

Appendix E
Colorado Division of Wildlife
Nonconsumptive Projects and Methods

Basin	Segment(s)	Project or Method Name	Project or Method Type	Project or Method Location	Comments
CO	CDOW CO 1	Abrams Ck Cutthroat Improvement	Restoration	Abrams Creek	Potential exchange w/ private entity holding rights to diversion that truncates cutthroat trout habitat in Abrams Ck. Use of pump station on Eagle facilitates exchange potential.
CO	CDOW CO 2	Windy Gap Bypass Channel	Restoration	Windy Gap	Ongoing discussions w/ NCWCD, Denver Water, and other govt. and NGO interests through NEPA/DEIS comments and impact analyses. Bypass channel would improve access upstream and aquatic conditions downstream of Windy Gap reservoir; mitigate reservoir effects on Co River fishery.
CO	CDOW CO 3	Moffatt Bypass Channel	Restoration	Moffatt	Discussions with Denver Water to improve access upstream and aquatic conditions downstream of Moffatt project components; NEPA/DEIS comments in DRAFT form to mitigate effects on Co River fishery from project implementation.
CO		Shoshone Operations	Flow Certainty; O&M agreements	Co River - Glenwood Canyon	CDOW has met w/ Excel/ Shoshone operators to relay to them our concerns about both sediment flushes below the Shoshone diversion, and ways to mitigate uncertainty created by turbine maintenance.
CO		Eagle River- Gypsum Ponds SWA	Habitat Improvement	Gypsum Ponds SWA	Update - Stream project resulted in bank stabilization only.
CO		Eagle Mine Superfund Site	Mitigation for Eagle Mine impacts	Eagle River nr Minturn	Ongoing process to stabilize and minimize potential threats to aquatic resources.
CO		Summer Low-flow project	flow certainty	Co Basin - headwaters to 15-mile reach	Ongoing discussions with other basin entities to operate exchanges from Eagle Park, Wolford Mtn, Green Mtn, and other upstream facilities to minimize significant streamflow impairments while meeting water management obligations in the basin.
GU	CDOW GU 1	Tomichi Real Estate Purchase	Restoration	Tomichi Creek	Provide fishing access and educational plans, east of Gunnison on Tomichi Ck.
GU		Diversion Reconstruction - Relief Ditch	Restoration/ boat and fish passage (CDOW partnership)		preliminary funding made available through partners to design new diversion structure for the Relief Ditch to facilitate recreational boat and fish passage.

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GU	CDOW GU 2	Diversion Reconstruction - Relief Ditch? Hartland?	Restoration/ boat and fish passage (CDOW partnership)		Hartland headgate reconstruction - application for final implementation dollars approved by Gunnison BRT 10/4/10; construction on ~ \$2 M project to begin 10/10. Rebuild diversion to improve boating and fish passage -
GU	CDOW GU 3	Ridgeway	Restoration / Flow	Ridgeway	Work on Nov. and Dec. flows to fish gas bubble disease in trout by allowing full 50 cfs ISF. Still trying to firm up commitments for improved early winter flow conditions.
GU		Coleman Easement Min Flow	Flow / Diversion Structure?	Cochetopa Ck	Problem remains senior agricultural diversion through easement parcel. Negotiations w/ 2 private entities; facilitation thru Water Trust; process ongoing.
GU		Blue Mesa Ecology	Research/ Study	Blue Mesa Res	Ongoing focused research to determine underlying trophic interactions between Kokanee salmon, lake trout, and other species in Blue Mesa. Perpetuation of Kokanee populations and spawn take at the Roaring Judy hatchery high priority.
SW	CDOW SW 1	Ames FERC Relicensing	FERC operations agreement	Ames (Trout Lake/ San Miguel headwaters)	FERC Relicensing to rebuild lake (?), re-operate to minimize winter anchor ice disruption to spawn (rainbow) and existing emergent fry (brown)
SW	CDOW SW 2	Tacoma FERC Relicensing	FERC operations agreement	Cascade Ck - trib to Animas)	ISF bypass flow issues on Cascade Ck - potential to pursue off-site mitigation to enhance McPhee basepool; uncertain of current status of re-licensing process.
SW		Dolores River below McPhee Reservoir	Flow Certainty; Operations Agreements	Dolores River - McPhee Dam to State Line	Long-term process of research, monitoring, and public involvement to mitigate/ enhance flow conditions below McPhee dam for coldwater sportfish and warm water native aquatic species. Ongoing process w/ multiple/ overlapping layers of participation and jurisdiction
SW		La Plata River - Long Hollow	Flow certainty - NEPA process	lower La Plata drainage - to NM State line	low flow minimum flow bypass agreement w/ La Plata WCD as part of NEPA mitigation for project. Final ROD pending???
SW		Woods Lake Cutthroat Refugia	Restoration	Woods Lake SWA/ Hughes Ditch	CDOW has implemented outlet structure reconstruction to ensure no fish passage into lake from Fall Ck below the outlet. Remaining work to be done to redesign Hughes diversion to enable water administration. Also, need to replace existing brook trout fishery w/ native CO River cutthroat trout.

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Yampa River		Endangered Fishes Recovery Program	Cooperative Agreement	Yampa River	PBO process complete to conduct various physical improvement projects, stream gaging improvements, non-native abatement work, and flow agreements to meet target flows in the Yampa Basin. Includes programmatic depletion allowance for future water development within the Yampa River Basin.
Yampa River		Yampa SWA Wetlands	Enhancement	Yampa River SWA	A second phase of wetland creation/ restoration of floodplain and backwater wetlands was implemented in 2009 to support wildlife/ waterfowl viewing, breeding, and hunting in this reach of the Yampa (between Hayden and Craig).
Yampa River		Chuck Lewis SWA habitat improvement	Restoration/ enhancement	Chuck Lewis SWA	ongoing work to improve instream and riparian wetland habitat for fisheries and wildlife viewing/ hunting opportunities
White River		Lake Avery flow agreement	Lake Avery SWA	White River blw Buford	Mitigation of low flow impacts through voluntary flow agreements following water releases from Lake Avery. Only applicable during extreme drought conditions.
Yampa River		Maintain operational flexibility	Flow certainty	Yampa River	Continue communication with major water providers / owners in Stagecoach and Steamboat Lake, and other upstream facilities to optimize flow conditions during periods of critical needs. Exchange potential between Steamboat Lake and Stagecoach remain key components to maintain flexibility.
Western Slope		3-Species Conservation Agreement and Strategy	Strategic Plan - inter-agency conservation agreement	West Slope warm water streams and rivers	Six state and federal agency conservation agreement and strategy to preserve 3 native species of concern (roundtail chub; flannelmouth and bluehead suckers)
Statewide		Fishery Management Classifications	Strategic Plan		CDOW AQ Section manages fisheries statewide using specific classifications for every waterbody and river segment. These classifications help guide management decisions, and focus on obtaining maximum efficiencies to secure the best recreational and conservation opportunities for recreational sport fish and conservation species.

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Statewide		Aquatic Basin Management Plan	Strategic Plan		Basin Management Plans provide management guidance and strategies in order to conserve and protect aquatic resources in the basin. Updated cyclically (5-10 yr review cycles as needed).
Statewide		Reservoir sport fisheries management	Strategic Plan		Multiple high-quality large coldwater reservoir fisheries are located in the upper reaches of river basins statewide. These act as significant economic inputs in the tourism-based economy of these areas, and require constant active management in order to be sustained. Activities include stocking of large numbers of fish, egg collection, population manipulation through the use of harvest regulations, etc. Aquatic nuisance species have recently become a significant focal point for reservoir management.
Statewide		Native cutthroat trout conservation / restoration	Strategic Plan		Headwater reaches of river basins statewide contain valuable populations of native cutthroat trout. These populations provide recreational opportunity in wilderness areas as well as constitute a major conservation asset. Much ongoing effort is dedicated to activities such as expanding these populations, nonnative fish removal, assessments of genetic purity, installation of upstream barriers to migration, disease prevention, etc.
Statewide		Riverine sport fisheries management	Strategic Plan		Multiple world-class riverine trout fisheries (including designated Gold Medal Waters) are located in headwater and larger order streams in every major river basin. These fisheries require continual active management in order to maintain their high quality. They also require adequate amounts of water to maintain the ecological functions that allow these fisheries to persist.

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Statewide		Aquatic Research	Strategic Plan		CDOW Aquatic Research is ongoing and addresses the underlying cause-effect processes that affect fisheries statewide. These include research into fish / aquatic pathologies (e.g., whirling disease, chytrid fungus), stream and reservoir ecology, life-stage analyses, habitat restoration and utilization, fish toxicology, and many as-needed topics that emerge with the potential to affect aquatic resources.
Statewide		Water Quality	Strategic Plan	Statewide	Continue to work through State's water quality rule-making procedures to improve standards and classifications for streams and water bodies. Continue monitoring data collection, analyses, compilation posting. Continue advisory capacity on water and wildlife to many collaborative watershed groups.
Statewide		Instream Flows / Dynamic Flows	Strategic Plan	Statewide	Continue to provide technical support and make ISF recommendations to the CWCB's ISF program. Continue to advocate for baseflow, flushing or geomorphic flows to improve instream habitat within operational, institutional, and hydrologic constraints.
Statewide		Return Flow Mitigation	Conceptual Plan	Statewide	Educate various constituency groups as to the importance of late-season return flows (largely resulting from adjacent agricultural use) to the fisheries in the state. When possible address significant changes to return flows through available land-use processes and local mitigation projects.
AK	CDOW AK 1	Turks Pond Restoration	Restoration / Flow	Turks Pond on Horse Creek Trib	Property purchase and well project to keep pond full. Serves Birds, fishing, waterfowl hunting, and flat water boating. Adjacent to State Wildlife Area
AK	CDOW AK 2	Smith Goodale Wetland Project	Restoration	Off lower Ark	Dredging and cleaning out existing wetlands on private land. Waterfowl hunting, birding trails, and wetlands benefits
AK	CDOW AK 3	Clay Creek Project	Restoration / Flow	Higbee State Wildlife Area	Examining if domestic artesian well can be used for wetland restoration. For waterfowl hunting and wildlife watching and wetlands restoration
AK	CDOW AK 3	Higbee State Wildlife Area Food Plots	Restoration	Higbee State Wildlife Area	Irrigate 200 acres to create food plots for birds

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AK	CDOW AK 4	Granada State Wildlife Area Moist Soil Empoundments	Restoration / Flow	Granada State Wildlife Area (lower ark)	Partnering with Ducks unlimited for waterfowl hunting, birding trails, and wetlands. Using wells to develop moist soil empoundments to create a vegetative response for wetlands. Also for food plots.
AK	CDOW AK 5	Amity Pit Restoration	Restoration / Flow	Off lower Ark	Working with gravel company to restore gravel pit. Completed one end of pit restoration with 150 AF of water and providing public fishing access. Project is adjacent to Arkansas Wildlife Area. Will be complete in 20-30 years. Will also benefit waterfowl hunting, wetlands, and fishing.
AK	CDOW AK 6	Great Plains Reservoir Restoration	Restoration / Flow	Great Plains Reservoir System (e.g. Neenoshe)	Ongoing purchase of water rights to support Least Tern and Piping Plover habitat in reservoirs.
AK	CDOW AK 7	John Martin Reservoir Permanent Pool	Flow	East end of John Martin reservoir	Have 10 - 15 KAF pool to support fishing and flatwater boating on reservoir in cooperation with Colorado Parks.
AK	CDOW AK 7	John Martin Reservoir Wetlands Maintenance Program	Restoration	West end of John Martin Reservoir	Partnering with Fort Lyons with water rights and wetlands restoration project.
AK	CDOW AK 8	Thurston Reservoir Exchange	Flow	Thurston Reservoir	Acquired water to exchange 1,000 AF to support fishery. In cooperation with Fort Lyon. Did pilot test summer of 2010.
AK	CDOW AK 9	Pueblo Kayak Park and Fish ladder	Restoration	Below Pueblo Reservoir almost to confluence with Fountain Creek	Completed Kayak Course and Fish Ladder using \$7 million, however insufficient flows for fishing. Completed RICD for Kayak course.
AK	CDOW AK 9	Pueblo Fish Hatchery Bypass Flow	Flow	Below Pueblo Reservoir almost to confluence with Fountain Creek	Seeking water to serve federal fish hatchery and then utilize that water below dam when they are not releasing any water. Consider partnering with SDS pipeline to get 17 cfs to support fishing and downtown river walk
AK	CDOW AK 9	ISF Study	Flow Study	Below Pueblo Reservoir	Completed instream flow study, but stopped pursuing.

Segment Description	Segment ID	Contact Name 1	Non-consumptive attributes present, in Phase I data sets	Why values are important - Local Tourism Economy	Why values are important - Locally valued	Why values are important - Legal mandates	Why values are important - Needed for permitting	Why values are important - Attract new residents	Project or method 1	Comments
North Platte River	CDOW1	Pete Conovitz	Fishery/Riparian	x	x				Brownlee SWA habitat improvements	Proposed
North Platte River	CDOW2	Pete Conovitz	Fishery/Riparian	x	x				Verner SWA habitat improvements	Existing and Proposed
Roaring Fork	CDOW 3	Pete Conovitz	Fishery/Riparian	x	x				Manville SWA habitat improvements	Proposed
NF N. Platte	CDOW4	Pete Conovitz	Fishery/Recreation	x	x	x			Legal Tender Ditch diversion modification	Proposed
Roaring Fork	CDOW5	Pete Conovitz	Fishery/Recreation	x	x	x			Wolfer Ditch diversion modification	Existing
Twisty Park/County Wide	CDOW6	Pete Conovitz	Amphibians		x	x	x		Boreal Toad Studies	http://wildlife.state.co.us/NR/rdonlyres/1013C627-855D-4AEC-9D74-278847451617/0/2003BUBOreport.pdf ; http://wildlife.state.co.us/NR/rdonlyres/E5465171-80A3-4AE5-9BF9-B065BC7BCB2A/0/BorealToadStatusConservation20062007.pdf
NF Michigan River	CDOW7	Pete Conovitz	Fishery/Riparian/Recreation	x	x				Stream channel and riparian habitat improvements	Proposed
Lake Creek	CDOW8	Pete Conovitz	Waterfowl/Wetlands	x	x			x	Wetland habitat creation	Proposed

Basin	Segment(s)	Project or Method Name	Project or Method Type	Project or Method Location	Comments	Project Status	Contact Name
SP		1 Channel Restoration	Restoration/Diversion Reconstruction	South Boulder Creek between South Boulder Road and 1 mile west of Hwy 36.		planned	Ben Swigle - CDOW
SP		2 South Boulder Creek Channel Restoration	Stream and Riparian Restoration	South Boulder Creeek between Pinecliff and Moffat Tunnel		Planned	Ben Swigle - CDOW
SP		3 Channel Restoration	Stream and Riparian Restoration	Middle Boulder Creek @ Rogers Park		Completed	Ben Swigle - CDOW
SP		4 Greenback Cutthroat Waters	Study	Middle Boulder Creek from confluence with Boulder Creek to headwaters		Planned	Ben Swigle - CDOW
SP		5 Channel Restoration	Stream and Riparian Restoration	Big T at Glade Park		completed	Ben Swigle - CDOW
SP		6 Channel Restoration	Stream and Riparian Restoration	Big Thompson at Narrows SWA		Planned	Ben Swigle - CDOW
SP		7 Channel Restoration	Stream and Riparian Restoration	Middle Boulder Creek above Barker Reservoir		Planned	Ben Swigle - CDOW
SP		8 Craig Creek (VanHall Property)	Project	Craig Creek	Channel improvements, sediment transport, Planned	Planned	Freestone Aquatics
SP		9 Lower Allen Ranch	Project	Lower Tarryall Creek	Channel improvements, sediment transport, riparian improvements, Planned	Planned	Flywater
SP		10 Trail Creek Restoration	Project	Trail Creek	Channel improvements, sediment transport, riparian improvements, Planned	Planned	CUSP - Carol Ekarius
SP		11 Middle Fork South Platte Restoration	Project	M Fk. South Platte	Adult Salmonid Habitat, channel improvements, sediment transport, riparian improvements, Ongoing and completed.	ongoing	CDOW - Matt Kondratieff
SP		12 South Fork South Platte Restoration	Project	S Fk. South Platte	Adult Salmonid Habitat, channel improvements, sediment transport, riparian improvements, Planned and completed	Planned	CDOW - Matt Kondratieff
SP		13 Upper South Platte Stream Restoration	Project	South Platte	Adult Salmonid Habitat, channel improvements, sediment transport, riparian improvements, Planned	Planned	CDOW - Matt Kondratieff
SP		14 NISP EIS Impacts Study	EIS Study	Poudre River below Canyon Mouth	An assessment of the Lower Poudre river corridor as the habitat changes relative to water levels for both riparian areas	Ongoing	NCWCD
SP		15 Greenback Cutthroat Recovery Project	Habitat	La Poudre Pass, Corral, Neota, Willow, Hague, Chapin Creeks as well as Baker Gulch and the upper South Fork of the	The USFS decision in the Long Draw EIS to protect and reclaim the headwaters of the Cache la Poudre for greenback	Planned	USFS, CDOW
SP		16 Joint Operating Plan (JOP)	Flow Agreement	Poudre River Mainstem	Operating agreement between CDOW, Fort Collins and Greeley to provide minimum wintertime flows in Poudre River.	Existing	CDOW
SP		17 Anderson Engineering 2-D modeling	Study	Poudre River below Canyon Mouth	Groundwater modeling in support of proposed NISP project	Existing	NCWCD
SP		18 Physical habitat modeling	Study	Poudre River, North Fork	Technical report by Bill Miller in support of proposed Halligan Seaman project	Existing	City of Greeley
SP		19 Diversion structure modifications for bypass flows	Structural	Poudre River - Watson hatchery to Fossil Creek	Create ability to bypass low flows through diversion structures on Poudre river, including the CDOW Watson	Planned	CDOW
SP		20 Minimum instream flows - Poudre River	Flow Agreement	Poudre River in Fort Collins	Potential agreement to maintain 25 cfs at the Poudre River Lincoln St. gage from Nov. - April	Planned	CDOW
SP		21 JOP Enhancement	Flow Agreement	Poudre River below Joe Wright Reservroi	Exchange of Greeley owned Laramie Tunnel water into Chambers Lake to enhance existing wintertime JOP flows.	Planned	CDOW
SP		22 Poudre River State Fish Hatchery production	Structural	Statewide	Expansion of operations at Poudre River State Fish Hatchery for rearing Whirling disease resistant trout	Planned	CDOW
SP		23 Poudre River stream restoration - below Watson Lake diversion structure	Restoration	Poudre River below Watson Lake SWA	Channel restoration and design of low flow channel to improve habitat and channel funtion at low flow	Planned	CDOW
SP		24 USACE flood control study	Study	Lower Poudre River below Fort Collins	US Army Corps flood control study - Poudre River at Greeley.	Exisiting (Ongoing)	USACE
SP		25 Alvarado Bridge Replacement	Project	Clear Creek @ Lawson	Replaced 4-culvert bridge with span, allowing movement of fish	Completed	Clear Creek County
SP		26 Realignment of State Highway 119	Project	North Fork Clear Creek	Treat mine wastes, cap tailings piles, improve fish habitat	Planned	Holly Huyck-CDOT
SP		27 Reintroduction of Native Trout	Project	Grizzly Gulch	Planned introduction of Native Trout	Planned	Paul Winkle - CDOW
SP		28 Fish Passage study	Study	Boulder Creek	Study on ability of different fish species to pass through diversion structures under varying flows and temperatures.	Existing (Ongoing)	Ashley Ficke - CU Boulder

SP	29 Tamarack Recharge Study	Study	Lower South Platte at Tamarack SWA	Study on how recharge projects affect physical habitat during winter flow conditions.	Existing (Ongoing)	John Stednick - CSU
SP	30 Dr. Falke Study	Study	NF Republican and Arikaree River	Study on native fish population and habitat in NF Republican River Basin.	Existing	Jeff Falke - University of
SP	31 Plains Fish Monitoring	Monitoring	South Platte/ Republican	Ongoing monitoring of native fish populations in North Fork and Republican River basins.	Existing (Ongoing)	CDOW
SP	32 Special Status Plains Fish Species - State Conservation Plan	Monitoring/Study/Conservation Plan	South Platte/ Republican (& Arkansas) Poudre River Basin from Big South Confluence to Headwaters	Plan for all designated State Threatened and State Endangered native plains fish.	Existing	CDOW
SP	33 Boreal toad reintroduction	Species reintroduction		Reintroduction of Boreal Toads in Cameron Pass Area	Existing (Ongoing)	CDOW
SP	34 Identification and modification of barriers to fish passage on South platte	Study	South Platte	Indentfication of South Platte mainstem and tributary diversion structures that are barriers to fish passage. Propose	Planned	CDOW
SP	35 Plains fish reintroduction	Species reintroduction	South Platte/ Republican	Reintroduction of native plains fish species including Brassy Minnow, Northern Redbelly Dace, Common Shiner, Plains	Planned	CDOW
SP	36 Habitat improvements projects	Structural	NF Republican	Habitat Improvement projects for Stonecat within the NF republican watershed	Planned	CDOW
SP	37 Tarryall Project	Restoration	Tarryall Creek	Channel and Riparian restoration (0.6 miles)	Completed	CDOW
SP	38 Left Hand Creek Restoration	Restoration	Left Hand Creek Upstream UTM location: 492348E, 4444493N Downstream UTM: 491405E, 4443947N	Channel Restoration (0.9 miles)	Completed	CDOW
SP	39 Big Thompson Stream Restoration	Restoration	Big Thompson Creek Upstream UTM: 459136E4469374N Downstream UTM: 459191E, 4469221N	Channel Restoration (0.3 miles total)	Completed	CDOW

Table 1. CDOW South Platte stream restoration projects completed

Year	Stream project name	Location (UTMs)		County	Length (miles)
		Upstream	Downstream		
1998	Dream Stream (Phase 2), South Platte River	446817E 4313806N	446897E 4313763N	Park	0.2
1999	Antero Project, South Fork of South Platte River	423008E 4316108N	423513E 4316072N	Park	0.7
2000	Threemile Creek Creek Project, Tributary to South Platte River	447474E 4313277N	447592E 4313211N	Park	0.5
2001	Dream Stream (Phase 3), South Platte River	446897E 4313763N	447885E 4313638N	Park	0.9
2002	Knight-Imler Project, South Fork of South Platte River	415892E 4324356N	416521E 4322089N	Park	1.2
2002	Hartsel Project, South Fork of South Platte River	429621E 4319613N	430562E 4319239N	Park	1
2003	Aurora Project, South Platte River	440995E 4316473N	441837E 4316347N	Park	1
2004	Dream Stream (Phase 4), South Platte River	447885E 4313638N	448492E 4313429N	Park	0.3
2005	South Fork Project, South Fork of South Platte River	446897E 4313763N	435955E 4318057N	Park	1.7
2006	Middle Fork side-channel Project, Middle Fork of South Platte River	435539E 4318654N	435904E 4318299N	Park	0.6
2007	Middle Fork of South Platte River (Phase 1)	435539E 4318654N	435811E 4318497N	Park	0.5
2008	Middle Fork of South Platte River (Phase 1 continued)	435811E 4318497N	435918E 4318290N	Park	0.2
1991	South Platte River	436205E 4317880N	436644E 4317668N	Park	0.4
1993	South Platte River	446523E 4313949N	446817E 4313806N	Park	0.4