

Restoring Little Green Valley Wet Meadow 2024-2026



Figure 1: Most significant headcut in 2024 prior to restoration.

Decades of headcutting and erosion channelized and dried large portions of the Little Green Valley wet meadow and threatened the entire wetland complex. Little Green Valley is a recommended Botanical Area in the Tonto National Forest (TNF) plan with the purpose of enhancing and protecting unique soil conditions and plant communities. Degradation of the system came from an upstream, in-channel material borrow pit and an over 15-foot headcut at the bottom of the wet meadow. (Figure 1)

Throughout the wet meadow system on public and private land, downcutting ranged from 1 foot to over 10 feet, with the most significant degradation on National Forest System (NFS) lands. The 15-foot headcut was first arrested using riprap in 2011, (Figure 2) however, the system continued to degrade and in 2023 the riprap failed and the headcut began advancing into the wet meadow again. (Figure 3)



Figure 2: First headcut repair in 2011.
(Shown here 10 yrs after initial repair in 2022)



Figure 3: In 2023 after the repair failed.

The goal of the 2024 Little Green Valley Wet Meadow Project was to stop the headcut from advancing, restore wet meadow hydrology, and increase the system's resilience to drought, wildfire, and flood. The project used a Stage 0 approach, whereby the entire valley floor is reset by cutting and filling areas based on if they are above (cut) or below (fill) the target elevation. This target elevation is determined by using a relative elevation model and the geomorphic grade line.¹ (Figure 4) While dozens of Stage 0 projects have been completed in wet and dry environments in the Pacific Northwest and Colorado, the Little Green Valley Wet Meadow Project was the first Stage 0 project in the Southwest.

¹ For more information on Stage 0 restoration see <https://stagezeroriverrestoration.com/>

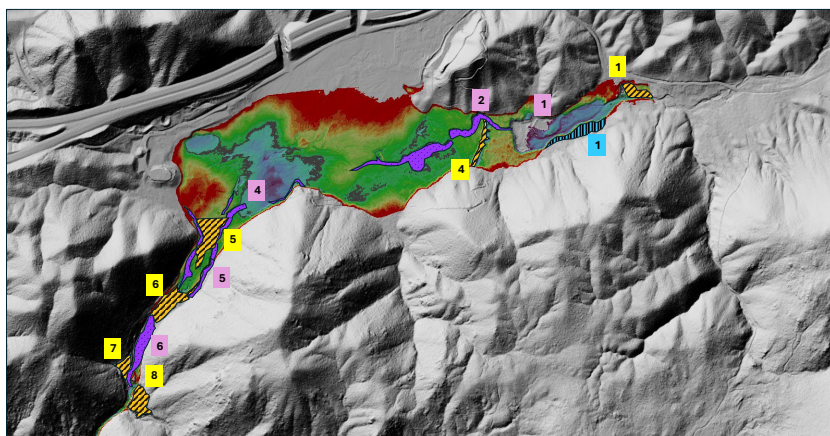


Figure 4: Restoration area with cut (yellow) and fill (purple) areas identified.

The project was managed through an agreement with National Forest Foundation (NFF) with daily assistance from TNF watershed staff and design and construction oversight from the USFS Enterprise program. Throughout the project, Payson Ranger District botany, fire, timber, range, and silvicultural staff provided valuable assistance in bringing in materials, fixing elk fence, and planting riparian species.

Table 1: Project Summary

Phase	Duration/ Date	Cut and Fill	Harvested Trees	Other Material
One	8 weeks Nov-Dec 2024	~40,000 yd ³	~300	~200 salvaged riparian seedlings & native seed
Two	6 weeks Mar-Apr 2026	~10,000 yd ³	~100	~100 sedges, rushes and grasses onsite transplanted from undisturbed to restored areas

All trees, plants, and fill material were sourced onsite, and sedge, rush, and grass seed was collected at the wet meadow by seed collection crews in summer of 2024. Phase 1 included building an access road (Figure 5), bringing the headcut and 5 acres below it to grade (Figure 6), and seeding/planting. Between Phases 1 and 2 a new headcut opened at the bottom of the project area (Figure 7) where flow concentrated due to the unrepaired remaining channel upstream and the lack of stabilizing vegetation. Phase 2 repaired this area, filled 4 additional channels, brought an additional 5 acres to grade, and decommissioned the access road.



Figure 5: Building the access road



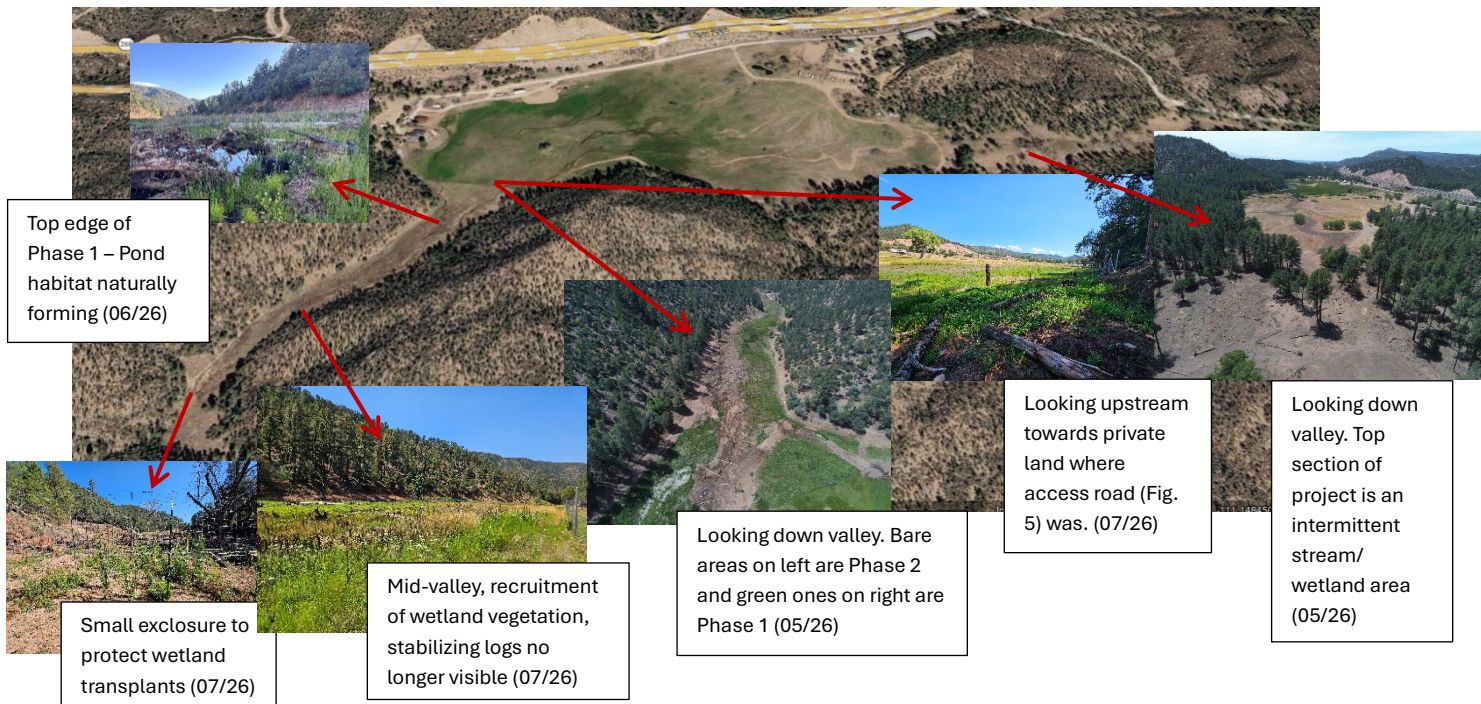
Figure 6: USFS drone footage of Phase 1 taken 12/2025 looking upstream



Figure 7: New headcut at bottom repaired in Phase 2

As of July 2026, recovery of the wet meadow post-restoration varies based on when the area was completed, if the area is inside the elk fence, and availability of water. At the bottom of the project, re-establishment of wetland vegetation has been slow due to a lack of water, erosion from flooding between Phase 1 and 2, and ungulate and livestock pressure. Phase 1 areas near the historic headcut have recovered so well the logs are no longer visible and large stands of cattails and willows have naturally filled in the site. The top of the project remains dry; however, recovery can be seen in wet areas on both public and private land throughout Phase 2. (Figure 8)

Figure 8: Project Overview May-July 2026 (Google Earth image taken in March 2026 prior to Phase 2).



Overall, this project has restored function to a 45-acre wet meadow complex and ~1.5 miles of stream. Total project cost was \$1.2 million² and used federal appropriations to the USFS and NFF, Arizona Water Protection Fund, Northern Arizona Forest Fund (City of Scottsdale & City of Phoenix), and Swire Coca-Cola. Ongoing monitoring includes measuring change in groundwater levels, vegetation establishment and species composition through transects established in 2021, floristic inventories, soil horizon development and organic matter content, annual drone flights, and photo points established in 2024. (Figures 9 and 10) As part of the ongoing floristic inventory by FS botanists, there have been 126 species documented, including several new records of species that are uncommon in Arizona or only found at wetland meadow habitat areas. Finally, by fall of 2026 a livestock enclosure will be constructed at the bottom of the project through assistance from The Nature Conservancy and the USFS will maintain this enclosure and the elk enclosure for at least a decade.

² Of this total cost \$155,000 was for building the elk enclosure and re-establishing livestock fencing at the bottom of the project. \$86,000 for heritage survey and an initial design which was not used because the riprap failed during the design process, and the hired firm did not have the capacity to design for a Stage 0 project.

Figure 9: Photo Point 2 - Looking East (Upstream) at the Large Headcut.



Figure 10: Photo Point 3 - Looking West (Downstream) Midway Through Lower USFS Property.

