyiyumptwea@hopi.nsn.us	-	

Notes: Cons = Consultation, THPO = Tribal Historic Preservation Officer
1 – Tribe Consultation was initiated as part of the Scoping process and is documented in the Scoping Report included in Appendix A.
2 – Documentation in included in Appendix A.
3 – Date of receipt of mail delivery to Tribe.

6.2 Coordination

6.2.1 Utah Division of Wildlife Resources

The Utah Division of Wildlife Resources (UDWiR) was invited to comment on the project during the scoping period. A state sensitive species list was obtained as part of the biological resource analysis and the BE determined that there would be no impact to state sensitive species from the implementation of the Proposed Project.

6.2.2 Utah Division of Water Quality

The UDWQ was invited to comment on the project during the scoping period. Representatives from the UDWQ attended the agency scoping meeting on October 21, 2020.

6.2.3 Utah Division of Water Rights

The UDWRi was invited to comment on the project during the scoping period. Representatives from the UDWRi attended the agency scoping meeting on October 21, 2020.

6.2.4 U.S. Fish and Wildlife Service

The USFWS was invited to comment on the project during the scoping period. NRCS requested that USFWS be a Cooperating Agency for the Proposed Project on October 15, 2020. USFWS representatives did not attend the agency scoping meeting on October 21, 2020.

A BE was prepared for the Proposed Project and determined that the Proposed Project would have no effect on listed animal species (Appendix E). Given the no effect determination, consultation with USFWS was not necessary for compliance with Section 7 of the ESA.

6.2.5 U.S. Environmental Protection Agency

The EPA was invited to comment on the project during the scoping period. NRCS requested that EPA be a Cooperating Agency for the Proposed Project on October 15, 2020. EPA representatives attended the agency scoping meeting on October 21, 2020. The EPA responded on November 4, 2020, indicating their acceptance as a cooperating agency.

6.2.6 U.S. Forest Service

The upper portion of the project area in the Oak Creek subwatershed is located on USFS lands. USFS is a cooperating agency. NRCS requested that USFS be a Cooperating Agency for the Proposed Project on October 15, 2020. USFS representatives attended the agency scoping meeting on October 21, 2020.

The USFS Inadvertent Discovery Plan (Appendix C of the MOU between the Utah State Historic Preservation Officer and the USDA USFS Intermountain Region regarding Compliance with Section 106 of the NHPA [2019]) shall be followed for discoveries of USFS lands.

6.2.7 U.S. Army Corps of Engineers

The USACE has jurisdiction over work in WOTUS under Section 404 of the CWA. NRCS requested that USACE be a Cooperating Agency for the Proposed Project on October 15, 2020. USACE did not respond and are not a cooperating agency. USACE representatives did not attend the agency scoping meeting on October 21, 2020.

Coordination with the USACE regarding Section 404 of the CWA is ongoing. It is not anticipated that a permit would be required because the Action Alternative would be eligible for an agricultural exemption under Section 404(f) of the CWA.

6.3 Public Participation

Scoping for the Proposed Project began in October 2022. Scoping letters were sent to all interested parties and potential stakeholders on October 14, 2022. The public scoping meeting was held virtually on October 22, 2020. During the scoping period, 2 comments were received regarding the Proposed Project. The 30-day scoping period for this project began October 22, 2020 and closed on November 21, 2020. NRCS began consultations in October 2022 as well. NRCS sent scoping letters to the Ute Indian Tribe of the Uintah & Ouray Reservation, Utah; the Northern Ute Tribe; the Paiute Tribe; and the Hopi Tribe on October 27, 2020 (see Appendix A). See Table 6-1 for the Tribal Consultation record. *Additional SHPO and Tribal consultations are pending.*

6.3.1 Public Participation

The main goal of public participation is to involve diverse groups of the public, and government agency representatives to solicit input and provide relevant and timely information throughout the NEPA review process. It is meant to engage all demographics of the public in the NEPA review process, who may be potentially affected by the proposed action. Outreach methods are described in the following section. Table 6-2 lists the project's public outreach activities (some of which are still pending).

Table 6-2. Public Outreach Activities

Date	Activity	Type
September 9, 2020	Preliminary Kick-ff Meeting	
October 14, 2020	Scoping Letters sent	--
October 15, 2020	Public Notice Published in the Sanpete Messenger and The Pyramid	Newspaper Publication
October 21, 2020	Virtual Agency Scoping Meeting	Virtual via Zoom
October 22, 2020	Virtual Public Scoping Meeting	Virtual via Zoom
October 22, 2020	Public Comment Period Opened	--
October 24, 2020	Boards and Comment Cards delivered to Spring City Hall	
November 21, 2020	Public Comment Period Closed	--
TBD	Notice of Draft Plan-EA Public Comment Period	Newspaper and Online Notification
TBD	Draft Plan-EA Public Comment Period Open	Newspaper and Online Notification
TBD	Draft Plan-EA Public Meeting	--
TBD	Draft Plan-EA Public Comment Period Closed	--
TBD	Final Plan-EA	Publication

6.3.2 Project Scoping

The scoping procedure for the formulation of this Plan-EA followed the general procedures outlined in the NRCS NWPH (NRCS, 2014a) and the NRCS NWPM (NRCS, 2014b). NRCS procedures and NEPA regulations (40 CFR 1500-1508) require that the NRCS use a scoping process early in the planning phase to identify issues, concerns, and potential impacts that require analysis.

A Public Scoping Open House was held virtually on October 22, 2020, via Zoom with the purpose of involving the public and gathering feedback regarding community natural resource concerns related to the Proposed Project. The public was encouraged to submit comments during the public scoping period that started October 22, 2020 and ended November 21, 2020.

A total of 2 comments were received during the public scoping period. A summary of the natural resource and recreation concerns identified during the public open house and agency scoping are described in the Scoping Report (Appendix A).

6.3.3 Agency Involvement

JUB coordinated with local, state, and federal agencies regarding subjects pertinent to their jurisdiction, authority, and expertise. Agency coordination occurred via telephone, email, and written letter. Prior to initial scoping, the NRCS approved a scoping letter and project map developed by JUB. The purpose of the scoping letter was to inform agencies of the Plan-EA and to request preliminary comments on the proposal. Formal coordination and consultation with tribes and SHPO was completed by NRCS.

Federal, state, tribal, and local agencies were involved in project formulation and given the opportunity to comment and raise concerns on the Proposed Project. A project scoping letter was mailed to various agencies on October 14, 2020. The following agencies received a project scoping letter:

- Federal
    - EPA, Region 8
    - USACE, Bountiful Regulatory Office
    - BLM, Color County District, Richfield Field Office
    - USFS, Manti-La Sal National Forest, Sanpete Ranger District
    - USFWS
- State & Local
    - UDWR
    - UDEQ UDWQ
    - Utah Division of State History
    - UDOT, Region 4
    - Sanpete County
    - Utah State Clearinghouse
    - Utah Department of Public Safety, Division of Emergency Management
    - Board of Water Resources
    - Utah Department of Agriculture and Food
    - UDWRi, Sevier River/Southern Regional Office
    - Utah Public Lands Policy Coordination Office
    - Utah Division of Homeland Security
    - Utah Division of Emergency Management
    - State of Utah School and Institutional Trust Lands Administration (SITLA)
    - Utah Rivers Council
    - Friends of Historic Spring City
- Tribes
    - Navajo Nation, Arizona, New Mexico & Utah
    - Ute Indian Tribe of the Uintah and Ouray Reservation, Utah

A virtual agency meeting was held via Zoom on October 21, 2020. The agency scoping meeting discussed the proposed project goals and objectives, potential concerns, the NEPA process, and how agencies can be involved in the NEPA process. The agency meeting was attended by sponsor representatives, NRCS representatives, and agency personnel from the scoping list, including both the EPA and the USFS. Agency questions and concerns were also addressed at that time. Five comments were received during the meeting with an additional two received after the meeting. Comments included questions about the NEPA and commenting process, the project schedule, and the project funding process. Specific comments received after the meeting concerned the area's flood hazard classification and flood permitting of the area and additional questions about the NEPA process.

The full meeting agenda and meeting notes, including comments received during the meeting and the resulting discussion, are included in the Scoping Report in Appendix A.

6.3.4 Agency Plan-EA Reviews

[Pending] NRCS reviewed and commented on the Draft Plan-EA prior to issuing the Draft Plan-EA for public review. Agency comments on the Draft Plan-EA were addressed before the Draft Plan-EA was issued for public comment.

6.4 Draft Plan-EA Public Comment Period

[Pending] The Final Plan-EA will document the public comment process, including any comments and responses. All public comment documentation will be included in Appendix A of the Final Plan-EA.

6.5 Final Plan-EA

[Pending] A Notice of Availability will be published in the paper of local record to notify the public when the Final Plan-EA and FONSI are issued by the NRCS.

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Chapter 7 Preferred Alternative

7.1 Purpose & Summary

The Action Alternative was determined to be the Preferred Alternative because of its ability to meet the purpose and need for the project, to have the least impacts to environmental and social resources, and to have the greatest net economic benefits of the available alternatives. The Preferred Alternative watershed area is shown on the Project Map in Appendix B.

7.2 Rationale for Preferred Alternative Selection

The Action Alternative is considered the Preferred Alternative and described in detail in Section 7.3. The Action Alternative was selected as the Preferred Alternative because it addressed flood protection, water quality, agriculture water management, and provided for recreational resource development. Construction of the Reservoir would add needed flood protection for the residents of Spring City and Sanpete County. The reservoir would fully detain storm water according to the 100-year storm without exercising the overflow spillway. Flood protection, water security, and water delivery efficiency for agricultural users is of vital importance. Climate change, intense storms, and devastating drought continue to impact the project area, especially agricultural producers. The Action Alternative would allow the sponsor to build the necessary multi-purpose reservoir to offer protection to the public and property at risk. Implementing the Action Alternative would result in a substantial impact on safety and water security for numerous residents and irrigators in the project area. The Action Alternative is projected to conserve approximately 2,563 ac-ft of vital irrigation water that services farmland within Spring City and portions of unincorporated Sanpete County; and it would improve the likelihood that users receive their allocated share of water, reduce water conflicts, and improve water quality and quantity in Oak and Canal Creeks.

The No Action Alternative would not meet the purpose and need of the project as identified above. The Action Alternative would meet the purpose and need of the project and would provide the greatest net benefit. The Action Alternative was selected as the Preferred Alternative and was also determined to be the NEE Alternative (see Table 7-1). Refer to the Investigation and Analyses Report in Appendix D for additional information.

Table 7-1. Summary of Project Alternatives and Associated Ecosystem Services Evaluated as Part of the (NEE) Benefit-Cost Analysis (2022 $)

	Alternatives	
	FWOFI	**Action Alternative[1]**
Alternatives		
Locally Preferred		X
Non-structural[2]	-	-
NEE		X
Environmentally Preferable		X
Guiding Principles		
Healthy and Resilient Ecosystems		X
SED		X
Watershed Approach		X
Environmental Justice		X
Public Safety		X
Floodplains		X

	Alternatives	
	FWOFI	**Action Alternative[1]**
Total Project Investment (Annualized Average)[3]	$-	$893,900
Monetized Net Benefits (Annualized Average)[4]	-$1,149,600	$1,143,100
Provisioning Services (Annualized Average)		
Farm income	$-	$143,100
Regulating Services (Annualized Average)		
Property-related damages	-$842,700	$658,400
Farm income damages	-$2,500	$2,500
Power income damages	-$42,600	$42,600
Municipal water supply expenses	-$171,500	$171,500
Cultural Services (Annualized Average)		
Recreation values	$-	$43,700

1. Note that all costs and benefits for Action Alternative are compared to the FWOFI here and elsewhere in this document. Benefits and costs were calculated over a 100-year analysis period using a discount rate of 2.25 percent. All values reposted in 2022 dollars.
2. Non-structural alternatives, if they exist, may be included in the final analysis (see Section 6C(2)(c) pf PR&G) (NRCS, 2014a). Non-structural alternatives were eliminated from detailed study because none were brought forwar that would meet the purpose and need of the project.
3. Annualized costs for the Action Alternative include design, engineering, administration, permitting, construction, and O&M.
4. The net benefits of the FWOFI are negative to reflect the annualized damages and expenses in the study area due to flood events and monetary expenditures.

The Action Alternative, which used a watershed approach to characterize problems and solutions in the watershed, meets the federal principles for investments in water resources, including the following principles:

- The Action Alternative would restore the watershed's ability to regulate flood damages impacting Spring City, thereby increasing the health and resiliency of the ecosystem.
- By reducing flood damages, the Action Alternative improves SED by improving the economic well-being of present and future generations living within the watershed.
- The Action Alternative avoids the unwise use of flood-prone areas by reducing the watershed's vulnerability to future flood events.
- Public safety is enhanced by the Action Alternative because it would result in lower rates of injury and death related to flooding.
- The Action Alternative would not adversely affect environmental justice communities because there are no such communities located within the watershed.

In terms of benefits and costs, the Action Alternative's investment in the watershed would generate economic returns in excess of the upfront installation and ongoing management costs of the flood control structures as compared to the No Action Alternative. Under the No Action Alternative, average annual economic damages and expenses are approximately $977,900. These damages are the result of expenses residents of the watershed face to provide municipal water, repair property-related damages as well as damages to farmland and infrastructure. The Action Alternative would invest an average annual amount of $893,900 in built infrastructure to avoid these damages and expenses, thereby avoiding damages and expenses and enhancing farm incomes and recreational opportunities in the watershed. The annualized discounted value of the enhanced regulating, provisioning, and cultural service benefits generated by the project amount to $1,143,100,

outweighing the Action Alternative's annualized expense. In all cases, the benefits of each proposed improvement of the Action Alternative outweigh their respective costs.

7.3 Measures to be Installed

The measures proposed for the Preferred Alternative would be designed to NRCS conservation practice and safety standards. The design items listed below, as well as construction practices, would be submitted to NRCS for review prior to the start of construction. The Proposed Project components include the following:

- Reservoir: Construct a 1,034 ac-ft multi-purpose reservoir and debris basin (52-ft high embankment, 2,382 ft in length) which would provide for critical flood control and damage protection, irrigation water storage, and day use recreational facilities.
- Oak Creek Diversion Structure: Construct a new concrete water diversion structure on Oak Creek to divert flood flows into the Reservoir.
- Flood Channel to Reservoir: Install a new open concrete, 5,850 LF, trapezoidal channel within an existing ditch and upgrade existing diversion structure to divert flood water and debris from Oak Creek into the Reservoir. The concrete channel would be designed to convey a peak flow rate of 382 cubic feet per second (cfs) (500-year storm flow plus debris and sediment).
- Reservoir Outlet Piping: Install 7,830 LF of new outfall piping to deliver flood water from the Reservoir back to Oak Creek and the irrigation system at the existing, downstream Last Chance Diversion Structure. Pipeline will convey 11.6 cfs of flood water and 16.8 cfs of irrigation water from the reservoir to the distribution system.
- Mill Race Flood Ditch Piping: Complete bank stabilization and channel restoration work on11,570 LF n to allow irrigation and floodwaters to flow efficiently through Spring City. This restoration work would extend the life of the existing irrigation system and reduce erosion and maintenance issues for Spring City.
- North Fields Piping: Install approximately 21,070 linear ft of piping in the existing irrigation ditches within the North Field Ditch and deliver 5 cfs of irrigation water to water users. The pipeline will replace an existing open earth ditch system that is highly susceptible to water loss and is expected to save up to 648 ac-ft of irrigation water annually.
- Point Ditch Piping and Work Area: Install approximately 6,890 linear ft of pipe in the Point Ditch and deliver 10 cfs of irrigation water to water users. The pipeline would replace an existing open earth ditch system that is highly susceptible to water loss and is expected to save up to 1,773 ac-ft of irrigation water annually.
- City Regulating Pond: Construct a new 20 ac-ft regulating pond with a 20-foot-high embankment, 1,060 ft in length, adjacent to the existing agricultural regulating pond to provide separate water storage for Spring City secondary water users
- Oak Creek Upper Diversion Replacement: Replace the existing Oak Creek Upper Diversion pipeline with 8,450 linear ft of new pipeline that will convey 8 cfs of water from Oak Creek to Spring City's hydroelectrical plant and provide continuity and long-term power generation of 266 kW.
- Chester Ponds Capacity Restoration: Dredge the Chester irrigation ponds and install new, 5,330 linear ft of pipeline and a new diversion from Oak Creek. Dredging would remove an estimated 161,333 cubic yards of sediment and debris and increase water storage capacity of ponds by 1,000 ac-ft for late season irrigation.

- Install new secondary water meters for approximately 502 secondary water users within Spring City's boundary. Water meters would be located at the juncture of pipeline connection and residential property line on private property. This would provide an estimated water saving of 142 ac-ft annually.
- Replace existing, deteriorated diversion structures throughout the system and upsize 15 culvert road crossings to reduce water losses.
- Construct day use recreational facilities at the Freeman Allred Reservoir including parking, small watercraft access, a 6,500-ft gravel trail around the entire reservoir, and picnic areas with small pavilions.

7.4 Mitigation

BMPs would be implemented during and post-construction to avoid and minimize impacts to environmental resources in the project area that could occur as a result of the Preferred Alternative. Details of all BMPs and mitigation measures are included in Appendix E.

Compensatory mitigation may be required for the Preferred Alternative, pending consultation.

7.5 Permits & Compliance

7.5.1 Federal

7.5.1.1 U.S. Army Corps of Engineers

An ARD was completed for the project area and determined that the Preferred Alternative is not anticipated to significantly impact WOTUS (see Appendix E). Coordination with the USACE regarding Section 404 of the CWA is ongoing. It is not anticipated that a permit would be required because the Action Alternative would be eligible for an agricultural exemption under Section 404(f) of the CWA.

7.5.1.2 Federal Emergency Management Administration

FEMA manages the National Flood Insurance Program (NFIP), which provides flood insurance to property owners, renters, and business. The NFIP uses flood hazard maps to determine flooding risks and assist with floodplain management. As a result, FEMA requires that any structure or development that could change flood hazard risks or floodplain management be reported so the flood hazard maps can be updated.

The Preferred Alternative would include construction of two new water storage basins, the Reservoir and the Regulating Pond, which would be designed to contain and hold water for long-term storage and would include dams. As such, the Preferred Alternative would modify the existing flood hazard risks in the project area. The Preferred Alternative would require a LOMR from FEMA, which would officially recognize the revised flood hazard risks in the area and document the revision of the current flood hazard map to show appropriate changes to floodplains, regulatory floodways, and flood elevations as a result of the Preferred Alternative. Additionally, the Preferred Alternative could also require a Conditional Letter of Map Revision (CLOMR), which is a decisional document from FEMA stating if "a proposed project, if built as proposed…would meet minimum NFIP standards" (FEMA, 2023).

7.5.1.3 U.S. Fish and Wildlife Service

A BE was completed for the Proposed Project and determined that the Preferred Alternative would have No Effect on any ESA-listed species (Appendix E). Given the no effect determination, consultation with USFWS was not necessary for compliance with Section 7 of the ESA.

7.5.1.4 National Historic Preservation Act

The NHPA requires federal agencies to assess potential effects of proposed projects on historic properties and cultural and historic resources and develop measures to avoid, minimize, or mitigate and adverse effects to these historic properties and cultural and historic resources. To comply with the NHPA, a Cultural Resource Inventory Report of the APE was completed in June 2022, which identified 16 historic resources within the project area that are eligible for NRHP listing. The NRCS State Conservationist initiated Section 106 consultation on August 16, 2024, when letters with the cultural resources survey and NRCS determination was submitted to the Utah SHPO and the following Tribes/THPOs: Ute Indian Tribe of the Uintah & Ouray Reservation, Utah; the Navajo Nation in Utah and Arizona, Paiute Indian Tribe of Utah, and Hopi Tribe of Arizona. SHPO concurrence was received on September 25, 2024. Copies of all SHPO and THPO/Tribal correspondence is located in Appendix A. To date, no Tribal response has been received. Table 6-1 shows consultation details with each federally recognized tribe.

If construction activities were to inadvertently discover any materials of cultural or historical significance (i.e., bone fragments, pottery, stone tools, burial features, etc.), construction would halt and procedures outlined in the NRTCS Prototype Programmatic Agreement with the Utah SHPO would be followed.

7.5.2 State

7.5.2.1 Utah Department of Transportation

Encroachment Permits allow for temporary construction work within the UDOT ROW. An Encroachment Permit likely would be required where work on the irrigation system intersects state of federal roadways, such as U.S. Highway 89.

7.5.2.2 Utah Division of Water Quality

Under Section 402 of the CWA, a UPDES CSWGP is required for construction activities that disturb more than 1 acre with potential to discharge pollutants into surface waters. A SWPPP would be developed as part of the CSWGP.

7.5.2.3 Utah Division of Water Rights

Stream Alteration Permits would allow for construction work within the bed or banks of a natural stream (construction activities occurring within 30 ft of the channel). A Stream Alteration Permit would likely be required where rehabilitation or replacement work on the channel diversions occur on Oak and Canal Creeks, as well as where new diversions will be installed on Oak Creek for the Oak Creek Diversion and Reservoir Outlet Piping.

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If construction activities were to inadvertently discover any materials of cultural or historical significance (i.e., bone fragments, pottery, stone tools, burial features, etc.), construction would halt and coordination with the SHPO, THPO, and Sanpete County Sheriff would occur.

7.5.3 Local

7.5.3.1 Spring City

ROW Encroachment permit

7.5.3.2 Sanpete County

Easement Permits allow for temporary construction work within the county road ROW. An Easement Permit likely would be required where work on the irrigation system intersects county roadways.

7.6 Installation & Financing

7.6.1 Planned Sequence of Installation

The sponsor anticipates that the design and construction would occur from 2025 through 2027. Design and construction for the piping components of the HIC irrigation system, are anticipated to start in 2025, with construction activities phased to take place outside the irrigation season. Construction for the multi-purpose reservoir is anticipated to start in 2025 and completed in 2026. Maintenance work and construction for the piping components on the Chester Pond work will be completed in 2026, with construction activities taking place outside the irrigation season. Recreational facilities would begin construction in 2026 and be completed in 2027.

7.6.2 Responsibilities and Contracting

Spring City is the signatory sponsor with HIC as a co-sponsor. Spring City will be the responsible party for the coordination of the Plan-EA. Partners would coordinate with the County and NRCS as the city designs and constructs the Preferred Alternative. The sponsor and its partners would work in cooperation with other interested agencies to meet environmental, permitting, and public process requirements.

All work associated with the Preferred Alternative would be properly procured using awarded contracts. The sponsor in coordination with NRCS would oversee and administer the construction of the Proposed Project.

7.6.3 Financing

As the principal benefactors of the Proposed Project, partnering resources are expected from HIC. Flood prevention projects are fully paid by NRCS and require no cost share. Agricultural water management projects require a 75/25 cost share. Therefore, NRCS would provide 75 percent of funds for the agricultural water management improvements and Spring City and HIC would be responsible for 25 percent. Recreational projects require a 50/50 cost share, therefore NRCS would provide 50 percent of funds for the recreational improvements and Spring City and HIC would be responsible for 50 percent.

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7.7 Operation & Maintenance

O&M of the irrigation infrastructure would be completed by HIC. Operation of these facilities would include administration, management, and performance of non-maintenance actions needed to keep the facilities operational and safe. Maintenance includes performance of work, recording instrumentation data, preventing deterioration of structures, and repairing damage or replacement of the structure-as needed to prevent failure. Damages to completed structures caused by normal deterioration, droughts, flooding, or vandalism are considered maintenance. Operation and maintenance costs for the Preferred Alternative are estimated to be $165,274 annually, including the hiring of a maintenance manager.

O&M of the recreation facilities will be the responsibility of Spring City and an O&M agreement will be signed before project agreement is signed. Recreational facilities consist of a day use campground and 6,500 ft of trail. Operation cost includes management labor costs and other non-maintenance labor which is needed. Regular maintenance includes time and material for repairs to damaged asphalt or of recreational facilities and regular weed control maintenance. This O&M will be completed by a Spring City employee. Estimated annual cost of the maintenance of recreation facilities is $2,475.

7.8 Costs

Table 7-2 through Table 7-4 describe the estimated project and installation cost of the Preferred Alternative, and how those costs would be shared. Tables with an itemized materials list for flood prevention, agricultural water management, and public recreation works of improvement are included in Appendix D. Economic tables have been included to present information relevant to the costs and benefits of the Preferred Alternative (Table 7-5 and Table 7-6). Structural tables are included as Table 7-7.

Table 7-2. Estimated Installation Costs (Dollars) 1/

Works of Improvement	Applicant Participation 2/	PL 83-566 Funding 2/	Total
Flood Prevention	$19,000	$10,236,655	$10,255,655
Agricultural Water Management	$4,046,804	$14,605,169	$18,651,973
Public Recreation	$193,750	$249,150	$442,900
Total	$4,259,554	$25,090,974	$29,350,528

1/ Base price: 2022. Prepared August 2022.
2/ All works of improvement will be on non-federal land.

In all cases, the benefits of each proposed improvement of the Action Alternative outweigh their respective costs. In total, the benefit-cost ratio (BCR) of the Action Alternative was estimated to be 1.3. The BCRs for each work of improvement ranged from a low of 1.0 for the Oak Creek Upper Diversion replacement work to a high of 2.6 for the secondary water meter work and the day use recreational facilities (See Table 7-6).

Table 7-3. Estimated Cost Distribution – Water Resource Project Measures (Dollars) 1/

Works of Improvement	Installation Cost – PL 83-566					Installation Cost – Other Funds						Total Installation Costs
	Construction	Engineering	Project Admin	Real Property Rights	Total PL 83-566	Construction	Real Property Rights	Water Rights	Permits	Project Admin	Total Other	
Flood Control and Detention	$8,851,243	$1,231,477	$153,935	$0	$10,236,655	$0	$0	$0	$15,000	$4,000	$19,000	$10,255,655
Agricultural Water Management	$12,083,413	$2,241,561	$280,195	$0	$14,605,169	$4,027,804	$0	$0	$15,000	$4,000	$4,046,804	$18,651,973
Recreation	$189,750	$52,800	$6,600	$0	$249,150	$189,750	$0	$0	$0	$4,000	$193,750	$442,900
Total	$21,124,407	$3,525,838	$440,730	$0	$25,090,974	$4,217,554	$0	$0	$30,000	$12,000	$4,259,554	$29,350,529

1/ Price base: 2022. Prepared August 2022.

Table 7-4. Cost Allocation and Cost Sharing Summary – Water Resource Project Measures (Dollars) 1/

Site	Item	Cost Allocation					Cost Sharing									
		Purpose					PL 83-566					Other				
		Flood Control and Detention	Watershed Protection	Public Recreation	Agricultural Water Mgmt.	Total	Flood Control and Detention	Watershed Protection	Public Recreation	Agricultural Water Mgmt.	Total	Flood Control and Detention	Watershed Protection	Public Recreation	Agricultural Water Mgmt.	Total
Spring City Flood Prevention & Irrigation Improvement Project	Const.	$8,851,243	$0	$379,500	$16,111,218	$25,341,961	$8,851,243	$0	$189,750	$12,083,413	$21,124,407	$0	$0	$189,750	$4,027,804	$4,217,554
	Eng.	$1,231,477	$0	$52,800	$2,241,561	$3,525,838	$1,231,477	$0	$52,800	$2,241,561	$3,525,838	$0	$0	$0	$0	$0
	Permit	$15,000	$0	$0	$15,000	$30,000	$0	$0	$0	$0	$0	$15,000	$0	$0	$15,000	$30,000
	Admin.	$157,935	$0	$10,600	$284,195	$452,730	$153,935	$0	$6,600	$280,195	$440,730	$4,000	$0	$4,000	$4,000	$12,000
	Total	$10,255,655	$0	$442,900	$18,651,973	$29,350,528	$10,236,655	$0	$249,150	$14,605,169	$25,090,974	$19,000	$0	$193,750	$4,046,804	$4,259,554

1/ Price base: 2022. Prepared August 2022.

Table 7-5. Estimated Average Annual NEE Costs (Dollars) 1/

Measures	Project Outlays Amortization of Installation Cost	Project Outlays O&M and Replacement Cost	Total
Flood Control and Detention	$255,192	$55,994	$311,300
Agricultural Water Management	$467,232	$102,098	$569,300
Recreation	$11,020	$2,401	$13,400
Total	$733,444	$160,493	$893,900

1/ Price base: 2022. Calculated using FY 2022 Water Resources Discount Rate (2.25%) and 102-year period of analysis. Prepared August 2022.

Table 7-6. Comparison of Annual NEE Benefits and Costs (Dollars) 1/

Works of Improvement 2/	Agricultural Related						Non-agriculture Related	Average Annual Benefits Total	Average Annual Costs	Benefit Cost Ratio
	Reduced Property-Related Damages	Reduced Farm Income Damages	Reduced Power Income Damages	Increased Farm Income	Reduced Road Damages	Avoided Municipal Water Supply Expenses	Recreation Values			
A3			$42,600					$42,600	$41,600	1.0
F1, F2, F3, A4, A5, A7, A6	$658,400	$2,500			$171,500			$832,400	$668,100	1.2
A1, A2, A9, A10				$143,100				$143,100	$136,300	1.1
R1							$34,700	$34,700	$13,400	2.6
A8						$90,300		$90,300	$34,600	2.6
Total	$658,400	$2,500	$42,600	$143,100	$171,500	$90,300	$34,700	$1,143,100	$893,900	1.3

1/ Price base: 2022. Calculated using FY 2022 Water Resources Discount Rate (2.25%) and 102-year period of analysis. Prepared August 2022.

2/ Works of Improvement:

- Flood Control and Detention
  - F1/A7 – Freeman Allred Reservoir and Debris Basin
  - F2 – Concrete Flood Channel to Reservoir
  - F3 – Mill Race Flood Ditch Channel Restoration and Bank Stabilization
- Agricultural Water Management
  - A1 – North Fields Ditch Piping
  - A2 – Point Ditch Piping
  - A3 – Oak Creek Upper Diversion Replacement
  - A4 – Oak Creek Outlet Piping
  - A5 – Oak Creek Diversion Structure Replacement
  - A6 – Regulating Pond
  - A8 – Secondary Water Meters
  - A9 – Oak Creek Bypass Piping
  - A10 – Chester Ponds Capacity Restoration
- Recreation
  - R1 – Freeman Allred Day Use Area

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Table 7-7. Freeman Allred Reservoir Embankment and Capacity Summary Data

Item	Unit	Freeman Allred Dual Purpose Reservoir	Regulating Pond
Class of Structure		High Hazard	Low Hazard
Seismic Zone1		D	D
Uncontrolled Drainage Area	mi2	0.8	.005
Controlled Drainage Area	mi2	10.1	2.02
Total Drainage Area	mi2	10.9	2.025
Runoff curve No. (1-day)(AMC II)		59.7	59.7
Time of Concentration (Tc)		45 Min	<5 Min
Elevation Top of Dam	FT	6,722	6,137.5
Elevation Crest Auxiliary Spillway	FT	6,717	6,132.5
Elevation Crest High Stage Inlet		N/A	N/A
Elevation Crest Low Stage Inlet	FT	6,722	6,134.5
Auxiliary Spillway Type		Earth/Rock	Earth/Rock
Auxiliary Spillway Bottom Width	FT	50	20
Auxiliary Spillway Exist Slope		3H:1V	3H:1V
Maximum Height of Dam	FT	52	20
Volume of Fill	CY	131,304	22,743
Total Capacity	AC-FT	1034	19
Sediment Submerged	AC-FT	100	0
Sediment Aerated	AC-FT	0	0
Beneficial Use (Identify Use)	AC-FT	934	19
Floodwater Retarding	AC-FT	231	0
Between High and Low Stage	AC-FT	N/A	N/A
Surface Area			
Sediment Pool	Acres	22.3	0
Beneficial use Pool (Identify Use)	Acres	51.8	3
Floodwater Retarding Pool2	Acres	30	0
Principal Spillway Design			
Rainfall Volume (24-hour, 100yr)	IN	3.4	3.4
Rainfall Volume (24-hour, 500yr)	IN	4.3	4.3
Runoff Volume (24-hour, 500yr)	AC-FT	525	97.5
Capacity of Low Stage (Max.)	CF/S	31.5	16.8
Capacity of High Stage (Max.)	CF/S	270	0
Dimensions of Conduit	Ø (IN)	36	24
Type of Conduit	-	HDPE	HDPE
Frequency Operation-Auxiliary Spill			
Auxiliary Spillway Hydrograph			
Rainfall Volume	IN	4.3	4.3
Runoff Volume	AC-FT	525	97.5
Storm Duration	HR	24	24
Velocity of Flow (Ve)	FT/S	3.2	5.4
Max. Reservoir Water Surface Elev.	FT	6722	6137.5
Freeboard Hydrograph			
Rainfall Volume (24-hour, 500yr)	IN	4.3	4.3
Runoff Volume (24-hour, 500yr)	AC-FT	525	97.5
Storm Duration (24-hour, 500yr)	HR	24	24
Max. Reservoir Water Surface Elev.	FT	6717	6132.5

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Item	Unit	Freeman Allred Dual Purpose Reservoir	Regulating Pond
Capacity Equivalents			
Sediment Volume	IN	60	0
Floodwater Retarding Volume	IN	180	0

[1]https://fema.gov/emergencymanagers/riskmanagement/earthquake/hazard-maps

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Chapter 9 List of Preparers

9.1 Draft Plan-EA Preparers

Table 9-1 lists the individuals who assisted in preparing this Draft Plan-EA.

Table 9-1. List of Preparers

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Chapter 10 Distribution List

A notice of availability for the Draft Plan-EA will be distributed to the following government agencies/staff and organizations.

10.1 Federal Government

- USACE, Bountiful Regulatory Office
- U.S. BLM, Color County District, Richfield Field Office
- U.S. EPA, Region 8
- USFWS
- USFS, Manti-La Sal National Forest, Sanpete Ranger District

10.2 Tribal Government

- Navajo Nation, Arizona, New Mexico & Utah
- Ute Indian Tribe of the Uintah and Ouray Reservation, Utah

10.3 State Government

- UDWR
- Utah DWQ
- Utah Division of State History
- UDOT, Region 4
- Utah State Clearinghouse
- Utah Department of Public Safety, Division of Emergency Management
- Board of Water Resources
- Utah Department of Agriculture and Food
- Utah Division of Water Rights, Sevier River/Southern Regional Office
- Utah Public Lands Policy Coordination Office
- Utah Division of Forestry, Fire, and State Lands

10.4 Local Government

- Spring City
- Sanpete County

10.5 Private Parties

The names and addresses of private parties who will receive notice of the Draft Plan-EA are not listed in this chapter for privacy purposes.

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Acronyms, Abbreviations, and Short Forms

ac-ft	acre-feet
ACHP	Advisory Council on Historic Preservation
Ag	Anco silty clay loam
AMSL	Above Mean Sea Level
APE	area of potential effect
BA	Biological Assessment
BC	Business/Commercial
BCR	Benefit-cost ratio
BE	Biological Evaluation
BGEPA	Bald and Golden Eagle Protection Act of 1940
BLM	U.S. Bureau of Land Management
BMPs	Best management practices
CAA	Clean Air Act
CCS	Center for Climate Strategies
Census	U.S. Census Bureau
CEQ	Council on Environmental Quality
CH_4	Methane
CLOMR	Conditional Letter of Map Revision
CO	Carbon Monoxide
CO_2	Carbon Dioxide
Cottonwood	Cottonwood Archaeology, LLC
cfs	Cubic feet per second
CSWGP	Construction Storm Water General permit
CWA	Clean Water Act
DAQ	Division of Air Quality
DNR	Department of Natural Resources
DWR	Division of Water Resources
EIS	Environmental Impact Statement
E.O.	Executive Order
EPA	U.S. Environmental Protection Agency
EQ	Environmental Quality
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
ft	feet
FONSI	Finding of No Significant Impact
FPPA	Federal Farmland Protection Policy Act
GHG	Greenhouse Gas
HFC	Hydrofluorocarbon
HHS	U.S. Department of Health and Human Services
HIC	Horseshoe Irrigation Company
HUC	Hydrologic Unit Code
IPaC	Information for Planning and Consultation
JUB	J-U-B Engineers, Inc.
LOL	loss of life
LOMR	Letter of Map Revision
MBTA	Migratory Bird Treaty Act
N_2O	Nitrous Oxide
NAAQS	National Ambient Air Quality Standards

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NEE	National Economic Efficiency
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NHPA	National Historic Preservation Act
NISC	National Invasive Species Council
NPDES	National Pollutant Discharge Elimination System
NPPH	National Planning Procedures Handbook
NRHP	National Register of Historic Places
NWPH	National Watershed Program Handbook
NWPM	National Watershed Program Manual
NO_2	Nitrogen Dioxide
NOAA	National Oceanic and Atmospheric Administration
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
O_3	Ozone
O&M	Operations and Maintenance
OHWM	ordinary high-water mark
OSE	Other Social Effects
PAR	Population at risk
Pb	Lead
PFC	Perfluorocarbon
PGP-10	Programmatic General Permit 10
PL	Public Law
Plan-EA	Watershed Plan and Environmental Assessment
PM	Particulate matter
Proposed Project	Spring City Flood Prevention and Irrigation Improvement Project
PR&G	Principles, Requirements and Guidelines
RCRA	Resource Conservation and Recovery Act
ROD	Record of Decision
ROW	rights-of-way
SED	Sustainable Economic Development
SF_6	Sulfur Hexafluoride
SFHA	Special Flood Hazard Area
SGMA	Sage-Grouse Management Area
SHPO	State Historic Preservation Office
SITLA	Utah School and Institutional Trust Lands Administration
SL	Sensitive Lands
SO_2	Sulfur Dioxide
SPCC	Spill Prevention, Control, and Countermeasures
SWPPP	Stormwater Pollution Prevention Plan
TMDL	Total Maximum Daily Load
TDS	Total Dissolved Solids
TECs	Temporary Erosion Controls
THPO	Tribal Historic Preservation Office
TM	Technical Memo
UAC	Utah Administrative Code
UDEQ	Utah Department of Environmental Quality
UDOT	Utah Department of Transportation
UDWQ	Utah Division of Water Quality
UDWR	Utah Division of Wildlife Resources

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UDWRi	Utah Division of Water Rights
ULT	Ute ladies'-tresses
UNHP	Utah Natural Heritage Program
UPDES	Utah Pollutant Discharge Elimination System
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USFS	USDA Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UST	Underground Storage Tank
USWRC	U.S. Water Resources Council
VOC	Volatile Organic Compound
VRM	Visual Resource Management
WBD	Watershed Boundary Dataset
WFPO	Watershed and Flood Prevention Operations
WOTUS	Waters of the United States
WPFPA	Watershed Protection and Flood Prevention Act
WRA	Water Resources Assessment

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