

Operation of Public Service Company of New Mexico Fish Passage Structure

Fiscal Year 2019 Project Proposal

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Background

The Power Company of New Mexico (PNM) Diversion Dam was constructed in 1971. The 3.25-foot high diversion dam (weir) is located on the San Juan River about 12 miles downstream of Farmington, New Mexico near the town of Fruitland at River Mile 166.6. Facilities at the diversion include a concrete weir, a series of screened intake structures, an intake channel, a settling channel, and a pump house.

Water flows over the dam into a stilling basin created by a concrete apron. The stilling basin is the width of the river. The presence of the dam and the basin creates a barrier to fish moving upstream. As flows increase, the difference in the upstream and downstream water levels is reduced. Although water levels are reduced, water velocities increase and the weir provides an impediment to upstream fish movement. Recovery studies conducted as part of the SJRRIP have shown that some fish are able to move upstream past the weir but their specific method of movement is not known and the number of fish discouraged from upstream movement by the presence of the weir is also unknown. One possible method of upstream movement could occur during high river flows. When the flow in the San Juan River is above 7,000 cfs, some of the flow goes around the dam making it possible for fish to go around the dam at these higher flows.

A need has been identified by the San Juan River Basin Recovery Implementation Program (SJRRIP) to restore endangered fish passage upstream past the PNM Diversion Dam. The purpose of establishing fish passage was to protect and recover native Colorado pikeminnow (*Ptychocheilus lucius*) and razorback sucker (*Xyrauchen texanus*) populations in the San Juan Basin while water development proceeds in compliance with all applicable Federal and State laws, including fulfillment of Federal trust responsibilities to the Southern Ute Indian Tribe, Ute Mountain Ute Tribe, Jicarilla Apache Nation and the Navajo Nation. In addition, other native fish species would benefit from restored passage. The facility has been operated and maintained by the Navajo Nation Department of Fish and Wildlife (NNDFW) since it was built in 2003. The U.S. Fish and Wildlife Service (Service), Bureau of Reclamation (BOR), Bureau of Indian Affairs (BIA), Navajo Indian Irrigation Project (NIIP), Navajo Agricultural Products Industry (NAPI), and PNM have provided the NNDFW with technical assistance, planning assistance, environmental clearance, maintenance and improvements to the facility and its access points.

The fish passage has facilitated movement of pikeminnow and razorback suckers upstream into a 50 mile stretch of river, which is historical habitat of these species.

Study Area

Public Service Company of New Mexico Diversion Dam is located at RM 166.6.

Methods/Approach

The Fish Passage facility will be operated from March 19 to May 31, 2019 as a flow through system. This was decided by the biology committee during the February 2018 BC meeting. Pressure sensors at

the south channel, entry point and last boulder before passage were installed to keep record of flow during this pass thru system. A new PIT tag antenna was installed at the inlet attached to the trash beam to gather more data for fish passing thru the passage. Installation of a game camera was also installed to give a time elapse image of the passage in operation. The only screen left would be the inlet screen. Preparation for this setup was to remove the automatic brush system and lift up the screens to provide no restrictions for the passage.

The Fish Passage facility will resume normal operation from June 1 to October 31, 2019. The fish passage traps fish attempting to move upstream of the facility. All fish that are caught in the trap are transported to a sorting table. All fish are identified and enumerated. Non-endangered native fish are released upstream of the facility. Rare native fishes are scanned for a pit tag, weighed and measured, marked with a pit tag if they do not have one and then released upstream of the facility. All non-native fishes are removed from the river system permanently. When feasible, channel catfish are transported to area fishing lakes that already have channel catfish in their systems to support the tribal sport-fishing program.

Daily operation and maintenance includes cleaning of surface and submerged trash, debris, silt, and river-born algae from the trash racks and bar screens in the fore-bay of the fish passageway, and aluminum conduit screens in the fish trap. The amount of algae, debris, trash, and sediment that accumulates daily at this site is seasonally variable, depending upon flow magnitude and water volume during the water year. Maintenance also includes painting as necessary to control corrosion, lubrication of moving equipment, and checking fluid levels in gearboxes and cooling radiators, as necessary. Representatives from the NNDFW, BOR, PNM and the Service will perform an inspection of the facility every 3 years. In the event of a significant flood event, representatives from the NNDFW will notify BOR, PNM and FWS and appropriate parties will inspect the facility for damage, as necessary.

The Fish Passage Program maintains a database of all fish processed through the facility. Staff that operate this facility also have initiated a public outreach and education program that will continue in FY' 2019. School groups visit the facility to learn about the purpose of the facility and the endangered fish program on the San Juan River.

Objectives of this project are as follows:

1. Determine the use of the fish passage by juvenile and adult native and nonnative fishes.
2. Identify any Colorado pikeminnow congregations that may be related to the spawning period in the San Juan River.
3. Operate and maintain⁵ the facility in a manner that assures long-term benefit.

This proposal does not include any maintenance or repair work that is major and requires mobilization of heavy equipment and is outside of the constraints of this budget.

Products/Schedule

The Fish Passage facility will be operated from March 19 to October 31, 2019. During the operation season the passage is operating 24 hours a day, 7-days a week. Each channel is checked daily and are sorted for Native and Non-natives¹.

Data will include definitive numbers of species, numbers per species, and seasonal use and distribution by species. Our numbers on Razorback Suckers seem to be greater before the high flow regime and later in the season when flows taper out. The 2016 numbers were 42 before the high flow period (March to May) and 30 at the end of the season (Sept. and Oct.). As for the Colorado Pikeminnow they seem to peak after the monsoon season flow spikes. The 2016 data showed 129 species to move thru the facility during the months of July and August². Identification of Colorado Pikeminnow congregations will be observed and

noted based off flow regime and monsoon season trend. As 2016 showed our Pikeminnow numbers occurred at the tail-end of the monsoon season for San Juan County⁶.

NNDFW staff will prepare and submit monthly reports and one draft and final annual report. USFW Service staff will assist NNDFW with data analysis and draft and final report preparation, if needed.

NNDFW staff will attend SJRRIP Biology Committee meetings and provide reports as needed throughout the year.

Fiscal Year - 2019 NNDFW PNM Fish Passage

Personnel/Labor Costs (salary + benefits)

Daily Pond Management	
1 FTE NNDFW - Fisheries Biologist x \$44,055	\$44,055.00
Fringe Benefits \$44,055 X 48.70%	\$21,454.79
Temporary Wildlife Technician x \$5,856	\$6,148.80
Fringe Benefits Temp. \$5,856 X 9.05%	\$556.47
Personnel Subtotal	<u>\$72,215.05</u>

Travel

1 Tribal Vehicle	\$12,852.00
1 x Per Diem Lodging and Meals	\$1,050.00
Travel Subtotal	<u>\$13,902.00</u>

Equipment

BioMark HP Plus Scanner w/ Wand	\$3,165.75
SIMPSON Aluminum 4000-PSI 3.3 Gpm Cold Water Pressure	\$945.00
Food Grade Silicone - 16 Oz Aerosol Multipurpose 12/year	\$120.00
Super Wide Dip Net (\$340.70) x 2	\$681.40
Craftsman Gas Trimmer - Push Mower (\$260 ea)	\$260.00
Echo 2 Cycle Gas Trimmer (\$260 ea)	\$260.00
Equipment Maintenance, Repair, & Replacement	\$420.00
PFD - Astral PFD (\$100 ea) x 2	\$200.00
Hip boots (\$150 each) x 2	\$300.00
Waders (\$155.00 each) x 2	\$310.00
Muck Boots(\$100 ea) x 2	\$200.00
Rain Gear (\$100 ea) x 2	\$200.00
Uniforms	\$200.00
BVM Berkely Vertical Pump 7 1/2 HP	\$6,174.00
VFD Nema 3R 7.5 HP, 230V 1 Phase	\$5,670.00
General Operating Supplies (includes fish transport costs, i.e. oxygen, salt, stress coat, etc.)	\$400.00

Office Supplies and Equipment

Paper, Ink, Toner, Pens, Shipping & shipping material & supplies	\$300.00
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Fish Ladder Screen Cleaner Maintenance (i.e. motors, batteries, limiting switches, contractor assistance, etc) \$6,201.76

Maintenance, Landscape, Hardware tools, propane, supplies, wrenches, sockets, nuts bolts, blades, paints, pvc, lumber, tapes, etc... \$1,260.00

	Support Subtotal	<u>\$27,267.91</u>
Navajo Natio Fish & Wildlife Total		\$113,384.96
NNDFW Administrative charge (17.18%)@ \$116,660.45/1.1718 x.1718 =		<u>\$16,623.60</u>
NN Total		\$130,008.56
NN Total with 5% Increase for inflation		\$136,508.99