

Yakima River Basin Water Enhancement Project Phase III

Addendum to Enhanced Water Conservation Element Framework

**U.S. Bureau of Reclamation
Contract No. 140R1019D0009**

Prepared by

Anchor QEA



**U.S. Department of the Interior
Bureau of Reclamation
Pacific Northwest Region
Columbia-Cascades Area Office**



**State of Washington
Department of Ecology
Office of Columbia River**

December 2024

MISSION STATEMENTS

The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to Indian tribes and our commitments to island communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

The Mission of the Washington State Department of Ecology is to protect, preserve and enhance Washington's environment, and promote the wise management of our air, land, and water for the benefit of current and future generations.

Yakima River Basin Water Enhancement Project Phase III

Addendum to Enhanced Water Conservation Element Framework

**U.S. Bureau of Reclamation
Contract No. 140R1019D0009**

Prepared by

Anchor QEA

**U.S. Department of the Interior
Bureau of Reclamation
Pacific Northwest Region
Columbia-Cascades Area Office**

**State of Washington
Department of Ecology
Office of Columbia River**

December 2024

Contents

1.0	Introduction	1
1.1	Previous Conservation Efforts	1
1.2	YRBWEP Phase II – Section 1203 Basin Conservation Program	1
1.3	YRBWEP Phase II – Section 1204 Yakama Nation	1
1.4	YRBWEP Phase II – Section 1207 Enhancement of Water Supplies for Yakima Basin Tributaries	1
1.5	Other Water Conservation Projects	1
2.0	Purpose and Goal	2
3.0	Conservation Accounting	2
4.0	YRBWEP Phase III Participants and Projects	2
4.1	Projects Completed to Date or Ongoing for YRBWEP Phase III	2
4.2	Benefits of Conserved Water	2
4.3	Potential Projects to Meet Water Conservation Goals	2
4.3.1	Potential Wapato Irrigation Project Projects	3
4.3.2	Potential Kittitas Reclamation District Projects	3
4.3.3	Other Potential Projects	5
4.4	Summary of Initial Development Phase and Long-term Projects	5
4.5	Prioritization of Projects to Meet YRBWEP Phase III Water Conservation Goal	6
5.0	Implementation of Water Conservation Projects	6
6.0	Summary	6
7.0	References	9
8.0	List of Preparers	9

Figure

Figure 1. Enhanced Water Conservation Projects in the Yakima Basin	8
--	---

Tables

Table 1. YRBWEP Phase II – Basin Conservation Program Completed Projects	1
Table 2. Completed or Ongoing Water Conservation Projects by Savings Type and Cost	2
Table 3. Potential Initial Development Phase Water Conservation Projects – KRD	3
Table 4. Potential Additional Water Conservation Projects – KRD	3
Table 5. Other Potential Water Conservation Projects	5
Table 6. Completed and Potential Water Conservation Projects	6

Appendix

Appendix 1. Accounting for Enhanced Water Conservation	
--	--

1.0 Introduction

The purpose of this addendum to the Enhanced Water Conservation Element Framework Technical Memorandum (April 2021) is to provide an update on the progress in planning and implementation of the Enhanced Water Conservation Element of the Yakima River Basin Integrated Water Resource Management Plan (Integrated Plan).

This addendum follows the structure of the 2021 technical memorandum with updated tables and a short description of changes. If no changes are necessary for a section, it is noted.

1.1 Previous Conservation Efforts

No changes needed.

1.2 YRBWEP Phase II – Section 1203 Basin Conservation Program

Changes to the volume of conserved water for Yakima River Basin Water Enhancement Project (YRBWEP) Phase II are listed in Table 1 based on updated information. Projects funded under the Basin Conservation Program throughout the Yakima River Basin provided an estimated 64,787 acre-feet of conserved water to date. The estimate is based on internal U.S. Bureau of Reclamation (Reclamation) accounting of conserved water volumes. Projects are summarized in Table 1.

Table 1. YRBWEP Phase II – Basin Conservation Program Completed Projects		
Entity	Description	Conserved Water (acre-feet)
Sunnyside Division Board of Control	Phase I – Check structures and reregulation reservoirs	29,162
Benton Irrigation District	Point of diversion change*	8,550
Benton Irrigation District	Conveyance water reduction	2,524
Benton Irrigation District	Pressurized pipe system	4,346
Sunnyside Division Board of Control	Phase IIA – Piping	5,865
Sunnyside Division Board of Control	Phase IIB, IIC, & IID – Piping**	8,154
Roza Irrigation District	Reregulation reservoir	5,523
Miscellaneous	Land and water purchases	663
Total – Diversion Reduction		64,787
Wapatox Canal	Water right purchase	260,000
Total		324,787

Source: Horner, 2024a (internal Reclamation documentation).

* BID diversion entitlement stays instream for 71 river miles from old point of diversion at Sunnyside Dam to new point of diversion at Benton City.

** Additional phases of SDBOC projects are in process.

1.3 YRBWEP Phase II – Section 1204 Yakama Nation

No changes needed.

1.4 YRBWEP Phase II – Section 1207 Enhancement of Water Supplies for Yakima Basin Tributaries

No changes needed.

1.5 Other Water Conservation Projects

No changes needed.

2.0 Purpose and Goal

No changes needed.

3.0 Conservation Accounting

The summary of projects that documents the quantity of water conserved and the cost for completed projects and projects in progress was updated to include projects through June 2024.

4.0 YRBWEP Phase III Participants and Projects

4.1 Projects Completed to Date or Ongoing for YRBWEP Phase III

A total of 178 projects have been completed since 2013 or are in progress (see Appendix 1). The water conservation projects were completed by 17 different entities including irrigation districts, conservation districts, and other entities. The estimated water conservation savings from the projects are 73,619 acre-feet at a cost of about \$315,900,000 (Horner, 2024a). A listing of the projects is provided in Appendix 1. Figure 1 shows the location of the projects.

4.2 Benefits of Conserved Water

Table 2 provides a summary of water conservation projects completed-to-date or in progress by category or type of project. An estimate of the water conservation savings and cost for each category or type of project is included.

Table 2. Completed or Ongoing Water Conservation Projects by Savings Type and Cost			
Water Conservation Savings Type	Water Conserved (acre-feet)	Cost	Cost per Acre-foot
Instream Flow	32,287	\$243,575,504	\$7,544
Drought Resiliency and Improved O&M	30,017	\$61,501,604	\$2,049
WIP Conservation	11,315	\$10,822,338	\$956
Total	73,619	\$315,899,446	\$4,291

Source: Horner, 2024b

Funding for the construction of completed conservation projects has been provided by Reclamation, Washington State Department of Ecology (Ecology), irrigation districts, and other entities. Additional funding not reflected in the total sum has been provided for feasibility studies and designs of projects. Reclamation has provided the most funding, about 69%, irrigation districts and Wapato Irrigation Project (WIP) have provided 15% of project funding, Ecology has provided 8.5%, and other entities such as Natural Resources Conservation Service (NRCS) and conservation districts have provided the remainder.

4.3 Potential Projects to Meet Water Conservation Goals

To complete the initial water conservation goal of 85,000 acre-feet from YRBWEP Phase III, additional projects need to be implemented with at least 11,381 acre-feet (85,000 minus 73,619) of conservation. To meet the long-term goal from the Integrated Plan of about 170,000 acre-feet, 96,381 acre-feet of conservation would need to be implemented. Entities throughout the Yakima River Basin were contacted to obtain lists of potential projects for YRBWEP Phase III and the long-term conservation goal. Listings of individual projects from WIP, Kittitas Reclamation District (KRD), and others are provided below.

4.3.1 Potential Wapato Irrigation Project Projects

WIP has a long-term goal to conserve up to 165,000 acre-feet of water by implementing their conservation and modernization plans (ITRC, 2019). While it will take a lot of lining, piping and re-regulation reservoir projects being implemented to achieve this goal, future addendums for the Enhanced Water Conservation report will be updated to include these projects. The conservation of this significant amount of water will likely lead to increased efficiencies on district farms, expansion of an irrigation demonstration project for the economic benefit of the Yakama Nation and the potential for increased instream flows and/or storage.

The estimated cost (in 2019 dollars) for WIP projects is \$219 million. Escalating costs to mid-2024 using Reclamation cost trends (<https://www.usbr.gov/tsc/techreferences/mands/cct.html>) results in an estimated total cost of \$279 million and a cost per acre-foot of \$1,690.

4.3.2 Potential Kittitas Reclamation District Projects

A total of 67 potential projects were identified by KRD (Satnik, 2024). Table 3 lists the proposed projects that could be counted towards the initial water conservation goal and Table 4 lists the additional projects that could be counted towards the long-term goal of the Integrated Plan. Estimated costs for Table 3 projects are in 2024 dollars, and estimated costs for Table 4 projects are in 2019 dollars.

Table 3. Potential Initial Development Phase Water Conservation Projects – KRD

Project	Estimated Water Conserved (acre-feet)	Estimated Cost	Cost per Acre-Foot
North Branch Lining (NB23.3-NB30.5)	3,958	\$45,198,259	\$11,419
Pump Ditch Lining (PP0.65-PP5.6)	2,200	\$34,283,304	\$15,583
North Branch Lateral 35.1 Piping	500	\$3,457,258	\$6,915
South Branch Phase II Piping	1,245	\$18,837,827	\$15,131
South Branch 9.9 Lateral Piping	400	\$3,289,075	\$8,223
West Side Canal Lining – Taneum Rd to I-90	977	\$13,465,312	\$13,782
South Branch Lining (SB3.9-SB7.0)	1,078	\$23,309,117	\$21,623
SB 14.3 & SB Extension Piping	1,200	\$22,589,506	\$18,825
South Branch Lining (SB0.9-SB1.7)	272	\$5,882,033	\$21,625
North Branch Lateral 33.5 Piping	2,200	\$25,394,028	\$11,543
Pump Ditch Piping (PP5.6-PP15.0)	2,200	\$38,547,551	\$17,522
Turbine Ditch Piping (PT12.5-PT16.1)	2,400	\$16,942,131	\$7,059
Total	18,630	\$251,195,401	\$13,483

Table 4. Potential Additional Water Conservation Projects – KRD

Project	Estimated Water Conserved (acre-feet)	Estimated Cost (2019 \$)	Cost per Acre-Foot (2019 \$)
Capture Weep Drain Loss – Main Canal Above Tucker	750	\$1,564,588	\$4,341
Gravity Lateral Lining	6,522	\$36,828,000	\$5,647
Main Canal 0.8-1.2	220	\$2,407,059	\$10,941
Main Canal 4.6-6.1	825	\$4,814,118	\$5,835
Main Canal 9.4-12.5	1,705	\$6,258,353	\$3,671
Main Canal Crack Sealing	3,570	\$5,295,529	\$1,444
MB 13.6 Lateral	743	\$4,092,000	\$7,000
MB Lining	2,526	\$20,098,941	\$2,000
MB18.1 Lateral	300	\$3,008,824	\$10,029
NB 20.2 Lateral	1,400	\$3,369,882	\$1,738
NB 20.8 – 0.8 Sub Lateral	1,400	\$3,369,882	\$7,000
NB 22.0 Lateral	3,800	\$6,258,353	\$2,333

Table 4. Potential Additional Water Conservation Projects – KRD			
Project	Estimated Water Conserved (acre-feet)	Estimated Cost (2019 \$)	Cost per Acre- Foot (2019 \$)
NB 22.8 Lateral	300	\$361,059	\$4,333
NB 26.7 Lateral	3,200	\$15,284,824	\$1,571
NB 27.5 Lateral	700	\$1,444,235	\$1,132
NB 28.6 Lateral	200	\$842,471	\$816
NB 31.3 – Johnson Spill	1,000	\$2,166,353	\$2,166
NB 4.1 Lateral	900	\$9,387,529	\$3,923
NB 5.8 Lateral	400	\$1,203,529	\$2,524
NB 6.4 Lateral	900	\$1,925,647	\$1,000
NB 7.7 Lateral	1,300	\$7,582,235	\$3,219
NB 8.3 Lateral	2,100	\$7,943,294	\$1,429
NB15.2 Lateral	1,200	\$12,877,765	\$10,731
NB15.9 Lateral	850	\$10,711,412	\$12,602
NB16.5 Lateral	922	\$11,313,176	\$12,270
NB17.0 Lateral	745	\$10,711,412	\$14,378
NB17.8 Lateral	220	\$3,730,941	\$16,959
NB20.8 Lateral	750	\$10,230,000	\$13,640
NB23.6 Lateral	300	\$2,286,706	\$7,622
NB26.1 Lateral	1,150	\$9,026,471	\$7,849
NB29.2 Lateral	900	\$8,063,647	\$8,960
NB30.1 Lateral	250	\$3,249,529	\$12,998
NB30.4 Lateral	200	\$5,536,235	\$27,681
NB4.41-4.5 Lateral	275	\$3,369,882	\$12,254
NB7.4 Lateral	850	\$8,665,412	\$10,195
North Branch Lining NB 14.7–23.3	4,730	\$24,190,941	\$5,114
North Branch Lining NB 4.0–14.7	4,925	\$28,764,353	\$2,500
SB 1.7 Lateral	200	\$2,166,353	\$10,832
SB 11.7 Lateral	300	\$1,925,647	\$6,419
SB 4.8 Lateral	300	\$1,083,176	\$3,611
SB12.8 Lateral	772	\$6,619,412	\$8,574
T0.2 Lateral	200	\$5,175,176	\$25,876
T12.5 Lateral	310	\$3,008,824	\$9,706
T6.2 Lateral	200	\$1,805,294	\$9,026
T6.7 Lateral	180	\$1,444,235	\$8,024
T7.8 Lateral	175	\$1,323,882	\$7,565
T9.3 Lateral	300	\$2,888,471	\$9,628
Taneum Canal Lining	3,082	\$12,276,000	\$3,983
Taneum Canal Piping	624	\$3,249,529	\$5,208
TC 0.00 – Taneum Chute Spill	1,317	\$1,323,882	\$1,005
TD 7.0 – Taneum Canal Tailend	2,133	\$1,323,882	\$621
Turbine Lateral Lining– Ross to Billiter Spill	2,948	\$12,757,412	\$4,327
Turbine Lateral Lining– Wippel to Ross	4,376	\$9,507,882	\$2,173
Turner Ditch Piping	520	\$2,647,765	\$5,092
WW 0.0 – Wippel Headworks	1,949	\$1,323,882	\$679
Total	72,914	\$370,085,294	\$5,076

Source: Satnik, 2024.

KRD has a long-term goal to conserve up to 100,000 acre-feet of water by implementing their Conservation Plan. While it will take a lot of lining and piping projects being implemented to achieve this goal, future addendums for the Enhanced Water Conservation report will be updated to include these projects. The overall goal to conserve this significant amount of water will likely lead to increased efficiencies on district farms and the potential for increased instream flows for tributary enhancement projects and/or storage.

Estimated conservation savings for the potential initial development phase KRD projects are 18,630 acre-feet at an estimated cost of \$251,195,000. The cost per acre-foot is \$13,483. The estimated cost for the potential additional projects that would help meet the long-term goal of the Integrated Plan is \$370,085,000 in 2019 dollars, with an estimated water conservation savings of 72,914 acre-feet. Escalating costs to mid-2024 results in an estimated cost of \$471,574,000 and a cost per acre-foot of \$6,470.

4.3.3 Other Potential Projects

Other potential projects were identified and are listed in Table 5. The timeline for implementation of the projects is not certain so they were counted against the long-term goal of the Integrated Plan of 170,000 acre-feet of water conservation. Table 5 is also not a comprehensive list as there are many smaller piping and on-farm conservation projects that will likely be identified and implemented as a result of the implementation of the Integrated Plan.

Entity	Description	Estimated Water Conserved (acre-feet)	Estimated Cost	Cost per Acre-Foot
Roza Irrigation District ¹	Canal Sealing	1,651	\$600,000	\$363
	Canal Floor Replacement	635	\$500,000	\$787
	Lateral Piping	1,582	\$13,500,000	\$8,534
Union Gap Irrigation District ²	Piping	9,317	\$26,700,000	\$2,866
Selah-Moxee Irrigation District ³	Lining and Piping – Initial Phase	5,276	\$18,100,000	\$3,431
	Lining and Piping – Second Phase	4,651	\$44,600,000	\$9,589
Terrace Heights Irrigation District ⁴	Pump Station and Piping	493	\$1,160,000	\$2,353
Naches-Selah Irrigation District ⁵	Line Main Canal	500	\$2,800,800	\$5,602
	Re-regulation Reservoir	2,500	\$3,500,000	\$1,400
	No. 1 Lateral Piping	1,000	\$6,777,900	\$6,778
	No. 3 Lateral Piping	1,500	\$5,500,000	\$3,667
Columbia Irrigation District ⁶	Main Canal Control Structures and Flow Measurement		\$137,000	
	Lateral 2 Lining		\$146,900	
Others to be determined	Acquisitions, on-farm conservation, diversion consolidations/reach improvements, other piping, lining projects	n/a	n/a	n/a
Total		29,105	\$124,022,600	\$4,261

Sources:

1. Revell, 2020, 2021; Sonnichsen, 2024.
2. Andreas, 2017
3. Draper, 2020.
4. Leitch, 2018.
5. Harter, 2020, 2024.
6. Empel, 2020.

Estimated water conservation savings from the projects listed in Table 5 are 29,105 acre-feet at an estimated cost of \$124,023,000. Escalating costs of the Table 5 projects to mid-2024 results in an estimated cost of \$155,900,000 and a cost per acre-foot of \$5,360.

4.4 Summary of Initial Development Phase and Long-term Projects

Table 6 provides a summation of projects that would meet the goal of the initial development phase of the Enhanced Water Conservation element. To date, 178 projects have been or are in progress of being implemented with an estimated water conservation savings of 73,619 acre-feet. Twelve additional

projects are planned to be implemented in the initial development phase by KRD that have an estimated water conservation benefit of 18,360 acre-feet. WIP is also implementing projects from their conservation plan in the initial development phase but the number of projects and water savings was not available at this time. All of their conservation plan projects were counted as long-term projects. The total potential water conservation savings for the initial development phase without accounting for WIP projects is 92,249 acre-feet, exceeding the goal of 85,000 acre-feet. The potential water conservation savings from future additional projects is 267,019 acre-feet. The total water conservation savings for the initial development phase and long-term projects is estimated to be 359,268 acre-feet, which would far exceed the Integrated Plan goal of 170,000 acre-feet.

Table 6. Completed and Potential Water Conservation Projects				
Project Status	Number of Projects	Water Conserved (acre-feet)	Cost	Cost per Acre-Foot
Completed or In Progress	178	73,619	\$315,899,000	\$4,291
Potential Initial Development	12	18,630	\$251,195,400	\$13,483
Subtotal	190	92,249	\$567,094,400	\$6,147
Potential Additional	94	267,019	\$874,596,600	\$3,275
Total	284	359,268	\$1,441,691,000	\$4,013

The costs for the potential initial development projects and potential additional projects are listed in 2024 dollars.

4.5 Prioritization of Projects to Meet YRBWEP Phase III Water Conservation Goal

No change needed.

5.0 Implementation of Water Conservation Projects

No change needed.

6.0 Summary

The Enhanced Water Conservation Element of YRBWEP Phase III has a water conservation goal of 85,000 acre-feet during the initial development stage (2013 to 2029). Ongoing and completed projects since 2013 have water conservation savings of approximately 73,619 acre-feet at a cost of \$315,900,000. Those projects have been both self-funded by irrigation districts and funded through grants from Reclamation, Ecology, and other entities. To meet the Enhanced Water Conservation Element goal of the initial development phase, an additional 11,381 acre-feet of water conservation is needed to be implemented before 2029. Irrigation districts and other entities provided lists of potential water conservation projects that could be implemented before 2029. KRD alone identified projects that are planned to be implemented before 2029 that could provide 18,630 acre-feet of water conservation, which would bring the total above the initial development phase goal. The cost of the KRD projects is estimated to be \$251,195,400. WIP will also be implementing projects before 2029, providing assurance the initial development phase goal will be met.

Additional projects were identified that would allow the long-term goal of 170,000 acre-feet to be met. Those projects would be implemented by WIP, KRD, Roza Irrigation District, and other entities. The potential additional water conservation savings are estimated to be 267,019 acre-feet at a cost of

\$874,597,000 in 2024 dollars. If those projects are implemented along with the initial development stage projects, the total estimated water conservation savings would be 359,268 acre-feet. That volume of water conservation would far exceed the long-term goal of the Enhanced Conservation Element of the Integrated Plan.



Conservation Districts - ● Items with an *, indicate unknown locations

- 1: Pipeline (Manastash – Consolidated & MWDA)
- 2: Acquisition (Anderson Diversion irrigation water)
- 3: Irrigation Conversion (273 acres flood/rill to sprinkler)
- 4: Irrigation Conversion (771 acres flood/rill to sprinkler)
- 5: Irrigation Conversion (755 acres flood/rill to sprinkler)
- 6: Irrigation Conversion (176 acres flood/rill to sprinkler)
- 7: Irrigation Conversion (175 acres flood/rill to sprinkler)
- 8: Irrigation Conversion (331 acres flood/rill to sprinkler)
- 9: Irrigation Conversion (140 acres surface to sprinkler)
- 10: Irrigation Conversion (82 acres flood/rill to sprinkler)
- 11: Irrigation Conversion (404 acres flood/rill to sprinkler)
- 12: Irrigation Conversion (1247 acres flood/rill to sprinkler)
- 13: Irrigation Conversion (75 acres flood/rill to sprinkler)
- 14: Irrigation Conversion (240 acres flood/rill to sprinkler)
- 15: Landscaping (Heritage Garden Program) (12 certified)
- 16: Landscaping (Heritage Garden Program implementation)
- 17: Irrigation Conversion (30 acres wheel line to pivot)
- 18: Irrigation Conversion (14 acres flood to pod)
- 19: Irrigation Conversion (14 acres flood to solid set/handline)
- 20: Irrigation Conversion (40 acres wheel line to pivot)
- 21: Irrigation Conversion (23 acres flood to pod)
- 22: Irrigation Conversion (3 acres flood to solid set)
- 23: Irrigation Conversion (10 acres flood to solid set)
- 24: Irrigation Conversion (15 acres wheel line to solid set)
- 25: Irrigation Conversion (16.4 acres wheel line to linear line)
- 26: Irrigation Conversion (126 acres wheel line to pivot)
- 27: Irrigation Conversion (18 acres flood to wheel line)
- 28: Irrigation Conversion (50 acres overhead sprinkler to drip)
- 29: Irrigation Conversion (40 acres flood to pod)
- 30: Irrigation Conversion (3.5 acres flood to solid set)
- 31: Irrigation Conversion (21 acres wheel line to center pivot)
- 32: Structures (eliminated 2 Cowiche Cr div; created a new div at YTID's)
- *33: Irrigation Conversion (19.7 acres wheel line to center pivot)
- *34: Irrigation Conversion (16 acres k-line and flood irrigation to drip irrigation)
- *35: Irrigation Conversion (34.6 acres wheel line to center pivot)
- *36: Irrigation Conversion (24 acres wheel line and ditch irrigation to center pivot)
- *37: Irrigation Conversion (0.25 acres irrigation pond lined with geotextile)
- *38: Irrigation Conversion (cement pipeline to PVC pipeline)
- 39: Landscaping (Heritage Garden Program implementation) (9 certified)
- 40: Landscaping (Heritage Garden Program) (39 certified)
- 41: Irrigation Conversion (ditch to pipeline with fish screens)
- 42: Irrigation Conversion (1571 acres flood/rill to sprinkler)

Kennewick Irrigation District (KID) - ●

- 1: Canal Lining
- 2: Canal Lining (14.6 miles of earthen canal with geomembrane liner)
- 3: Canal Lining (7.2 miles of earthen canal with geomembrane liner)
- 4: Canal Lining (5.6 miles of canal)

Kittitas Reclamation District (KRD) - ●

- 1: Pipeline (13.6, 13.8 Lateral Piping Project)
- 2: Canal Lining (North Branch Canal Phases 1, 2, 3A and 3B)
- 3: Pipeline (Turbine 1.1 Pipeline, 1700' of pipeline on a small lateral)
- 4: Canal Lining (South Branch Canal Phase 1)
- 5: Canal Piping (SB Phase 2, Robinson Canyon to Manastash)
- 6: Canal Sealing (cracks/joints in 3000' of concrete lined canal)
- 7: Canal Lining (South Branch Canal, MP 10.4-10.85)
- 8: Canal Lining (SB Phase 2, 6,000')
- 9: Canal Lining (North Branch Canal, 5,600')
- 10: Canal Lining (South Branch Canal, 1,902')
- 11: Canal Lining (South Branch Canal, 1,700')
- 12: Canal Lining (North Branch, 68,425')
- 13: Canal Lining (South Branch, 79,407')
- 14: Canal Lining (South Branch Canal, 2,656')

Naches Selah Irrigation District (NSID) - ●

- 1: Pipeline (Install pipe, waterboxes to enclosed deliveries on Guinan Lateral)
- 2: Canal Lining (Install 5400' of liner on D Section of Main Canal)
- 3: Canal Lining (3530' concrete over geomembrane, 3326' pipe, replace flumes)
- 4: Canal Lining (Install 2600' exposed lining over circa 1918 concrete canal)

Other - ○

- 1: Landscaping (City of Yakima Xeriscape Demonstration Project)
- 2: Landscaping (Low water use garden conversion project)
- 3: Acquisition (Manastash Creek water)
- 4: Irrigation Conversion (560.4 acres converted to sprinkler/microirrigation)
- 5: Irrigation Conversion (231.2 acres converted to sprinkler/microirrigation)
- 6: Irrigation Conversion (292.1 acres flood/rill)
- 7: Irrigation Conversion (166 acres flood/rill to sprinkler)
- 8: Irrigation Conversion (253.7 acres flood/rill)
- 9: Irrigation Conversion (132.2 acres to sprinkler)
- 10: Irrigation Conversion (95 acres to sprinkler)
- 11: Irrigation Conversion (514.8 acres to sprinkler)
- 12: Irrigation Conversion (255.6 acres to sprinkler)
- 13: Irrigation Conversion (202 acres to sprinkler)
- 14: Irrigation Conversion (106.8 acres to sprinkler)

Roza Irrigation District (RID) - ●

- 1: Canal Sealing (MP 17.7 to 18.9)
- 2: Canal Sealing
- 3 & 7: Pipeline (Pump 7, 21.3 Lateral enclosed)
- 4: Canal Lining (Concrete seal MP 30.3-30.8)
- 5: Canal Sealing (900 feet)
- 6: Canal Sealing (4,222 feet)
- 8: Pipeline (Pump 8 Lateral enclosed)
- 9: Pipeline (P16H, 7.8 Lateral enclosed)
- 10: Pipeline (P16L, 18.3, 19.1, 22.1 Laterals enclosed)
- 11: Pipeline (P9 Lateral enclosed)
- 12: Pipeline (P15H, 23.9, 24.3 Laterals enclosed)
- 13: Pipeline (P15L, 23.2, 24.8 Laterals enclosed)
- 14: Canal Sealing (Main Canal, 2.5 miles)
- 15: Pipeline (1/3 of P14, 15.0, 17.1, 35.2A, 38.5 laterals enclosed)
- 16: Pipeline (remaining 2/3 of P14 Laterals enclosed)
- 17: Canal Sealing (1.5 miles)

Selah Moxee Irrigation District (SMID) - ●

- 1: Pipeline (Postma Pipeline Phase III, railroad to canal end, 21" - 12")
- 2: Structures (Turnout and water measure replacement)
- 3: Structures (Turnout and water measure replacement)
- 4: Structures (Turnout and water measure replacement)
- 5: Pipeline (Gamache Mid S-M End Pipe Line Phase 1, 18" & 24")
- 6: Pipeline (Gamache Upper S-M Canal End Pipeline, 24")
- 7: Pipeline (Ekelman L-M Canal Pipeline, 30")
- 8: Pipeline (Gamache Lower S-M End Pipeline, 18")
- 9: Canal Lining (S-M Canal at Walters Rd.)
- 10: Canal Lining (S-M Canal at Pomona)
- 11: Pipeline (Rob Gam S-M End Pipeline)
- 12: Pipeline (Moxee Ditch Mieras Rd. Pipeline Phase A, 30")
- 13: Pipeline and Structures (Hubbard Intertie and water measurement)
- 14: Canal Lining (S-M Canal at Weaver)
- 15: Pipeline (S-M Canal Pipeline Siphon 2-3, 60")
- 16: Pipeline (Mieras L-M Canal Pipeline Phase B, 30")
- 17: Pipeline (Gam-Rob S-M Canal Pipeline Phase C, 30")
- 18: Pipeline (Morrier Ranch L-M Canal Pipeline, 30")
- 19: Pipeline (S-M Canal Tunnel Entrance Pipeline, 66")

Wapato Irrigation Project (WIP) - ●

- 1: Pipeline (Yakama Nation aquifer recharge and canal piping projects)
- 2: Canal Lining & Pipeline (WIP Project upgrades in Unit 2)
- 3: Canal Lining & Pipeline (Aquifer Recharge and Canal Piping Projects)
- 4: Satus Unit 2 (L274, L739, L766, L434: PS&E)
- 5: Wapato Irrigation Project (WIP) Improvements AFA #1-4
- 6: Toppenish Creek Alluvial fan Aquifer Recharge Project

Enhanced Water Conservation

Conservation Districts	Project Locations	District Boundaries
Kennewick Irrigation District (KID)	●	
Kittitas Reclamation District (KRD)	●	
Naches Selah Irrigation District (NSID)	●	
Other	○	
Roza Irrigation District (RID)	●	
Selah Moxee Irrigation District (SMID)		
Sunnyside Valley Irrigation District (SVID)		
Wapato Irrigation Project (WIP)	●	
Yakima-Tieton Irrigation District (YTID)		

	Dams/Reservoirs		Hydrology
	Cities		Interstates
			Yakama Nation

Locations of water conservation projects are at a variety of accuracy levels. Some projects were conducted at multiple locations. For this map, centroids were used to show the project location instead of each individual site.

These data may not be current, complete, or coincident. The depiction of property lines, boundaries, and imagery are not intended to substitute for a survey.

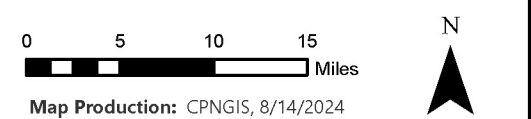


Figure 1

7.0 References

- Andreas, Pat (Union Gap Irrigation District), 2017. *Yakima Basin Integrated Plan Project Proposal – Union Gap Irrigation District*. October 20, 2017.
- Dills, Richard, and Brady Kent, 2021. “Wapato Irrigation Project Conservation and Modernization.” PowerPoint presentation. March 10, 2021. Available at: usbr.gov/pn/programs/yrbwep/2011integratedplan/meetings/2021mtgs/20210310/WIPConMod.pdf.
- Draper, Nathan (Selah-Moxee Irrigation District), 2020. Regarding: Enhanced Water Conservation Element Future Conservation Projects. Email to: Bob Montgomery, Anchor QEA. August 3, 2020.
- Empel, Janine (Ecology/Reclamation), 2020. Regarding: Phase II Conservation. Email to: Bob Montgomery, Anchor QEA. December 11, 2020.
- Harter, Justin (Naches-Selah Irrigation District), 2020. Regarding: Water Conservation in Naches-Selah ID. Email to: Janine Empel, Ecology/Reclamation. August 7, 2020.
- Harter, Justin (Naches-Selah Irrigation District), 2024. Regarding: Water Conservation Projects. Email to: Bob Montgomery, Anchor QEA. January 30, 2024.
- Horner, Michael (Washington State Department of Ecology), 2024a. Regarding: Enhanced Water Conservation TM. Email to: Bob Montgomery, Anchor QEA. November 8, 2024.
- Horner, Michael (Washington State Department of Ecology), 2024b. Regarding: Water Conservation TM. Email to: Bob Montgomery, Anchor QEA. August 8, 2024.
- ITRC (Irrigation Training & Research Center), 2019. *Wapato Irrigation Project Comprehensive Water Conservation Plan*. Prepared for U.S. Bureau of Indian Affairs and Yakama Nation. 2019. Accessed December 6, 2024. Available at: <https://www.itrc.org/projects/images/WIP%20CWCP.pdf>.
- Leitch, Lou Anne (Terrace Heights Irrigation District), 2018. Regarding: Grant Application. Email to: Bob Montgomery, Anchor QEA. April 5, 2018.
- Revell, Scott (Roza Irrigation District), 2020. Regarding: Conservation Projects. Email to: Bob Montgomery, Anchor QEA. August 31, 2020.
- Revell, Scott (Roza Irrigation District), 2021. Regarding: Roza Drought Pump Back. Email to: Janine Empel, Ecology, February 19, 2021.
- Satnik, Roger (Kittitas Reclamation District), 2024. Regarding: Enhanced Water Conservation Addendum. Email to: Wendy Christensen, Reclamation. November 21, 2024.
- Sonnichsen, Wayne (Roza Irrigation District), 2024. Regarding: Enhanced Water Conservation Plan Update. Email to: Bob Montgomery, Anchor QEA. January 26, 2024.

8.0 List of Preparers

Name	Background	Responsibility
Anchor QEA		
Robert Montgomery, PE	Water Resources Engineering	Author
Adam Hill, PE	Water Resources Engineering	Author

This Page Intentionally Left Blank

Appendix 1

Initial Phase Projects

This Page Intentionally Left Blank

Enhanced Water Conservation
Wapato Irrigation Project
Completed or Ongoing Projects

Entity	Project Reference Number	Project Description	Project Notes	Proratable Water User	Non-proratable Water User	Acre-feet Conserved	Total Cost	Cost/Ac-ft	Year	Funded By	Completed	Conservation Benefit	Contract/Grant/Agreement # or Reference	Notes	Creek/Reach Benefited
Yakama Nation	1	Yakama Nation Aquifer Recharge and Canal Piping Projects	Pipe Satus East Lateral E73. 1.5 miles of open ditch, except near end, piped.	X	X	890	\$300,000	\$337	2013 - 2019	Ecology	Yes	Conservation on WIP	C1500029 (Amendment No. 3)		Toppenish, Simcoe and Agency Creek
			Pipe WIP Lateral 4-414C. 1.25 miles of open ditch piped.	X	X	840	\$650,000	\$774		Ecology	Yes				
			Toppenish Creek Alluvial Fan Aquifer Recharge - install surface-flow control structures in existing canals and make modifications to diversions	X	X		\$612,284			Ecology	Yes			*2,500 to 5,000 ac-ft/year delivered to aquifer	
Yakama Nation	2	WIP 2019-2020 Project Upgrades (Canal Lining and Pipeline Projects in Unit 2)	Pipeline Lateral 251. Replaced 4,100' of leaking concrete pipeline and eliminated tail-end spill.	X	X	220	\$62,000	\$282	2018 - 2020	Ecology	Yes	Conservation on WIP	WRYBIP-2019-BlindAI-00002	Whole project jointly funded by Ecology & WIP - ERL	
			Pipeline Lateral 398. Replaced 14,720' of leaking concrete pipeline and eliminated tail-end spill.			698	\$307,000	\$440			Yes				
			Pipeline Lateral 362. Replaced 15,920' of leaking concrete pipeline and eliminated tail-end spill.			684	\$390,000	\$570			Yes				
			Pipeline Lateral 160. Replaced 6,480' of leaking concrete pipeline and eliminated tail-end spill.			482	\$143,000	\$297			Yes				
			Pipeline Lateral 209. Replaced 1,280' of leaking concrete pipeline and eliminated tail-end spill.			164	\$42,000	\$256			Yes				
			Pipeline Lateral 229. Replaced 5,740' of leaking concrete pipeline and eliminated tail-end spill.			375	\$110,000	\$293			Yes				
			Pipeline Lateral 118. Replaced 1,280' of leaking concrete pipeline and eliminated tail-end spill.			220	\$42,000	\$190			Yes				
			Pipeline Lateral 149. Replaced 2,080' of leaking concrete pipeline and eliminated tail-end spill.			190	\$46,000	\$242			Yes				
			Liner: STA 204+20 to 221+20 (1,700ft). Lined 1,810' of canal.			628	\$323,000	\$514			Yes				
			Liner: STA 117+00 to 129+00 (1,200ft). Lined 1,760' of canal.			587	\$228,000	\$388			Yes				
Yakama Nation	3	Aquifer Recharge and Canal Piping Projects	Unit 2 L672 Pipeline Replacement. Replaced five miles of leaking concrete pipeline and eliminated tail-end spill. Lining of Unit 2 West Branch from Station 167+20 to 173+80. Lined 660' of canal.	X	X	1,060	\$1,490,000	\$1,406	2016 - 2020	Ecology	Yes	Conservation on WIP	C1700079 (Amendment No. 1)		
						230	\$125,000			Ecology	Yes				
							\$30,950			Yakama Nation Engineering/WIP	Yes				
Yakama Nation	4	Satus Unit 2	L274, L739, L766, L434: PS&E	X		1,270	\$800,000 \$1,217,640		2020	NRCS WIP	Yes Yes	Conservation on WIP		Information provided by YNE	
Yakama Nation	5	Wapato Irrigation Project (WIP) Improvements AFA #1	Water measurement equipment procurement and installation, irrigation water flow and delivery measurement, update inventory of acres served by Satus 1, 2 & 3, replace & pressurize Satus 3 F Line	X	X	972	\$1,115,335		2017 - 2018	Reclamation (638)	Yes	Conservation on WIP	R16AV00020	"Satus 3 Line F was jointly funded by WIP and Reclamation under AFA #1. Reclamation purchased materials only. 8,540' of the existing 14,645' leaking and failing pipeline was replaced by this project. 4,415' had been previously replaced by WIP. Initial water savings were estimated at 972 acre feet per year." -ERL	
		Wapato Irrigation Project (WIP) Improvements AFA #2	Continue irrigation water flow and delivery measurement, continue to update inventory of acres served by Satus 1, 2 & 3, begin to procure materials for Satus 3 D Line and Satus 3 E Line				\$1,300,000		2018 - 2019	Reclamation (638)	Yes				
		Wapato Irrigation Project (WIP) Improvements AFA #3	Continue irrigation water flow and delivery measurement, continue to update inventory of acres served by Satus 1, 2 & 3, develop construction contract documents and begin construction of modernized Satus 3 D Line and Satus 3 E Line			1,805	\$500,000		2019 - 2020	Reclamation (638)	Yes			"Satus 3 Lines D and E were jointly funded by Reclamation under AFA #2 and #3. Line D: 11,560 feet of failing concrete pipe was replaced by PVC pipeline. Estimated water savings will be 987 ac-ft/year for a 189 day season. Line E: 13,640 feet of failing concrete pipe was replaced by PVC pipeline. Estimated water savings will be 918 ac-ft/year for a 189 day season." -ERL	
		Wapato Irrigation Project (WIP) Improvements AFA #4	Develop specification and contract documents for the construction of 10 long crested weir check/grade control structure on Satus 3 Pump Canal				\$988,129		2020 - 2021	Reclamation (638)	No				

Enhanced Water Conservation
Wapato Irrigation Project
Completed or Ongoing Projects

Entity	Project Reference Number	Project Description	Project Notes	Proratable Water User	Non-proratable Water User	Acre-feet Conserved	Total Cost	Cost/Ac-ft	Year	Funded By	Completed	Conservation Benefit	Contract/Grant/Agreement # or Reference	Notes	Creek/Reach Benefited
Yakama Nation	6	Track Lateral D	Install 15,254 lf of pvc pipeline near toppenish	X	X	1,504	\$570,965		2022-7	Reclamation/Watersmart	No	Conservation on WP	WEEG 158 (WatersSMART)	Per Bruce, funding approved, waiting on contracting. Will include with in progress totals once contract is signed (May 2022) - Still waiting for THPO letter, not yet contracted as of 1/23/23.	
							\$570,965						Yakama Nation		

COMPLETE PROJECTS TOTAL:	11,315	\$9,834,209	\$869.13
IN-PROGRESS PROJECTS TOTAL:	0	\$988,129	
OVERALL PROJECTS TOTAL:	11,315	\$10,822,338	\$956

Excluded the final row as this project has not yet started.

Enhanced Water Conservation
Kittitas Reclamation District
Completed or Ongoing Projects

Entity	Project Reference Number	Project Description	Project Notes	Proratable Water User	Non-proratable Water User	Acre-feet Conserved	Total Cost	Cost/Ac-ft	Year	Funded By	Completed	Conservation Benefit	Contract/Grant/Agreement # or Reference	Notes	Creek/Reach Benefited
Kittitas Reclamation District	1	13.6, 13.8 Lateral Piping Project	Construct and provide design and devices during construction for laterals 13.6 and 13.8. Upgrade existing piped laterals. Construct a permanent turnout to Manastash Creek	X		1,300	\$240,242		2013 - 2015	Ecology	Yes	Instream	C1600087		Manastash Creek
			13.6, 13.8 Lateral Piping Project, Man. Turnouts				\$4,000,000		2014 - 2015	Reclamation	Yes	Instream	R13MR13712	*Approximate cost. PriorityProjects.pdf (Source: KRD)	
Kittitas Reclamation District	2	North Branch Canal Lining (Phases 1, 2, 3A and 3B)	Line 850 linear feet of earthen canal with a geomembrane and concrete lining	X		195	\$147,104		2016	Reclamation/WaterSmart	Yes		R16AP00105		
			Phase 1 of construction of lining 3.4 mi of North Branch Canal	X			\$150,950		2016	KRD	Yes				
			Canal lining Johnson Siphon to Wipple	X		3,153	\$250,000		2016 - 2017	Ecology	Yes	Instream	C1600156		Manastash Creek. Some water to tributary supplement program including Tucker, Big, Little, and Taneum Creeks using passthrough water.
							\$200,000		2016 - 2019	Ecology/Drought Well Mitigation	Yes		PriorityProjects.pdf (Source: KRD)	*Approximate cost	
							\$100,000		2016 - 2019	Ecology/Water Acquisitions	Yes		PriorityProjects.pdf (Source: KRD)	*Approximate cost	
							\$245,593		2016 - 2019	Salmon Recovery Funding Board (SRFB)	Yes		16-1760R		
							\$500,000		2016 - 2019	BPA/NFWF	Yes		PriorityProjects.pdf (Source: KRD)	*Approximate cost	
			Phase 2 of Canal Lining. Install geomembrane liner with an overlay of concrete on ~2.68 mi of earthen canal	X			\$5,649,504		2017 - 2022	Reclamation	Yes		R17AP00064		
Kittitas Reclamation District	3	Turbine 1.1 Pipeline	1700' of pipeline on a small lateral	X		82	\$25,000		2016 - 2016	Reclamation/WaterSmart	Yes	Instream	R16AP00062		Contract does not specifically state it will be used for the Tributary Enhancement Program. May benefit the Yakima River from Easton through Mouth of Canyon
							\$28,727			KRD	Yes				
Kittitas Reclamation District	4	South Branch Canal Lining - (Phase 1)	Swede Tunnel to Robinson Canyon. Line KRD South Branch Canal to eliminate seepage and deliver saved water to tributaries on the upper Yakima River	X		1,585	\$3,567,076		2017 - 2019 & 2018 - 2020	Ecology	Yes	Instream	No. WROCR-VER1-KITRD-00016 (Amendment No 1)	As of 7/28/20, work is about 59% complete. Total conserved water will be 1585 ac/yr. UPDATED: Project completed and closeout submitted by RC 9/15/2020	
							\$6,482,539		2018 - 2023	Reclamation/YRBWEP	No		R18AP00036. (Add: PriorityProjects.pdf (Source: KRD))	Cost was \$5,751,700, but additional drought funds allocated through BOR in 2021.	Water is used for tributary supplementation program. Manastash Creek and some water to tributary supplement program including Tucker, Big, Little, and Taneum Creeks using passthrough water.
							\$300,000		2018 - 2022	Reclamation/WaterSmart	Yes		R18AP00180	As of 7/28/20, work is about 59% complete. Total conserved water will be 1585 ac/yr.	
			Reach 4 & 5 lining.				\$3,251,700		2022	Reclamation/WaterSmart	No		R18AP00036 (Add: PriorityProjects.pdf (Source: KRD))	KRD is asking for an additional \$500,000 to complete the project.	
Kittitas Reclamation District	5	South Branch Canal Piping - (Phase 2)	Robinson Canyon to Manastash	X		544	\$2,000,000		2019 - 2022	Ecology/Streamflow Restoration	Yes	Instream	WRSRP-2019-KITRD-00044 PriorityProjects.pdf (Source: KRD)	Design and permitting done, construction to begin in October 2020	Water is used for tributary supplementation program. Manastash Creek and some water to tributary supplement program including Tucker, Big, Little, and Taneum Creeks using passthrough water.
Kittitas Reclamation District	6	KRD Main Canal Seepage Loss Correction	Seal cracks and expansion joints in 3000' of concrete lined canal (starting at Tillman siphon/milepost MB12.5)	X		270	\$75,000		2018-2020	Reclamation/WaterSmart	No	Instream	R18AP00254	As of 7/6/20, work is about 54% done. Estimated water savings from communications with Mr. Roger Satnik. Total conserved water will be ~270 ac/yr when complete. (or other non-Federal funding)	Contract does not specifically state it will be used for the Tributary Enhancement Program. May benefit the Yakima River from Easton through Mouth of Canyon
							\$75,000			KRD	No				
Kittitas Reclamation District	7	South Branch Piping	Eliminate loss in 800' section of SBC resulting in 91 acre feet of water conservation. MP 10.4-10.85	X		91	\$1,030,000		2021-2023	Ecology/KRD	No	Instream	WRYBP-2123-KITRD-00024	Per 1/5/2022 PR submitted by Mr. Satnik, contractor has moved to site but not yet submitted payment request.	Water will be used for tributary supplementation program. Manastash Creek and some water to tributary supplement program including Tucker, Big, Little, and Taneum Creeks using passthrough water.
Kittitas Reclamation District	8	South Branch Phase 2 Canal Piping (New Award)	6,000 linear feet of canal piping	X		789	\$6,031,071		2022-2026	Reclamation/WaterSmart	No	Instream	R21AP10329	YRBWEP has obligated \$2.9 million so far. KRD has completed 1450 feet.	Manastash Creek and some water to tributary supplement program including Tucker, Big, Little, and Taneum Creeks using passthrough water.
Kittitas Reclamation District	9	North Branch Canal Lining	5600 linear feet of lining above Johnson.	X		1,110	\$6,007,585		2021-2026	Reclamation/YRBWEP	No	Instream	R21AP10328	YRBWEP has obligated \$2.2 million. KRD has complete design and started construction.	Manastash Creek and some water to tributary supplement program including Tucker, Big, Little, and Taneum Creeks using passthrough water.
Kittitas Reclamation District	10	South Branch Piping	1902 linear feet of canal piping	X		317.4	\$2,000,000		2022-2024	Reclamation/WaterSmart EWRP	No	Instream	R22AP00600	Will begin construction fall of 2023.	Water will be used for tributary supplementation program. Manastash Creek and some water to tributary supplement program including Tucker, Big, Little, and Taneum Creeks using passthrough water.

Enhanced Water Conservation
Kittitas Reclamation District
Completed or Ongoing Projects

Entity	Project Reference Number	Project Description	Project Notes	Proratable Water User	Non-proratable Water User	Acre-feet Conserved	Total Cost	Cost/Ac-ft	Year	Funded By	Completed	Conservation Benefit	Contract/Grant/Agreement # or Reference	Notes	Creek/Reach Benefited
Kittitas Reclamation District	11	South Branch Piping	1700 linear feet of canal piping	X		194.3	\$2,000,000		2023-2026	Ecology/KRD	No	Instream	WRYBIP-2325-KittRD-00041	Will begin construction fall of 2023.	Water will be used for tributary supplementation program.
Kittitas Reclamation District	12	North Branch Water Conservation	68,425 feet of piping and lining	X		2773	\$82,938,821		2023-2028	Reclamation/YRBWEP	No	Instream	R23AP00152	\$7,237,478 obligated	Water will be used for tributary supplementation program.
Kittitas Reclamation District	13	South Branch Water Conservation	79,407 feet of piping and lining	X		5245	\$88,363,960		2023-2028	Reclamation/YRBWEP	No	Instream	R23AP00150	\$4,250,000 obligated	Water will be used for tributary supplementation program.
Kittitas Reclamation District	14	South Branch Piping	2656 linear feet of canal piping	X		385	\$3,000,000		2023-2028	Reclamation/WaterSmart EWRP	No	Instream	R24AP00204	Will begin construction fall of 2023.	Water will be used for tributary supplementation program.

COMPLETE PROJECTS TOTAL:	5,274	\$17,404,196	\$3,300
IN-PROGRESS PROJECTS TOTAL:	12,760	\$201,255,676	\$15,772
TOTAL PROJECTS TOTAL:	18,034	\$218,659,872	\$12,125

KRD must deliver **16 CFS (~5,700 AF/YR)** to **Manastash** for instream flow. They have also delivered water to Tucker, Big, Little, and Taneum Creeks using passthrough water. Whiskey, Reecer, Wilson, and other potential creeks will have to wait until we have conserved more water, and can make the changes necessary to guarantee that delivered water would stay in the creek on those tributaries.

Enhanced Water Conservation
Roza Irrigation District
Completed or Ongoing Projects

Entity	Project Reference Number	Project Description	Project Notes	Proratable Water User	Non-proratable Water User	Acre-feet Conserved	Total Cost	Cost/Ac-ft	Year	Funded By	Completed	Conservation Benefit	Contract/Grant/Agreement # or Reference	Notes	Creek/Reach Benefited
Roza Irrigation District	1	Canal Sealing - MP 17.7 to 18.9	Conserve water by sealing cracks and joints w/ AquaLastic in existing concrete lining in an ~6,336 linear foot section of main canal in the Moxee Valley	X		273	\$350,000	\$1,282	2015 - 2017	Ecology	Yes	Drought resiliency	IAA C1600174		
Roza Irrigation District	2	Canal Sealing	Sealing at MPs: 11.8, 19.3-19.9, 21.3-21.5, 28.0-28.2, 28.9-29.1, 29.3-29.8, 30.7, 32.8-32.9, 33.2-34, 34.0-34.7, 35.5-35.9, 50.5-50.8, 58.0-58.2, 33.0-33.4 in Main Canal	X		2,115	\$1,528,908	\$723	2015 - 2021	Ecology	Yes	Drought resiliency	IAA C1700086 Amendment 5	As of 7/29/20, the project is 72% complete	
Roza Irrigation District	4	Concrete Lining Seal Mile Post 30.3-30.8	Seal half a mile of concrete liner in the districts main canal to help reduce seepage	X		800	\$75,000 \$79,249		2017	Reclamation/ WaterSmart Roza	Yes Yes	Drought resiliency	R17AP00197		
Roza Irrigation District	5	Canal Sealing (900 feet)	Seal canal (MP 18.5-18.7 to MP 43.9-44.1) by applying AquaLastic over all cracks and joints	X		39	\$25,000 \$25,858		2016	Reclamation/ WaterSmart Roza	Yes Yes	Drought resiliency	R16AP00066	Water savings estimate from YBConsProg.pdf	
Roza Irrigation District	6	Canal Sealing (4,222 linear feet)	Main Canal Concrete Sealing Project - From MP36.2 to MP36.9. Seal 4,222 LF with AquaLastic	X		183	\$74,972 \$74,972		2018	Reclamation/ WaterSmart Roza	Yes Yes	Drought resiliency	R18AP00252		
Roza Irrigation District	7	Pump 7, 21.3 Lateral Enclosed		X		735	\$1,189,395	\$1,618	2013-2014	Roza	Yes	Drought resiliency	Summary of ECS Construction 2019.pdf (Source: Roza)		
Roza Irrigation District	8	Pump 8 Lateral Enclosed		X		848	\$2,269,406	\$2,676	2014-2015	Roza	Yes	Drought resiliency	Summary of ECS Construction 2019.pdf (Source: Roza)		
Roza Irrigation District	9	P16H, 7.8 Lateral Enclosed		X		721	\$1,525,107	\$2,115	2015-2016	Roza	Yes	Drought resiliency	Summary of ECS Construction 2019.pdf (Source: Roza)		
Roza Irrigation District	10	P16L, 18.3, 19.1, 22.1 Lateral Enclosed		X		1,054	\$1,653,200	\$1,569	2016-2017	Roza	Yes	Drought resiliency	Summary of ECS Construction 2019.pdf (Source: Roza)		
Roza Irrigation District	11	P9 Lateral Enclosed		X		783	\$2,264,290	\$2,892	2017-2018	Roza	Yes	Drought resiliency	Summary of ECS Construction 2019.pdf (Source: Roza)		
Roza Irrigation District	12	P15H, 23.9, 24.3 Lateral Enclosed		X		873	\$2,800,000	\$3,207	2018-2019	Roza	Yes	Drought resiliency	Summary of ECS Construction 2019.pdf (Source: Roza)		
Roza Irrigation District	13	P15L, 23.2, 24.8 Lateral Enclosed		X		1,002	\$3,050,000	\$3,044	2019-2020	Roza	Yes	Drought resiliency	Summary of ECS Construction 2019.pdf (Source: Roza)		
Roza Irrigation District	14	Main Canal concrete sealing project, appx 2.5 miles	Sealing of cracks and joints of approximately 2.5 miles of concrete lined canal with a polyurea compound.	X		2,500	\$481,000	\$192	2021-2023	Ecology/YBIP	No	Drought resiliency	WRYBIP-2123-RozID-00026	2500 ac-ft estimate from Mr. Wayne Sonnichsen 3/1/2022.	
Roza Irrigation District	15	One third of P14 Lateral Enclosed. 15.0, 17.1, 35.2A, 38.5 Lateral enclosed.		X		290	\$ 2,400,000	\$ 8,276	2021-2024	Ecology/YBIP	No	Drought resiliency		Per correspondence with Mr. Wayne Sonnichsen 4/10/23.	
Roza Irrigation District	16	Remaining 2/3rd P14 Lateral enclosed.		X		450	\$2,000,000	\$ 4,444	2023-2024	Roza	No	Drought resiliency		Per correspondence with Mr. Wayne Sonnichsen 2/14/24.	
Roza Irrigation District	17	Main Canal concrete sealing project, appx 1.5 miles	Sealing of cracks and joints of approximately 1.5 miles of concrete lined canal with a polyurea compound.	X		1600	\$ 600,600	\$ 375	2023-2025	Ecology/YBIP	No	Drought resiliency	WRYBIP-2325-RozID-00042	Per correspondence with Mr. Wayne Sonnichsen 2/14/24.	

COMPLETE PROJECTS TOTAL:	9,426	\$16,985,358	\$1,802
IN-PROGRESS PROJECTS TOTAL:	4,840	\$5,481,600	\$1,133
TOTAL PROJECTS TOTAL:	14,266	\$22,466,958	\$1,575

Enhanced Water Conservation
 Kennewick Irrigation District
 Completed or Ongoing Projects

Entity	Project Reference Number	Project Description	Project Notes	Proratable Water User	Non-proratable Water User	Acre-feet Conserved	Total Cost	Cost/Ac-ft	Year	Funded By	Completed	Conservation Benefit	Contract/Grant/Agreement # or Reference	Notes	Creek/Reach Benefited
Kennewick Irrigation District	1	Canal Lining		X		131	\$580,913	\$4,434	2013 - 2015	KID	Yes	Drought Resiliency	GrantSummary.pdf (source: KID)		
Kennewick Irrigation District	2	EPDM Canal Lining and Conservation Project (KID WaterSmart13 Canal Lining Project)	Line 14.6 miles of existing earthen canal with geomembrane liner.	X			\$1,500,000		2013 - 2015	Reclamation/ WaterSmart	Yes	Drought Resiliency & Instream	R13AP13016 (WEEG 2013)	Does not include drive water (2,199 AF) at Chandler Pumps Not Diverted at Prosser for conserved water. A portion of water conserved will remain instream for add'l fishery habitat. Remaining water savings used to shore up supplies during periods of shortage. District also estimates energy savings of 228,459 kw hours throughout reduction of pumping req.	Chandler Powerplant to Columbia River
			Line 14.6 miles of existing earthen canal with geomembrane liner.	X		1,763	\$4,305,344	\$3,293	2013 - 2015	KID	Yes			AF conserved and cost/ac-ft includes line above	Chandler Powerplant to Columbia River
Kennewick Irrigation District	3	HDPE Canal Lining and Water Conservation Project (KID WaterSmart16 Canal Lining Project)	Line 7.2 miles of an existing earthen canal with high-density polyethylene geomembrane liner	X			\$1,000,000		2016 - 2019	Reclamation/ WaterSmart	No	Drought Resiliency & Instream	R16AP00108 (WEEG-050 2016)	Does not include drive water (1,334 AF) at Chandler Pumps Not Diverted at Prosser for conserved water.	Chandler Powerplant to Columbia River
				X		1,067	\$2,471,215	\$3,253	2016 - 2019	KID	No			Per Bruce Sully, will be complete for 2022 irrigation season.	Chandler Powerplant to Columbia River
Kennewick Irrigation District	4	KID WaterSmart18 Canal Lining Project	5.6 mi	X			\$1,000,000		2019 - 2022	Reclamation/ WaterSmart	No	Drought Resiliency & Instream	R18AP00184	Contract is awarded, but pending final approval. Does not include drive water (1,546 AF) at Chandler Pumps Not Diverted at Prosser for conserved water	Chandler Powerplant to Columbia River
				X		1,237	\$2,427,874	\$2,771	2019 - 2022	KID	No			Per Bruce Sully 02142022, this will not be complete for 2022 irrigation season.	
Kennewick Irrigation District	5	2022 Canal Lining and Water Conservation Project	Line appx. 3.6 miles of the main canal reducing seepage loss.	X		785	\$4,041,290	\$5,148	2022-	KID	No	Drought Resiliency & Instream	R22AP00568 (WEEG-085)	Contract awarded in 2022. Project will save 1,178 af overall. Project description notes that settlement requires that a minimum of 393 af of the conserved water will stay in stream during fish critical and low flow periods. Source USBR Watersmart project list, 2023.	Chandler Powerplant to Columbia River
						393	\$2,000,000	\$5,089		Reclamation/ WaterSmart	No				

COMPLETE PROJECTS TOTAL:	1,894	\$6,386,257	\$3,372
IN-PROGRESS PROJECTS TOTAL:	3,482	\$12,940,379	\$3,716
TOTAL PROJECTS TOTAL:	5,376	\$19,326,636	\$3,595

Enhanced Water Conservation
Naches-Selah Irrigation District
Completed or Ongoing Projects

Entity	Project Reference Number	Project Description	Project Notes	Proratable Water User	Non-proratable Water User	Acre-feet Conserved	Total Cost	Cost/Ac-ft	Year	Funded By	Completed	Conservation Benefit	Contract/Grant/Agreement # or Reference	Notes	Creek/Reach Benefited
Naches-Selah Irrigation District	1	Pipe Guinan Lateral - Phase 2 (North End)	Pipe Guinan Lateral - Phase 2 2013: Install 3,440 12" HDPE Pipe and replace waterboxes with enclosed deliveries.	X ¹	X	64	167,750.32	\$2,641.74	2013	NSID	Yes	Drought Resiliency		All project data provided by Justin Harter	
Naches-Selah Irrigation District	2	D-Section Lining - 5,400 Ft	D-Section Lining - Installation of 5,400 Ft of Geomembrane Liner from Mile 9.8 to 10.8 & Mile 11.4 to 11.7 on D Section of Main Canal	X ¹	X	273	\$213,747		2013	Reclamation/ Watersmart	Yes	Drought Resiliency			
							\$213,747	\$1,565.93		NSID	Yes	Drought Resiliency			
Naches-Selah Irrigation District	3	Main Canal Flume Replacement	Replace Wood and Concrete Flumes circa 1910-1950. Install 3,530ft reinforced concrete canal over HDPE geomembrane, 3,326ft 96" CCFRP Pipe	X ¹	X	1,150	\$7,430,860	\$6,462.74	2014	NSID	Yes	Drought Resiliency			
Naches-Selah Irrigation District	4	Mile 14.48 Lining	Install 2,600ft exposed bituminous geomembrane lining over circa 1918 concrete canal	X ¹	X	417.9	\$209,422	\$501.13	2020	NSID	Yes	Drought Resiliency			
Naches-Selah Irrigation District	5	No. 3 Lateral Pipe conversion	Install 14,400 feet of pipe on the No. 3 Lateral	X ¹	X	1,500	\$6,000,000	\$4,000.00	2022	NSID	No	Drought Resiliency		In Progress, scheduled to be complete by April 2022	

¹ Water user has both non-proratable and proratable entitlements (mostly non-proratable)

COMPLETE PROJECTS TOTAL:	1,904	\$8,235,526.43	\$4,324.93
IN-PROGRESS PROJECTS TOTAL:	1,500	\$6,000,000.00	\$4,000.00
TOTAL PROJECTS TOTAL:	3,404	\$14,235,526.43	\$4,181.75

Enhanced Water Conservation
Selah-Moxee Irrigation District
Completed or Ongoing Projects

Entity	Project Reference Number	Project Description	Project Notes	Proratable Water User	Non-proratable Water User	Acre-feet Conserved	Total Cost	Cost/Ac-ft	Year	Funded By	Completed	Conservation Benefit	Contract/Grant/Agreement # or Reference	Notes	Creek/Reach Benefited
Selah-Moxee Irrigation District	1	Moxee Canal	Postma Pipe Line Phase III (Railroad to Canal End) 21"-12"	X ¹	X ²	233	\$351,000	\$1,506.44	2014	SMID	Yes	Drought Resiliency	SMID Conservation Projects.pdf (Source: SMID)		
Selah-Moxee Irrigation District	2	S-M Canal	Replace T.O. and water measure	X ¹	X ²	9	\$20,000	\$2,285.71	2016	SMID	Yes	Drought Resiliency	SMID Conservation Projects.pdf (Source: SMID)		
Selah-Moxee Irrigation District	3	S-M Canal	Replace T.O. and water measure	X ¹	X ²	15	\$20,000	\$1,333.33	2018	SMID	Yes	Drought Resiliency	SMID Conservation Projects.pdf (Source: SMID)		
Selah-Moxee Irrigation District	4	S-M Canal	Replace T.O. and water measure	X ¹	X ²	10	\$20,000	\$2,000.00	2019	SMID	Yes	Drought Resiliency	SMID Conservation Projects.pdf (Source: SMID)		
Selah-Moxee Irrigation District	5	S-M Canal	S-M End Pipe Line Phase 1 (18" & 24")	X ¹	X ²	78	\$171,000	\$2,206.45	2020	SMID	Yes	Drought Resiliency	SMID Conservation Projects.pdf (Source: SMID)		
Selah-Moxee Irrigation District	6	Install 1500 LF PVC pipe Gamache Upper S-M Canal End	1500 LF 24" PVC	X ¹	X ²	78	\$182,152	\$2,350.35	2020	SMID	Yes	Drought Resiliency	Correspondence with Nathan Draper	Completed 2021	
Selah-Moxee Irrigation District	7	Install 2450 LF PVC Pipe Ekelman L-M Canal	2450 LF 30" PVC	X ¹	X ²	125	\$307,049	\$2,462.30	2020	SMID	Yes	Drought Resiliency	Correspondence with Nathan Draper	Completed 2021	
Selah-Moxee Irrigation District	8	Install 1300 LF 18" PVC pipe at the end of S-M canal	1300 LF 18" PVC	X ¹	X ²	68	\$155,000	\$2,295.62	2021	SMID	Yes	Drought Resiliency	Correspondence with Nathan Draper	Completed 2022	
Selah-Moxee Irrigation District	9	S-M Canal at Walters Rd.	700 LF canal liner	X ¹	X ²	15 **			2021	SMID	No	Drought Resiliency	Correspondence with Nathan Draper	Postponed to 2025	
Selah-Moxee Irrigation District	10	Install 1700 LF canal liner in S-M Canal at Pamaona	1700 LF canal liner	X ¹	X ²	36	\$97,525	\$2,680.73	2021	SMID	Yes	Drought Resiliency	Correspondence with Nathan Draper	Completed 2022	
Selah-Moxee Irrigation District	11	S-M Rob-Gam Piping	860 LF piping	X ¹	X ²	47	\$226,163	\$4,841.86	2023	SMID	Yes	Drought Resiliency	Correspondence with Nathan Draper		
Selah-Moxee Irrigation District	12	Moxee Ditch Mieras Rd Piping Phase A	1200 LF 30" pvs	X ¹	X ²	62.2	\$337,157	\$ 5,420.53	2022	SMID	Yes	Drought Resiliency	Correspondence with Nathan Draper	Completed 2022	
Selah-Moxee Irrigation District	13	Hubbard Intertie	200 LF piping and water measurement	X ¹	X ²	10.3	\$35,954	\$3,490.69	2022	SMID	Yes	Drought Resiliency	Correspondence with Nathan Draper	Completed 2023	
Selah-Moxee Irrigation District	14	S-M Canal Lining at Weaver	Install 700 LF Canal liner	X ¹	X ²	15	\$32,486	\$ 2,165.73	2022	SMID	Yes	Drought Resiliency	Correspondence with Nathan Draper	Completed Fall 2022	

Enhanced Water Conservation
Selah-Moxee Irrigation District
Completed or Ongoing Projects

Entity	Project Reference Number	Project Description	Project Notes	Proratable Water User	Non-proratable Water User	Acre-feet Conserved	Total Cost	Cost/Ac-ft	Year	Funded By	Completed	Conservation Benefit	Contract/Grant/Agreement # or Reference	Notes	Creek/Reach Benefited
Selah-Moxee Irrigation District	15	S-M Canal Piping Siphon 2-3	Install 1300 lf 60" PVC	X ¹	X ²	233.46	\$606,290	\$2,596.98	2023	SMID	Yes	Drought Resiliency	Correspondence with Nathan Draper	Completed Fall 2023	
Selah-Moxee Irrigation District	16	L-M Canal Piping	Install 1000 lf 30" PVC	X ¹	X ²	51.8	\$241,280	\$ 4,657.92	2023	SMID	Yes	Drought Resiliency	Correspondence with Nathan Draper	Completed Feb 2024	
Selah-Moxee Irrigation District	17	S-M Gam-Rob Piping Ph C	3,300 LF 30" PVC Pipe	X ¹	X ²	172			2024/25	SMID	No	Drought Resiliency			
Selah-Moxee Irrigation District	18	L-M Morrier Ranch Piping	4300 LF 30" PVC Pipe	X ²	X ²				2025/26		No	Drought Resiliency			
Selah-Moxee Irrigation District	19	S-M Tunnel Entrance Piping	1300 LF 66" HDPE Pipe	X ¹	X ²	318.35			2025/26		No	Drought Resiliency			

¹ 14.4% Junior rights (proratable)

² 85.6% Senior rights (non-proratable)

** Cost estimate not provided, final cost will be reported

COMPLETE PROJECTS TOTAL:	1,070	\$2,803,056	\$2,620.12
IN-PROGRESS PROJECTS TOTAL:	505	\$0	\$0.00
TOTAL PROJECTS TOTAL:	1,575	\$2,803,056	\$1,779.55

Enhanced Water Conservation
Columbia Irrigation District
Completed or Ongoing Projects

Entity	Project Reference Number	Project Description	Project Notes	Proratable Water User	Non-proratable Water User	Acre-feet Conserved	Total Cost	Cost/Ac-ft	Year	Funded By	Completed	Conservation Benefit	Contract/Grant/Agreement # or Reference	Notes	Creek/Reach Benefited
Columbia Irrigation District	1	Lateral 2 Mile 2.1 Liner Project	Line 850 LF of CID's Lateral 2 Canal with fiber reinforced concrete lining over a membrane liner			13	\$ 73,438	\$5,649.08	2020-2022	Reclamation/WaterSMART	Yes	Drought Resiliency	R19AP00199	will be completed for irrigation season 2022.	
Columbia Irrigation District	2	Lateral 2 Mile 2.26 Liner Project	Line 850 LF of CID's Lateral 2 Canal with fiber reinforced concrete lining over a membrane liner			13	\$ 61,320	\$ 4,716.92	2021-2023?	Reclamation/WaterSMART	Yes	Drought Resiliency	R20AP00171/R21 AP00171		
Columbia Irrigation District	3	Birtle spillway liner	line 925 LF of CID's main canal with fiber reinforced concrete				\$ 198,000		2022-2023	C.I.D	yes	Drought Resiliency			
Columbia Irrigation District	4	Lateral 1 Rebuild/R e-size	Replace 1,700 linear Ft of old broken liner and widened canal to hold water instream longer				\$ 135,000		2022-2024	C.I.D	yes	Drought Resiliency			
Columbia Irrigation District	5	Valley View Liner	line 1,850 linear ft of CID's main canal with fiber reinforced concrete				\$ 375,000		2023-2024	C.I.D	Yes	Drought Resiliency			
Columbia Irrigation District	6	Rubicon Gates	CID has installed 12 Automated Rubicon gates				\$ 400,000		2018-2024	C.I.D/Reclamation	yes	Drought Resiliency	R21AS00300 R23AP00218-00		
Columbia Irrigation District	7	Divide Liner project	CID lined 1,450 linear ft of canl with fiber reinforced concrete				\$ 95,000		2023-2024	C.I.D	Yes	Drought Resiliency			

COMPLETE PROJECTS TOTAL:	26	\$ 1,337,758	\$ 51,452.23
IN-PROGRESS PROJECTS TOTAL:	0	\$ -	\$ -
TOTAL PROJECTS TOTAL:	26	\$ 1,337,758	\$ 51,452.23

Enhanced Water Conservation
Conservation Districts
Completed or Ongoing Projects

Entity	Project Reference Number	Project Description	Project Notes	Proratable Water User	Non-proratable Water User	Acre-feet Conserved	Total Cost	Cost/Ac-ft	Year	Funded By	Completed	Conservation Benefit	Contract/Grant/Agreement # or Reference	Notes	Creek/Reach
Kittitas County Conservation District	1	Manastash – Consolidated Pipeline & MWDA Pipeline Construction	Replace MWDA earthen ditch with 4 miles of pipeline and remove three unscreened diversions on Manastash Creek	N/A	N/A	587	\$507,713	\$864.35	2013 - 2015	Ecology	Yes	Instream Flow	G1000527		Manastash Creek
Kittitas County Conservation District	2	Anderson Diversion Irrigation Water Acquisition	Trout Unlimited negotiate acquisition of water rights for instream flow or alternately KCCD assist with connection between existing irrigation systems and the new KRD Lateral 13.8 pressurized pipeline in exchange for an equitable portion of water rights	N/A	N/A	36	\$275,000	\$7,617.73	2016 - 2021	Ecology	Yes	Instream Flow			
		Reed Pipeline Construction	Continue the pipeline previously constructed by USBR by designing pipeline to replace one mile of earthen ditch.	N/A	N/A		\$200,000	#DIV/0!		Ecology	Yes	Instream Flow	WROCR-VER1-KittCD-00003 (Amendment No. 5)	Design only	Manastash Creek
		Stockwater Acquisition	KCCD and Trout Unlimited to work with stockwater rights holders to acquire water for instream flow and convert to winter stockwatering wells.	N/A	N/A	2,120	\$1,060,020	\$500.01		Ecology (SRA)	No	Instream Flow		Amendment 7 added \$75,000 into KCCD ECY grant for stockwater acquisition.	Manastash Creek
Kittitas County Conservation District	3	Irrigation Efficiency Improvements	273 acres flood/rill irrigation to sprinkler	N/A	N/A	273	\$354,900	\$1,300.00	2013	NRCS	Yes	Instream Flow		Source: 'Conservation by Acres by County.xlsx'. 1 AF conserved per 1 AC converted used as an estimate of water savings. Cost is estimated based on average conversion cost of other NRCS projects.	Reach benefits could not be determined?
Kittitas County Conservation District	4	Irrigation Efficiency Improvements	771 acres flood/rill irrigation to sprinkler	N/A	N/A	771	\$1,002,300	\$1,300.00	2014	NRCS	Yes	Instream Flow		Source: 'Conservation by Acres by County.xlsx'. 1 AF conserved per 1 AC converted used as an estimate of water savings. Cost is estimated based on average conversion cost of other NRCS projects.	Reach benefits could not be determined?
Kittitas County Conservation District	5	Irrigation Efficiency Improvements	755 acres flood/rill irrigation to sprinkler	N/A	N/A	755	\$981,500	\$1,300.00	2015	NRCS	Yes	Instream Flow		Source: 'Conservation by Acres by County.xlsx'. 1 AF conserved per 1 AC converted used as an estimate of water savings. Cost is estimated based on average conversion cost of other NRCS projects.	Reach benefits could not be determined?
Kittitas County Conservation District	6	Irrigation Efficiency Improvements	176 acres flood/rill irrigation to sprinkler	N/A	N/A	176	\$228,800	\$1,300.00	2016	NRCS	Yes	Instream Flow		Source: 'Conservation by Acres by County.xlsx'. 1 AF conserved per 1 AC converted used as an estimate of water savings. Cost is estimated based on average conversion cost of other NRCS projects.	Reach benefits could not be determined?
Kittitas County Conservation District	7	Irrigation Efficiency Improvements	175 acres flood/rill irrigation to sprinkler	N/A	N/A	175	\$227,500	\$1,300.00	2017	NRCS	Yes	Instream Flow		Source: 'Conservation by Acres by County.xlsx'. 1 AF conserved per 1 AC converted used as an estimate of water savings. Cost is estimated based on average conversion cost of other NRCS projects.	Reach benefits could not be determined?
Kittitas County Conservation District	8	Upper Yakima RCPP Irrigation Efficiency Improvements	Conversion of surface to sprinkler irrigation on 331 acres	N/A	N/A	689	\$1,000,000	\$1,452.10	2018 - 2021	Ecology	No	Instream Flow	WRYBIP-VER1KittCCD*-00002 & Amendment No. 1	Per communication with Anna Lael, will be complete June 2022.	Reach benefits could not be determined?

Enhanced Water Conservation
Conservation Districts
Completed or Ongoing Projects

Entity	Project Reference Number	Project Description	Project Notes	Proratable Water User	Non-proratable Water User	Acre-feet Conserved	Total Cost	Cost/Ac-ft	Year	Funded By	Completed	Conservation Benefit	Contract/Grant/Agreement # or Reference	Notes	Creek/Reach
North Yakima Conservation District	9	CCWUA Barrier Removal and Trust Water	NYCD eliminated the need to use two Cowiche Creek diversions by creating a new 7.9 cfs water right on the Tieton River at the same point of diversion as the Yakima Tieton Irrigation District. An agreement between the Cowiche Creek Water Users (CCWUA), YTID, and Reclamation was entered into, in which YTID uses its current pipeline infrastructure to transport the CCWUA water right to their existing place of use where a new pressurized pipeline taps into YTID's mainline and delivers water.	N/A	N/A	1,583	\$574,599	\$362.98	2015 - 2018	Salmon Recovery Funding Board (RCO)	Yes	Instream Flow	12-1328R		Cowiche Creek to Naches River
			The existing CCWUA 7.9 cfs Cowiche Creek water right was acquired by the Washington Water Project of Trout Unlimited and placed into trust down to the Naches River.				\$350,007	#DIV/0!		North Yakima Conservation District	Yes	Instream Flow			
South Yakima Conservation District	10	Irrigation Efficiency Improvements	82 acres flood/rill irrigation to sprinkler	N/A	N/A	82	\$106,600	\$1,300.00	2013	NRCS	Yes	Drought Resiliency ¹		Source: 'Conservation by Acres by County.xlsx'. 1 AF conserved per 1 AC converted used as an estimate of water savings. Cost is estimated based on average conversion cost of other NRCS projects. It is a placeholder.	
South Yakima Conservation District	11	Irrigation Efficiency Improvements	404 acres flood/rill irrigation to sprinkler	N/A	N/A	404	\$525,200	\$1,300.00	2014	NRCS	Yes	Drought Resiliency ¹		Source: 'Conservation by Acres by County.xlsx'. 1 AF conserved per 1 AC converted used as an estimate of water savings. Cost is estimated based on average conversion cost of other NRCS projects.	
South Yakima Conservation District	12	Irrigation Efficiency Improvements	1247 acres flood/rill irrigation to sprinkler	N/A	N/A	1,247	\$1,621,100	\$1,300.00	2015	NRCS	Yes	Drought Resiliency ¹		Source: 'Conservation by Acres by County.xlsx'. 1 AF conserved per 1 AC converted used as an estimate of water savings. Cost is estimated based on average conversion cost of other NRCS projects.	
South Yakima Conservation District	13	Irrigation Efficiency Improvements	75 acres flood/rill irrigation to sprinkler	N/A	N/A	75	\$97,500	\$1,300.00	2016	NRCS	Yes	Drought Resiliency ¹		Source: 'Conservation by Acres by County.xlsx'. 1 AF conserved per 1 AC converted used as an estimate of water savings. Cost is estimated based on average conversion cost of other NRCS projects.	
South Yakima Conservation District	14	Irrigation Efficiency Improvements	240 acres flood/rill irrigation to sprinkler	N/A	N/A	240	\$312,000	\$1,300.00	2017	NRCS	Yes	Drought Resiliency ¹		Source: 'Conservation by Acres by County.xlsx'. 1 AF conserved per 1 AC converted used as an estimate of water savings. Cost is estimated based on average conversion cost of other NRCS projects.	
Benton Conservation District	15	Heritage Garden Program	12 gardens certified.	N/A	N/A	1	\$75,000	\$62,500.00	2019-2021	Ecology	Yes	Drought Resiliency	Agreement No. WRYBIP-1921-BentCD-00012	397,364 gallons saved per grant close out report.	
Benton Conservation District	16	Heritage Garden Program Implementation		N/A	N/A	0.2	\$34,125	\$213,281.25	2018-2019	Ecology	Yes	Drought Resiliency	Agreement No. WRYBIP-2019-BentCD-00001		
Benton Conservation District	17	Irrigation Efficiency Improvements	30 acres wheelie to pivot on row crops	N/A	N/A	14	\$25,000	\$1,773.05	2013	Washington State Conservation Commission	Yes	Drought Resiliency		Info provided by Benton Conservation District	
Benton Conservation District	18	Irrigation Efficiency Improvements	14 acres flood to pod irrigation on pasture	N/A	N/A	28	\$15,000	\$535.71	2013	Washington State Conservation Commission	Yes	Drought Resiliency		Info provided by Benton Conservation District	
Benton Conservation District	19	Irrigation Efficiency Improvements	14 acres flood to solid set/handline irrigation on pasture	N/A	N/A	28	\$9,000	\$321.43	2013	Washington State Conservation Commission	Yes	Drought Resiliency		Info provided by Benton Conservation District	
Benton Conservation District	20	Irrigation Efficiency Improvements	40 acres wheelie to pivot irrigation on row crops	N/A	N/A	25	\$15,000	\$595.24	2014	Benton Conservation District	Yes	Drought Resiliency		Info provided by Benton Conservation District	

Enhanced Water Conservation
Conservation Districts
Completed or Ongoing Projects

Entity	Project Reference Number	Project Description	Project Notes	Proratable Water User	Non-proratable Water User	Acre-feet Conserved	Total Cost	Cost/Ac-ft	Year	Funded By	Completed	Conservation Benefit	Contract/Grant/Agreement # or Reference	Notes	Creek/Reach
Benton Conservation District	21	Irrigation Efficiency Improvements	23 acres flood to pod irrigation on pasture	N/A	N/A	46	\$16,497	\$358.63	2014	Benton Conservation District	Yes	Drought Resiliency		Info provided by Benton Conservation District	
Benton Conservation District	22	Irrigation Efficiency Improvements	3 acres flood to solid set irrigation on row crops	N/A	N/A	5	\$1,813	\$362.61	2014	Benton Conservation District	Yes	Drought Resiliency		Info provided by Benton Conservation District	
Benton Conservation District	23	Irrigation Efficiency Improvements	10 acres flood to solid set irrigation on pasture	N/A	N/A	20	\$8,349	\$417.47	2014	Washington State Conservation Commission	Yes	Drought Resiliency		Info provided by Benton Conservation District	
Benton Conservation District	24	Irrigation Efficiency Improvements	15 acres wheeline to solid set irrigation on row crops	N/A	N/A	4	\$3,900	\$1,083.31	2014	Washington State Conservation Commission	Yes	Drought Resiliency		Info provided by Benton Conservation District	
Benton Conservation District	25	Irrigation Efficiency Improvements	16.4 acres wheeline to linear line irrigation on row crops	N/A	N/A	10	\$45,411	\$4,408.82	2015	Washington State Conservation Commission	Yes	Drought Resiliency		Info provided by Benton Conservation District	
Benton Conservation District	26	Irrigation Efficiency Improvements	126 acres wheeline to pivot irrigation on alfalfa	N/A	N/A	111	\$15,000	\$134.89	2015	Benton Conservation District	Yes	Drought Resiliency		Info provided by Benton Conservation District	
Benton Conservation District	27	Irrigation Efficiency Improvements	18 acres flood to wheeline irrigation on pasture	N/A	N/A	36	\$16,461	\$457.24	2015	Benton Conservation District	Yes	Drought Resiliency		Info provided by Benton Conservation District	
Benton Conservation District	28	Irrigation Efficiency Improvements	50 acres overhead sprinkler to drip irrigation on pasture	N/A	N/A	29	\$15,000	\$513.70	2015	Benton Conservation District	Yes	Drought Resiliency		Info provided by Benton Conservation District	
Benton Conservation District	29	Irrigation Efficiency Improvements	40 acres flood to pod irrigation on pasture	N/A	N/A	80	\$15,000	\$187.50	2016	Benton Conservation District	Yes	Drought Resiliency		Info provided by Benton Conservation District	
Benton Conservation District	30	Irrigation Efficiency Improvements	3.5 acres flood to solid set irrigation on pasture	N/A	N/A	7	\$7,927	\$1,132.39	2018	Benton Conservation District	Yes	Drought Resiliency		Info provided by Benton Conservation District	
Benton Conservation District	31	Irrigation Efficiency Improvements	21 acres wheeline to center pivot irrigation on row crops	N/A	N/A	13	\$50,000	\$3,787.88	2018	Washington State Conservation Commission	Yes	Drought Resiliency		Info provided by Benton Conservation District	
Kittitas County Conservation District	32	Irrigation Efficiency Improvements	Proposed 140 acres converted from surface to sprinkler irrigation	N/A	N/A	120	\$400,000	\$3,333.33	2021-2023	Ecology	No	Instream Flow	WRYBIP-2123-KirCCD*-00025 (RCP	Info provided by KCCD	
Benton Conservation District	33	Irrigation Efficiency Improvements	19.7 acres of wheeline converted to center pivot	N/A	N/A	9.0	\$48,206	\$5,356.22	2020	Washington State Conservation Commission - NRI	Yes	Drought Resiliency		Info provided by Benton Conservation District	
Benton Conservation District	34	Irrigation Efficiency Improvements	16 acres of k-line and flood irrigation converted to drip irrigation.	N/A	N/A	13	\$20,640	\$1,651.20	2020	Washington State Conservation Commission - VSP	Yes	Drought Resiliency		Info provided by Benton Conservation District	
Benton Conservation District	35	Irrigation Efficiency Improvements	34.6 acres of wheel line converted to a center pivot	N/A	N/A	16.0	\$41,520	\$2,595.00	2020	Washington State Conservation Commission - VSP	Yes	Drought Resiliency		Info provided by Benton Conservation District	
Benton Conservation District	36	Irrigation Efficiency Improvements	24 acres of wheel line and ditch irrigation converted to a center pivot	N/A	N/A	19	\$28,880.00	\$1,504.17	2022	Washington State Conservation Commission	Yes	Drought Resiliency		Info provided by Benton Conservation District	
Benton Conservation District	37	Irrigation Efficiency Improvements	A 0.25 acre pond irrigation pond was lined with an impermeable geotextile	N/A	N/A	18.00	\$35,525.70	\$1,973.65	2022	Benton Conservation District	Yes	Drought Resiliency		Info provided by Benton Conservation District	
Benton Conservation District	38	Irrigation Efficiency Improvements	Replaced Old Leaky Cement Irrigation Pipeline with PVC Pipeline	N/A	N/A	67	\$47,040.48	\$702.10	2023	Benton Conservation District	Yes	Drought Resiliency		Info provided by Benton Conservation District	
Benton Conservation District	39	Heritage Garden Program Implementation	9 certified gardens	N/A	N/A	0.6	\$30,128	\$50,213.33	2023	Benton Conservation District	Yes	Drought Resiliency		Info provided by Benton Conservation District	
Benton Conservation District	40	Heritage Garden Program (Yakima + Kittitas Counties)	39 certified gardens			5.5	214000	\$38,909.09	2021-2023	Ecology	yes	Drought Resiliency	WRYBIP-2123-00023	Info provided by Benton Conservation District. 7 demonstration gardens, 218 site visits, over 2.5 million gal/yr cumulative water savings for Heritage Gardens in Yakima/Kittitas.	
North Yakima Conservation District	41	Purdin Ditch Project	Project will implement a compliant fish screen for the 24 water users who make up the Purdin Ditch Association. In addition the open ditch delivery system will be replaced with a pipeline to each individual water users pump station.	N/A	N/A	545	\$1,916,500	\$3,517.80	2023-2024	North Yakima Conservation District	No	Instream Flow	Update with multiple funding source breakdown provided by Mike.	Info provided by NYCD, Mr. Mike Tobin.	Wenas Creek

Enhanced Water Conservation
Conservation Districts
Completed or Ongoing Projects

Entity	Project Reference Number	Project Description	Project Notes	Proratable Water User	Non-proratable Water User	Acre-feet Conserved	Total Cost	Cost/Ac-ft	Year	Funded By	Completed	Conservation Benefit	Contract/Grant/Agreement # or Reference	Notes	Creek/Reach
Kittitas County Conservation District	42	Irrigation Efficiency	Conversion of 1571 acres from surface to sprinkler irrigation.	N/A	N/A	1571	\$ 2,855,028	\$1,817.33	2018-2023	NRCS	Yes	Instream Flow		Yakima Integrated Plan - Toppenish to Teanaway RCPP Project. Facilitated by KCCD but funded through NRCS directly to producers.	Reach benefits cannot be determined.

¹ NRCS does not require recipients of grants to give up water rights or place water in trust. However, conserved water from these projects is typically left in stream or in the irrigation delivery canal.

² Reach benefits cannot be determined for Irrigation Efficiency Projects. These project locations were not disclosed to protect the farmers' privacy.

COMPLETE PROJECTS TOTAL:	8,581	\$11,054,170	\$1,288.15
IN-PROGRESS PROJECTS TOTAL:	3,473	\$4,376,520	\$1,259.99
TOTAL PROJECTS TOTAL:	12,055	\$15,430,690	\$1,280.03

Enhanced Water Conservation
Cities, Counties, NRCS, Others
Completed or Ongoing Projects

Entity	Project Reference Number	Project Description	Project Notes	Proratable Water User	Non-proratable Water User	Acre-feet Conserved	Cost	Cost/Ac-ft	Year	Funded By	Completed	Conservation Benefit	Contract/Grant/Agreement # or Reference	Notes	Creek/Reach Benefited
City of Yakima	1	City of Yakima Xeriscape Demonstration Project	Project will install a low water use garden at the City of Yakima Public Works Facility and Downtown Yakima			8	\$50,200	\$6,435.90	2015-2017	Ecology	Yes	Drought Resiliency	C1600173		
City of Yakima	2	Low Water Use Garden Conversion Project	City of Yakima will implement a low water-use garden conversion project converting 38,000 sq ft of grass lawn and high water use plants to low water-use landscaping			10	\$63,500		2017 - 2019	Reclamation/WaterSmart	Yes	Drought Resiliency	R17AP2003 (2019 Amendment)		
							\$85,863			City of Yakima	Yes	Drought Resiliency			
Trout Unlimited	3	Manastash Creek Water Acquisitions	Surface water rights & assessed acres from KRD, and KRD water satisfied their need. Essentially removal of redundant water needs.			337	\$128,468	\$381.21	2018	Ecology Water Acquisitions	Yes	Instream		Correspondence with Justin Bezold	Manastash Creek
Benton County, Yakima County, & Tribal Lands NRCS Offices	4	Irrigation Efficiency Improvements	560.4 acres converted to sprinkler or microirrigation	N/A	N/A	560	\$580,574	\$1,036.00	2013	NRCS	Yes	Drought Resiliency ¹	Conservation by Acres by County	Source: 'Conservation by Acres by County.xlsx'. 1 AF conserved per 1 AC converted used as an estimate of water savings	
Benton County, Yakima County, & Tribal Lands NRCS Offices	5	Irrigation Efficiency Improvements	231.2 acres converted to sprinkler or microirrigation	N/A	N/A	231	\$306,429	\$1,325.39	2014	NRCS	Yes	Drought Resiliency ¹	Conservation by Acres by County	Source: 'Conservation by Acres by County.xlsx'. 1 AF conserved per 1 AC converted used as an estimate of water savings	
Benton County, Yakima County, & Tribal Lands NRCS Offices	6	Irrigation Efficiency Improvements	292.1 acres flood/rill irrigation to sprinkler	N/A	N/A	292	\$516,763	\$1,769.13	2015	NRCS	Yes	Drought Resiliency ¹	Conservation by Acres by County	Source: 'Conservation by Acres by County.xlsx'. 1 AF conserved per 1 AC converted used as an estimate of water savings	
Benton County, Yakima County, & Tribal Lands NRCS Offices	7	Irrigation Efficiency Improvements	166 acres flood/rill irrigation to sprinkler	N/A	N/A	166	\$198,003	\$1,192.79	2016	NRCS	Yes	Drought Resiliency ¹	Conservation by Acres by County	Source: 'Conservation by Acres by County.xlsx'. 1 AF conserved per 1 AC converted used as an estimate of water savings	
Benton County, Yakima County, & Tribal Lands NRCS Offices	8	Irrigation Efficiency Improvements	253.7 acres flood/rill irrigation to sprinkler	N/A	N/A	254	\$486,109	\$1,916.08	2017	NRCS	Yes	Drought Resiliency ¹	Conservation by Acres by County	Source: 'Conservation by Acres by County.xlsx'. 1 AF conserved per 1 AC converted used as an estimate of water savings	
Benton County, Yakima County, & Tribal Lands NRCS Offices	9	Irrigation Efficiency Improvements	315.9 acres to sprinkler or microirrigation in Yakima and Benton Counties	N/A	N/A	316	\$518,995	\$1,642.39	2018	NRCS	Yes ²	Drought Resiliency ¹		Source: 'Conservation by Acres by County.xlsx'. 1 AF conserved per 1 AC converted used as an estimate of water savings	
Benton County, Yakima County, & Tribal Lands NRCS Offices	10	Irrigation Efficiency Improvements	724.3 acres to sprinkler or microirrigation in Yakima and Benton Counties	N/A	N/A	724	\$1,080,976	\$1,492.44	2019	NRCS	Yes ²	Drought Resiliency ¹			
Benton County, Yakima County, & Tribal Lands NRCS Offices	11	Irrigation Efficiency Improvements	598.8 acres to sprinkler or microirrigation in Yakima County	N/A	N/A	599	\$1,188,462	\$1,984.74	2020	NRCS	Yes ²	Drought Resiliency ¹			
Kittitas NRCS Office	12	Irrigation Efficiency Improvements	132.2 acres to sprinkler	N/A	N/A	132	\$104,293	\$788.90	2013	NRCS	Yes	Drought Resiliency ¹	NRCS Kittitas	Source: 'Conservation by Acres by County.xlsx'. 1 AF conserved per 1 AC converted used as an estimate of water savings	
Kittitas NRCS Office	13	Irrigation Efficiency Improvements	95 acres to sprinkler	N/A	N/A	95	\$50,000	\$526.32	2014	NRCS	Yes	Drought Resiliency ¹	NRCS Kittitas	Source: 'Conservation by Acres by County.xlsx'. 1 AF conserved per 1 AC converted used as an estimate of water savings	

Enhanced Water Conservation
Cities, Counties, NRCS, Others
Completed or Ongoing Projects

Entity	Project Reference Number	Project Description	Project Notes	Proratable Water User	Non-proratable Water User	Acre-feet Conserved	Cost	Cost/Ac-ft	Year	Funded By	Completed	Conservation Benefit	Contract/Grant/Agreement # or Reference	Notes	Creek/Reach Benefited
Kittitas NRCS Office	14	Irrigation Efficiency Improvements	514.8 acres to sprinkler	N/A	N/A	515	\$419,177	\$814.25	2015	NRCS	Yes	Drought Resiliency ¹	NRCS Kittitas	Source: 'Conservation by Acres by County.xlsx'. 1 AF conserved per 1 AC converted used as an estimate of water savings	
Kittitas NRCS Office	15	Irrigation Efficiency Improvements	255.6 acres to sprinkler	N/A	N/A	226	\$197,366	\$874.85	2016	NRCS	Yes	Drought Resiliency ¹	NRCS Kittitas	Source: 'Conservation by Acres by County.xlsx'. 1 AF conserved per 1 AC converted used as an estimate of water savings	
Kittitas NRCS Office	16	Irrigation Efficiency Improvements	202 acres to sprinkler	N/A	N/A	202	\$274,128	\$1,357.07	2017	NRCS	Yes	Drought Resiliency ¹	NRCS Kittitas	Source: 'Conservation by Acres by County.xlsx'. 1 AF conserved per 1 AC converted used as an estimate of water savings	
Kittitas NRCS Office	17	Irrigation Efficiency Improvements	106.8 acres to sprinkler	N/A	N/A	107	\$266,549	\$2,495.78	2018	NRCS	Yes	Drought Resiliency ¹	NRCS Kittitas	Source: 'Conservation by Acres by County.xlsx'. 1 AF conserved per 1 AC converted used as an estimate of water savings	Reach benefits cannot be determined.
Kittitas County & Trout Unlimited	18	Yakima River Land & Water Acquisitions	Purchase of 675.4 AF water right with SRA funding and 160 acres of floodplain property with Floodplains by Design funding.	NA	NA	675	\$1,700,000	\$2,518.52	2018	Ecology	Yes	Instream	Floodplains by Design & Streamflow Restoration Grants	Per Arden Thomas. Instream flow and historic groundwater mitigation.	Mainstem, downstream from the mouth of the Yakima Canyon
Trout Unlimited	19	Diversion Closure	Tjossem Ditch Closure/Water Acquisition (S4-84195-J, S4-84282-J)	N/A	N/A	18	\$61,850	\$3,436.11	2021	Ecology	Yes	Instream	Ecology Water Acquisitions Funding		Mainstem Yakima, near Yakima Canyon Mouth
Benton County, Yakima County, & Tribal Lands NRCS Offices	20	Irrigation Efficiency Improvements	291.3 acres to sprinkler or micro irrigation	N/A	N/A	291	\$348,232	\$1,196.67	2021	NRCS	Yes ²	Drought Resiliency ¹	NRCS EQIP	Source: 'Conservation by Acres by County.xlsx'. 1 AF conserved per 1 AC converted used as an estimate of water savings	Reach benefit cannot be determined.
Kittitas County	21	Yakima River Land & Water Acquisitions	Purchase of 1,006.82 AF water right and 262 acres of floodplain property.	N/A	N/A	1,007	\$1,382,225	\$1,372.86	2021	Ecology	Yes	Instream	Floodplains by Design	Per Arden Thomas. Instream flow and historic groundwater mitigation.	Mainstem, downstream from the mouth of the Yakima Canyon
Trout Unlimited	22	Manastash Creek Water Acquisitions	Unstacking of redundant rights, serving with KRD supply.	N/A	N/A	127.51	\$45,904	\$360.00	2021	NFWF	No	Instream	CBWTP		Manastash Creek
Benton County, Yakima County, & Tribal Lands NRCS Offices	23	Irrigation Efficiency Improvements	260.8 acres to sprinkler or micro irrigation	N/A	N/A	260.8	\$263,404	\$1,009.74	2021	NRCS	Yes ²	Drought Resiliency ¹	NRCS EQIP	Source: 'Conservation by Acres by County.xlsx'. 1 AF conserved per 1 AC converted used as an estimate of water savings	Reach benefit cannot be determined.
Kittitas NRCS Office	24	Irrigation Efficiency Improvements	415.5 acres to sprinkler or micro irrigation	N/A	N/A	415.5	\$499,205	\$1,201.46	2021	NRCS	Yes ²	Drought Resiliency ¹	NRCS EQIP	Source: 'Conservation by Acres by County.xlsx'. 1 AF conserved per 1 AC converted used as an estimate of water savings	Reach benefits cannot be determined.

¹ NRCS does not require recipients of grants to give up water rights or place water in trust. However, conserved water from these projects is typically left in stream or in the irrigation delivery canal.

² Completion status is an estimation.

³ Reach benefits cannot be determined for Irrigation Efficiency Projects. These project locations were not disclosed to protect the farmers' privacy.

COMPLETE PROJECTS TOTAL:	7,440	\$10,770,708	\$1,448
IN-PROGRESS PROJECTS TOTAL:	128	\$45,904	\$360
TOTAL PROJECTS TOTAL:	7,568	\$10,816,611	\$1,429