Meta

Volumetric Water Benefits: 2024 Report

Prepared by:
LimnoTech

August 2025

LimnoTech
Water Environment | Scientists Engineers

Volumetric Water Benefits:
2024 Report

Prepared for:
Meta

Prepared by:
LimnoTech

August 2025

Contents

Introduction

Meta takes a comprehensive approach to water stewardship, incorporating efficient operations, reuse, and water restoration. Since 2012, Meta has tracked and reported water usage effectiveness at its data centers.

Meta has set a goal of being Water Positive in 2030. To achieve this goal, Meta will restore more water than consumed by supporting and funding projects with volumetric benefits, with targets of restoring 200% of water consumed in high water stress regions and 100% in medium water stress regions. Meta will also provide support and funding for capacity building projects that may not have a volumetric benefit but have a catalytic impact on watersheds where the company operates. Meta initiated its water restoration program in 2017, and through June 2025, Meta has funded over 40 projects that are in various stages of completion in the source watersheds of 10 data centers and Meta facilities with medium to high water risk. Twenty three of these projects generated volumetric benefits in 2024, totaling 1,589.5 million gallons (see Appendix 1). Once the remaining funded projects (see Appendix 2) are fully implemented in the coming years, the total anticipated volumetric benefit from all projects is expected to be 3.0. to 3.4 billion gallons. The locations of the watersheds, Meta assets, and projects are shown in Figure 1.

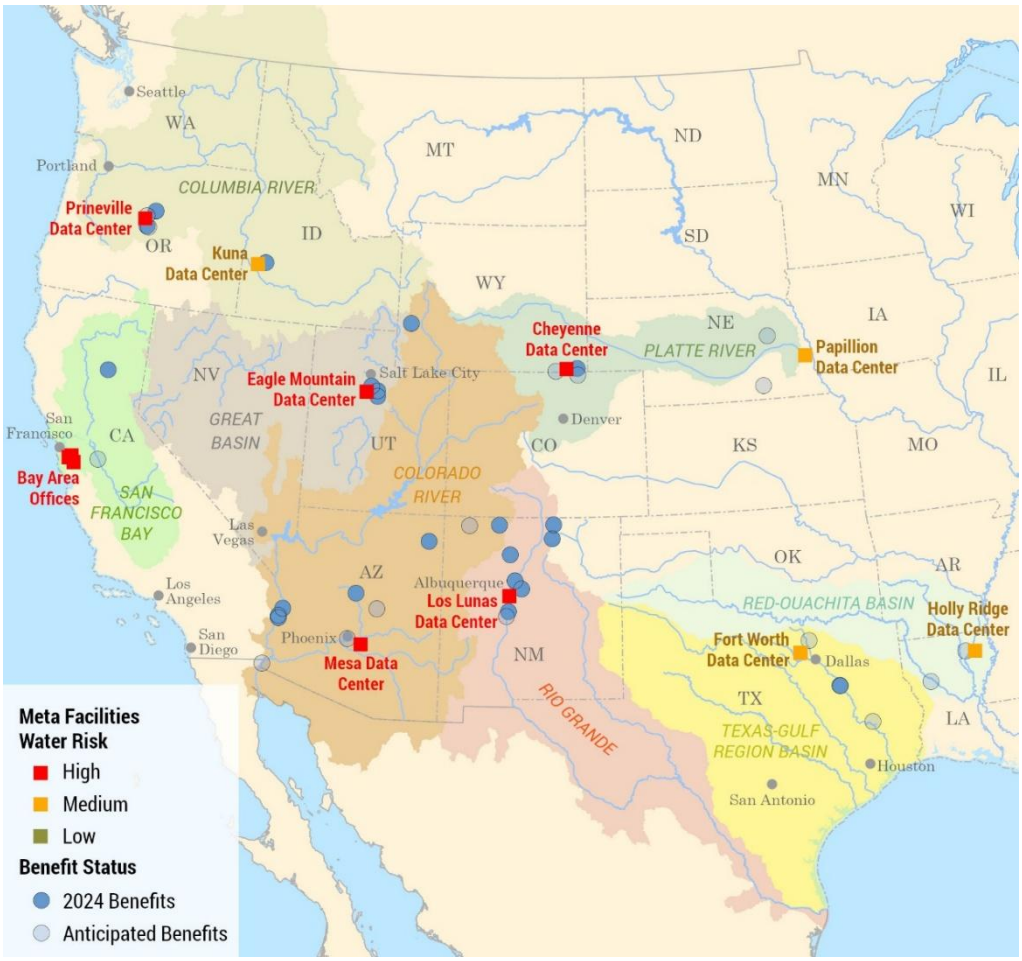


Figure 1. Locations, operations, and basins related to Meta's 2024 water restoration projects.

Quantification Methodology

Volumetric water benefits (VWBs) are the volume of water resulting from water stewardship activities, relative to a unit of time, that modify the hydrology in a beneficial way and/or help reduce shared water challenges, improve water stewardship outcomes, and meet the targets of Sustainable Development Goal (SDG) 6[1] (VWBA, 2019). Volumetric water benefits of water restoration projects are quantified following Reig et al. (2019), and the specific method applied depends on the project objectives, activities implemented, and the information available for calculating benefits. It is recognized that the estimated benefits have some uncertainty, as they are based on available data and information using models and estimation techniques. To reduce this uncertainty, scientifically defensible methodologies and conservative assumptions are employed throughout the quantification process.

Volumetric water benefits of funded and completed projects are first counted in the year the project begins achieving volumetric water benefits, and in each subsequent year, for up to a maximum of ten years, provided the project is maintained and confirmed to function as intended. If a project has multiple funders, the volumetric water benefit is adjusted to reflect Meta's financial contribution compared to the total project cost, to report the percent of the total volumetric water benefit that can be attributed to Meta.

Risk Assessment Methodology

Water risk for each data center or facility was assessed using WRI Aqueduct Water Risk Atlas 4.0 (2023). The Water Risk Atlas includes 13 indicators covering various types of water risk; there are eight indicators related to water quantity, two indicators related to water quality, and three indicators related to regulatory and reputational risk. Based on a site's location, Aqueduct assigns a raw overall risk score as well as a categorical ranking (low, low-medium, medium-high, high, or extremely high), which Meta simplifies into risk scores of low, medium, or high.

However, Aqueduct is a global tool with some underlying limitations. While the underlying models have been validated, the results are not. Water stress remains highly subjective and cannot be measured directly, and not every aspect of water risk can be captured and incorporated into the tool. The underlying model results are static and are only periodically updated in Aqueduct, so the results may not necessarily reflect current basin conditions. Furthermore, the current underlying model does not include inter-basin transfers, which is an important component of many water systems; in such instances, Aqueduct would only capture water risk for the site, not necessarily risk for the site's water supply, which could result in misleading results. Finally, Aqueduct is a global tool meant to compare regions with limited application at the local level. Because of these limitations, best professional judgement was used to adjust the risk scores at several sites based on Meta's intimate knowledge of the local water context. Meta only increases the risk category of a site to a higher category (e.g., Medium to High), but does not adjust the risk score to be lower than what is reflected in Aqueduct.

[1] SDG 6: Ensure availability and sustainable management of water and sanitation for all. https://sdgs.un.org/goals/goal6#targets_and_indicators

Meta's 2024 Volumetric Water Benefits by the Numbers

10
data centers in 7 watersheds

23
projects with 2024 benefits

1,589.5 million gallons
of volumetric water benefit

+
Co-benefits & more projects on the horizon

In 2024, volumetric benefits were generated by 23 Meta-supported water restoration projects implemented across seven watersheds in which data centers and Meta facilities with medium to high water risk are located. These projects have been completed in collaboration with a wide range of partner organizations, including NGOs, government agencies, and private firms. Together, adjusted for Meta's cost-share, the projects represent a volumetric water benefit of 1,589.5 million gallons for 2024. These projects provide a variety of additional benefits beyond their volumetric contributions, including strengthened water security, improved water quality, habitat creation, and erosion prevention.

These projects, as well as other funded projects anticipated to begin generating volumetric benefits in the years ahead, are described below, organized by the watershed they impact.

Columbia River | Prineville Data Center and Kuna Data Center

The Columbia River Basin, within which the Prineville and Kuna Data Centers are located, extends across the northwestern United States and into Canada, covering large portions of Oregon, Washington, Idaho, and Montana. The watershed faces high interannual variability in water supply and availability, and concerns over flooding and water quality. Water demand in excess of reliable supply also contributes to water stress in the basin. Meta has funded four projects within the Columbia River Basin (Figure 2). The Ingram Meadow Restoration and the Prineville Aquifer Storage and Recharge project provided a combined volumetric benefit of 31.8 MGY for the Columbia River basin in 2024. These projects are in the vicinity of the Prineville Data Center. Farther upstream, the Kuna Data Center is rated as having a medium water risk based on its local context. Two additional projects, including the Alta Harris Creek Side Channel project and the McKay Creek Water Rights Exchange project, are not yet complete, but in future years, are expected to provide benefits in the Columbia River basin, in the vicinity of the Kuna Data Center and the Prineville Data Center, respectively.

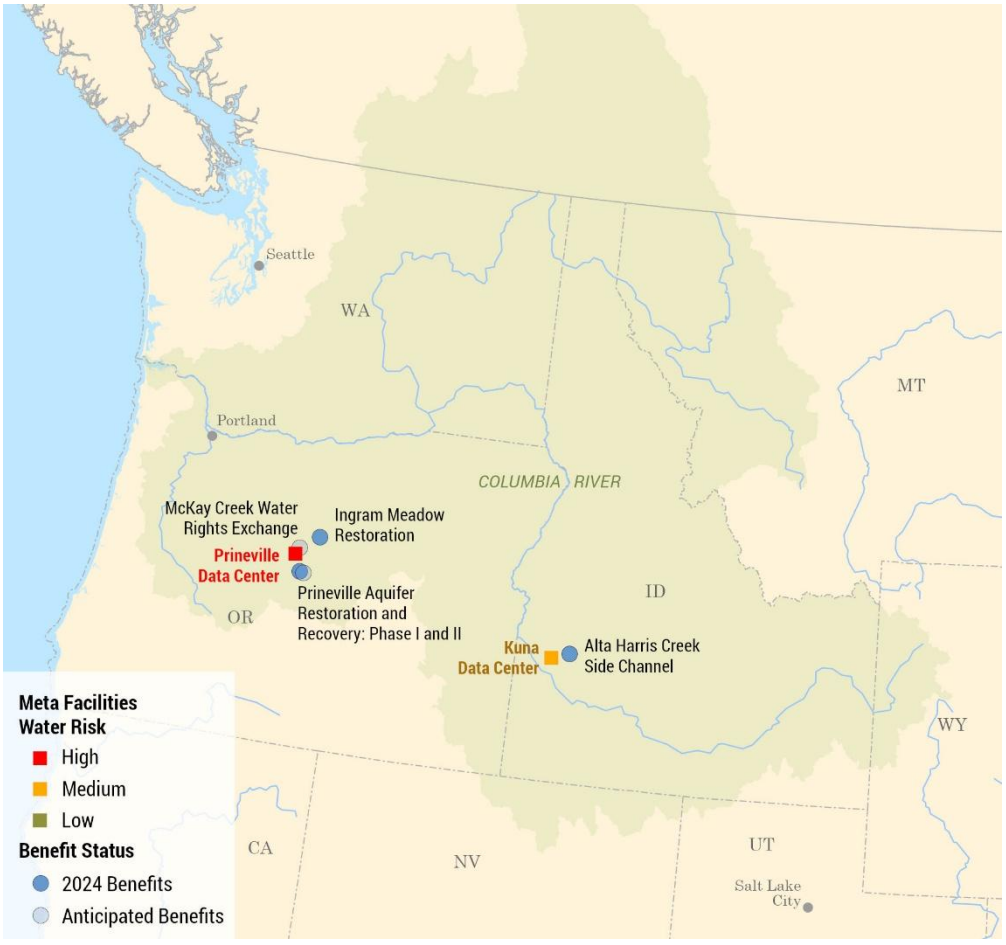


Figure 2. Project locations within the Columbia River Basin.

Ingram Meadow Restoration

Ingram Meadow is located within Ochoco National Forest, Oregon (Figure 3). Past grazing, removal of riparian hardwood vegetation, and timber harvest resulted in a downcut channel that drained the wet meadow and lowered the water table for most of the year. Although the stream channel supported perennial flows of water, the meadow no longer functioned as a "sponge," holding groundwater throughout the year. Instead, the meadow dried out and areas with important fen habitat were at risk of being drained and lost.

Figure 3. Project Location: Ingram Meadow Restoration.

- **Challenge**: Incised channel draining a wet meadow and lowering the water table
- **Outcome**: Restored 15 acres of wet meadow, increasing late summer water availability
- **Volumetric Water Benefit:** 1.5 MGY increased storage
- **Additional Benefits:** Improved water quality, decreased sediment loading, habitat creation
- **SDG Goal**: 6.6

This project, completed in 2019, repaired the degraded, incised channel to halt headcutting by using plug and pond techniques (Figure 4). Significant amounts of large wood, rock, and soil were placed in the channel to prevent upstream headcutting and increase groundwater storage. The aquifer replenishment and corresponding rise of the water table supports increased summer water availability. Additionally, this project improves water quality, reduces sediment loading, and provides improved wet meadow habitat. The implementing partners included the National Forest Foundation, the US Forest Service, the Middle Deschutes Watershed Council, and the Rocky Mountain Elk Foundation. This project is anticipated to provide volumetric benefits through 2029.

Figure 4. Ingram Meadow Restoration Site (Photo credit: USFS, 2018).

Prineville Aquifer Storage and Recharge (Phase I)

The City of Prineville has experienced growing water demand from its customers, including multiple data centers. There are concerns about meeting peak day demands, which can vary from 1 to 4 million gallons per day (MGD), as well as about the long-term resiliency of the city's water supply. This project was funded collaboratively by Meta, Apple, and the City of Prineville to construct an Aquifer Storage and Recovery (ASR) System that takes advantage of underground storage capacity in geologic formations to support the City in meeting growing peak day demands (Figure 5).

Figure 5. Project Location: Prineville ASR.

- **Challenge**: Local water availability
- **Outcome**: Increased supply reliability
- **Volumetric Water Benefit:** 30.3 MGY increased recharge
- **Additional Benefits:** Groundwater level stabilization, improved community economic welfare & climate resilience
- **SDG Goal**: 6.b

To utilize the available storage, groundwater is extracted from wells located near the Crooked River during the winter, when streamflows are higher and demand is lower. The water is conveyed uphill to the ASR, where it is used to recharge the aquifer through injection wells and stored for use during summer periods of greater demand. This project was completed and began delivering volumetric benefits in 2021. The City of Prineville is taking responsibility for ongoing monitoring and maintenance.

Anticipated Future Benefits: Alta Harris Creek Side Channel

In 2005, construction of a side channel on the Boise River was initiated to provide fish passage around Barber Dam. The side channel was connected to the Boise River downstream of the dam but work to connect the side channel to the Boise River upstream of the dam was never completed. The partially completed channel, referred to as the Alta Harris Creek Side Channel, is currently obstructed by the Barber Dam. There is therefore minimal flow in the channel, and the existing flow is primarily from springs and irrigation system overflow. This project will complete the side channel connection with the mainstem of the Boise River to bypass Barber Dam and is expected to improve habitat for native salmonids, improve water quality, and reestablish a robust riparian corridor along the Boise River.

Anticipated Future Benefits: McKay Creek Water Rights Exchange

McKay Creek is a tributary to the Crooked River and provides the freshwater habitat that is critical for successful reintroduction of Middle Columbia River steelhead and salmon in the lower Crooked River. This project aims to restore and permanently protect the natural hydrograph of a six-mile length of McKay Creek to provide habitat for steelhead fry in a reach that is currently dewatered by agricultural withdrawals.

This project involves construction of a pump station, a pipeline, and associated District and on-farm infrastructure to reliably deliver irrigation water to farms and ranges adjacent to McKay Creek. As part of the project, irrigators along McKay Creek will trade their privately held water rights, sourced from McKay Creek, for water rights held by Ochoco Irrigation District, sourced from Prineville Reservoir. In exchange for reliable stored water, these irrigators will transfer McKay Creek water rights permanently instream. This project effectively removes the majority of artificial factors (e.g., agricultural diversion) impacting McKay Creek during the critical spawning period.

Anticipated Future Benefits: Prineville Aquifer Storage and Recharge (Phase II)

Phase II of the Prineville Aquifer Storage and Recharge project (Phase I discussed above) will include the installation of one additional injection and recovery well. Additionally, a new horizontal well will be installed, which will allow for more source water to be withdrawn and facilitate injection at a higher volume. In association with this effort, new meters will be installed and the oxygen system will be upgraded. It is anticipated that Phase II of this project will increase the recharge to the aquifer and provide additional resiliency of the city to drought and water shortages.

Great Basin | Eagle Mountain Data Center

The Great Basin of the Southwestern United States, within which the Eagle Mountain Data Center is located, covers large portions of Nevada and Utah. Water risk in the watershed arises from increasing aridity from climate change and increasing water demand from rapid population growth. These twin pressures have led to substantial and publicized[2] reductions in the volume and area of the Great Salt Lake. This desiccation is leaving the lakebed exposed and allowing dust laden with toxic heavy metals to become airborne, which poses a risk to Salt Lake City to the North of the Eagle Mountain Data Center. Efforts to conserve water have led the City of Eagle Mountain to pause issuance of permits for businesses that require significant water. These concerns contribute to a high water risk in this region. Meta has funded three projects within the Great Basin. The Provo River Flow Restoration, the Hobble Creek Flow Restoration project, and the Eagle Mountain Wastewater Reuse project provided a combined volumetric benefit of 726.9 MGY in 2024 (Figure 6).

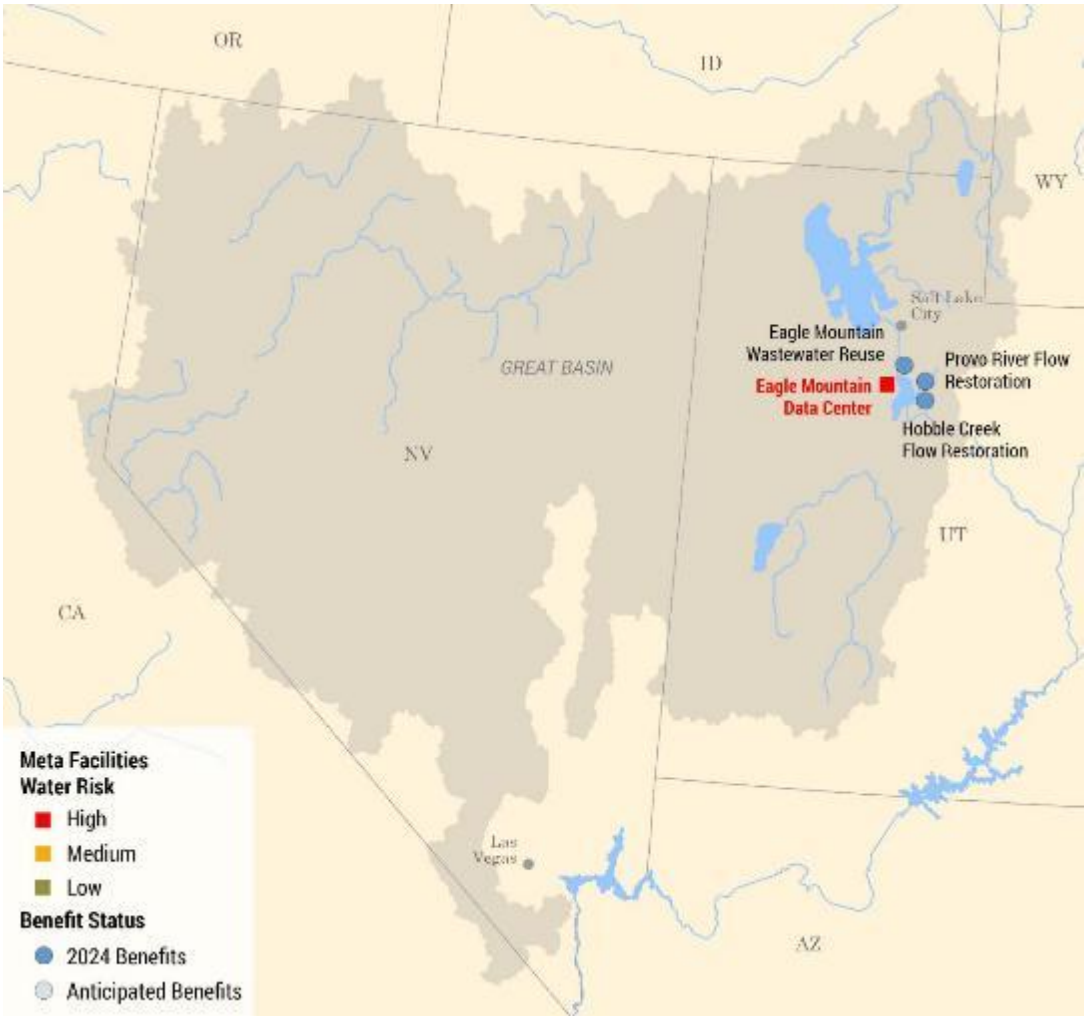


Figure 6. Project locations within the Great Basin.

[2] As the Great Salt Lake Dries Up, Utah Faces An 'Environmental Nuclear Bomb' - The New York Times (nytimes.com)

Provo River Flow Restoration

For over one hundred years, flows from the Provo River have been diverted out of the river at Olmstead Diversion Dam for hydropower generation (Figure 7). As a result, in-river flows were reduced for a stretch of approximately five miles along the river, with very significant low flow impacts occurring in the most downstream 1.2-mile portion. During periods of high irrigation demand, river flows dropped below five cubic feet per second (cfs), resulting in warmer water and reduced oxygen levels, which can be fatal to wild brown and rainbow trout populations in this popular fishery.

Figure 7. Project location: Provo River Flow Restoration.

- **Challenge**: Seasonal flow depletion impacting aquatic habitat and recreation
- **Outcome**: Restored flows in a dewatered reach, improving fisheries and catalyzing increased investment and restored flows.
- **Volumetric Water Benefit:** 406.6 MGY reduced withdrawal
- **Additional Benefits:** Improved water quality, recreational benefits, habitat creation for species of interest
- **SDG Goal**: 6.6

Meta was the initial funder of this collaborative project to increase flows in the lower Provo River, paying Central Utah Water Conservancy District for foregone revenue to ensure 7.15 cfs remain in the river during the hottest months of the year for a 10-year period begun in 2020. Figure 8 shows the project reach before and after this project was implemented. This project has received widespread support from NGOs, as well as federal and state agencies, and has piqued the interest of others. The initial investment from Meta has since been leveraged to raise significant additional funds that ensure 20 cfs remains in the river from April 15 to October 15 each year through 2029. These flows will be measured and dedicated to support instream flow in the project reach.

Figure 8. Provo River before and after flow restoration. Photo Credit: Trout Unlimited.

Hobble Creek Flow Restoration

The June sucker is a fish found in Utah Lake and the lower reaches of its tributaries. The June Sucker Recovery Implementation Program (JSIP) is a multi-agency effort designed to coordinate and implement recovery activities for the threatened species. JSIP has identified Hobble Creek, a tributary of Utah Lake, as a priority for June sucker restoration (Figure 9).

- **Challenge**: Irrigation diversion depleting flows and impacting aquatic habitat for a species of interest
- **Outcome**: Enhance flows below a modernized irrigation diversion, which will improve habitat conditions for a species of interest
- **Volumetric Water Benefit:** 314.0 MGY improved flow regime
- **Additional Benefits:** Improved aquatic habitat availability and quality, improve aquatic habitat connectivity
- **SDG Goal**: 6.6

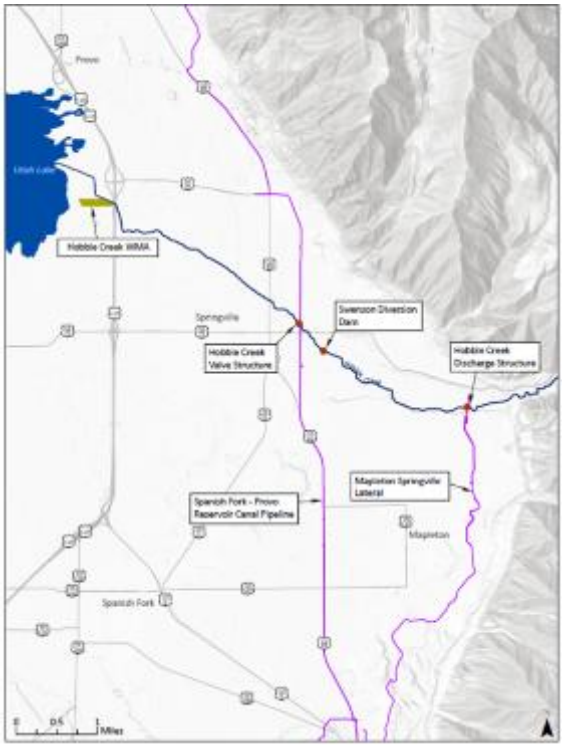


Figure 9. Project location: Hobble Creek Flow Restoration. Source: CUWCD.

The Swenson Diversion Dam (Figure 10) was designed to divert the entire flow of Hobble Creek for irrigation, which has historically resulted in a reach of dry stream below the diversion for most of the irrigation season. Water managers were supplementing flows in the creek through the Hobble Creek Valve Structure, which was critical to encouraging spawning and maintaining a suitable reach habitat for the June sucker. Unfortunately, the ability to deliver water at the Hobble Creek Valve Structure was in jeopardy due to competing water demands.

Figure 10. The Swenson Diversion Dam, looking upstream, prior to replacement. Photo Credit: CUWCD.

This project modernized an irrigation diversion in Hobble Creek by replacing the existing Swenson Diversion Dam with a new diversion that allows for enhancement of flows in Hobble Creek and improves habitat conditions for the June sucker fish.

Eagle Mountain Wastewater Reuse

The City of Eagle Mountain is at risk of future water scarcity because of limited precipitation, increasing water demand due to rapid population growth, and its location in a hydrologically closed watershed (Figure 11). This project involved construction of infrastructure to treat and reuse wastewater effluent from Meta's data center to irrigate a city park (Cory Wride Memorial Park) using drip irrigation. This infrastructure includes two new reservoirs with a total capacity of 50 million gallons, a pump station with five pumps to facilitate water transport, and 19,500 feet of PVC conveyance pipe (Figure 12). The reuse of treated wastewater effluent reduces the volume of freshwater withdrawn for irrigation.

- **Challenge**: Water scarcity due to hydrologically closed watershed, limited precipitation, and significant population growth
- **Outcome**: Enable reuse through efficient delivery of treated wastewater to a city park
- **Volumetric Water Benefit:** 6.3 MGY reduced withdrawal
- **Additional Benefits:** Avoided infrastructure costs to serve community growth, improved water supply resiliency
- **SDG Goal**: 6.6

Figure 11. Project Location: Eagle Mountain Wastewater Reuse.

Figure 12. New infrastructure for project.

San Francisco Bay | Bay Area Offices

The San Francisco Bay Watershed, within which the Bay Area Offices are located, extends across central California. High and growing demand from domestic, commercial, and industrial water users has contributed to water stress in the basin. Intensifying aridity in the region has further heightened water stress, as has the extreme drought and resultant groundwater table decline. These stressors, and the governance decisions being made to curtail water rights of certain users, contribute to high water risk in this region. Meta has funded the California Wildfire Reforestation project within the San Francisco Bay Watershed (Figure 13), providing a volumetric benefit of 37.3 MGY in 2024.

Figure 13. Project locations within the San Francisco Bay Watershed.

California Wildfire Reforestation

In 2018, over 1.8 million acres of California forestland were burned by wildfires. To restore these areas, the Arbor Day Foundation and American Forest Foundation planted two million trees on 8,000 acres, focusing on large swaths of private lands, which are often omitted from governmental revitalization efforts.

In 2020, Meta supported the planting of 70,000 trees on 280 acres of the Sacramento River Watershed, within the larger project area. Species planted included Ponderosa pine, Douglas fir, Sugar pine and Incense cedar (Figure 14). This restoration of vegetative cover on burned lands reduces

- **Challenge**: Fire impacts and altered hydrology
- **Outcome**: Reforested 280 acres of forest to restore hydrologic function
- **Volumetric Water Benefit**: 37.3 MGY reduced runoff
- **Additional Benefits**: Habitat restoration, improved water quality
- **SDG Goal**: 6.6

runoff and erosion and restores habitat lost due to wildfires; these efforts are anticipated to provide volumetric benefits through 2027.

Figure 14. Project area before reforestation (left) and anticipated future condition (right). Photo credit: Arbor Day Foundation.

Anticipated Future Benefits: Hidden Valley Floodplain Revegetation

Hidden Valley Ranch is a 496-acre site located on the San Joaquin River (California's second-longest-river), immediately upstream of its confluence with the Tuolumne River. Of the 496 acres, 341 acres have been under irrigated cultivation for half a century. The remainder of the property supports a 40-acre dairy site, native vegetation along the river, as well as infrastructure including roadways, a levee, waterways and ditches. This project includes taking former commercial cropland out of production and converting it to native riparian vegetation. This will not only extend the size of the riparian corridor and support a diversity of species but also reduce withdrawals from the San Joaquin River. This project is important, as climate change is expected to increase the frequency of both drought and flood in the region, impacting fish, wildlife, and residents.

.

Rio Grande | Los Lunas Data Center

The Rio Grande Basin, within which the Los Lunas Data Center is located, is situated in the Southwestern United States and along the US- Mexico border. The basin covers most of New Mexico and portions of Colorado, Texas, and Mexico. Water risk in the watershed arises from high baseline water stress and scarcity, groundwater depletion, and annual and seasonal variability in available water supply. High volumes of withdrawals and diversions, combined with increasing aridity, result in minimal or non-existent flows in the downstream regions of the river. These stressors contribute to a high water risk in this region. Meta has funded six projects that together provided a volumetric benefit of 136.3 MGY in the Rio Grande Basin in 2024: the Comanche Creek Restoration, Restoration of La Jara Wetland, the Cedro Creek Restoration, the Middle Rio Grande Flow Restoration, the Harvey Jones Bioswale Project, and the Rito Peñas Negras Restoration project (Figure 15).

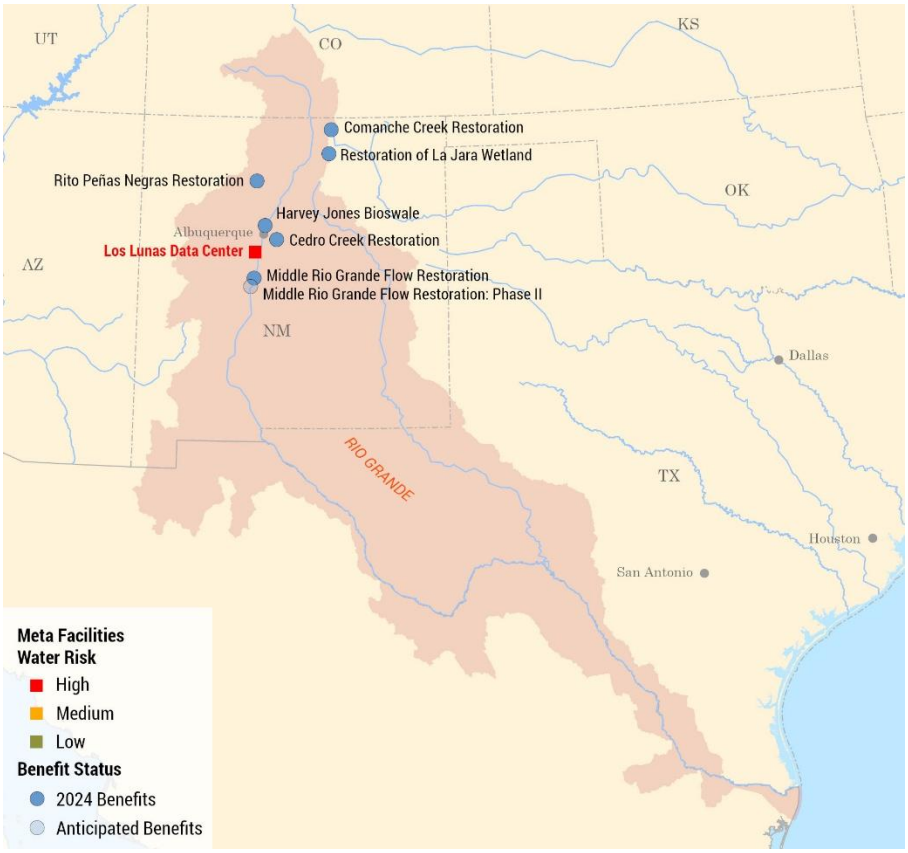


Figure 15. Project locations within the Rio Grande Basin.

Comanche Creek Restoration

- **Challenge**: Wetland loss, floodplain disconnection and lowered groundwater table
- **Outcome**: Restored 24 acres of off-channel floodplain wetland habitat
- **Volumetric Water Benefit**: 7.9 MGY increased storage
- **Additional Benefits**: Habitat restoration, reversed groundwater losses, improved water quality
- **SDG Goal**: 6.6

Comanche Creek is a high elevation tributary to the Rio Costilla and Upper Rio Grande located in Carson National Forest. High elevation perennial streams in the area provide important habitat for Rio Grande cutthroat trout and support large areas of organic wetlands (fens), which are rare across the southwest.

Past logging, road building, mining, and heavy grazing activities have caused stream channel incision, wetland loss, and floodplain disconnection within the Comanche Creek watershed. As a result, wetland water storage and flows to Comanche Creek have been reduced, the groundwater table has dropped, and wet meadow vegetation has converted to dryland and shrub vegetation. A combination of instream and bank restoration activities were identified and carried out by Trout Unlimited and the National Forest Foundation to address channel incision, reconnect Comanche Creek to its floodplain, and recharge floodplain wetlands. As a result of this project, 24 acres of off-channel floodplain wetlands were restored (Figure 16). Additionally, Trout Unlimited reports that the water table in this area has been raised between 12 and 18 inches in coordination with this project. The restoration activities are expected to provide improved habitat quality for fish and wildlife, increased off-channel wetland habitat for plant communities, reversed groundwater losses, and improved water quality. Completed in 2018, this project is anticipated to provide volumetric benefits through 2028.

Figure 16. Project area before restoration (left) and after restoration (middle (2018) and right (2019)). Photo credits: Craig Sponholtz, Watershed Artisans, Inc. (left and middle photos). T. Mitchell, Trout Unlimited, 2019 (right photo).

La Jara Wetland Restoration

La Jara Wetland is located within the Carson National Forest and is degraded due to historic and current land management activities including livestock grazing, forestry (and associated fire suppression), road drainage, and recent prolonged drought cycles.

In partnership with The Nature Conservancy, Amigos Bravos, and Watershed Artisans, high priority erosion areas were identified for headcut repair along the Rio Fernando de Taos and three tributary valleys. Completed in 2019, this project restored 12.7 acres of off-channel wetland habitat by stabilizing eroding headcuts with rock rundowns, controlling channel grade with one-rock dams, and increasing floodplain connectivity with sheet flow spreaders (Figure 17). These activities increase groundwater storage, support increased summer baseflow in Rio Fernando de Taos, and improve water quality. Volumetric benefits from this project are anticipated to continue through 2029.

- **Challenge**: Channelization and headcuts causing loss of hydrologic connectivity & function
- **Outcome**: Restored 12.7 acres of off-channel wetland habitat, reduced erosion, increased floodplain connectivity and groundwater storage
- **Volumetric Water Benefit**: 3.0 MGY increased storage
- **Additional Benefits**: Habitat restoration, reduced erosion, increased groundwater storage
- **SDG Goal**: 6.6

Figure 17. Left: Lower project area restoration structures (3 visible in photo). Right: Headcut repair and erosion control at project site. Photo credit: Rachel Conn, Amigos Bravos, 2019.

Cedro Creek Restoration

Cedro Creek is located within the Cibola National Forest upstream of the Los Lunas data center (Figure 18), in an area that has been severely impacted by improper road and trail alignment, historic logging and grazing, and wildfire suppression.

- **Challenge**: Channel erosion causing drying riparian zone
- **Outcome**: Reconnected floodplain, increased baseflow duration, reduced erosion, and increased riparian vegetation
- **Volumetric Water Benefit:** 19.5 MGY increased recharge
- **Additional benefits:** improved water quality, increase in native biodiversity, improved baseflow
- **SDG Goal:** 6.6

Figure 18. Project Location: Cedro Creek Restoration.

Cedro Creek and its tributaries are highly eroded and incised (Figure 19). Channelization has increased runoff volume and velocity and has reduced infiltration and storage. In partnership with The Nature Conservancy, the Rocky Mountain Youth Corps, and Stream Dynamics, zuni bowls, rock rundowns, one-rock dams, and diversion dams were implemented at approximately 70 degraded locations to increase soil moisture along the stream corridor and decrease wildfire risk in the Cedro Creek headwaters. As a result of this project, streambank erosion and down-cutting were addressed, increasing infiltration, reducing sediment loading, and improving water quality. Native woody plants, grasses, and forbs benefit from increased soil moisture and improve biodiversity. Additionally, increased infiltration is expected to increase the baseflow duration in Cedro Creek. Volumetric benefits from this project are anticipated to continue through 2029.

Figure 19. Bank erosion (left), structure installation (center), and installed structures (right). Photo credit: Rocky Mountain Youth Corps/Stream Dynamics, 2019.

Middle Rio Grande Flow Restoration

Flow depletion in the Middle Rio Grande is a chronic issue with important cultural, water quality, and wildlife implications. The river corridor provides crucial habitat for migratory, wintering, and nesting birds. Isleta Reach is a 42-mile portion of the Middle Rio Grande downstream of Albuquerque (Figure 20). Irrigation withdrawals contribute to persistent low flows and intermittent drying, depriving cottonwoods, wetlands, birds, fish, and other wildlife of the water they need to survive.

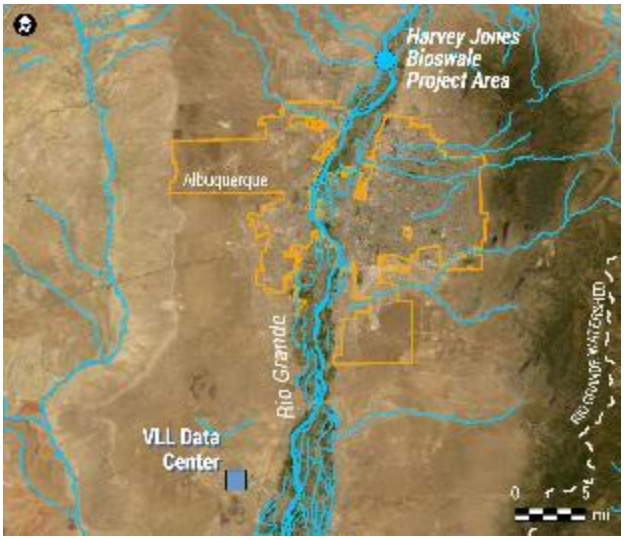
- **Challenge**: Chronic flow depletion impacting aquatic and riparian habitat
- **Outcome**: Restored flows in a dewatered reach, improving fish and wildlife habitat
- **Volumetric Water Benefit:** 81.5 MGY reduced withdrawal
- **Additional benefits:** increased habitat provision for fish, birds, and wildlife,
- **SDG Goal:** 6.6

Figure 20. Project location: Middle Rio Grande Flow Restoration.

Endangered species like the Rio Grande Silvery Minnow and Southwestern Willow Flycatcher remain imperiled in this area, and work to restore flow to the river and improve critical riparian habitat is a focus for many groups across the region. In 2024, this project leased a total of 250 acre-feet of water (81,462,735 gallons) from the City of Bernalillo which was delivered to key wetland and channel areas in the Isleta Reach of the Rio Grande that lack adequate water supply to support riparian, in-channel, and environmental function. This project will continue to deliver 250 acre-feet of water to these key wetland and channel areas through the end of 2027. This eight-year flow restoration project is the first long-term commitment to lease water for environmental flows in the Rio Grande. Observations in 2020 by project partner Audubon New Mexico identified a total of 75 bird species at three monitored locations in the project area.

Harvey Jones Bioswale

The Nature Conservancy and the Southern Sandoval County Arroyo Flood Control Authority partnered to develop a bioswale in Rio Rancho, New Mexico, upstream of the Los Lunas data center (Figure 21). This green stormwater treatment feature captures and infiltrates stormwater runoff from the Montoya watershed, filtering sediments, toxins, and nutrients from the stormwater before it is infiltrated or released to the Rio Grande (Figure 22). The capture and slow infiltration or release of stormwater supports fish and wildlife through creation of wetland habitat. A system of trails allows recreational access and viewing of the newly created habitat.



- **Challenge**: Water quality degradation due to stormwater runoff
- **Outcome**: Stormwater runoff is captured and filtered by the bioswale before discharging to the Rio Grande
- **Volumetric Water Benefit:** 0.6 MGY volume captured
- **Additional benefits:** increased groundwater recharge, improved water quality, improved habitat, increase in native plant species
- **SDG Goal:** 6.6

Figure 21. Project location: Harvey Jones Bioswale.

The bioswale has been completed and a grand opening took place in 2022. The project is expected to generate volumetric water benefits through the end of 2031.

Figure 22. Project area before the bioswale in April 2020 (left) and after in August 2022.

Rito Peñas Negras Restoration

Rito Peñas Negras is a headwater tributary of the Jemez River in the Upper Rio Grande basin. Historic grazing practices, an extensive road system, past timber harvest, and dispersed recreational practices within the floodplain have destabilized the stream banks, widened the stream channel, and reduced riparian vegetation, leading to increased temperatures and sediment loads within the stream. These changes have been detrimental to the resident populations of Rio Grande Cutthroat Trout and other aquatic organisms.

This project, implemented by the National Forest Foundation, installed 250 Beaver Dam Analogs (BDAs) along 3.43 miles of the stream to reconnect the stream to its floodplain (Figure 23). Wherever possible BDAs were constructed within existing exclosures that are intact and functioning well, to prevent grazing impacts. Additional perimeter fencing was included as part of this project to limit cattle access into the valley and further reduce grazing impacts. In addition to restoring and creating in-stream and wetland habitat, this project increases groundwater recharge by slowing and spreading the flow of the stream. The BDAs may also help attract beavers back to this area after riparian vegetation has been re-established.

- **Challenge**: Water quality degradation due to destabilized stream banks, widened stream channel, and reduced riparian vegetation.
- **Outcome**: Reconnected stream floodplain that will restore in-stream and wetland habitat and increase groundwater recharge
- **Volumetric Water Benefit:** 23.8 MGY increased recharge
- **Additional benefits:** improved aquatic habitat availability and quality, improved flow regime
- **SDG Goal:** 6.6

Figure 23. Images showing work completed. Image (left): BDA installation, with exclusion fencing at top of slope; Image (right): An installed BDA, demonstrating the additional ponded area behind BDAs

Anticipated Future Benefits: Middle Rio Grande Flow Restoration Phase II

In 2016, Audubon New Mexico initiated the first Rio Grande flow restoration project (Phase I), delivering San Juan Chama water to the Isleta Reach, setting the stage for future work to enhance environmental flows and habitat in the Middle Rio Grande. Phase II of this flow restoration project builds on past success to restore flows to the Isleta reach of the Middle Rio Grande and a commitment to lease water for environmental flows in the Rio Grande through 2030.

Colorado River | Mesa Data Center

The Colorado River Basin, within which the Mesa Data Center is located, encompasses parts of the Southwestern United States and the US-Mexico border. The basin covers all of Arizona and portions of California, Nevada, Utah, Wyoming, Colorado, New Mexico, and Mexico. The basin has been experiencing historic and extended drought conditions since 2000. These drought conditions, in combination with the increasing aridity and high water demand of the region, have led to the depletion of regional reservoirs, Lake Mead and Lake Powell, to historic and concerning low levels. These current conditions, and the prospect of further increases in the magnitude and frequency of drought in the basin from climate change, contribute to a high water risk in this region. Meta has funded eleven projects (which includes a second phase for one project) within the Colorado River Basin.

These projects provided 568.6 MGY of volumetric benefits in 2024: the Colorado River Indian Tribes (CRIT) System Conservation project, the Navajo Community Water Supply project (Phase 1 and 2), Mason Lane Ditch Piping, CRIT Irrigation Canal Lining Project, the Green River Demand Management and Resilience Project, the Jicarilla Apache Nation Water Sharing Agreement, the CRIT Drip Irrigation/Crop Conversion Project, and the CRIT Drip Irrigation Project. Four additional projects that are expected to provide future volumetric benefits for the Colorado River Basin have also been funded: the Phoenix Hospital Cooling & Conservation Project, the Cocopah West Riparian Restoration project, the Dude Forest Restoration project, and the Water Leak Reduction: "Water, United" Initiative (Phase 3) (Figure 24).

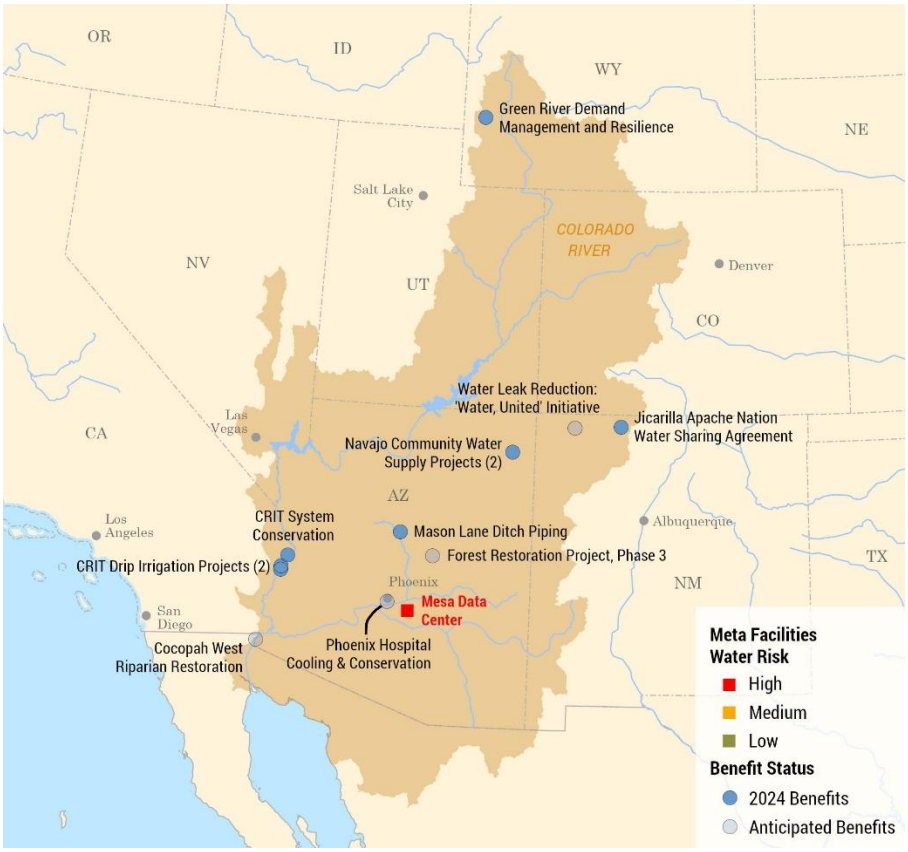


Figure 24. Project locations within the Colorado River Basin.

Colorado River Indian Tribes (CRIT) System Conservation

With the Colorado River experiencing long-term drought conditions, reservoir levels in Lake Mead have reached unprecedentedly low levels, negatively affecting water security for Colorado River water users. In response, representatives of the Department of the Interior, Bureau of Reclamation, all seven Colorado River Basin states, and Mexico agreed to the Drought Contingency Plan (DCP) in May of 2019. The plan is designed to reduce risks from ongoing drought by promoting conservation, reducing demand, and stabilizing water levels. As a part of this plan, water rights held by CRIT were leased for Lake Mead and Lake Powell system conservation (Figure 25).

- **Challenge**: Declining levels in Lake Mead due to drought and extraction
- **Outcome**: Cumulative restoration of 150,000 acre-feet of water to Lake Mead
- **Volumetric Water Benefit:** 25.6 MGY reduced withdrawal
- **Additional benefits:** Improved water security, funding for irrigation infrastructure improvements
- **SDG Goals:** 6.6, 6.b

Figure 25. Project location: CRIT reservation and surrounding area.

Rights for up to 150,000 acre-feet of water were leased from the CRIT through collaborative funding efforts, with Meta providing funding to lease 785 acre-feet of water. The CRIT have pledged to forgo irrigation water deliveries and fallow approximately 10,000 acres of farmland from some of their least profitable and least efficiently irrigated areas, leaving 50,000 acre-feet (approximately 16 billion gallons) per year in Lake Mead for the period 2020-2022. This agreement allows up to 150,000 acre-feet (approximately 49 billion gallons) of water to accrue in Lake Mead and provides funding that the CRIT may use to modernize irrigation infrastructure. This project plays a key role in helping Arizona comply with its system conservation requirements for DCP implementation and large-scale conservation, and the retained volume of water reduces the severity of water curtailment.

Navajo Community Water Supply (Phase 1 and 2)

The Navajo Nation is the largest contiguous Native American reservation in the continental United States, with approximately 174,000 residents. Approximately one third of the population in the Navajo Nation does not have running water in their homes; instead, households pay for and haul water at a price approximately 70 times the rate of typical urban water users. Project partner Dig Deep responded to the need for accessible and affordable water during the COVID-19 pandemic by installing temporary water systems. With funding from Meta, they have transitioned to providing permanent water systems for Navajo families, installing water tanks and infrastructure that supply families with in-home running water sourced from sustainable groundwater supplies in Dilkon, Arizona (Figure 26).

- **Challenge**: Navajo families lack access to water
- **Outcome**: Permanent drinking water supply to households in Navajo Nation
- **Volumetric Water Benefit:** 0.19 MGY volume provided (Phase 1 and Phase 2)
- **Additional benefits:** Improved water security
- **SDG Goals:** 6.1, 6.b

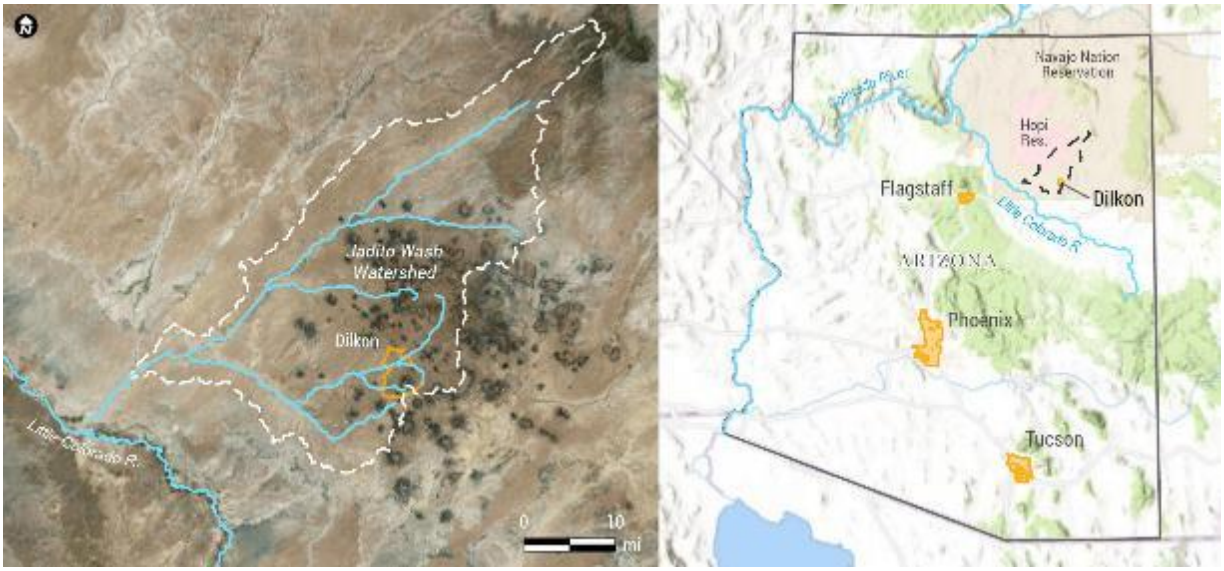


Figure 26. Project location: Navajo Community Water Supply project.

Phase 1 of this project installed five water systems that cumulatively provided 0.07 MGY (72,000 gallons/year) in 2024 to households in the Navajo Nation. Each system includes a 1,200-gallon polyethylene water tank, indoor plumbing, power connections to provide running water, and recurring water delivery to refill the water tank. The systems are expected to provide drinking water for at least the next 10 years, with volumetric water benefits through the end of 2031.

Phase 2 of this project builds off this work, providing 0.12 MGY in 2024 to households in the Navajo Nation. This phase of the project included the installation of additional permanent water systems to supply groundwater for household use in Navajo Nation. The systems are filled by DigDeep-managed water trucks that transport safe drinking water from water access points to the home. The systems are

expected to provide drinking water for at least the next 10 years, with volumetric water benefits through the end of 2033.

CRIT Irrigation Canal Lining Project

The Colorado River Indian Tribes have partnered with BEF, the Bureau of Indian Affairs, the Bureau of Reclamation, and private sector funders including Meta to improve irrigation infrastructure to reduce seepage lost in conveyance (Figure 27) in order to forestall irrigation system water shortages. Multiple irrigation infrastructure rehabilitation needs were identified as first priority for improvements to improve system functionality. This project lines an earthen sublateral canal 73-19L-1, which was determined to have the highest leakage rate. With a project completion in 2023, this project allows for reduced withdrawals, with benefit claims anticipated through the end of 2033.

- **Challenge**: Water shortage conditions in the Lower Colorado River Basin
- **Outcome**: Reduced water conveyance loss and reduce demand at the point of diversion
- **Volumetric Water Benefit:** 43.8 MGY reduced withdrawal
- **Additional benefits:** Improved water security, improved flow regime and aquatic habitat quality, improved climate adaptation and mitigation
- **SDG Goals:** 6.6, 6.b

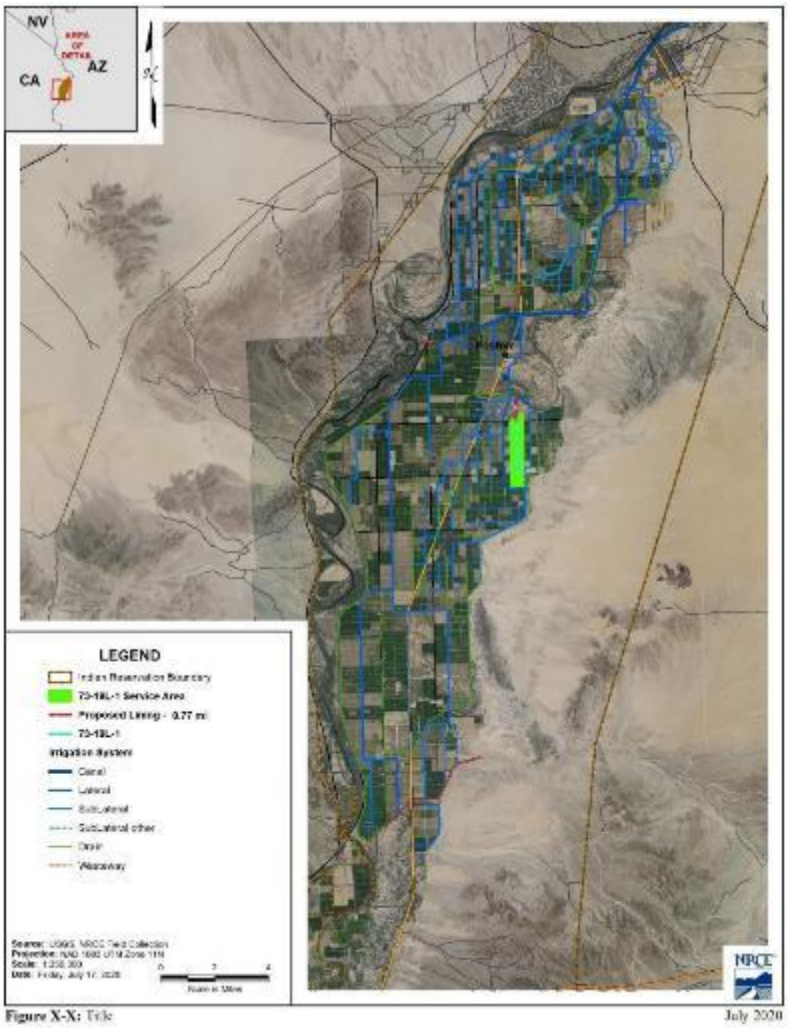


Figure 27. Project location: Canal service area and location of canal lining.

Green River Demand Management and Resilience Project

- **Challenge**: Water shortage conditions in the Colorado River Basin
- **Outcome**: Demonstrate an integrated land and water management approach to conserve water
- **Volumetric Water Benefit:** 40.9 MGY increased recharge and reduced withdrawal
- **Additional benefits:** Improved flow regime, improved surface water quality, improved climate adaptation and mitigation, and improved aquatic habitat quality
- **SDG Goals:** 6.6

In response to the increasing stress on the water supply of the Colorado River, this project seeks to address both the demand and supply pressures that contribute to the strain on shared water resources. The Green River Demand Management and Resilience Project is part of a large-scale pilot effort to develop projects and strategies that can free up additional water for federal reservoirs, shore up water supply for Arizona and Nevada, and simultaneously implement nature-based solutions that can achieve long-term environmental benefits to mitigate climate change impacts. A partnership between Trout Unlimited and ranchers in the Green River watershed has implemented demand management projects, such as fallowing of irrigated agricultural lands (Figure 28), to allow water to remain instream. Nature-based solutions were used to improve hydrologic function, infiltration, and habitat, with the construction of Beaver Dam Analogs (BDAs) reconnecting the river to its floodplain (Figure 29).

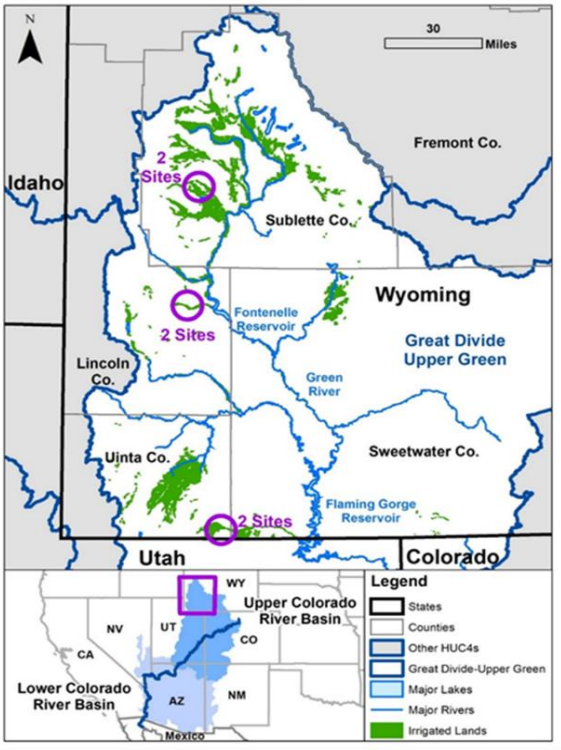


Figure 28. Project location: Upper Green River Basin, WY fallowing agreements. Source: Trout Unlimited.

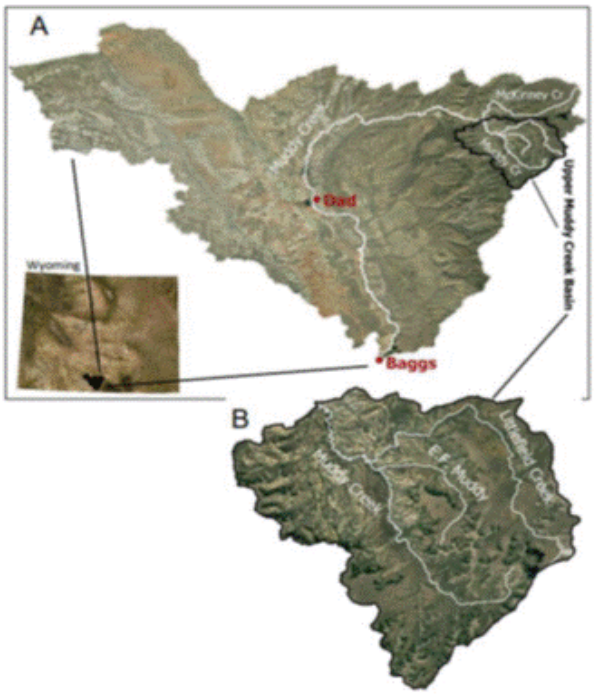


Figure 29. Project location: Muddy Creek basin, (where BDAs are installed), and relative location in Wyoming. Source: Trout Unlimited.

Jicarilla Apache Nation Water Sharing Agreement

The Jicarilla Apache Nation (the Nation, Figure 30) has more than 45,000 acre-feet (approximately 14 billion gallons) of settled water rights in the San Juan River Basin, which are presently used for cultural practices, domestic supply, economic development, environmental, and other purposes. The Nation has a right to use up to 33,500 acre-feet (almost 11 billion gallons) per year from Navajo Reservoir, and this water has historically been used for economic development. For the last several decades, the Nation leased its Navajo Reservoir water to coal-fired power plants that are now facing closure. This transition presented a new opportunity for the Nation, the New Mexico Interstate Stream Commission, and The Nature Conservancy to work together. The partners collaborated to design a new innovative water-sharing agreement that allows the state to lease up to 20,000 acre-feet (approximately 6.5 billion gallons) of water per year (for 10 years) from the Nation. This will benefit threatened and endangered fish and increase water security for New Mexico. Water leased under this agreement will be used in New Mexico's Strategic Water Reserve and released from Navajo Reservoir to increase flows in the San Juan River, which is a tributary to the Colorado River. The water leasing agreement bolsters flow in the San Juan River and is also expected to buffer against future cutbacks to Rio Grande water supplies (e.g., Albuquerque and Santa Fe) from the San Juan-Chama Project. Increased flows in the San Juan River are expected to provide ecological benefits for threatened, endangered, and sensitive fish species.

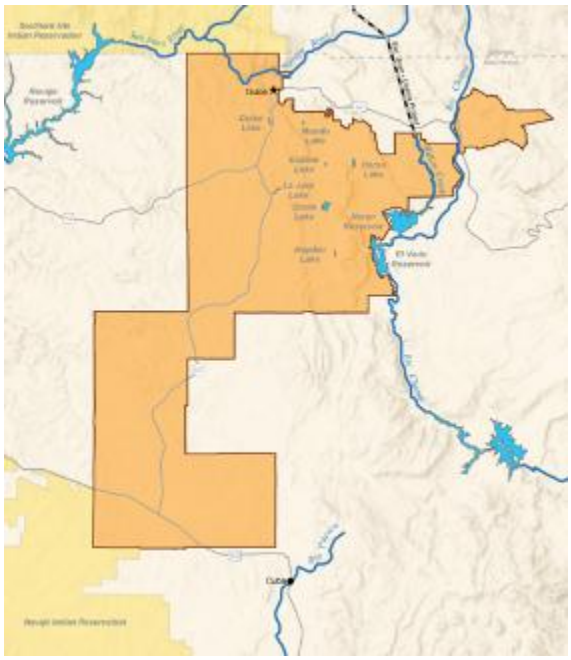


Figure 30. Jicarilla Apache Nation Indian Reservation is shown in orange. Source: Ten Tribes Partnership (2018).

- **Challenge**: Critical drought and water shortages in Colorado River Basin
- **Outcome**: Increased flows in the San Juan River
- **Volumetric Water Benefit:** 114.0 MGY reduced withdrawal
- **Additional benefits:** Improved flow regime, improved aquatic habitat quality, improved climate adaptation and mitigation, and improved livelihood opportunities
- **SDG Goals:** 6.6

Mason Lane Ditch Piping

Oak Creek, one of the few remaining perennial streams in Northern Arizona, is a tributary of the Verde River. It runs through high desert canyons and the famous red rocks of Sedona before joining the Verde River. Oak Creek provides recreation and supports a vibrant ecosystem of mammals, birds, and aquatic species, including the endangered Gila Chub and Gila Topminnopw.

- **Challenge**: Critical drought and water shortages in the American southwest
- **Outcome**: Reduced transmission losses from Mason Lane Ditch
- **Volumetric Water Benefit:** 163.1 MGY reduced withdrawal
- **Additional benefits:** Improved flow regime, improved aquatic habitat quality and improved climate adaptation and mitigation
- **SDG Goals:** 6.6

Along Oak Creek, 19 separate ditches divert irrigation water to residents, including farmers and small properties. Although the ditches are important contributors to the local economy, most of them are around 150 years old and there is limited capital to invest in infrastructure upgrades to meet the needs of water users and aquatic habitat. Mason Lane Ditch (Figure 31), which diverts approximately half the flow of Oak Creek in the dry summer months, provides water to 77 water users and 223 acres of irrigated land along its five-mile path.

The soils under Mason Lane Ditch are extremely porous, which has resulted in severe leakage and seepage of water from the canal. These volumetric losses during conveyance threaten the ability of the diverted supply to meet agricultural water needs. This project installs a pipe for a mile-long section of the Mason Lane Ditch to reduce both transmission losses and the total volume of water diverted from Oak Creek. The project was completed in partnership with The Nature Conservancy and the Mason Lane Water Users Association.

Figure 31. Approximate project location of the Mason Lane Ditch Piping Project.

CRIT Drip Irrigation

The Colorado River Indian Tribes (CRIT) have territory that stretches along 56 miles of lower Colorado River lands with the majority of their reservation located in Arizona (Figure 32) and is entitled to divert 719,248 acre-feet (approximately 234 billion gallons) of water annually to supply consumptive irrigation uses. This project involved the installation of efficient drip irrigation and real-time smart irrigation management on CRIT alfalfa farmland (Figure 33). In 2024, the efficient irrigation systems were present on 402 acres (with two farms reduced in size from 2023); however, only 327 acres were irrigated because 75-acres were flooded and not farmed.

- **Challenge**: Water shortage conditions in the Lower Colorado River Basin
- **Outcome**: Increased resilience for tribal farm operations by maintaining irrigation for economic development
- **Volumetric Water Benefit:** 64.9 MGY reduced consumption
- **Additional benefits:** Improved surface water storage, reduced carbon emissions, improved climate adaptation and mitigation, improved agricultural output
- **SDG Goals:** 6.6

Figure 32. Project location: CRIT Drip Irrigation project.

Figure 33. (L) A field where N-Drip is being installed and (R) irrigation infrastructure on CRIT lands.

CRIT Drip Irrigation/Crop Conversion

The project installed precision drip irrigation on 1,500 acres of CRIT agricultural lands (Figure 34), using updated irrigation efficiency technology and real-time smart irrigation management to replace a flood irrigation system. The resource savings from implementing this irrigation conversion will support a transition of these acres to a planned rotation of one year cotton production and four years alfalfa production, as compared to the current planting of only alfalfa which will benefit soil health.

- **Challenge**: Water shortage conditions in the Lower Colorado River Basin
- **Outcome**: Decreased irrigation demands on the lower Colorado River system and sustained agricultural productivity for the CRIT
- **Volumetric Water Benefit:** 116.1 MGY reduced consumption
- **Additional benefits:** Improved surface water storage, reduced carbon emissions, improved climate adaptation and mitigation, improved agricultural output
- **SDG Goals:** 6.6

The production of cotton will allow CRIT to reopen a tribally owned cotton gin that is expected to provide additional economic benefits to the Tribe through employment and economic opportunities. Additionally, the improved irrigation is expected to provide a 10% increase in yield.

Figure 34. Project location: CRIT Drip Irrigation/ Crop Conversion project.

Anticipated Future Benefits: Phoenix Hospital Cooling & Conservation

The City of Phoenix is the third largest municipal water supplier in the United States, supporting nearly 1.7 million people within a 540 square-mile service area. As a desert city that relies primarily on surface water for nearly all of its total supply through the Colorado and Salt River systems, the city faces unique water supply risks that have driven it to make large-scale investments in its water portfolio and increase its focus on water conservation. The widespread use of dated wet-cooling systems in large commercial and industrial buildings provides a key opportunity for scaled water conservation. This project will implement and construct water softening and chemical treatment retrofits, media replacement, and plumbing system upgrades in existing wet cooling tower applications within large hospitals in the Phoenix metro area to reduce chemical use and hard water demand in hospitals. Project activities are anticipated to begin providing volumetric benefits in the coming years.

Anticipated Future Benefits: Salt River Project (SRP) Forest Restoration Project (Phase 3)

The Verde River is one of Arizona's most important waterways, providing water to users in the Phoenix Metropolitan Area. As the Phoenix area's population has grown, along with industrial and agricultural activities, so has demand for the desert region's water supplies. The 1990 Dude Fire, a high-severity wildfire that occurred near Payson, Arizona, led to the widespread destruction of forests in the Verde River watershed. In many areas that were burned, land that was previously forest has since been repopulated by an overabundance of small shrubs and trees, which put the project area at great risk for another high-severity wildfire that would have devastating effects on water infrastructure and would impair providing reliable water supplies to downstream communities. The project activities focus on reducing crowded understory in a 2,335-acre area of the Verde River watershed. The restoration activities will help return forests in the project area to a more historic and fire-resilient state. Project activities are anticipated to begin providing volumetric benefits in the coming years.

Anticipated Future Benefits: Cocopah West Riparian Restoration Project

The Colorado River is critical to supporting human and ecological communities including supplying water to 40 million people with its basin spanning across seven states. However, decreasing water levels in the Colorado River and its reservoirs have been extensively documented in recent years. Long-term climate-change driven drought has been a defining characteristic of the Colorado River conditions in the last two decades, with the average annual natural flow decreasing during this time. This project will take place within the Cocopah West Reservation with the restoration site sitting just below Morelos Dam within the historic floodplain of the Colorado River. The site will be restored with wetland/open water and riparian habitat. Revegetation work will include removing non-native vegetation, earthwork to shape backwater wetlands, and propagating and establishing native cottonwood and willow to restore the riparian floodplain habitat along the limitrophe to support species recovery. This project will also aid in the objective of supporting tribal culture through the restoration of important native plant species.

Anticipated Future Benefits: Water Leak Reduction "Water, United" Initiative

The Colorado River basin is facing an unprecedented water crisis due to prolonged drought, climate change, and an overallocation of its resources. The project partner has been part of an initiative to reduce water leakage across the Colorado River Basin as part of the "Water, United" catalytic community. The water supply in the City of Farmington is surface water dominant. Due to this and the pressures on water availability, the city aims to leverage new technologies to improve water efficiency and enhance water system reliability. The initiative will entail the partner working with several utilities across the Colorado River Basin States, including the City of Farmington, New Mexico. The project will leverage the partner's AI-enabled acoustic leak analysis to provide live monitoring and active repair of leaks. When leaks are identified, the city will repair any leaks within eight weeks. Reducing these leaks is an important measure in implementing conservation measures to mitigate the impact of drought conditions in the region.

Texas – Gulf Region | Forth Worth Data Center

The Texas-Gulf Region, within which the Fort Worth Data Center is located, covers most of Texas and portions of New Mexico and Louisiana. Water risk in the watershed arises from high drought risk and baseline water stress. These concerns contribute to a medium water risk for this region. Meta has funded one project within the Gulf Coast Basin that has provided 74.5 MGY of volumetric benefits in 2024: Restoring and Enhancing Richland Creek Wildlife Management Area. Meta has also funded three projects: Wildcat Marsh Project, Longleaf Pine Restoration Project, and Denton County Land Protection project, which are expected to generate volumetric benefits in the coming years (Figure 35).

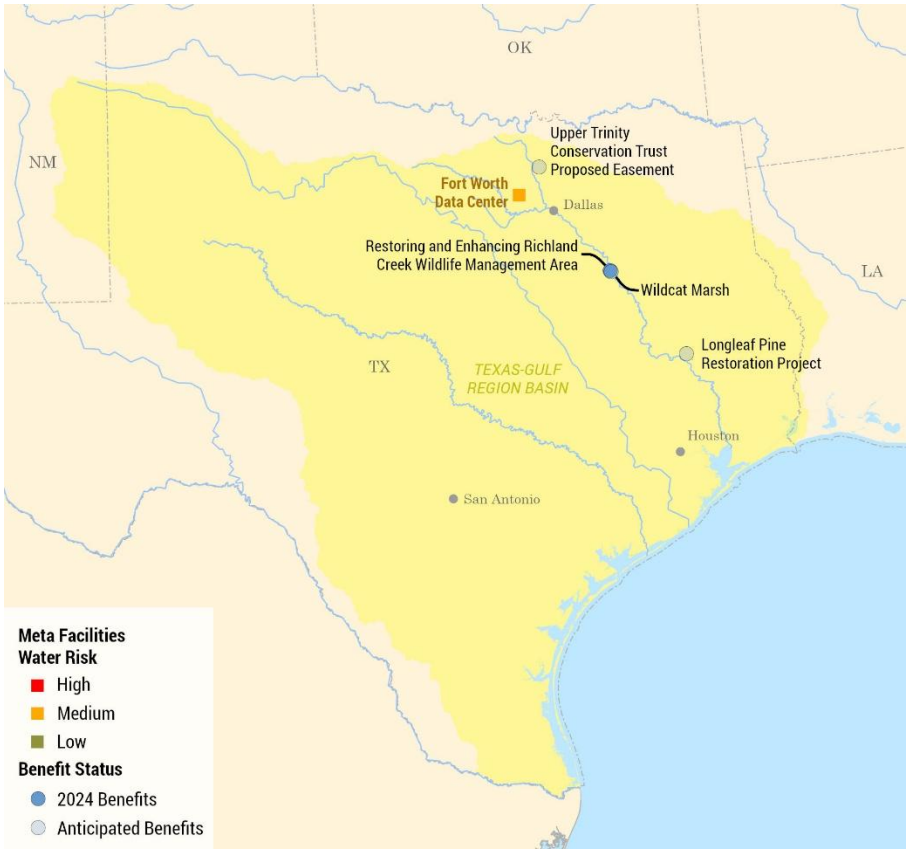


Figure 35. Project locations within the Gulf Coast Basin.

Restoring and Enhancing Richland Creek Wildlife Management Area

The Richland Wildlife Management Area (WMA) is a 13,783-acre site consisting of bottomland forests, previously cleared agricultural lands and riparian forests along the Trinity River (Figure 36). The Texas Parks and Wildlife Department (TPWD), which is responsible for managing the WMA, has worked in association with the Tarrant Regional Water District, responsible for meeting the growing water supply needs of the Dallas-Fort Worth region, to develop an extensive wetland treatment system on the WMA. Raw water from the Trinity River is pumped into sedimentation basins, then flows through the wetlands to reduce its sediment and nutrient contents before being pumped into the Richland Chambers Reservoir, from which water is supplied to municipal and industrial users in the Dallas-Fort Worth area. This system benefits wildlife through habitat creation and improves the quality of water in the reservoir that is delivered to municipal and industrial water users in Dallas Fort-Worth.

The project funded by Meta, in partnership with Ducks Unlimited and the TPWD, builds on the success of the existing projects to create new wetlands in the WMA. The constructed wetlands cover 238 acres providing expanded available wetland habitat and improved water quality to the Trinity River.

- **Challenge**: Growing water supply needs of the Dallas-Fort Worth region
- **Outcome**: Wetland creation in the Richland Creek WMA
- **Volumetric Water Benefit:** 74.5 MGY increased inundation
- **Additional benefits:** Improved surface water quality, improved aquatic habitat, improved recreation opportunities
- **SDG Goals:** 6.6

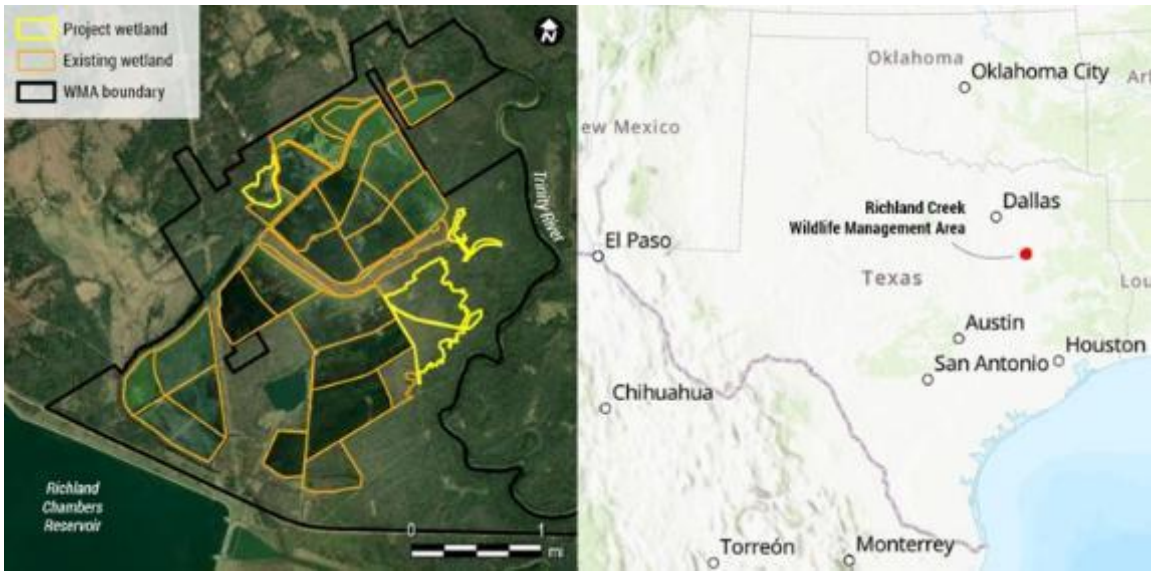


Figure 36. Project location: Restoring and enhancing Richland Creek Wildlife Management Area.

Anticipated Future Benefits: Wildcat Marsh Project

Wildcat Marsh is located 68 miles southeast of downtown Dallas, within the Richland Creek Wildlife Management Area (WMA) and the Trinity River watershed. The Texas Parks and Wildlife Department (TPWD) manages the Richland Creek WMA, a 13,783-acre site consisting of bottomland forests, previously cleared agricultural lands, and riparian forests. As part of the project, Ducks Unlimited will construct roughly 111 acres of wetlands in partnership with TPWD. The wetland will provide habitat for a variety of wildlife species and will also help improve water quality by reducing sediment, nitrogen, and phosphorous levels.

Anticipated Future Benefits: Longleaf Pine Forest Restoration

Longleaf pine (Pinus palustris) is an evergreen conifer native to the southeastern United States Longleaf pine forests support rich biodiversity and serve as a critical habitat for more than 30 endangered and threatened species (e.g., the red cockaded woodpecker). Longleaf pines are water efficient and drought resistant and lose less water to evapotranspiration than other southern pines, which can help increase local water availability. However, longleaf pine forests have become one of the most endangered ecosystems in North America due to unsustainable land use practices and urbanization and many of the longleaf pine forests that remain are in degraded condition due to improper land management practices. These ecosystems rely on prescribed fires to create an ideal environment for longleaf seed germination, promote natural regeneration, and foster a healthy forest understory. This project will restore this longleaf pine ecosystem through improved forest stewardship practices.

Anticipated Future Benefits: Denton County Land Protection

As the North Texas population grows rapidly, land and water resources face pressure from development, stressing wildlife populations and agriculture production. Conserving North Texas lands protects the quality of drinking water sources, provides habitat for fish and wildlife, and preserves agriculture and family heritage. When conservation easements are placed on open lands, these lands are kept undeveloped. The Upper Trinity Conservation Trust (UTCT) has initiated the process to establish a conservation easement on a 120-acre property. This site will be conserved and maintained in perpetuity to preserve water quality and riparian ecosystem functions of the property, and to protect a relatively natural habitat for wildlife, plants and similar ecosystems on the property.

.

Platte River | Papillion and Cheyenne Data Centers

The Platte River watershed, within which the Papillion Data Center and Cheyenne Data Centers are located, is a major river of the American Midwest and Southwest/Mountain West. The South Platte also provides groundwater recharge for the Ogallala Aquifer. Large-scale extraction for agricultural purposes and climate change contribute to a high water risk for this region. Meta has funded one project within the Platte River basin that has provided 13.9 MGY of volumetric benefits that is attributable to the Cheyenne Data Center in 2024: the Crow Creek Stream Restoration. Meta has also funded one additional project: the Mariah Pasture project, which is expected to generate volumetric benefits in the coming years (Figure 37).

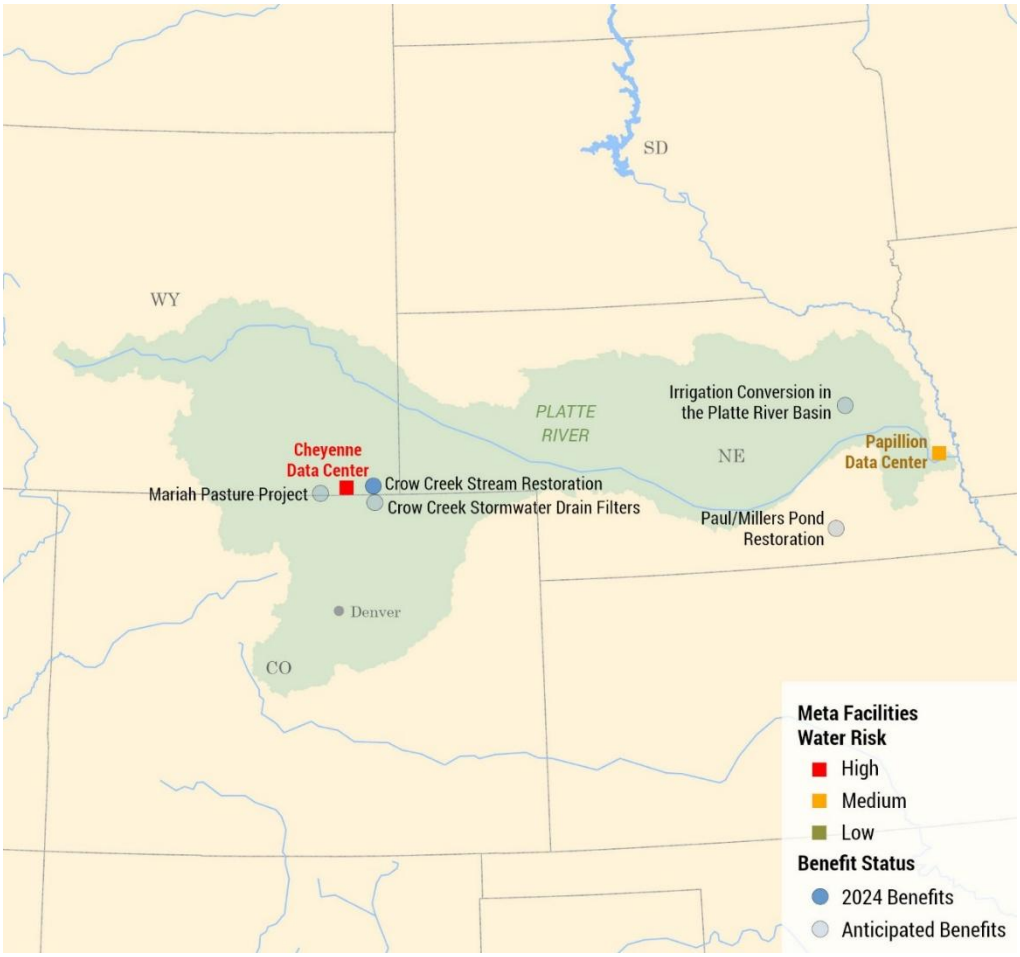


Figure 37. Project locations within the Platte River Watershed.

Crow Creek Stream Restoration

Crow Creek is a tributary of the South Platte River that flows through southeastern Wyoming (Figure 39). It is an important water resource for Laramie County, providing flows for municipal, recreational, industrial, irrigation, and stock watering purposes. Crow Creek also provides groundwater recharge for southeastern Wyoming's Ogallala Aquifer. Crow Creek's many uses, in combination with land management decisions, have reduced hydrologic and ecologic functionality of the stream. Due to high flows and erosion, the creek is incised and separated from its floodplain. This has resulted in a lowered water table, which has decreased bank storage and riparian biomass.

- **Challenge**: Reduced hydrologic and ecologic functionality of the stream due to local land management decisions
- **Outcome**: Redirect and attenuate flow to restore Crow Creek
- **Volumetric Water Benefit:** 13.9 MGY increased recharge
- **Additional benefits:** Improved flow regime, improved aquatic habitat availability and quality, improved recreation opportunities, improved agricultural output
- **SDG Goals:** 6.6

The Laramie County Conservation District (LCCD) is committed to conservation of the county's water resources. To restore Crow Creek, LCCD has implemented barbs, Post Assisted Log Structures (PALs), and Beaver Dam Analogues (BDAs) in the creek (Figure 40). These structures are made of wooden posts, branches, and other vegetation and aim to widen the stream channel, increase sinuosity, and encourage aggradation.

These changes are expected to result in many benefits such as: increased floodplain connectivity, water table storage, bank stability, sediment deposition, riparian vegetation, later season flows, longevity of flows, and groundwater recharge.

Figure 39. Project location: Crow Creek stream restoration.

Figure 40. Example of BDA implementation (LCCD, 2024).

Anticipated Future Benefits: Mariah Pasture Project

Sand Creek is a tributary of the South Platte River that flows through southeastern Wyoming and the northern part of Colorado. It is an important water resource for Laramie County, providing flows for recreational, irrigation, and stock watering purposes. Sand Creek's many uses, in combination with land management decisions, have reduced hydrologic and ecologic functionality of the stream.

The City of Cheyenne owns a 27-square mile ranch which contains a livestock reservoir that is in disrepair. This reservoir is connected to Sand Creek and has collected sediment over time which has reduced its capacity to provide storage. Dredging activities are planned to increase reservoir capacity. In addition to the reservoir dredging activities, LCCD intends to implement structures known as Beaver Dam Analogues (BDAs) in the creek. These structures are made of wooden posts, branches, and other vegetation and aim to widen the stream channel, increase sinuosity, and encourage aggradation. These changes are expected to increase floodplain connectivity, water table storage, bank stability, sediment deposition, riparian vegetation, later season flows, longevity of flows, and groundwater recharge.

Anticipated Future Benefits: Irrigation Conversion in the Platte River Basin

Climate change may negatively affect already scarce water availability in Nebraska, while also causing increases in water demand. There is the possibility of drier soils coupled with warmer temperatures, resulting in increased irrigation as evaporation and water use by plants increase. Additionally, less rainfall along with increased evaporation could result in decreasing flows in Nebraska's rivers. There have been historic disputes over water use in the Missouri River Basin, with disputes in recent history often aimed at balancing human use with water needs for wildlife habitat. Additionally, water management in the basin largely does not focus on long-term ecosystem resilience or the future uncertainty in basin water availability. This project involves conversion of flood irrigation to more efficient N-Drip irrigation systems on cropland within the Platte River Basin. Improvement in application efficiency is expected to reduce basin water demand, addressing anticipated availability concerns in future years.

Anticipated Future Benefits: Crow Creek Stormwater Drain Filters

Crow Creek has been identified as being impaired by several pollutants including sediment, *E. coli*, and selenium. Of particular interest for this project is the sediment impairment, which the Wyoming Department of Environmental Quality notes is caused by urban sources, such as stormwater runoff in the City of Cheyenne. This project will install 180 storm drain inserts within the city to capture trash and other pollutants, like sediment, from stormwater runoff. The pollution reduction capabilities associated with the inserts are anticipated to help the city reduce pollution impairments to Crow Creek.

Anticipated Future Benefits: Paul/Millers Pond Restoration

The 3.9-million-acre "Rainwater Basin" lies in the center of the United States, in south-central Nebraska, and just south of the Platte River. Nebraska's Rainwater Basin was historically a tall- to mixed-grass prairie containing nearly 12,000 playa (shallow, temporary) wetlands that covered over

200,000 acres. Restoring the playa wetlands of the Rainwater Basin can help communities create a sustainable water future by ensuring groundwater recharge. Additionally, the area provides vital habitat for migratory birds and other wildlife. The project will convert cropland to restore a series of Rainwater Basin playa wetlands using a combination of sediment removal, seeding with native plants, infrastructure replacements, and various protections of the properties in perpetuity. Sediment removal will allow for increased groundwater recharge and creation of waterfowl habitat. The project partner will also complete high-diversity native seeding on 64 upland acres, providing a wetland buffer, providing habitat, and deterring future sedimentation.

Red-Ouachita River | Holly Ridge Data Center

Holly Ridge, Louisiana is located within the Red-Ouachita watershed. This watershed encompasses several subwatersheds including the Boeuf River watershed, which drains to Ouachita River. Downstream of this confluence, the Ouachita becomes the Black River, where it converges with the Red River before it flows into the Atchafalaya River, a tributary of the Mississippi River.

Flooding, drought, groundwater decline, and saltwater intrusion due to excessive groundwater withdrawals all contribute to this region's water risk. Meta has funded two projects within this basin, the Bayou Pierre Reforestation and Wetland Treatment project, which are expected to generate volumetric benefits in the coming years (Figure 41).

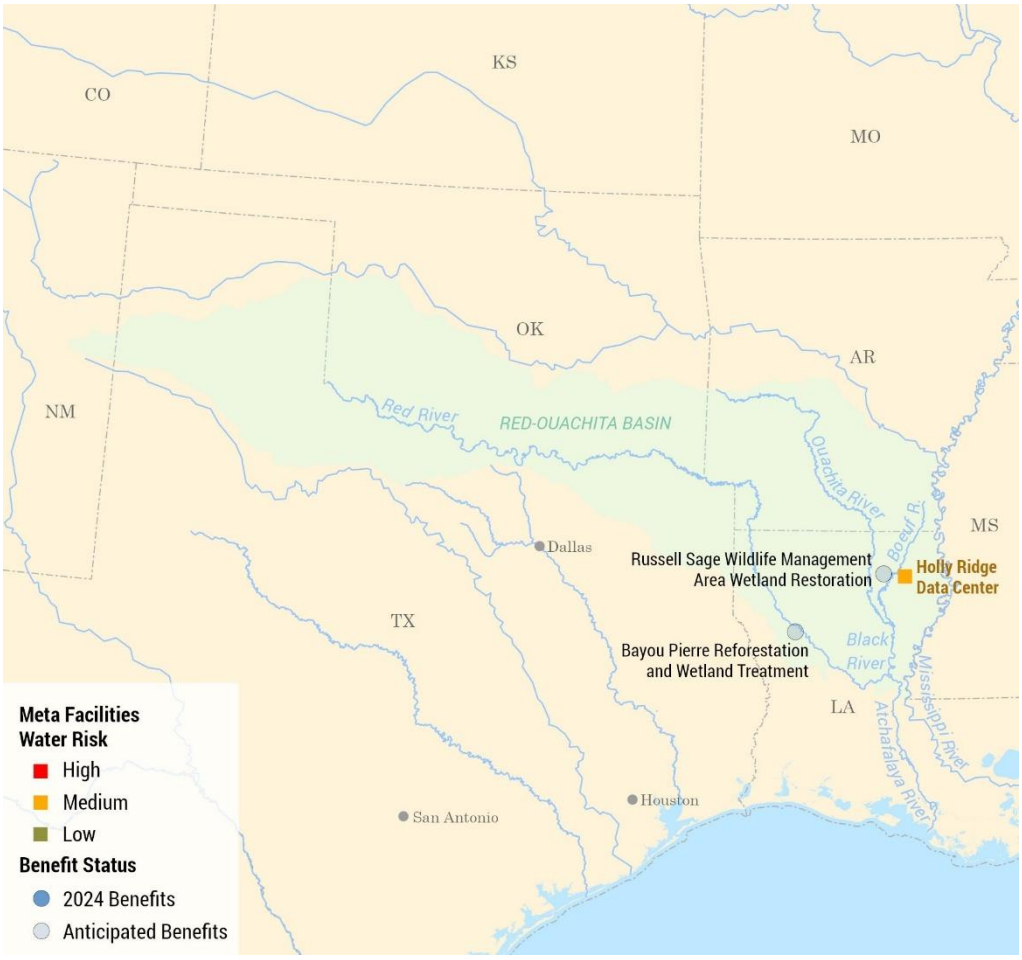


Figure 41. Project location within the Red-Ouachita River basin.

Anticipated Future Benefits: Russell Sage Wildlife Management Area Wetland Restoration

The Russell Sage Wildlife Management Area, located in northeastern Louisiana, forms one of the largest remaining tracts of the vast bottomland hardwood forests that historically composed the lower Mississippi River basin floodplain from lower Illinois to the Gulf of Mexico. To enhance and sustain wetland habitat for wildlife, the area is actively managed through a combination of water control infrastructure, habitat restoration efforts, and strategic land management practices. Water levels are regulated using a series of levees, pumps, and water control structures to mimic natural hydrological cycles and improve habitat for waterfowl, wading birds, and other wetland-dependent species. Much of the existing water management infrastructure has aged and deteriorated over time, limiting the effectiveness of wetland management efforts. This project replaces defunct equipment and improves pumping capacity to ensure that water levels can be managed more effectively, which will enhance habitat conditions and restore more natural hydrology to the area.

Anticipated Future Benefits: Bayou Pierre Reforestation and Wetland Treatment

The project site is a 316-acre cattle pasture in Natchitoches Parish, Louisiana, lying within the Bayou Pierre floodplain within the Red River watershed. The project will restore the pasture to native forested upland and wetland habitats adjacent to impaired waterbodies within the watershed. This will include the permanent relocation of cattle to an offsite location that will not impact surface water and revegetation of native forested upland and restoration of approximately 240 acres of wetland habitat. The project will include the construction of features to direct water runoff into improved detention ponds and wetland treatment cells to capture additional sediment and improve water quality. Restoration will also include planting a diverse mixture of native wetland and upland plant species for improved ecological function and benefit.

Liffey River | Clonee Data Center

The Liffey River watershed, within which the Clonee Data Center is located, is in eastern Ireland near Dublin. The river is a significant source of drinking water as well as water to supply industry. The main landuses in the watershed are peat bog and forestry in the upper catchment, agriculture in its middle reaches, and urban areas as it flows through Dublin. Water risk in this region is influenced by nutrient enrichment from agriculture and urban wastewater and stormwater, hydrological stream changes due to siltation from mining activities and forestry, and hydrological modifications (e.g., dams, culverts). Meta has funded one project within this basin, Peatland Restoration in the Wicklow Mountain Special Area of Conservation, which is expected to generate volumetric benefits attributable to the Clonee Data Center in the coming years (Figure 42).

Figure 42. Project location within the Liffey River basin.

Anticipated Future Benefits: Peatland Restoration in the Wicklow Mountain Special Area of Conservation

The Wicklow Mountains Special Area of Conservation encompasses 20,000 hectares of upland habitats including blanket bog, heath, woodlands, lakes, and exposed rocky habitats and includes Wicklow Mountains National Park. The majority of the area is covered by varying depths of peat or peaty soils, but a significant portion is degraded due to drainage, peat extraction, forestry operations,

uncontrolled fires, overgrazing, and recreational use. The degraded peatlands that are in poor ecological condition are also much more susceptible to damage from intense rainfall and extended periods of drought. This project will restore 450 hectares of degraded blanket bog, which will enhance the water storage capacity of the bog, protect the existing carbon storage, reduce ongoing emissions from degraded areas, and increase the carbon sequestration potential of these peatland habitats. Improvements in water quality are also expected to occur over a longer time frame, after vegetation cover has been restored, and peat erosion and runoff is improved.

Looking Ahead

Meta has reaffirmed its commitment to water stewardship by pledging to be water positive by 2030, restoring more water than is consumed across its facilities and operations. This report describes Meta's progress towards its water stewardship commitment in the watersheds where it operates. In addition to substantial volumetric benefits, the projects described in this report generate a variety of non-volumetric benefits for both people and ecological systems, contributing to increased water access and security, modernized infrastructure, improved water quality, and expanded habitat. These projects and activities serve to support not only Meta's own operations, but also the health of the communities and ecosystems in which it operates.

In future years, Meta will continue to identify projects that protect and restore ecosystems, improve water supply and reliability, provide water access, and improve water quality. Meta is also investing in capacity-building projects that can have a catalytic effect in watersheds around the world. These projects could include supporting local environmental nonprofits, governance, research, and other non-volume-generating activities.

References

Reig, P., Larson, W., Vionnet, S. and JB Bayart. 2019. Volumetric Water Benefit Accounting (VWBA): A Method for Implementing and Valuing Water Stewardship Activities. URL: https://wriorg.s3.amazonaws.com/s3fs-public/volumetric-water-benefit-accounting.pdf

Appendix 1: Funded Projects with Volumetric Benefits in 2024

Project	Location	Data Center	Implementing Partners	Project Activity	VWB Indicator	2024 VWB MGY	Anticipated 2025 VWB MGY	Year of initial VWB claim	Anticipated Benefit Duration End Date
Comanche Creek Restoration	New Mexico	Los Lunas	Trout Unlimited and National Forest Foundation	Floodplain Reconnection	Increased storage	7.9	7.9	2019	2028
Cedro Creek Restoration	New Mexico	Los Lunas	The Nature Conservancy; Rocky Mountain Youth Corps; Stream Dynamics	In-channel structures to facilitate recharge	Increased recharge	19.5	19.5	2020	2029
Ingram Meadow Restoration	Oregon	Prineville	National Forest Foundation; U.S. Forest Service; Middle Deschutes Watershed Council; Rocky Mountain Elk Foundation	Wetland restoration	Increased storage	1.5	1.5	2020	2029
La Jara Wetland Restoration	New Mexico	Los Lunas	The Nature Conservancy, Amigos Bravos, Watershed Artisans	Wetland restoration	Increased storage	3.0	3.0	2020	2029
Middle Rio Grande Flow Restoration: Phase I	New Mexico	Los Lunas	Audubon New Mexico	Water rights leasing	Reduced withdrawal	81.5	81.5	2020	2027

Project	Location	Data Center	Implementing Partners	Project Activity	VWB Indicator	2024 VWB MGY	Anticipated 2025 VWB MGY	Year of initial VWB claim	Anticipated Benefit Duration End Date
Provo River Flow Restoration	Utah	Eagle Mountain	Central Utah Water Conservancy District	10-year water rights lease	Reduced withdrawal	406.6	406.6	2020	2029
California Wildfire Reforestation	California	Bay Area Offices	Arbor Day Foundation, American Forest Foundation	Reforestation	Reduced runoff	37.3	37.3	2021	2027
Prineville Aquifer Storage and Recovery	Oregon	Prineville	City of Prineville, Apple	Aquifer recharge	Increased recharge	30.3	30.3[3]	2021	2030
Colorado River Indian Tribes System Conservation	Arizona/ Nevada	Mesa	Colorado River Indian Tribes, Arizona Department of Water Resources	Water leasing agreements	Reduced withdrawal	25.6	25.6	2021	2030
Harvey Jones Bioswale	New Mexico	Los Lunas	The Nature Conservancy; Southern Sandoval County Arroyo Flood Control Authority	Bioswale construction	Volume captured	0.6	0.6	2022	2031

[3] This project has variable annual volumetric water benefits based on actual measured volumes. The anticipated 2025 VWB here is equal to the actual 2024 VWB, but actual annual benefits in 2025 may differ from the anticipated benefits.

Project	Location	Data Center	Implementing Partners	Project Activity	VWB Indicator	2024 VWB MGY	Anticipated 2025 VWB MGY	Year of initial VWB claim	Anticipated Benefit Duration End Date
Navajo Community Water Supply Phase I	Arizona	Mesa	Dig Deep	Drinking water access	Volume provided	0.07	0.07	2022	2031
Colorado River Indian Tribes Irrigation Canal Lining Project	Arizona	Mesa	Colorado River Indian Tribes, Bureau of Indian Affairs, US Bureau of Reclamation	Irrigation canal lining	Reduced withdrawal	43.8	43.8	2023	2032
Green River Demand Management and Resilience Project	Wyoming	Mesa	Trout Unlimited, partner ranchers	Fallowing agreements and Beaver Dam Analogues	Reduced withdrawal and increased recharge	40.9	47.5[4]	2023	2032
Jicarilla Apache Nation Water Sharing Agreement	New Mexico	Mesa	New Mexico Interstate Stream Commission, Jicarilla Apache Nation, The Nature Conservancy	Water leasing agreement	Reduced withdrawal	114.0	114.0	2023	2032

[4] The benefit claim duration for fallowing agreements is three years and for Beaver Dam Analogs is 10 years.

Project	Location	Data Center	Implementing Partners	Project Activity	VWB Indicator	2024 VWB MGY	Anticipated 2025 VWB MGY	Year of initial VWB claim	Anticipated Benefit Duration End Date
Hobble Creek	Utah	Eagle Mountain	Central Utah Water Conservancy District, June Sucker Recovery Implementation Program, Springville Irrigation Company	Irrigation diversion and flow enhancement	Volume provided	314.1	467.4[5]	2023	2032
Mason Lane Ditch Piping	Arizona	Mesa	The Nature Conservancy, Mason Lane Water Users Association	Irrigation efficiency improvement	Reduced withdrawal	163.1	163.1	2023	2032
Restoring and Enhancing Richland Creek Wildlife Management Area	Texas	Fort Worth	Ducks Unlimited, Texas Parks and Wildlife Department	Wetland creation	Increased inundation	74.5	74.5	2023	2032
Rito Penas Negras Restoration	New Mexico	Los Lunas	National Forest Foundation	Beaver dam analogs	Increased recharge	23.8	23.8	2023	2032

[5] The volume provided in Hobble Creek at Swenson Diversion Dam is based on measurements at the flow gauges. This number is subject to change. The volume of water provided to Hobble Creek as a result of this project is expected to be higher than the 2024 benefit because 2024 was a dry year

Project	Location	Data Center	Implementing Partners	Project Activity	VWB Indicator	2024 VWB MGY	Anticipated 2025 VWB MGY	Year of initial VWB claim	Anticipated Benefit Duration End Date
Navajo Community Water Supply Phase II	Arizona	Mesa	Dig Deep	Drinking water access	Volume provided	0.12	0.12	2024	2033
CRIT Drip Irrigation/Crop Conversion	Arizona	Mesa	CRIT; N-Drip	Irrigation efficiency improvement	Reduced consumption	116.1	116.1[6]	2024	2031
CRIT Drip Irrigation	Arizona	Mesa	CRIT; N-Drip	Irrigation efficiency improvement	Reduced consumption	64.9	126.1[6]	2024	2033
Crow Creek Stream Restoration	Wyoming	Cheyenne	Laramie County Conservation District	Stream restoration	Increased recharge	14.0	14.0	2024	2033
Eagle Mountain Wastewater Reuse	Utah	Eagle Mountain	Eagle Mountain City	Wastewater reuse	Reduced withdrawal	6.3	6.3[7]	2024	2053
2024 Volumetric Water Benefit, MGY (million gallons/yr)						**1589.5**			
Anticipated 2025 Volumetric Water Benefit from Completed Projects, MGY (million gallons/yr)							**1,810.6**		

[6] Volumetric benefit is based on the crop planted in a given year (cotton or alfalfa). Benefit may change based on the crop planted in 2025.
[7] Volumetric benefit is based on annual measurements and may vary annually. The 2025 anticipated benefit is estimated to be similar to 2024 to be conservative.

Appendix 2: Funded Projects Not Yet Generating Volumetric Benefits

Project	Location	Data Center	Implementing Partners	Project Activity	VWB Indicator	Estimated Future VWB MGY	Anticipated Year of Initial VWB Claim
Salt River Project (SRP) Forest Restoration Project	Arizona	Mesa	Salt River Project	Forest thinning/ restoration	Reduced evapotranspiration	5.1	2025
Wildcat Marsh	Texas	Fort Worth	Ducks Unlimited	Wetland creation	Increased inundation volume	13.4	2025
Denton County Land Protection	Texas	Fort Worth	Upper Trinity Conservation Trust	Conservation easement	Avoided runoff	13.1	2025
Irrigation Conversion in the Platte River Basin	Nebraska	Papillion	N-DRIP	Irrigation efficiency improvement	Reduced consumption	65.5	2025
Water Leak Reduction: “Water, United” Initiative	New Mexico	Mesa	FIDO Tech Ltd., City of Farmington, Las Vegas Valley Water District	Leak detection	Reduced withdrawal	248.8 to 391.0	2025
Middle Rio Grand Flow Restoration Phase II	New Mexico	Los Lunas	Audubon New Mexico	Water leasing agreements	Reduced withdrawal	13.0 to 94.5	2025
Prineville Aquifer Storage and Recovery Phase II	Oregon	Prineville	City of Prineville	Aquifer recharge	Increased recharge	150.0	2025

Project	Location	Data Center	Implementing Partners	Project Activity	VWB Indicator	Estimated Future VWB MGY	Anticipated Year of Initial VWB Claim
Crow Creek Stormwater Drain Filters	Wyoming	Cheyenne	Frog Creek Partners	Stormwater management treatment	Volume treated	10.9	2025
Russell Sage Wildlife Management Area Wetland Restoration	Louisiana	Holly Ridge	Ducks Unlimited	Equipment upgrades to increase inundation in constructed wetland	Increased inundation	26.8	2026
Bayou Pierre Reforestation and Wetland Treatment	Louisiana	Holly Ridge	Resource Environmental Solutions (RES)	Reforestation, Wetland habitat restoration	Reduced runoff, volume treated	481.3 to 711.6	2026
Longleaf Pine Forest Restoration Project	Texas	Fort Worth	Texan by Nature	Forest restoration	Reduced evapotranspiration	44.0	2026
McKay Creek Water Rights Exchange, Phase II	Oregon	Prineville	Deschutes River Conservancy, Ochoco Irrigation District, Crooked River Watershed Council, Deschutes Land Trust, the Natural Resources Conservation	Aquatic habitat restoration	Reduced withdrawal	35.0	2026

Project	Location	Data Center	Implementing Partners	Project Activity	VWB Indicator	Estimated Future VWB MGY	Anticipated Year of Initial VWB Claim
Mariah Pasture Project	Wyoming	Cheyenne	Laramie County Conservation District	Reservoir dredging and Beaver dam analogs	Increased storage volume and increased recharge	1.0	2027
Cocopah West Riparian Restoration Project	Arizona	Mesa	Cocopah Indian Tribe, National Audubon Society, US Bureau of Reclamation, Yuma County Water User's Association	Riparian Restoration	Volume provided	36.1	2027
Hidden Valley Floodplain Revegetation	California	Bay Area Offices	River Partners	Cropland to native vegetation	Reduced withdrawal	48.0	2027
Peatland Restoration in the Wicklow Mountains Special Area of Conservation	Ireland	Clonee	Peatland Finance Ireland, private landholders, National Parks and Wildlife Service	Rewetting of peat bogs	Increased storage	21.4 to 42.8	2027
Paul/Millers Pond Wetland Restoration	Nebraska	Papillion	Ducks Unlimited	Sediment removal, upland revegetation	Increased recharge, reduced runoff	6.2	2027
Alta Harris Creek Side Channel	Idaho	Kuna	Trout Unlimited	Side channel reconnection	Increase in streamflow	149.0	TBD

Project	Location	Data Center	Implementing Partners	Project Activity	VWB Indicator	Estimated Future VWB MGY	Anticipated Year of Initial VWB Claim
Phoenix Hospital Cooling & Conservation	Arizona	Mesa	BlueCommons; City of Phoenix	Improved efficiency of upgraded wet cooling systems	Reduced withdrawal	11.0	TBD
Anticipated Future Volumetric Water Benefit for Projects not yet Providing Benefits once the projects are Fully Implemented, MGY (million gallons/yr)						**1,379.7 to 1,855.1**	