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Bill Coughlin, President/Owner

WSW PROJECT LIST

Mine Reclamation:

Silverbell Mine Reclamation, 2025-2026

WSW designed and built a Wetland Mitigation Project within existing Treatment Wetlands to provide additional filtration of suspended metals resulting from the reclamation maintenance efforts. Designed a collection building utilizing passive solar green house warming over a root cellar type design to make it possible to monitor water quality during high altitude long winters and subzero temperatures.

Howards Fork of the San Miguel River, Silverbell Mine Reclamation, Colorado 2023

WSW procured Army Corps and San Miguel County Permits for a floodplain enhancement, stream bank stabilization project. WSW designed-built the project in a steep canyon utilizing a Spider-Trackhoe, lowering materials in super sacks with a hoist down a vertical cliff. Completed floodplain enhancement by hand with a labor force when access became impossible. Broke enormous rock off cliff face and blasted it into useable river restoration boulders. Stabilized cliff face with shotcrete and built avalanche shed over hydrologic monitoring area for the Silverbell Mine Reclamation.

Bonanza Boy Mine, Mill Creek, Colorado, 2022-2023

Within a mine reclamation project WSW designed stream channel improvements, wetland mitigation areas consulting for ACOE and USFS within a mine reclamation for development at headwaters of Mill Creek Valley.

Silverbell Mine Reclamation, PacifiCorp, Ames, Colorado, 1999-2026

WSW has acted as Site Manager and Operator in Responsible Charge (ORC) for many years. The project requires WSW to be a State Certified Industrial Wastewater Operator. The position requires managing data collection and operation of Silverbell Mine Reclamation Project for twenty seven years. WSW design-builds iron retention ponds, and limestone bays for pH alteration to encourage deposition of iron for compliance of CDPHE permit standards. WSW design builds treatment wetlands to further mitigate and buffer acid mine drainage into the Howard's Fork of the San Miguel River. The experience of continually improving this Good Samaritan project with PacifiCorp has provided opportunities for WSW to combine stream restoration and mine reclamation techniques.

Ouray Silver Mines, Camp Bird, CO 2018-2020

WSW consults and collects field samples regarding hydrological and water quality for the DMR and CDPHE, ensuring highest standards of quality assurance, including gaging streams and collecting samples within Sneffels Creek

Camp Bird EPA Reclamation Project, Camp Bird, CO 2017

WSW asked by Caldera Mining to design stream channel restoration on the U.S. EPA Removal Action on the Camp Bird Project. WSW also managing construction of stream restoration on Imogene Creek, Sneffels Creek and Canyon Creek.

Camp Bird Mine Reclamation Project, Camp Bird, Colorado 2016-2017

WSW asked by Ouray Silver Mine to design a mine reclamation project, including stream bank stabilization project on Imogen Creek, Sneffels Creek and Canyon Creek as they pass through historic Camp Bird Mine Tailings for EPA project. The design will call for defining sinuosity and contouring tailings slopes to a 3:1 stable slope with vegetation.

Centennial Mine Reclamation Project, Colorado Dept. of Health and Environment (CDPHE) 2016

WSW designed a stream restoration project for the CDPHE funded by the Dept. of Natural Resources (DNR) within a steep sloped valley through historic uranium mine tailings from the Centennial Mine, mitigating erosion and enhancing water quality. The WSW design met CDBG Design Guidelines criteria and utilized the Colorado Water Conservation Board's Topographic Survey of Stream Channels. The site within Disappointment Valley is a historic area of tailings storage with an actively eroding channel through the center. The effort is to create a stable ephemeral channel to mitigate downstream transport and aggradation of tailings.

Sun Cup Mine Reclamation Project, Colorado Dept. of Health and Environment (CDPHE) 2016

WSW asked by the CDPHE funded by the Dept. of Natural Resources (DNR) to design a stream restoration project within a meandering valley through historic uranium mine tailings. The resulting WSW design met CDBG Design Guidelines criteria and utilized the Colorado Water Conservation Board's Topographic Survey of Stream Channels. The site within Disappointment Valley is a historic area of tailings storage from the Sun Cup Mine with an actively eroding, meandering channel through the tailings pile. The effort is to create a stable ephemeral channel, by mitigating erosion and the downstream transport and aggradation of tailings, and to optimally enhance long term water quality.

Ouray Silver Mining Company, Ouray, Colorado 2015

WSW consulted on hydrologic techniques, data collection and compliance procedures within State of Colorado discharge permit. Collected hydrologic data both underground and on surface.

Silverbell Mine Reclamation Treatment Wetland Project, Ames, Colorado, 2008

WSW field implemented design and managed construction of retention pond, limestone bays for pH alteration to encourage deposition of iron, and treatment wetlands to mitigate acid mine drainage in collaboration with MWH and Skanska Construction. Recycled alluvium from stream project to pond and installed wetland vegetation.

Silverbell Mine Reclamation, PacifiCorp Inc., Ames, Colorado, 2006-2007

WSW acquired U.S. Army Corps permit, designed and built stream bank stabilization-vane arm construction to protect mine tailing retaining wall, involved lowering boulders with 100' cable and long reach excavator over 150' cliff. Utilized stream restoration techniques to protect toe of mine reclamation project. Transferring skills from diverse environmental projects also created opportunity to use alluvium from stream flood mitigation on treatment wetland berm improvements. Implemented storm water management and BMP's.

Stream Restoration:

City of Ouray, 2024-2026

WSW Created a stream channel Monitoring and Mitigation Plan for the City of Ouray to establish Standard Operating Procedures for the Uncompahgre River through the City. WSW established Monitoring cross channel locations which assist in the annual monitoring of the river. Based on the monitoring WSW performs work instream as needed to protect the Cities stream corridor and river trail system.

Ouray County Flood Declaration of Emergency, 2024

WSW consulted and designed stream channel flood mitigation required after debris slides events occurred after heavy side channel flooding in tributaries of the Uncompahgre River, leading to Ouray County declaring a State of Emergency.

Howards Fork of the San Miguel River, Silverbell Mine Reclamation, Colorado 2023

WSW procured Army Corps and San Miguel County Permits for a floodplain enhancement, stream bank stabilization project. WSW designed-built the project in a steep canyon utilizing a Spider-Trackhoe, lowering materials in super sacks with a hoist down a vertical cliff. Completed floodplain enhancement by hand with a labor force when access became impossible. Broke enormous rock off cliff face and blasted it into useable river restoration boulders. Stabilized cliff face with shotcrete and built avalanche shed over hydrologic monitoring area.

Lockhart Property, Uncompahgre River, Ouray Colorado, 2023

WSW designed and procured ACOE permit for stream channel configuration within a high bedload transfer area in the glacial valley of the upper Uncompahgre River.

Bonanza Boy Mine, Mill Creek, Colorado 2022-2023

WSW Designed stream channel improvements, wetland mitigation areas consulting for ACOE and USFS within a mine reclamation for development at headwaters of Mill Creek Valley.

Coronet Creek, Telluride, Colorado

Consultation and mitigation design on Coronet Creek within private land Dakota Ave

Stream Channel Enhancement and Erosion Mitigation Project 2016-2020

NW Uncompahgre Plateau, Log Hill Mesa, Ridgway, CO

WSW Design-building several projects to stabilize erosion, enhance pond and wetlands for fish by creating pools and habitat, and restore stream channels.

Village Core, Mountain Village, Colorado 2016-2020

WSW consulting on ACOE and EPA permit compliance and maintenance construction management regarding streams and sediment control pond protected under the EPA Consent Decree.

.....Cottonwood Pass Project, Federal Highway Project, Taylor, Colorado, 2017-2019

WSW consulting and managing project construction as Stream Restoration/Wetlands Consultant during stream and wetland restoration, removing historic road and reestablishing natural aquatic system within Federal Highway Project.

Camp Bird EPA Reclamation Project, Camp Bird, CO 2017-19

WSW asked by Caldera Mining to design stream channel restoration on the U.S. EPA Removal Action on the Camp Bird Project. WSW also managing construction of stream restoration on initial work on Imogene Creek, Sneffels Creek and Canyon Creek.

Uncompahgre River, Billy Creek, Colona, Colorado 2017

WSW asked by Trout Unlimited to consult on stream restoration, fish habitat enhancement project.

Camp Bird Mine Stream Reclamation Project, Camp Bird, Colorado 2016-2017

WSW asked by Ouray Silver Mine to design a stream bank stabilization project on Imogen Creek, Sneffels Creek and Canyon Creek as they pass through historic Camp Bird Mine Tailings for EPA project.

Skyrocket Creek Stream Restoration Project, Ouray, Colorado 2017

WSW asked by City of Ouray to design-build a restoration project downstream of CDOT box culvert.

Sneffels Creek Stream Restoration Project, Camp Bird Rd, Colorado 2013-2016

WSW asked by the Uncompahgre Watershed Partnership (UWP) to locate an important and beneficial local project. Funded by the CDPHE Nonpoint Source Program and DRMS matching funds; WSW will design, permit and build a stream restoration project to mitigate streambank erosion within Sneffels Creek by the mine tailings at Atlas Mine. WSW working with UWP to build project and Ouray Silver Mines for the donation of boulders for instream work.

Centennial Mine Reclamation Project, Colorado Division of Mine Reclamation, 2016-2017

WSW designed a stream restoration project for the CDPHE funded by the Dept. of Natural Resources (DNR) within a steep sloped valley through historic uranium mine tailings from the Centennial Mine, mitigating erosion and enhancing water quality. The WSW design met CDBG Design Guidelines criteria and utilized the Colorado Water Conservation Board's Topographic Survey of Stream Channels. The site within Disappointment Valley is a historic area of tailings storage with an actively eroding channel through the center. The effort is to create a stable ephemeral channel to mitigate downstream transport and aggradation of tailings.

Sun Cup Mine Reclamation Project, Colorado Dept. of Health and Environment (CDPHE) 2016

WSW asked by the CDPHE funded by the Dept. of Natural Resources (DNR) to design a stream restoration project within a meandering valley through historic uranium mine tailings. The resulting WSW design met CDBG Design Guidelines criteria and utilized the Colorado Water Conservation Board's Topographic Survey of Stream Channels. The site within Disappointment Valley is a historic area of tailings storage from the Sun Cup Mine with an actively eroding, meandering channel through the tailings pile. The effort is to create a stable ephemeral channel, by mitigating erosion and the downstream transport and aggradation of tailings, and to optimally enhance long term water quality.

Stream Relocation Project, EPA Consent Decree Receiver, Ordot, Guam, 2014-2015

WSW hired as Stream Restoration Specialist to consult and oversee construction of a large stream relocation project around a historic WWII dump in the US territory of Guam, the largest and southernmost of the Mariana Islands in Micronesia. WSW managed construction of the stream relocation portion of this \$49 million dollar project. The project mitigated excessive erosion through area of toxic dump and was required by the EPA by the Territory of Guam to complete. The project also mitigated negative effects on outer reef ecosystem and protected valuable fisheries. This was the first stream project completed in this area of the Western Pacific.

San Miguel River Restoration Project, Town of Telluride Public Works Dept., CO 2013-2015

WSW designed, procured ACOE permit and built a stream restoration project to mitigate excessive stream erosion, creating a public hazard within town bike path by entrance into Town Park.

Sunnyside Development, Colorado 2014-19

WSW design-built large cascading waterfall feature with 15 stacked and lined drop structures into a pond. A benchmark for quality drop structure construction on the Western Slope.

Animas River Trail, Whitewater Park Project, City of Durango, 2014

WSW hired by Russell Engineering to consult on riparian stability components of the Animas River Trail project that will interface the Animas River Whitewater Park.

West Fork of the Dolores River, Ciecich Property 2013

WSW completed design, acquired Army Corps Permit and will build bank stream restoration project for private landowner when pond was being threatened by erosion and channel was degrading where previous project failed.

Remine Creek Stream Restoration Project, Sunnyside HOA, Telluride, CO 2013

WSW completed design, acquired Army Corps Permit and built stream project to ensure discharge into diversion structure designed by WSW to facilitate discharge into storage pond and provide irrigation water for development.

Animas River Trail Project 29th Street, City of Durango, Colorado 2013

WSW contracted as stream restoration consultant to meet permit compliance with Army Corps and City, WSW managed dewatering coffer dams and demolition of historic water pump station intake gallery.

Animas River Water Line Repair Project, City of Durango, Colorado 2013

WSW contracted as stream construction consultant to oversee dewatering activities and manage coffer dams for emergency repair of water line break.

Dolores River Restoration Project, Stanly Legro Property, Montezuma County, Colorado 2010-2013

WSW acquired U.S. Army Corps permit for design-build flood and stream bank erosion mitigation project. Protect home site along a historic oxbow channel, restore balance within the main channel, protect and enhance viable wetland habitat within beaver dams by maintaining sloughs.

Coronet Creek Erosion Mitigation Project, Glenn Property, Telluride, CO 2012-2013

WSW procured Army Corps and Town of Telluride permits and designed and built erosion mitigation project to stabilize degraded channel and mitigate head cut threatening owner's property. Sinuosity was reestablished and instream rock techniques dissipated shear stress.

Beaver Creek Phase II Restoration Project, EPA 319 Program, Southern Ute Indian Tribe, Water Quality Control Division, Ignacio, Colorado 2012-2013

WSW awarded project to create a design and build project collaborating with the Southern Ute Indian Tribe's Water Quality Program. WSW also procured an Army Corps Permit for this EPA 319 grant funded project. Our primary focus and objective was to reduce the amount of sediment entering Pine River downstream by stabilizing the eroding banks on Beaver Creek, which improves the water quality and the trout fishery on Pine River. Our approach was to protect highly erodible areas by creating a more stable system, replicating natural fluvial geomorphology and limiting impacts of construction activity by applying restorative integrity.

Corbett Creek Debris Slide Mitigation, Ouray County, Colorado

WSW voluntarily gained Army Corps permission and design-built sediment detention ponds with stable instream structures with County personnel. The effort helped reduce the amount of times County Road 17 washed out and saved Road and Bridge repair expenses.

Dolores River Restoration Project, U. S. Forest Service, Dolores, Colorado 2009-2013

WSW asked by the U.S. Forest Service to acquire U.S. Army Corps permit; design and build restoration project for the within heavily used recreational reach within the Town of Dolores, CO. The project created fish habitat, stabilized bank erosion, created boater recreational features, and enhanced riparian vegetation; the project was partially funded by the Greater Dolores Action Group, working with the USFS to fund stream improvement projects.

Coronet Creek Restoration Project, Town of Telluride, Colorado, 2012

WSW acquired Army Corps permit for the Town of Telluride and designed/built project to mitigate erosion and protect Town utilities that cross Coronet Creek.

Coronet Creek Restoration Project, Pryor Property, Colorado, 2012

WSW designed and built erosion mitigation project for private landowner to restore and stabilize property along Coronet Creek, on the highly erodible, alluvial fan which Telluride is built upon.

Cow Creek Stream Restoration Project, Ouray County, Colorado 2011-2013

WSW hired by the County of Ouray to design, permit and build a stream bank stabilization project to protect a County Road 3 from excessive erosion damage: the project reestablishes sinuosity within a high bedload transfer system and builds protective instream features; fish habitat creation and riparian vegetation enhancement simultaneously occurs within the project.

Uncompahgre River Restoration Project, Sander's Property, Ouray County, Colorado 2011-2012

WSW designed bank stabilization, procured an Army Corps permit, and constructed in-stream features to mitigate excessive erosion downstream of gravel mining operation. This project is built within a highly unstable reach of the Uncompahgre River, with a long history of erosion and previous work problems.

Uncompahgre River Bank Erosion and Floodplain Mitigation Project, Montrose, Colorado 2011-2012

WSW designed, permitted and built a flood mitigation project to protect a private vineyard from excessive erosion from the Uncompahgre River. Fifty-foot vertical cut banks and significant property loss occurred in 2010 from dam release flows. This project utilized a less is more philosophy within natural channel design to create a minimum of instream structures and dense willow transplants to stabilize this very erosive channel.

Bear Creek Erosion Mitigation Stream Project, Glenn Property, San Miguel County, Colorado 2011

WSW acquired U.S. Army Corps permit and San Miguel County Permit; designed and built erosion mitigation project by creating an enhanced floodplain to pond water at varying flow volumes, creating fish habitat, with waterfalls and wetlands and a high flow channel as Bear Creek enters the San Miguel River.

Animas River Restoration Project, Southern Ute Indian Tribe, Ignacio, Colorado 2011-2012

WSW was awarded the contract to design and build a stream project within an EPA 319 Water Quality Grant for the Southern Ute Indian Tribe, Environmental Programs Division. WSW worked with the Tribe's Water Quality Program to enhance the stream's fish habitat and riparian vegetation and mitigate silt transfer by creating two silt detention basins and a treatment wetland in an upstream tributary so that trout populations may prosper.

Dolores River Restoration Project, Stoner Ranch, Stoner, Colorado 2010-2011

WSW acquired U.S. Army Corps permit; design and built large fish enhancement project for Stoner Ranch within a meandering reach of the Dolores River. We utilized logs and boulders to replicate natural stream dynamics. WSW completed Phase One of the project, including over twenty fish habitat features, during summer 2010. We constructed every variation of fish structure. We will monitor these different structures for fish use and gather information from fly fisherman. We will utilize this information while building Phase Two.

Dolores River Restoration Project, Empire Electric Association, Stoner, Colorado 2010-2011

WSW acquired U.S. Army Corps permit; design and build project to mitigate excessive erosion threatening the Empire Electric Association's power line, which is located beneath the river, and is subject to erosive force within a meander of the stream: the utility line powers the entire north end of the Upper Dolores River valley. The project was completed fall 2010 and monitoring will continue for three years.

Deadhorse Creek Headcut Mitigation Project, Dry Creek Basin Wildlife Area, Colorado, 2010

WSW was asked by the CDOW to design a project within Deadhorse Creek's highly eroded upper basin. We completed a design for a Sage Grouse habitat enhancement project for the Colorado Department of Wildlife.

Dexter Creek Debris Slide Mitigation and Stream Restoration Project, Ouray, Colorado 2010

WSW created a design and obtained a permit to mitigate a sixty-year event debris slide. A private home along Dexter Creek lost significant property and remaining was fourteen-foot vertical cut banks within twenty-five feet of the home. The project is being phased over several years to be completed within a limited budget.

Animas River Restoration Project, Wilhelm's Property, Durango, Colorado, 2010

WSW acquired U.S. Army Corps permit; design and build erosion mitigation, fisheries enhancement and recreational feature-boater takeout on the Animas River in Durango.

Coronet Creek Stream Restoration Project, Ryan Property, Telluride, Colorado, 2008-2010

WSW acquired U.S. Army Corps permit, designed and built stream restoration and flood mitigation project to protect private property from excessive bank erosion. Completed instream work to reestablish grade and decrease degradation within the Town of Telluride's Coronet Creek flood mitigation effort. Landscape design and installation of riparian vegetation to stabilize bank and create aesthetic and diverse riparian corridor.

Animas River Restoration Project, Between 9th St Bridge and Hwy 160 Bridge, City of Durango, Colorado 2009

WSW acquired U.S. Army Corps permit, designed and built stream restoration project for the City of Durango, Trout Unlimited and Animas River Keepers. Created stream access, boating and fishing improvements along heavily used recreational reach within the city limits, including revegetation, trails and habitat improvements in collaboration with CDOW. Mitigated stream bank erosion and enhanced riparian vegetation. Created traffic control plan and created and implemented storm water management plan. Project awarded Colorado Trout Unlimited "Exemplary Project of the Year", for efforts to naturalize instream work to look and function within existing channel morphometry.

West Fork of the Dolores River Stream Restoration Project, Griffith Property, 2009

WSW acquired U.S. Army Corps permit, designed and built project to re-establish sinuosity and create high flow channel protecting bridge from stream erosion. Created log debris-fish habitat that appear and function naturally.

Coronet Creek Stream Restoration Project, for the Town of Telluride, Colorado, 2009

WSW designed and built bank stabilization along a confined area with a 15' vertical drop to the river, three feet from a building corner, developed heavy equipment maintenance access for the Town's flood mitigation project in conjunction with Mussetter Engineering's flood and debris slide analysis.

West Fork of the Dolores River Restoration Project, United States Forest Service, 2008-2009

WSW acquired U.S. Army Corps permit, designed and built stream access at trailhead, including enhancing and creating fish habitat, mitigating erosion, and enhancing riparian vegetation, access across the stream channel into Geysers Trailhead for pedestrians to enter Federal Land for the Dolores Public Lands Office, Cortez, CO.

West Fork of the Dolores River Restoration Project, Devereaux Property, 2008

WSW acquired U.S. Army Corps permit, designed and built restoration project mitigating historic beaver dam breach with subsequent property damage. Created and enhanced trout habitat, utilizing erosion as additional enhancement opportunity utilizing woody debris for natural function and appearance.

Uncompahgre River Restoration Project, Town of Ridgway, Colorado, 2008

WSW within U.S. Army Corps Nationwide permit compliance designed and built instream structures to maximize stream flow volume towards effluent discharge location ensuring State of Colorado dilution requirements, create floodplain and minimize stream-braiding during peak discharge events.

Silverbell Mine Reclamation, PacifiCorp Inc., Ames, Colorado, 2006-2007

WSW acquired U.S. Army Corps permit, designed and built stream bank stabilization-vane arm construction to protect mine tailing retaining wall, involved lowering boulders with 100' cable and long reach excavator over 150' cliff. Utilized stream restoration techniques to protect toe of mine reclamation project. Transferring skills from diverse environmental projects also created opportunity to use alluvium from stream flood mitigation on treatment wetland berm improvements. Implemented storm water management and BMP's.

Diversion Structures Project, Cornerstone, Colorado, 2007

WSW designed and built multiple concrete and steel headgate diversion structures to ensure water right and mitigate erosion for land development project.

Ouray Town Homes Stream Restoration Project, Ouray Colorado, 2007

WSW acquired U.S. Army Corps permit, provided consultation to Buckhorn Engineering on design, and built stream project mitigating excessive erosion resulting from the Uncompahgre River's peak flows through the City of Ouray where condominiums encroach on natural floodplain. Prior to construction one building's foundation was completely exposed from erosive activity, now the bank is stable with a high degree of structural integrity.

Oak Creek Stream Restoration Project, Ouray Colorado, 2007

WSW acquired U.S. Army Corps permit, provided consultation to Buckhorn Engineering on the design, and built a high gradient stream restoration project on severely degraded reach of Oak Creek resulting from flood event peak flows. Successful project involved facilitating collaboration between three different, disparate property owners in highly erosive, high altitude setting mitigating significant property loss.

Boulder Procurement for Instream Fish Habitat Project, Pagosa Springs, Colorado, 2006

WSW supplied rock material for structures scheduled for the San Juan River for a created spawning channel.

Coronet Creek Flood Mitigation Project, Ryan Property, Telluride, Colorado, 2006

WSW acquired U.S. Army Corps permit, designed and built a stream bank restoration project to protect house from potential stream erosion damage for a private landowner. A high flow event occurred in 2007 which resulted in the Town of Telluride's Coronet Creek Flood Mitigation Project. WSW's instream work not only survived the flood of 2007, it also prevented significant structural damage and property loss.

Uncompahgre River Restoration Project, Ridgway, Colorado, 2001-2006

WSW acted as Project Manager and Town Representative during all phases of project in excess of \$1,000,000. Led land owner meetings leading to subsequent approval of land easements, pursued and attained U.S. Army Corps of Engineers permits, Division of Wildlife approval, Colorado Department of Transportation approval, budget development, budget expenditures, rock procurement, heavy equipment contracting, managed all phases of construction following a National Park Service Design including: stream channel meanders, cross veins, J hooks, riffle reaches, bank stabilization, pond creation, wetland creation, etc.; solicited grants, grant writing, site walks, educational outreach, and media contacts.

Alamosa River Restoration Project, La Jarra, Colorado, 2005

WSW completed construction management for Riverbend Engineering during one mile of stream restoration, including the oversight of instream feature placement and construction, which created conditions that stream discharge could enter several landowners' head gates and supply irrigation water to ranch property for the first time in decades, successful project completed in an extremely degraded reach of the Alamosa River.

Boulder Procurement, Montrose, Colorado, 2005

WSW provided boulders, delivered on site to the City of Montrose Stream Diversion Project.

Stream Creation Project, San Juan River Ranch, Pagosa Springs, Colorado, 2004-2005

WSW acquired U.S. Army Corps permit, designed and built water features, managed construction of project. Procured all materials and coordinated all aspects of State and Federal Permitting Requirements.

Stream Diversion Project, Mountain Village, Colorado, 2005

WSW designed and built water diversion on U.S. Forest Service Property.

Utility Line Crossing Emergency Repair, Town of Telluride Public Works Dept., Colorado, 2005

WSW built instream structures in the San Miguel River, designed by Ecological Resource Consultants, Inc. to protect utility crossing in emergency pre runoff conditions.

San Miguel River Restoration Project, Telluride, Colorado, 2000-2001

WSW acted as Town Representative, Project Management on a \$700,000 Stream and Wetland Restoration Project. Organized and managed all boulder acquisition, mobilization and best management practices. Over saw all construction activities, planting efforts, re-vegetation, in-stream work, etc. WSW offered guidance to contractor while ensuring quality control for the Town of Telluride. Led Town meetings, gave radio and TV presentations, led informational site walks, handled all public relations. Managed emergency response logistics with local fire department, contractors, and wrote reports for state and federal review agencies. Managed budget, expenditures, coordinated project logistics and material supplies. Consulted on adaptive management and warranty issues, represented Town interests in contractual negotiations. WSW received Town of Telluride commendations for providing services in excess of original contract agreement to ensure project success.

Project Manager, Gondola Stream and Wetland Mitigation Project required for the Telluride-Mountain Village Gondola could be permitted and operational- Town of Mountain Village, Colorado, 1996

Managed successful completion of a \$200,000 wetland and stream mitigation project: rebuilt stream channels, rebuilt a pond establishing wetland terraces, and diverted a stream into created swales and meadows maximizing square acreage through grading techniques. Monitored surface hydrology and managed erosion control.

Compliance Monitoring:

Silverbell Mine Reclamation Project, Ames Colorado, 1999-2026

As hydrologist, and ORC (Operator in Responsible Charge) State of Colorado Industrial Wastewater Operator and Site Inspector during mine reclamation project; WSW collects monthly groundwater and anoxic drain samples, biannual stream samples during National Pollutant Discharge Elimination System (NPDES) Permit.

Bonanza Boy Mine, Mill Creek, Colorado, 2022-2023

WSW designed monitoring program and collected stream water quality data and built stream gaging stations and gaged tributaries at the headwaters of Mill Creek, and Mill Creek establishing baseline data.

Ouray Silver Mining Company, Ouray, Colorado 2015-2020

WSW collects required DRMS and CDPHE water quality samples and Potable Water, consults on hydrologic techniques, data collection and compliance procedures within DMR and State of Colorado discharge permit. Collected hydrologic data both underground and on surface.

Skyrocket Creek, Cascade Creek and North Ouray Corridor; City of Ouray, Colorado 2012-2019

WSW contracted by the City of Ouray to obtain Army Corps permit for the long-term maintenance of Skyrocket Creek, to write required Annual Monitoring Reports to Army Corps of Engineers and manage ACOE compliance issues. WSW procuring long term maintenance permits for Skyrocket Creek with the Army Corps to facilitate perennial conditions within highly erosive channel subject to frequent debris slides.

Skyrocket Creek, Cascade Creek and North Ouray Corridor; City of Ouray, Colorado 2012-2014

WSW contracted by the City of Ouray to design, acquire permits, manage construction and compliance issues within several stream projects. WSW procuring long term maintenance permits for Skyrocket Creek with Army Corps to facilitate perennial conditions within highly erosive channel subject to frequent debris slides. WSW designing long term maintenance criteria for Cascade Creek which has been channeled within a flume system through the City of Ouray, complete with settling and passive treatment of discharge. WSW designing and permitting an erosion control and bank stabilization project through the City along the Uncompahgre River.

Hartland Diversion Dam Fish Passage Project, McLaughlin Water Engineers, Ltd., Colorado, 2011

WSW was asked by McLaughlin Water Engineers Ltd. to be the Site Inspector for this dam modification and fish passage construction project on the Gunnison River. The project goals were to provide upstream passage for three native fishes and to reestablish population connectivity for these fishes upstream and downstream of the dam, to improve safety of boat passage over the existing dam and to preserve the ability of the Hartland Irrigation Company to divert river flow for irrigation. Project partners include the U.S. Fish and Wildlife Service, the National Resource Conservation Service and Colorado Division of Wildlife.

City of Ouray, Skyrocket Creek

WSW completing Annual Reports for ACOE compliance.

Private Projects within the Dolores River Watershed, 2008-2011

WSW completing required post construction monitoring reports for projects WSW built in accordance with U.S. Army Corps Nationwide Permits.

Uncompahgre River Restoration Project, Town of Ridgway, Colorado, 2003-2009

WSW completed five U.S. Army Corps required annual reports for Phase One and Phase Two of project, completed post-construction monitoring and assessment within Nationwide Permit requirements.

San Miguel River Restoration Project, Telluride, Colorado, 2001-2004

WSW collected and analyzed data pursuant to U.S. Army Corps of Engineers (ACE) Wetland Delineation Manual to determine project success. Monitor stream restoration in-stream features, including structural stability and habitat suitability, bank stabilization, transplant willows and monitor growth, repair rock weirs and

drop structures, collaborate with Telluride Public Works Department on annual reports to the ACE and the Colorado Department of Health and Environment.

Alder Street Wetland Project, Telluride, Colorado, 2001-2004

WSW collected data on a large, urban, treatment wetland project with an inline sediment detention facility collecting stormwater discharge prior to entering the San Miguel River. WSW analyzed hydrologic, vegetative, silt load transfer, urban runoff, soil moisture, and wetland indicator data to determine project success in accordance with ACE criteria, WSW collaborated with Telluride Public Works Department on annual reports for the required annual ACE monitoring period.

Hydrologic Analysis:

Skyrocket Creek, Cascade Creek and North Ouray Corridor; City of Ouray, Colorado 2012-2014

WSW contracted by the City of Ouray to design, acquire permits, manage construction and compliance issues within several stream projects. WSW procuring long term maintenance permits for Skyrocket Creek with Army Corps to facilitate perennial conditions within highly erosive channel subject to frequent debris slides. WSW designing long term maintenance criteria for Cascade Creek which has been channeled within a flume system through the City of Ouray, complete with settling and passive treatment of discharge. WSW designing and permitting an erosion control and bank stabilization project through the City along the Uncompahgre River.

Corbett Creek Debris Slide Mitigation, Ouray County, Colorado

WSW voluntarily gained Army Corps permission and design-built sediment detention ponds with stable instream structures with County personnel. The effort helped reduce the amount of times County Road 17 washed out and saved Road and Bridge repair expenses.

Cushman Lake, Colorado, 2009

WSW completed hydrologic analysis of nutrient loading and proposed measures to mitigate lake pollution by containing the historic leaching of benthic sediments.

Hydrograph Project, Town of Telluride, Colorado, 2007

WSW designed and built solar powered San Miguel River gauging station hydrograph with data logger for the Town of Telluride to monitor water rights from ski area usage and maintain minimum low flow for fisheries and water quality.

Bridal Veil Falls Hydroelectric Plant, Telluride, Colorado 2002

WSW was contracted by the hydroelectric plant to investigate, locate and repair a plug in the diversion from Blue Lake to the hydro plant; we also worked on a crew replacing a utility down a 380' cliff with climbing equipment, refurbishing the historic Idorado Mine infrastructure.

Environmental Specialist - Telluride Ski & Golf Company, Colorado, 1997-1999

Managed hydrologic analysis and stream and wetland restoration activities within the country's largest Consent Decree Action. Collected stream and groundwater data for pre-construction planning and post-construction erosion control; built and installed groundwater wells; installed Parshall flumes and staff gauges; collected precipitation, suspended sediment, bed load and water quality data. Wrote data reports to EPA.

Sitee River, Belize Coastal Runoff Containment Data Analysis, 1994-1996

Data collection with Belize to identify the use of pesticides up gradient of pristine reef ecosystem.

Arctic Hydrologist - Water Research Center, Fairbanks and Prudhoe Bay, Alaska, 1994-1995

Completed hydrologic and wetland analysis in Alaskan watersheds, throughout the Arctic including Prudhoe Bay area and the Brooks Range for the Water Research Center, based at the University of Alaska, Fairbanks. Built meteorological stations throughout arctic wilderness, gauged stream flows, collected snowpack data, programmed data loggers, built weirs to monitor spring runoff, and created data files and hydrographs. Hydrological analysis of Superfund site at Ft. Wainwright, including installation and monitoring of deep-water wells. Bill invented a technique preventing the annual replacement of \$10,000 monitoring wells installed in permafrost by transferring air pressure into the well from a SCUBA tank.

Oceanography Technician - Institute of Marine Science, Kenai Fjords National Park, Alaska, 1995

While on board the Alpha Helix Research Vessel operated by the Institute of Marine Science, University of Alaska Fairbanks, managed data collection including conductivity, temperature and density data including captioning vessel in previously unstudied glacial calving zone.

Research Scientist, Diver - Exxon Valdez Oil Spill Damage Assessment, Alaska 1990-1991

Analyzed intertidal sediment samples for presence of macroinvertebrates. Dive-research team member.

Physical Scientist - Great Lakes Laboratory, Buffalo, New York, 1986-1987

Collected water samples and sediment samples along U.S. and Canadian riparian border during U.S. Fish and Wildlife Niagara River Contaminant Study. Researched the effects of toxic landfills including Love Canal on benthic fish and marine ecosystems. Managed research vessel for U.S. Geologic Survey. Electro-shocked fish built on-board data collection apparatus. Collected artificial reef biological data utilizing SCUBA.

Eighteen Mile Creek Drainage Basin, Colden, New York, 1987

Analyzed fluvial geomorphology and stream flow characteristics of stream channel.

Bureau of Land Management, Student Conservation Association, U.S. Forest Service, Kremmling, Colorado, 1986

Hydrological analysis of streams along riparian areas affected by cattle grazing. Designed and built an interpretive sign including topographical and geological history of Upper Gore Canyon.

Wetland Delineation and Wetland Construction:**Silverbell Mine Reclamation, 2025-2026**

WSW designed and built a Wetland Mitigation Project within existing Treatment Wetlands to provide additional filtration of suspended metals resulting from the reclamation maintenance efforts.

Bonanza Boy Mine, Mill Creek, Colorado, 2023

WSW completed baseline wetland delineation near Artists Cabin on Mill Creek, looking for Wetland Fens and consulting on mitigation opportunities, in a glacial landscape within historic mining town of Chatanooga.

Wetland Specialist Consulting, Mountain Village, CO, 2022

WSW asked by private landowner to delineate wetland, consult with Mountain Village and procure Army Corps permitting within effort to preserve historic wetland area.

Wetland Delineation, Tommy Heins Associates, Telluride, Colorado 2016**Alder Street Treatment Wetland Maintenance Project, Town of Telluride, CO 2014**

WSW completed a 20 year maintenance of treatment wetland which contains excess sedimentation from urban storm water runoff; involving the removal of a wetland area, the excavation of twenty years' worth of sediment deposition and reestablishing wetland throughout area with additional braided channelization to encourage more settling within wetland prior to discharging into San Miguel River.

Mountain Village Wetland Delineation Project 2013

WSW completed wetland delineation for the Town of Mountain Village and submitted report for Army Corps.

Pearl Property Wetland Delineation Project, Telluride Colorado, 2007

WSW managed and completed wetland delineation project with Natural Resource Services, Inc., for the Town of Telluride.

De La Lama Span Structure-Wetland Mitigation Project, Mountain Village, CO, 2007

WSW acquired U.S. Army Corps permit and Design-Review Board approval, designed and built wetland mitigation project managing land trade with Telluride Ski and Golf Company into open space, resulting in driveway widening for emergency vehicle access purposes.

Wetland Delineation and Mitigation Consultant, 2007

WSW completed several wetland permitting and mitigation projects throughout the Western Slope, including Alta Lakes, Telluride, and the Montrose areas.

Lot 600B Mountain Village, Colorado, 2006

WSW acquired U.S. Army Corps permit and Design-Review Board approval, designed and built earthen bridge over stream channel allowing ski trail access, with additional revegetation efforts and wetland enhancement.

Lake Construction Project, Montrose, Colorado, 2005

WSW completed design coordination and consultation of lake construction and wetland mitigation project, coordinate US Army Corps of Engineers permitting activities.

Wetland Mitigation Project, Montrose, Colorado, 2005

WSW acquired U.S. Army Corps permit, designed and built wetland creation project for private land development.

Valley Floor Wetlands Specialist, San Miguel Valley Floor Corporation, Telluride, Colorado, 1998

Installed and monitored groundwater monitoring wells, completed soil moisture analysis, gauged San Miguel River peak flows, including synoptic gauging of all tributary streams, completed hydrologic data collection.

Project Manager, Gondola Wetland Mitigation Project - Town of Mountain Village, Colorado, 1996

Completed a \$200,000 wetland and stream mitigation project: rebuilt stream channels, rebuilt a pond establishing wetland terraces, and diverted a stream into created swales and meadows maximizing square acreage through grading techniques. Monitored surface hydrology and managed erosion control.

Pond Design and Construction:**Hellstrom Pond 2021**

WSW design-built fishing holes and enlarged a pond receiving water from runoff and mitigating agricultural runoff in a high altitude basin.

High Camp Pond 2020

WSW designed-built high altitude pond on Horsefly Mesa, built underwater fishing habitat and juvenile trout spawning area. Mitigated algae by installing solar powered aeration system. Stocked fish.

Mountain Village Core Pond 2020

WSW procured EPA Permit and successfully re-built pond and added handicapped fishing area.

Village Core Pond, Mountain Village, Colorado 2016-2017

WSW consulting on ACOE and EPA permit compliance and maintenance construction management.

Clark Pond, Wilson Mesa, Colorado, 2017

WSW asked by owner to obtain legal Water Right, and all local permitting required, then design-build pond on private property.

Ferenbach Pond, Grayhead Development, Telluride, CO 2013-2016

WSW design-built series of infinity ponds in a spectacular setting to function as irrigation storage while also securing water right. Ponds' shapes blend into hillside topography with cascading waterfalls providing oxygenation. Ponds will provide fish habitat and swimming opportunities while appearing natural and aesthetic.

Dallas Divide Pond Improvements, 2014

WSW design-built large, high altitude pond improvement project, including creating fish habitat, overwintering structures, peninsulas, islands, increased vegetation and naturalizing small lake with undulating berm features and increasing habitat for migrating waterfowl. WSW design-built solar powered aeration system for overwintering of trout.

Rutherford Pond Project, Ridgway, Colorado 2010-2011

WSW repaired a pond on private land and replaced vegetation within the impact area. We designed and installed an appropriate pump system to alleviate algae problems and create a healthy clear ecosystem.

Eagle Hill Ranch Pond Project, Ridgway, Colorado, 2009

WSW managed fish stock permit requirements from the Colorado Division of Wildlife and fabricated fish barrier screens within pond headgate structure so the pond WSW built in 2006 could be stocked with fish.

Fishing Ponds Flood Mitigation Project, Augusta, Kansas, 2008

WSW consulted on project to mitigate erosion and increase fish habitat, increase pond volume and stabilize stream channel.

Clubhouse Pond Project, Cornerstone, Colorado, 2007

WSW provided consulting services on the creation of a series of pond and integrated stream projects designed to create an attractive and functional recreational water setting.

Clear Valley Estates Pond Project, Montrose, Colorado, 2007

WSW acquired U.S. Army Corps permit and designed five-acre fishing and swimming pond. Procured water rights and facilitated subsequent regional permits.

Eagle Hill Ranch Pond Project, Ridgway, Colorado, 2005-2006

WSW designed and built a fishpond and irrigation enhancement project to protect landowner's water rights and increase discharge to pond. Re shaped and contoured an existing eutrophic system to increase circulation and create a healthy pond with excellent trout habitat. Designed and planted vegetation to enhance stabilization on island created from spoils material. Installed aeration system to increase oxygen levels and prevent algae growth. WSW designed and built treatment wetlands to mitigate ranch-related irrigation pollutants prior to entering pond.

Pond Enhancement Project, San Juan River Ranch, Pagosa Springs Colorado, 2005

WSW acquired U.S. Army Corps permit, designed and built trout pond and stable dam for private landowner, the project included constructing trails, fishing platforms, and enhancing vegetation.

Traumer Pond Project, Elerdville, Colorado, 2001

WSW designed and built fishpond with dock and wetland features for private landowner along the San Miguel River.

Water Right Procurement:

Summit Creek Coanda Effect Hydroscreen Project 2016

WSW will design-build and permit a Coanda effect hydroscreen installation into Summit Creek to procure irrigation water for Grayhead Development and ensure absolute water right.

Spring Water Right Procurement, Phillips Property 2012-2013

WSW procuring a private landowner's water right with the local Water Court and Colorado Division of Water Resources.

Glenn Property, San Miguel County, Colorado 2011

WSW secured Water Rights through the State of CO Water Court in order construct a holding facility for spring water in a pond with gated corrugated PVC lines that could be used for irrigation or fire retention. Investigated

and documented historic mineral, water and land use at the Federal, State and County levels. Acquired U.S. Bureau of Land Management (BLM) and Colorado Division of Water Resources permitting.

Bolger Property, Montrose County, Colorado 2009-2010

WSW secured water right and Montrose County development regulations for an ongoing land development project. Work included Army Corps wetland delineation and mitigation, and lease agreements regarding existing radio tower.

Bridal Veil Falls Hydroelectric Plant, Telluride, Colorado 2002

WSW was contracted by the hydroelectric plant to investigate, locate and repair a plug in the diversion from Blue Lake to the hydro plant; we also worked on a crew replacing a utility down a 380' cliff with climbing equipment, refurbishing the historic Idorado Mine infrastructure.

Stormwater Management and Erosion Control:

San Miguel Power Association, Revegetation Project 2015

WSW managed revegetation efforts within rural utility relocation.

Animas River Trail, Whitewater Park Project, City of Durango, 2014

WSW hired by Russell Engineering to consult on riparian stability components of the Animas River Trail project that will interface the Animas River Whitewater Park.

Coronet Creek Erosion Mitigation Project, Glenn Property, Telluride, CO 2012-2013

WSW procured Army Corps and Town of Telluride permits and designed and built erosion mitigation project to stabilize degraded channel and mitigate head cut threatening owner's property. Sinuosity was reestablished and instream rock techniques dissipated sheer stress.

Ouray County Road 361 Reconstruction, Camp Bird Road, Ouray, Colorado, 2011-2012

WSW was asked by Russell Engineering and Ouray County Road and Bridge Department to provide consulting expertise during DOW review of proposed project on heavily used backcountry road to Imogene Pass. WSW designed best management and containment structures mitigating adverse impacts on vegetation and existing wildlife corridor along riparian area of Canyon Creek. During road stabilization project, slope stabilization will improve existing conditions by enhancing increased habitat diversity and mitigating existing water quality impacts.

McElmo Creek Stream Restoration Project, Cortez, Colorado, 2008

WSW consulted on project to reduce erosion on private land and to prevent additional loss of property.

Fishing Ponds Flood Mitigation Project, Augusta, Kansas, 2008

WSW consulted on project to mitigate erosion and increase fish habitat, increase pond volume and stabilize stream channel.

Silverbell Mine Reclamation, Stormwater Management Contractor, 1999-present

WSW completes best management practices within the mine reclamation project and makes improvements based on CDPHE inspections; we design and implement settling basins and treatment wetlands, often utilizing limestone to improve the water quality within the mine reclamation project.

City of Durango Stormwater Management Contractor, 2010

WSW developed Stormwater Management Plan (SWMP) and implemented best management practices during and after the Animas River Stream Restoration Project, we met the objectives of the plan and completed compliance criteria within nine months with robust vegetation results.

Cornerstone Development Stormwater Management Contractor, 2007-2008

WSW completed storm water inspections, manage compliance responsibilities and implement BMPs during State of Colorado Stormwater Permit within 6,000-acre development.

Parks, Trails, Open Space Project Management:

Cornerstone Trail Construction Project, Montrose County, Colorado, 2008

WSW crew members constructed over ten miles of trails including stream crossings.

Ridgway Whitewater Park, Ridgway, Colorado, 2005-2006

WSW acted as Project Manager and led construction activities during a National Park Service and subsequent Riverbend Engineering design to build two whitewater play wave features in the Uncompahgre River.

Ridgway River Recreation Corridor, Ridgway, Colorado, 2001-2005

WSW acted as Project Manager during project funded by Great Outdoors Colorado Mid-Range Recreation Projects. Project included bike paths, trails, educational facilities, pedestrian bridge, educational interpretive signs, and bald eagle viewing area, wetland educational trails, recreation areas, fishing and boating access and local school participation. WSW also led Southwest Youth Corps crews during vegetation and trail construction.

Telluride River Park Project, Telluride, Colorado, 2000-2001

WSW acted as Project Manager and Town Representative managing the construction of a \$200,000 River Trail and Park expansion project along a newly restored reach of the San Miguel River. Project included park open space areas, bike trails, and picnic areas. WSW oversaw the vegetation, landscaping and irrigation efforts during several consecutive drought years. WSW co-wrote and built an educational interpretive sign.

Professional Teaching:

Ridgway High School, Ridgway, Colorado, 2000-2001 - High School Science Teacher

Mountain Craft, Inc., 1996-2000 - Owner of log home and log-construction business

North - South Extremes, Founder- Owner, 1993-1996

International ecotourism guide business, focusing on a cross-cultural experience hiring Indigenous Guides in Alaska and Belize, facilitating culturally responsible ecotourism.

University of Alaska, Fairbanks, Alaska, 1993 - Upward Bound Program, Teaching Indigenous Students college level classes promoting Higher Education from rural bush communities and villages.

Haiku Private Middle School, Haiku, Hawaii, 1992 - Special Education Teacher

Homesteaded, Land for Alaskans Program, McCloud, Alaska 1989-2003

Successfully awarded seven acres of land by the State of Alaska, during the Land for Alaskans Program, Division of Natural Resources, after building cabin and several outbuildings in Alaskan wilderness, harvesting local raw materials, utilizing sled dogs, for predetermined duration and by living Subsistence way of life.

Kenny Lake High School, Kenny Lake, Alaska, 1988 - Science, Physical Ed., & Outdoor Ed. Teacher in rural Alaska, managed State of Alaska's largest Science Fair and dedicated to the Exxon Valdez Oil Spill.

Fire Trail Construction, Forest Service Contractor, Oregon, 1983-1984

Commercial Fisherman, Shelter Island, San Diego, California 1983

Gillnetted on 36' rock cod boat in 65' seas, 300 miles offshore during the El Nino storms of 1983.

River Guide; Quebec, New York, Alaska and S.C.A. River Ranger, Colorado 1981-1996

PADI Dive Master in Hawaii, Belize, California and Alaska

Public Relations:

Living Streambanks, A Manual of Bioengineering Treatments of Colorado Streams, Colorado Water Conservation Board, Technical Review Committee, provide input and direction for the manual.

River Network, 2010 River Rally, Snowbird, Utah- Contributor during Stream Restoration seminar

Uncompahgre Watershed Partnership, Montrose, CO – Moderator during Stormwater Conference involving several towns and Cities on the Western Slope of Colorado

Fort Lewis College, Durango, and Mesa State College, Grand Junction - Guest lecturer

Colorado Non-Point Source Connection Newsletter – Wrote newsletter article applying stream restoration principles and techniques to improve stormwater management.

Colorado Riparian Association, Colorado Watershed Assembly - Member

Trout Unlimited Stream Restoration Workshop - Guest Speaker

10th National Nonpoint Source Monitoring Workshop - Presenter

San Miguel Watershed Newsletter and the **Colorado Riparian Association Magazine** - Contributor

Division of Water Quality, Salt Lake City, Utah - Water quality outreach and education demonstrations

Nenana River Regulatory Meetings, Denali National Park, Alaska – Spokesperson as professional river guide and hydrologist

Certifications:

Stream Restoration Specialist: WSW awarded Federal recognition, based on experience and quantity of successful stream projects, which was required to be selected to oversee the largest Consent Decree Stream Project in Guam, which was challenged by hurricanes within coral substrate in remote Oceania. WSW applies fluvial geomorphology within stream channel designs and completes successful construction design-building improvements during project completion.

US Army Corps of Engineers: Stream Restoration Consultant, WSW uniquely qualified to Design, Procure Nationwide Permits, to build by actively manage and operate required equipment within permit compliance, to vegetate and to monitor project success within Army Corps Standards under the Clean Water Act.

U.S. Army Corps of Engineers: Wetland Delineator and designated Wetland Scientist, uniquely qualified to design and build required wetland mitigation or wetland creation projects.

MSHA: Underground and Surface, Mining Safety and Health Administration Certification, required for performing services as a Hydrologist underground within active mine locations.

HAZWOPER Hazardous Material and OSHA related Certification

State of Colorado, Certified Industrial Wastewater Operator

State of Colorado, Certified Potable and Distribution Operator

State of Colorado, Certified Professional Erosion Control Specialist and Inspector

State of Colorado, Certification to write SWMP: Stormwater Management Plans