

RECLAMATION

Managing Water in the West

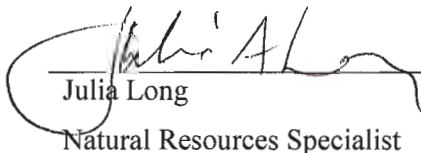
**Finding of No Significant Impact
and
Final Environmental Assessment**

Humboldt River Water Conservation Project

Humboldt Project, Pershing County, Nevada

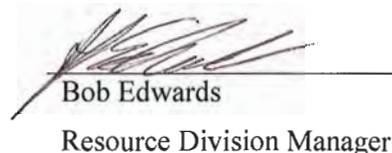
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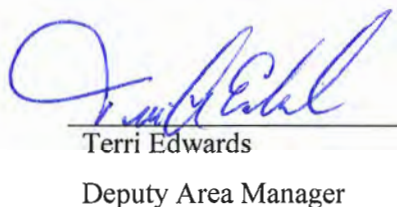
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February 13

I. Background, Proposed Action, and Purpose and Need

The Humboldt Project authorization provided for storage at Rye Patch Dam, acquisition of lands and water rights upstream in the Battle Mountain area for supplementing the water supply for project lands, and utilization of the Pitt-Taylor Reservoirs. The purpose of the project is to provide seasonal and long-term regulation of the Humboldt River and to increase the amount of water available for irrigation of agricultural lands in the Lovelock area. Currently there are 37,506 irrigable acres within the Pershing County Water Conservation District (PCWCD), approximately 32,000 acres of which are irrigated on an annual basis.

The operation and maintenance of the project were transferred from the U.S. Bureau of Reclamation (Reclamation) to the PCWCD on January 15, 1941. Since that time, the PCWCD has assumed all costs resulting from the day-to-day operations and maintenance of the entire Humboldt Project.

Although the distribution system downstream of Rye Patch is affected by releases from Rye Patch Reservoir, it is not part of the Humboldt Project. It consists of 5 diversion dams (Young, Pitt, Rogers, Sommers, and Big Five) six canals (Young, Union, Rogers, Big Five, Irish American, and Pitt-Taylor Diversion) and five ditches (Old Channel, B&B, Lakeshore, Tule, and Seven). The drainage system consists of four principal drains in the upper valley (Graveyard, Johnson, Lovelock, and Irish-American) and two principal drains in the lower valley (Toulon and Army).

Reclamation has provided \$750,000 for the following project elements:

1. Installation of a hydropower turbine and appurtenances on Rye Patch reservoir dam. In addition to the turbine installed on the end of one of the penstock pipes, this project element would include a power house, flow gages on the penstock gates, ventilation ducting in the penstock tunnel, and an automated gate valve system inside the existing gate house.
2. Installation of two 7-foot wide, powered overshot water release gates and an automated water level sensor with appurtenant wireless remote monitoring on the Pitt dam. The gates will be installed in the existing stoplog keyways in the concrete buttresses on the dam.
3. Installation of a water level sensor with appurtenant wireless remote monitoring on Rogers dam. The sensor will be wired into the existing gate control panel on the dam.
4. Installation of a powered gate actuator and automated water level sensor with appurtenant wireless remote monitoring at Rogers Canal diversion entrance.
5. Reconstruction of Rogers Canal including the reshaping of approximately 1.3 miles of the Canal cross-section from the canal entrance to the entrance of a 7-foot diameter pipe over the Humboldt river.

This Environmental Assessment (EA) analyzes the affects of the proposed project in accordance with the National Environmental Policy Act (NEPA) of 1969.

The project is proposed for the following purposes:

- To develop a hydro-electric power source at Rye Patch Dam by using the existing dam facility elements and head differential to generate power.
- To conserve water by improving the efficiency of existing dam and canal facilities within the PCWCD system.

The hydro power element is needed to provide a revenue source for operation and maintenance costs of PCWCD facilities, including Rye Patch Dam. Revenue from power generation would also be used to fund the renovation or replacement of other PCWCD facilities. The improvement of these facilities would contribute to water conservation efforts within the District.

The other project elements, including improvements to Pitt and Rogers Dams and the Rogers Canal, are needed to increase the efficiency of water management at each of these facilities. The proposed improvements would allow for a synchronization of each of the facilities with water releases from Rye Patch Dam. The result would be conservation of water resources.

II. Summary of Impacts

Proposed Action Alternative

Rye Patch Dam is currently part of the Humboldt Project which is managed by Reclamation. The proposed project elements planned for Rye Patch would be constructed in previously disturbed areas and on existing dam facilities.

The proposed improvements to the Pitt and Rogers Dams include modifications to the existing dam structures. All of the modifications to these structures can be reversed.

The reconstruction of the Rogers Canal will take place in previously disturbed areas within the footprint of the existing canal. Most of the modifications will be within the canal itself.

The EA includes analysis of potential impacts for each environmental category. The results of the analysis are summarized in the following:

Wildlife: During the construction phase, anticipated impacts to wildlife are expected to be temporary and localized. Wildlife may be temporarily displaced due to equipment noise, exhaust emissions, and fugitive dust. However, these effects will be minimized by Best Management Practice's (BMP's).

It is expected there will be injury or mortality to fish once the turbine is installed on Rye Patch Dam. It is not anticipated that impacts to fish will be great since the turbine will only run part of the year and the number of fish that pass through the dam penstock is not estimated to exceed 50%. Based on fish survivability calculations, approximately 91% of the total amount of fish that pass through the dam survive. Additionally, mitigation measures include use of the bypass and pre-operation flushing of the penstock will minimize fish mortality.

Threatened and Endangered Species: No threatened or endangered species are known to occur in the project areas therefore, it has been determined that the Proposed Action will not negatively affect any federal or state-listed species or any critical habitat.

Water Resources: The project will not affect water resources in regard to quality or quantity. In fact the anticipated effect and purpose of the project will be water conservation. Any machinery, such as the turbine, will use vegetable-based lubricants but, under normal operating conditions, lubrication will not come in contact with the water.

Air Quality: The project may have temporary, localized impacts to air quality during construction. Emissions from construction equipment would be temporary and insubstantial and would not result in violations of national or state ambient air quality standards. No air quality issues are anticipated post construction.

Land Use: The project will have no impact or change existing land uses within the vicinity.

Noise: There will be a temporary increase in noise associated with the construction of the project. However, the amount of construction equipment for these actions will be minimal and brief. Once the project is completed, the turbine will produce some noise but it is anticipated it will be below existing ambient noise levels at the dam. Ambient noise includes vehicle traffic and noise from water being released over the spillway and through the penstock pipes.

Vegetation and Invasive, Noxious Weeds: Project elements at Rye Patch Dam are on hard surfaces and will not affect vegetation. Some vegetation may be disturbed during the reconstruction of the Rogers Canal but since the construction will take place within the existing footprint of the canal, minimal effects are anticipated. There will be soil disturbances at Rye Patch and Rogers Canal, creating the potential for invasive weed growth. However, weed control BMPs, including a noxious weed plan will be instituted to prevent the spread of invasive plant species.

Hazardous Materials: Other than fuel and lubricants used during construction, the project includes no other hazardous materials. BMP's will be implemented to reduce the risk for the release of any pollutants.

Visual Resources: The proposed project will change the appearance of the area above the west side of the Rye Patch Dam spillway. The project will require the addition of a power house similar to the existing gate house as well as a turbine located on the west side of the spillway itself. The power house will be designed to meet the visual standards of Reclamation.

The installation of gates and level sensor on the Pitt Dam will change the appearance of two of the 8 stoplog bays on the dam. The level sensor on the Rogers Dam and the gate actuator and level sensor on the Rogers Canal structure will change the appearance only slightly and will blend well with the relatively new (2008) Dam facility. Visual changes in Pitt and Rogers Dam will be minor and insignificant. Changes in the appearance of the Rogers Canal will be insignificant since most of the work will be done within the existing channel.

Transportation: The proposed project will affect transportation only during construction. Any interruption to transportation would be temporary, possibly 1 to 2 days. Traffic control standards would be maintained until project completion.

Indian Trust Assets: There are no Indian Trust Assets (ITAs) within proposed project areas therefore, there will be no impact to ITAs.

Environmental Justice: The proposed project will have no disproportionately high and/or adverse human health or environmental effects, including social and economic effects on minority and low-income populations.

Soils: Project-related soil disturbance will be temporary and localized and will occur at Rye Patch and the Rogers Canal. Disturbances will include excavation only and no soil will be imported to or exported from either site.

Floodplains: Rye Patch Dam is elevated above the floodplain and the project elements at that location will not be affected by flooding. The Pitt Dam, Rogers Dam, and Rogers Canal are located within 100-year flood areas and may be inundated during a flood. However, the proposed project elements at those locations will not alter or affect the flood plain.

Historic and Cultural Resources: Three historic properties were identified in surveys conducted of the APE: Rye Patch Dam, Pitt Dam, and Rogers Canal. Reclamation applied the criteria of adverse effect and Secretary of Interior Standards to all three historic properties. None of the proposed actions will adversely affect any of the characteristics that make these properties eligible for listing. There is very little to no potential to effect archaeological deposits. In summary, based on all of the available information, Reclamation finds the overall project will result in a finding of no adverse effect to historic properties pursuant to 36 CFR §800.5(b).

The No Action Alternative

With the No Action alternative, no modifications would be constructed at Rye Patch Dam, Rogers Canal, Rogers Dam, and Pitt Dam. No ground-disturbing earthwork, pad construction, or other activities included in the proposed project description would occur. No impacts to the existing environment would occur as it would remain unchanged.

On-going conditions and trends would continue for wildlife, threatened and endangered species, water resources, air quality, noise, vegetation and invasive, noxious weeds, hazardous materials, visual resources, transportation, Indian Trust Assets, environmental justice, soils, floodplain, and historic and cultural resources.

III. Cumulative Impacts

Reclamation assessed past, present, and reasonably foreseeable future projects in the Humboldt River Water Conservation Project area for significant cumulative effects. An anticipated reasonably foreseeable future action is the Humboldt Title transfer which will patent the land to the Pershing County Water Conservation District but, will not change the historic use of the land. This future action will not result in a significant cumulative impact.

IV. Irreversible and Irretrievable Commitments

All of the proposed project elements would be constructed on existing facilities and changes in the function, status, and operation of these facilities is not anticipated. The intent of the project elements is to improve the operation or use of the existing structures and canal.

All of the proposed project elements are reversible and installation of all project elements is relatively superficial. The power house at Rye Patch dam would have the greatest visual impact of the project elements but removal would require demolition of the structure and re-grading of the parking area. Proposed project elements on the other dams could be removed in less than a day.

V. Environmental Commitments

The following environmental commitments would be implemented before, during, and after construction to prevent and reduce the impacts of the Proposed Action.

- Reclamation's contractor shall be responsible for complying with all environmental requirements identified in this environmental assessment (EA) and with all Federal, State, and local permits. BMPs shall be implemented to limit impacts to water quality and hazardous material accidents.
- Reclamation will require that all earth-moving equipment, gravel, other materials or equipment need to be noxious weed-free.

- Reclamation will conduct post-construction monitoring to ensure new construction at Rye Patch Dam is compliant with Secretary of Interior Standards for the Treatment of Historic Properties, 36 CFR §68.
- Pre-operation flush cycles will be incorporated into Rye Patch Dam's Standard Operating Procedures (SOP's).

VI. Consultation and Coordination

The Draft EA was provided for a 25-day public review and comment period on December 4, 2012, at www.usbr.gov/mp, at the Pershing County Library, and at the Bureau of Reclamation, Lahontan Basin Area Office which is located in Carson City, Nevada. A news release was issued and notice of availability was sent to those on the mailing list.

Reclamation received written comments from 4 interested parties. The Final EA and FONSI were developed after a thorough review of public comments and interest received. Based on agency and public concerns, additional project details and mitigation measures were included in the EA. No significant impacts were identified in the Final EA or as a result of the public review process.

VII. Findings and Decision

The EA documents that compliance has occurred with the Endangered Species Act, Section 106 of the National Historic Preservation Act, Indian Trust Assets, Clean Air Act, Clean Water Act, Environmental Justice, Fish and Wildlife Coordination Act, Migratory Bird Treaty Act, and the National Environmental Policy Act.

Reclamation's decision is to implement the Proposed Action alternative. Based on the analysis of the environmental impacts as described in the EA and thorough review of public comments received, Reclamation has determined that implementing the Proposed Action alternative will not have a significant impact on the quality of the human environment and the natural resources of the area. A Finding of No Significant Impact is justified for the proposed project. Therefore, an environmental impact assessment is not necessary to further analyze the environmental effects of the proposed action.

The following summarizes the reasons why the impacts of the proposed action are not significant:

1. There may be short-term, temporary impacts during construction to the following resources: wildlife, migratory birds, soils, air quality, water resources, and vegetation. Many of these impacts will be mitigated by BMPs and other measures.
2. There will be no impact to Threatened or Endangered Species.
3. There are no known impacts to Native American Religious concerns.
4. Implementing the proposed action will not disproportionately affect minorities or low income populations and communities.
5. Hazardous materials will be handled in accordance with federal and state regulations. An emergency response plan would be implemented that includes contingencies for hazardous materials spills and disposals.
6. Historic or cultural resources: Protection measures included in the project would minimize the likelihood of effects (through avoiding all known resources and stopping work if a resource or remains are encountered).
7. There would be no impact to existing land uses in the vicinity of the project.

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Environmental Assessment LO-2011-1016



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Bureau of Reclamation
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Mission Statements

The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to Indian Tribes and our commitments to island communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

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1.0 INTRODUCTION

1.1 Background

The Humboldt River Water Conservation Project (proposed project) includes elements that are either part of the Bureau of Reclamation (Reclamation) Humboldt Project (Rye Patch Dam) or are affected by water passing through the Humboldt Project (Pitt and Rogers Dams and Rogers Canal). The Humboldt Project is located in northwestern Nevada on the Humboldt River. Rye Patch Dam and Reservoir is on the Humboldt River about 22 miles upstream from Lovelock, the county seat of Pershing County.

The Humboldt Project provides for storage at Rye Patch Dam, acquisition of lands and water rights upstream in the Battle Mountain area for supplementing the water supply for project lands, and utilization of the Pitt-Taylor Reservoirs. The purpose of the project is to provide seasonal and long-term regulation of the Humboldt River and to increase the amount of water available for irrigation of agricultural lands in the Lovelock area. Currently there are 37,506 irrigable acres within the Pershing County Water Conservation District (PCWCD), approximately 32,000 acres of which are irrigated on an annual basis.

The operation and maintenance of the project were transferred from Reclamation to the PCWCD on January 15, 1941. Since that time, the PCWCD has assumed all costs resulting from the day-to-day operations and maintenance of the entire Humboldt Project.

Although the distribution system downstream of Rye Patch is affected by releases from Rye Patch, it is not part of the Humboldt Project. It consists of six canals (Young, Union, Rogers, Big Five, Irish American, and Pitt-Taylor Diversion) and five ditches (Old Channel, B&B, Lakeshore, Tule, and Seven). The drainage system consists of four principal drains in the upper valley (Graveyard, Johnson, Lovelock, and Irish-American) and two principal drains in the lower valley (Toulon and Army). A 1.3 mile section of Rogers Canal is included in the proposed improvements.

The distribution system also includes 5 diversion dams (Young, Pitt, Rogers, Sommers, and Big Five) located downstream of Rye Patch Dam. The proposed project includes improvements to two of these dams, the Pitt and the Rogers.

1.2 Purpose and Need for the Project

1.2.1 Hydropower at Rye Patch Dam

The PCWCD is proposing to install a hydropower turbine on Rye Patch Dam. The purpose for the project would be to generate electricity that could be sold back to the existing grid. Revenue generated by the sale of power would provide PCWCD with a steady source of funding for water system improvements and to offset irrigation pumping costs throughout the PCWCD system. The improvements funded by the power generation would potentially increase the conservation efficiency of existing facilities in the district, including the Rye Patch Dam and Reservoir.

1.2.2 Installation of Overshot gates and Water Level Sensor at Pitt Dam

Two automated power actuated overshot gates would be installed in the existing stoplog keyways in the Pitt Dam buttress bays. A water level sensor with appurtenant wireless remote monitoring would also be installed and would be hooked into existing power.

The purpose for the installation of the two gates and water level sensor at Pitt Dam is to allow for more accurate water control at the dam and thus better water conservation. More importantly, the improvements would make it possible to coordinate the release and impoundment of water at Pitt Dam with releases from Rye Patch reservoir. Coordination of releases at the Pitt and Rogers Dams downstream of Rye Patch reservoir will help conserve water while maintaining sufficient flows for irrigation. In summary, these facility upgrades are needed to improve overall water use management and decrease water loss.

1.2.3 Rogers Dam and Canal Improvements

There are three improvements proposed for the Rogers Dam facilities. The facilities include the Dam itself, the Rogers Canal diversion structure, and the Rogers Canal. The proposed improvements include the following:

1. Installation of a water level sensor with appurtenant wireless remote monitoring on Rogers Dam (see Figure 3).
2. Installation of an automated hoist (see Figure 5) on the existing radial gate and a solar powered water level sensor with appurtenant wireless remote monitoring on the Rogers Canal diversion structure.
3. Reconstruction of a 1.3 mile section of Rogers Canal.

The purpose for the improvements at Rogers Dam is to coordinate the release and impoundment of water with those of the Rye Patch and Pitt Dams. The improvements, along with those at the other dams, are part of a master planned approach to water management on the Humboldt River and specifically within the PCWCD system. The improvements at the Rye Patch, Pitt, and Rogers Dams are needed to help conserve available water.

The purpose for the rebuilding of the Rogers Canal is to improve measurement and flow through the canal. The improvement will allow for better water measurement and conservation.

2.0 PROPOSED ACTION AND NO ACTION ALTERNATIVE

2.1 Proposed Action

1. Under the proposed action, Reclamation would allow and provide \$750,000 to fund the installation of following improvements:
2. Installation of a hydropower turbine and appurtenances on Rye Patch Reservoir Dam.
3. Installation of two 7-foot wide, powered overshoot water release gates and an automated water level sensor with appurtenant wireless remote monitoring on the Pitt Dam. The gates will be installed in the existing stoplog keyways in the concrete buttresses on the dam.
4. Installation of a water level sensor with appurtenant wireless remote monitoring on Rogers Dam. The sensor will be wired into the existing control box on the dam.
5. Installation of a powered gate actuator and automated water level sensor with appurtenant wireless remote monitoring at Rogers Dam diversion entrance.
6. Reconstruction of Rogers Canal including the reshaping of approximately 1.3 miles of the Canal cross-section from the canal entrance to the entrance of a 7-foot diameter pipe over the Humboldt river.

The locations of these project elements are shown on maps in Appendix A.

2.1.1 Rye Patch Dam Hydropower

At Rye Patch Dam, a hydro-turbine would be installed on the downstream end of one of the two existing 48-inch penstocks. A penstock is an enclosed pipe that is used to regulate flow through the dam (see Figure 1). The power plant would be similar to those currently operating on similar sized dams in nearby reservoirs in California and Nevada.

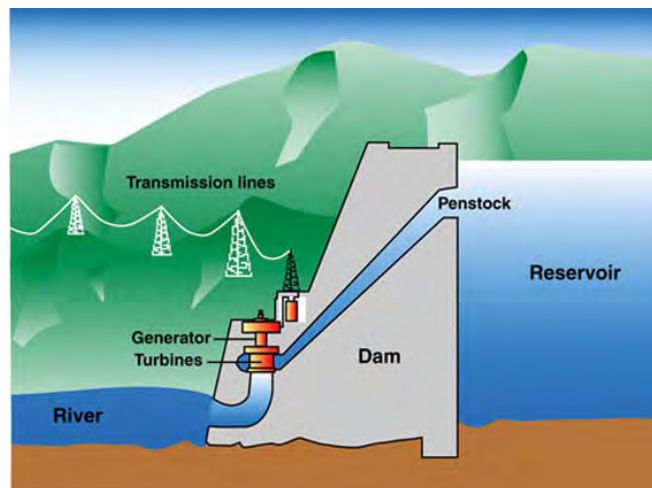


Figure 1 – Conceptual dam/hydro-turbine configuration

Additional appurtenances that would be installed as part of the hydro-turbine project include:

1. Construction of a power house near the existing gate house adjacent to the spillway. The footprint of the new building will be 18-feet square and the elevations will be designed to match that of the existing gate house. The building will house the power generation equipment.
2. Installation of a ventilation fan and ducting running from the dam valve chamber through the penstock maintenance tunnel. The proposed ducting is required by OSHA.
3. Installation of an external flow meter on the penstock pipe connected to the hydro turbine (see Figure 2)
4. Installation of gate position sensors on the two penstock control gates.
5. Installation of automated valves in the existing gate house.

The power generated by the hydropower turbine will be transmitted to the grid via existing power transmission lines located near Rye Patch Dam.



Figure 2 – Example of external flow sensor on penstock pipe

2.1.2 Pitt Dam Gates and Water Level Sensor

The proposed action includes the installation of two power actuated overshot gates and a water level sensor on Pitt Dam. The water level sensor includes a small antenna. Examples of an installed water level sensor and automated power actuated gates are shown in Figures 3 and 5, respectively.



Figure 3 – Water level sensor example showing solar panel and antenna



Figure 4 –Example of automated power radial gate hoist proposed for Rogers Canal

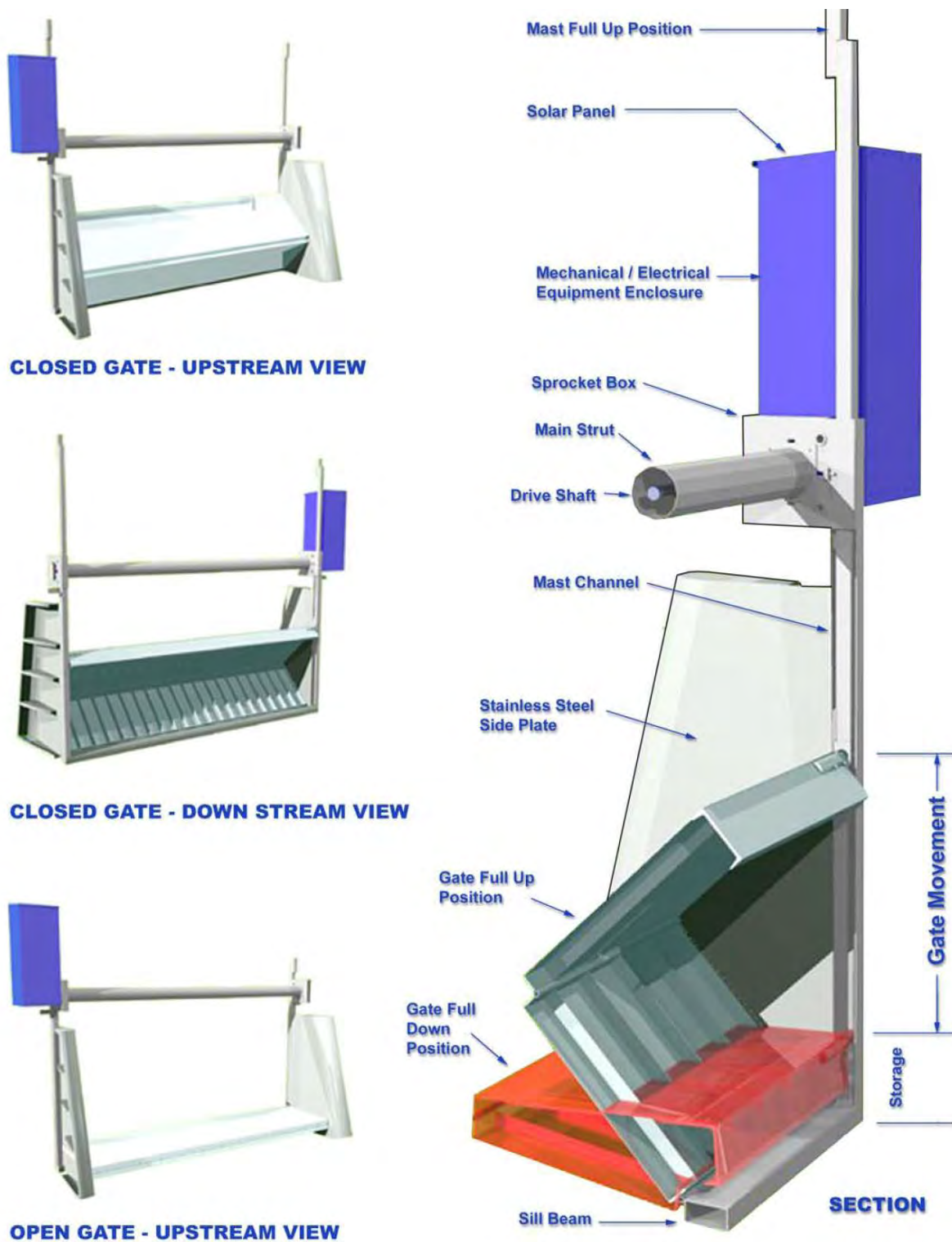


Figure 5 –Overshot gates proposed for Pitt Dam. Solar power won't be required on Pitt Dam

2.1.3 Rogers Dam Water Level Sensor

The control for the water level sensor on Rogers Dam will be installed in the existing panel on the dam. The sensor will not require a solar panel.

2.1.4 Rogers Canal Diversion Structure and Water Level Sensor

The water level sensor with solar panel and appurtenant wireless remote monitoring and gate actuator on the diversion structure will be similar to those shown in Figures 3 and 4, respectively. The gate actuator will replace the existing one shown in Figure 9.

2.1.5 Rogers Canal Reconstruction

The Rogers Canal reconstruction will include the reshaping of approximately 1.3 miles of cross section of the existing Rogers Canal starting at the canal entrance. The reconstruction will include excavation and grading in and immediately adjacent to the existing canal. Equipment to be used includes but is not limited to excavators, graders, loaders and haul trucks. The reconstruction does not include lining or hardening other than normal compaction.

2.2 No Action

Under the “No Action” alternative, the following proposed actions would **not** be implemented:

1. The proposed hydropower plant and appurtenances would not be installed at Rye Patch Dam,
2. The proposed gates and water level sensor would not be installed at Pitt Dam,
3. The proposed water level sensor would not be installed at Rogers Dam,
4. The power gate actuator and water level sensor would not be installed at the Rogers diversion structure and,
5. The Rogers Canal would not be reconstructed.

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 Site Descriptions

3.1.1 Rye Patch

The Reclamation website for the existing Rye Patch Dam states the following:

“Rye Patch Dam lies within a valley cut by the Humboldt River. The materials forming the valley slopes at the dam site are variably consolidated Lahontan and pre-Lahontan lacustrine and fluvial deposits consisting of very thinly-bedded to thickly-bedded gravel, sand, silt, and clay. Nearly continuous outcrops of the deposits occur in the valley slopes.

The deposits are nearly horizontal except for occasional local dips of 20 to 30 degrees south, southwest, and northwest along undulating erosional surfaces. Locally, Holocene age slope wash (Qs) forms 1- to 10-foot-thick clay and silt deposit on the lower half of the Humboldt River valley slopes.

The Lahontan deposits lie above elevation 4160 feet on the left abutment of the dam and above elevation 4200 feet on the right abutment of the dam and are not part of the abutments. The pre-Lahontan deposits (Qpl), which form the right and left abutments, include the Paiute, Rye Patch, and Lovelock Formations.

A volcanic ash bed and a calcium-carbonated-cemented gravel bed (5 feet thick) crop out in the upper Rye Patch Formation.

Since Lake Lahontan receded from the Rye Patch Dam area about 10,000 years ago, the Humboldt River has eroded the present valley and deposited up to 40 feet of unconsolidated alluvial silt and sand (Qa). This alluvium has been divided into six subunits based on physical characteristics. The central portion of the dam is founded on this alluvium.

A small shear zone was revealed during dam construction. This feature was attributed to minor slumping of pre-Lahontan deposits in the valley slopes. No faults are recognized in the foundation or abutments. No landslides or other major surficial slips are known to exist in the reservoir area. No fault displacement of Lahontan or pre-Lahontan deposits is known to exist in the immediate area of the dam.”

Rye Patch Dam (Figure 6) is an earth fill structure. A total of 322,900 cubic yards of compacted earth fill covered by 9,800 cubic yards of gravel and 36,200 cubic yards of rock fill and riprap forms the Rye Patch Dam. The foundation is a mixture of clay, sand, and fine gravel.

The Dam was completed and began storing water in 1936. A rehabilitation and betterment program in 1975 enlarged Rye Patch Dam to 78 feet high and a crest 1,074 feet long. Improvements increased the reservoir's storage capacity by an additional 23,000 acre-feet bringing its active capacity to 213,000 acre-feet.

The dam's design has three major structural features: an embankment, outlet, and spillway. The spillway is 110 feet wide, 353 feet long, and its full capacity is 20,000 cubic feet per second. Five steel radial gates, 17 feet high by 20 feet wide, discharge the spillway's flow.

The outlet works of the dam include a trash rack that covers the outlet entrance into a 12-foot diameter concrete lined circular tunnel running 472 feet where two sets of high pressure slide gates control flow into two 48-inch diameter steel discharge pipes. Control gates are in a gate chamber and a control house,

connected by a section of the tunnel. The outlet works can release 1,000 cubic feet per second and discharge is into the spillway stilling basin.

The Rye Patch Reservoir provides the usual types of water-based recreation. Facilities have been developed and operated under the administration of the Nevada Division of Parks. Fishing for trout and warm water species is under the management of the State Fish and Game Commission.



Figure 6 - Rye Patch Dam spillway and gate house

3.1.2 Pitt Dam

The Pitt Dam is located on the Humboldt River in the east half of Section 6, Township 27 North, Range 32 East. The Dam can be found on the Lovelock, Nevada 7.5 minute topographic map. The Dam is at elevation 4005 feet (approximate), latitude 40 degrees, 14 minutes, 5 seconds, and longitude 118 degrees, 25 minutes, and 14 seconds. The dam is located approximately 5 miles from the town of Lovelock.

The Pitt Dam is a seven-buttress dam constructed of steel reinforced concrete. The banks on both sides downstream of the dam are armored with rip-rap and the dam has a steel reinforced concrete toe and erosion control slab. The height of the dam from toe to crest is 15 feet and the length of the crest is approximately 85 feet. The dam has two railcar chassis placed end to end that provide the structure for a vehicular bridge that runs the length of the crest. Steel reinforced wooden flash boards in seven of the eight bays control the height of the water behind the dam and a manually operated rack and pinion operated wooden slide gate in the eighth bay controls the release of water from the dam. The dam is used

to back up water for diversion to the Old Channel and Union Canals. The Pitt Dam was constructed in 1915.

The Pitt Dam (Figure 7) is considered a small dam by State of Nevada since the potential reservoir capacity (approximately 150 acre feet) is less than 1,000 acre feet. The Pitt Dam is used for irrigation purposes and is considered a low hazard dam because if breached the increased flows would be insignificant. The National Identification Number for the Pitt Dam is NV00203.



Figure 7 – Pitt Dam

3.1.3 Rogers Dam and Diversion Structure

The Rogers Dam is situated just northeast of Lovelock on the Humboldt River. It is located in the northeast quarter of Section 24, Township 27 North, Range 31 East. The latitude of the dam is 40 degrees, 11 minutes, 57 seconds and the longitude is 118 degrees, 26 minutes, 27 seconds. The dam is at elevation 3995 feet and can be found on the Lovelock, Nevada 7.5 minute series topographic map. The dam and diversion structure are approximately 2 miles northeast of the town of Lovelock.

The original Rogers Dam failed on Tuesday, July 18th, 2006 as a result of very high flows in the Humboldt River. The dam could not be repaired for temporary or permanent use and consequently was removed and a new dam was constructed in its place.

Construction of the new Rogers Dam (Figure 8) included a temporary coffer dam and north by-pass spillway (bypass) around the coffer dam. Although the coffer dam was removed once the Rogers Dam was complete, the bypass remained in place as a permanent part of the project.

The design for the new Rogers Dam was completed by October 2007 and construction of the structure was completed in June 2008. The dam measures 100'x75'x40' and includes three buttresses and four 15' motor actuated radial gates and one 5-foot wide motor actuated slide gate.

The Rogers diversion structure was replaced at the same time as Rogers Dam and its purpose is to control water flowing into the Rogers Canal. The structure is constructed of concrete and steel sheet piles and includes a 7' x 12' manually operated radial gate.

The dam and diversion structure are approximately 2 miles northeast of the town of Lovelock.



Figure 8 – Rogers Dam



Figure 9 – Rogers Diversion Structure and existing gate actuator

3.1.4 Rogers Canal

The Rogers Canal originates at the Rogers Dam diversion structure (approximately 50 feet southeast of Rogers Dam) and flows southwest for approximately 1.5 miles at which point it joins the Union Canal to form the Union Rogers. The canal averages 23 feet in width at the bottom and has no diversions. The canal is approximately 1 mile east of the town of Lovelock.

The 1.3 mile (approximate) section of the Rogers Canal that is to be renovated as part of the proposed project originates at the Rogers Dam diversion structure. It terminates at a 7-foot diameter elevated steel pipe that crosses the Humboldt River. Figure 10 shows the section of the canal to be renovated.



Figure 10 – Rogers Canal. Length to be renovated is approximately 1.3 miles

3.2 Affected Environment/Environmental Consequences

After initial analysis it was determined that the proposed action would not affect: climate, wetlands, geology, mineral resources, land use, and coastal zones. Therefore, these environments are not considered in detail in this EA.

The “No Action” alternative could have no environmental effects. The facilities discussed in the proposed project would remain in their current condition and would continue to operate as they currently do.

3.2.1 Wildlife

Rye Patch Dam Affected Environment

The Nevada department of Wildlife (NDOW) was contacted regarding the proposed project elements at Rye Patch Dam. NDOW delineated an area of interest that included a three-mile buffer around the proposed project area. Based on that area of interest, NDOW provided information regarding wildlife known to reside in the vicinity. Sensitive wildlife in the vicinity includes various species of raptors. Of those, burrowing owl, ferruginous hawk, northern goshawk, peregrine falcon, short-eared owl, and Swainson’s hawk are NDOW species of special concern and are target species for conservation as outlined by the Nevada Wildlife Action Plan.

The following species have also been observed in the vicinity of the project area:

American beaver	Coyote	Sacramento blackfish
Bluegill	Great blue heron	Tahoe sucker
Common carp	North American river otter	Walleye
Rainbow trout	Channel catfish	Spotted bass
Largemouth bass	Smallmouth bass	Crappie
Bullhead catfish	White catfish	Wiper

Table 1

Based on the 2011 water sampling tests, Rye Patch Reservoir is considered “suspect” (testing positive in one DNA test) for juvenile quagga mussels. Currently, it is unknown if quagga mussels will establish and thrive in northern Nevada. Further water sample testing will continue to occur at Rye Patch Reservoir in order to obtain conclusive test results that will determine if quagga mussels are present and future infestation imminent.

Rye Patch Dam Environmental Consequences

Proposed Action

Consequences to wildlife resources generally result from impacts to individuals, populations, or from disturbance to habitat. Most potential impacts to wildlife are associated with habitat disturbance and vegetation removal.

Because the proposed action area of effect includes only the interior of the dam, the existing parking area, and the dam spillway, the only anticipated impact would be the potential killing of fish passing through the hydroelectric turbine. NDOW has suggested that a fish screen might be installed on the intake of the penstock pipe that would supply water to the turbine. These options are not practical for the following reasons:

1. There is one existing common inlet for two existing outlet pipes (penstocks). If a screen were installed on the inlet, it would prevent fish from passing through both outlets. With no screen on the inlet, the fish can pass completely unmolested through one of the pipes even when the turbine is operating. Also, the pipe connected to the turbine has a bypass immediately before the turbine which will be regularly flushed and open in high flow and low flow events. If there is no screen, fish can also pass unmolested through both pipes during these events.
2. PCWCD (dam operator and turbine owner) and Reclamation (dam owner) prefer not to use fish screens based on the potential for quagga mussels in Rye Patch Reservoir. If quagga mussel populations become established, required maintenance and maintenance costs will increase as they encrust the fish screen, the turbine, penstocks, and other underwater facilities, and ultimately, choke off flow to the dam outlet.
3. When the dam water level is lower than 15 feet (max water level is 60-63 feet) power cannot be generated and water will be directed through the turbine bypass. This eliminates the possibility of fish looking for deeper water in low water events from passing through the turbine. Likewise, even with water levels higher than 15 feet, any time the dam is scheduled to release water volumes less than 75 cubic feet per second (cfs), the turbine cannot make power. In both scenarios, fish will pass unmolested. It should also be noted that less than 75 cfs is released from October 15th to March 15th as this is the off irrigation season.
4. Fishermen downstream do not want a screen because it will eliminate all large fish. Without a screen some large fish can still pass in the scenarios described above. Some small fish will pass with or without a screen and can survive particularly in the upper reaches of the river.
5. Installing a screen on such a small scale, low head, low velocity power project is cost prohibitive.

Regarding fish mortality, the following issues were considered:

1. The proposed Kaplan turbine is considered among the most fish-friendly of turbine designs. An article in the "Fisheries" Journal (Vol. 26, Issue 9) entitled "The Development of Advanced Hydroelectric Turbines to Improve Fish Passage Survival" indicates that the expected survival rate for small fish passing through a Kaplan Turbine can be 70% to 88%.
2. The penstock currently has a trash rack at the inlet. The bars on the trash rack are 6-inches on center.
3. The turbine operates only during irrigation season (March through September).
4. The turbine has a bypass pipe (angled off of the main pipe at 30) that allows for complete or partial bypass of the turbine. The ideal flow rate for the operation of the turbine is 350 cfs and excess flows above this amount can be directed through the bypass. During four of the seven months of turbine operation, approximately 30% of the flow can be sent through the bypass. This is equal to approximately 18% of the total flow during the 7 operational months (based on USGS flow gage data downstream of the dam).
5. The turbine and penstock valves will be automated and a pre-operation flush cycle will be integrated into its operation. Flushing the penstocks prior to turbine operation will allow fish already inside the pipe to pass safely.

Based on the forgoing information the fish mortality is estimated below:

- 50% of the fish that pass through the dam travel through the pipe with the turbine,
- approximately 82% of those fish travel past the bypass and on to the turbine and,
- 79% of the fish that pass through the turbine survive.

Consequently, of the total amount of fish that pass through the dam, approximately 91% survive.

Mitigation measures include use of the bypass and pre-operation flushing of the penstock.

Other than the potential effect on fish, there are no anticipated long term environmental consequences associated with wildlife in the vicinity of Rye Patch Dam under the proposed action. There will be temporary localized environmental effects during the construction process. These may include equipment exhaust emissions, noise, and fugitive dust. However these effects will be minimized by BMP's. It should also be noted that all proposed project elements at Rye Patch Dam are reversible.

No Action

The "No Action" alternative would not affect wildlife at the Rye Patch Dam. All facilities discussed in the proposed action would remain in their present condition and would continue to operate as they currently do.

Pitt and Rogers Dams and Rogers Canal Affected Environment

Wildlife species residing in the areas near both the Pitt and Rogers Dams are similar to those found in the vicinity of Rye Patch Dam. However, the Pitt and Rogers Dams are located near residential and agricultural areas so there is less wildlife than that found at Rye Patch.

Pitt and Rogers Dams and Rogers Canal Environmental Consequences

Proposed Action

Under the proposed action, work on the Pitt and Rogers Dams and Rogers Canal would include minor mechanical modifications to existing facilities. No habitat will be disturbed on land or in the river. All work activities associated with the installation of project elements will be performed in previously disturbed areas intended for maintenance activities (parking areas).

No Action

The "No Action" alternative would not affect wildlife at the Pitt and Rogers Dams and Rogers Canal. All facilities discussed in the proposed action would remain in their present condition and would continue to operate as they currently do.

3.2.2 Threatened and Endangered Species

Rye Patch, Pitt, and Rogers Dams Affected Environment

According to the U.S. Fish and Wildlife Service there are no listed species under the Endangered Species Act of 1973 (Act), as amended, in Pershing County, Nevada (U.S. Fish and Wildlife Service, 2011) that will be impacted by the proposed action or are known to occur within the project area.

Rye Patch, Pitt, and Rogers Dams Environmental Consequences, both Alternatives

There are no environmental consequences for either alternative since there are no threatened and endangered species occupying these areas.

3.2.3 Water Resources

Rye Patch Dam Affected Environment

The exterior area affected by the proposed action includes the parking area on the west side of the dam spillway and the west side of the spillway. The parking area has a compacted gravel surface and is frequented by vehicles. The dam spillway is concrete and the area where the turbine will be installed will be covered with water from time to time. The depth is dependent upon the amount released down the spillway.

The interior area affected by the proposed project includes the north wall above the existing dam controls, the penstock tunnel and the gate room inside the dam.

The automation elements of the project (controls, water measurement, valves, etc...) will improve the ability to coordinate water releases from the reservoir. The releases would be synchronized with downstream agricultural demands/deliveries. Currently there is no instantaneous water delivery coordination which can cause water releases to exceed demand downstream. In summary, the improved control of the dam will allow for better water use practices including conservation.

The benefit of the hydro turbine will be the capture of green energy. The revenue from the power generation will be used for the improvement of other facilities in the PCWCD system, thus allowing for even greater water conservation.

Rye Patch Dam Environmental Consequences

Proposed Action

Construction of the power house would affect the parking area. However, the drainage in the parking area will not change and the power house will have no effect on water resources.

The hydro turbine will be installed on the discharge end of one of two existing penstock pipes on the west side of the spillway. The turbine assembly will allow for discharge through the turbine or through an integrated bypass. This proposed design will ensure that the amount of water discharged from the penstock pipes will be the same as it is currently.

No water rights will be affected by this project. The project will allow for better management of existing water resources by use of improved technologies.

Installation of the turbine will require the attachment of anchor bolts to the dam. During this process best management practices will be employed to insure that any debris generated during the installation process will not be allowed to enter the river. Therefore the installation of the hydro turbine will not affect water resources.

Once the turbine is installed, it will be in contact with the water released from the dam. There are components of the hydro turbine that will be lubricated. These include a gear box and bearings that will come in contact with the water but are mechanically sealed (gaskets, etc...). Also, lubrication used in the turbine will be vegetable based and under normal operating conditions would not come in contact with the flow. Any lubrication that might come in contact with the water due to leaks caused by normal wear would be in small amounts compared to the flow and would be quickly diluted, posing no threat to

wildlife. Additionally, maintenance on the gearbox can be done under non-flow conditions which would prevent water contamination by lubricants during maintenance.

Other proposed appurtenant equipment to be installed at the dam include ducting inside the gate room and penstock tunnel, flow sensors on the penstock pipes, gate position sensors on the penstock control gates, and automated valves in the gatehouse. These proposed project elements will improve water release control at the dam. Construction activities related to the installation of these appurtenances will have no effect on water resources.

Consequently, the anticipated effect on water resources of these project elements would be to allow for better water conservation. Conservation benefits include timed and measured releases from Rye Patch reservoir and revenue generated from power production that could be used on further improvements.

There would be no direct environmental consequences associated with the “No Action” alternative as it relates to water resources. However, even though the dam would remain as it is and would continue to operate as it does currently, the potential for the anticipated water conservation associated with the proposed action would not be realized.

Pitt Dam Affected Environment

The buttresses and floor where the power automated gates would be installed on the Pitt Dam are constructed of concrete that is approximately 100 years old. The buttresses have existing stop log keyways. The new gates would be installed in two buttress bays approximately in the center of the river where, when the river is flowing, it passes over the floor and through the buttresses.

Pitt Dam Environmental Consequences

Proposed Action

The powered gates are installed by sliding them down into the existing stop log keyways. Non toxic neoprene gaskets are then installed at the bottom and sides to provide a seal. The installation of the power automated gates on the Pitt Dam would require no diversion of the water flowing through the dam.

Since the gates will be used to control the release and impoundment of water at the dam, the only affect on water resources would be to improve operational control thus increasing the potential for water conservation. No excavation will be performed on the river bed itself so there will be no environmental consequences.

Rogers Dam and Rogers Canal Affected Environment

The Rogers Dam was completed in 2007 and the area around it and the diversion structure to the Rogers Canal are the same condition as they were when the dam was completed.

The 1.3 mile section of Rogers Canal to be reconstructed is used throughout the irrigation season and only rarely in the off season. The canal is unlined and the area adjacent to the canal is relatively free of weeds. The terrain is relatively flat and there are also very few trees in the immediate vicinity. Vegetation on and in the canal is regularly controlled by the PCWCD.

Rogers Dam and Rogers Canal Environmental Consequences

Proposed Action

The proposed actions at the Rogers Dam, Rogers diversion structure, and Rogers Canal would include the implementation of Best Management Practices (see NDEP “Nevada Contractors Field Guide for Construction Site Best Management Practices (BMPs)) to reduce sediment erosion, in compliance with the storm water pollution prevention requirements of the Clean Water Act. Also, petroleum products or other chemical spills that may occur during construction would be isolated and any contaminated material would be treated appropriately or removed and disposed of, in compliance with state and local requirements. Water used for dust abatement would be trucked into the project area and would not affect surface waters in the project area.

No environmental consequences are anticipated. Positive consequences would be the improvement of operational control at the facilities and a corresponding increase in water conservation.

No Action

In general, under a “No Action” alternative, there would be no environmental consequences regarding water resources for any of the facilities. All facilities would continue to function as they do currently.

3.2.4 Air Quality

Rye Patch, Pitt, and Rogers Dams and Rogers Canal Affected Environment

The National Ambient Air Quality Standards (NAAQS) published by USEPA in 40 CFR Part 50 define the levels of air quality that USEPA has determined protect human health and welfare. An area is considered to be in nonattainment for a pollutant if it violates a particular NAAQS. Conversely, attainment areas are those where monitoring shows that no violations of the NAAQS have occurred. An area is considered unclassifiable if no monitoring has been conducted to determine its classification and NAAQS violations would not otherwise be expected. Pershing County is classified as an attainment area and all of the proposed action is located within Pershing County.

Rye Patch, Pitt, and Rogers Dams and Rogers Canal Environmental Consequences

Proposed Action

The construction of the power house at Rye Patch Dam and the reconstruction of the Rogers Canal will require some excavation and consequently fugitive dust will be generated. According to the Nevada Division of Environment Protection (NDEP) Bureau of Air Quality Planning, if an area in excess of five (5) acres is disturbed, a surface area disturbance permit is required. Also, regardless of the size of the disturbed area, fugitive dust emissions must be controlled at all times through the use of BMPs. The total area to be disturbed over the course of the project is 17 acres.

Most of the soil disturbance associated with the project will occur during the reconstruction of the Rogers Canal (approximately 16 acres); with the construction at Rye Patch Dam disturbing only about .25 acres. In summary, there is the potential for temporary, localized impacts on air quality associated with fugitive dust generated during construction and emissions from construction equipment. Fugitive dust generated during construction will be controlled by best management practices including watering. Emissions from

construction equipment would be temporary and insubstantial and would not result in violations of national or state ambient air quality standards. No air quality issues are anticipated post construction.

No Action

There will be no air quality environmental consequences associated with the “No Action” alternative since no work will be performed.

3.2.5 Noise

Rye Patch, Pitt, and Rogers Dams and Rogers Canal Affected Environment

There is traffic noise on all of the dams since they all have vehicular roads across their crest. On Rye Patch there is a two-lane vehicular road and the Pitt and Rogers each have one lane. Auto traffic across the dams would be considered light and the relative loudness of light auto traffic at 100 feet is approximately 50 decibels (dBA) ((Beranek (1988) and EPA (1971)).

All of the project locations are relatively close to U.S. Interstate 80 (I-80) and the Southern Pacific Railroad corridors. The Pitt Dam is also within 0.5 miles of U.S. Highway 95. I-80 and railroad distances are shown in Table 2.

Site	I-80 (miles)	Railroad (miles)
Rye Patch Dam	1.2	1.0
Pitt Dam	1.0	0.5
Rogers Dam	0.2	0.7
Rogers Canal	0 to 0.5 (passes under I-80)	0.7

Table 2 – Distance from the project sites of existing road and rail noise sources.

All of the project sites experience noise related to the release of water from the control gates. The noise from the water varies according to the amount being released but can reach levels where it is difficult to hear other sounds.

Rye Patch, Pitt, and Rogers Dams and Rogers Canal Environmental Consequences

Proposed Action

All of the proposed project site would experience a temporary increase in noise due to construction activities. However, the amount of construction equipment for these projects will be minimal and brief. Construction at Rye Patch may include a small excavator and a loader or backhoe. Installation of gates at Pitt Dam and the Rogers diversion structure will require a crane. Construction on the Rogers Canal will include an excavator and a loader.

At the Rye Patch Dam, the noise level inside the power house will be 75 to 85 dB at 100% power. 100 ft away from the power house the noise level should be less than 65 dB at 100% power. Most of the hydro turbine noise will be radiated downward and will be masked by the water exiting the tailrace and hitting the river. The turbine will radiate 80 to 90 dB at full power however it will be no louder than the water rushing out of the control pipes now.

At the Pitt Dam and Rogers Diversion Structure, the sound of the powered gates during operation is the only noise the proposed action would produce. The noise produced by the gates would be less than that of a vehicle passing over the dams.

No Action

No additional noise would be produced under the “No Action” alternative and so there would be no environmental consequences.

3.2.6 Vegetation

Rye Patch, Pitt, and Rogers Dams and Canal Affected Environment

The dominant habitat type at Rye Patch above the reservoir is Great Basin saltbush scrub. Dominant species around the shoreline include black greasewood, four-wing saltbush, tamarisk, cheat grass, halogeton, Russian thistle, and native Great Basin wildrye. Great Basin saltbush scrub blends into desert sagebrush scrub habitat on the upland mesa surrounding the reservoir. This area is dominated by sagebrush, shadscale saltbush, rabbitbrush, and black greasewood.

Native riparian and aquatic plants along the river upstream and (to a lesser extent) downstream from the reservoir include Fremont cottonwood, narrow-leaved willow, buffalo berry, common monkeyflower, common spikerush, beautiful spikerush, and Baltic rush. This riparian scrub-forest habitat is patchy and disturbed, and has been heavily invaded or replaced by tamarisk and, to a lesser extent, Russian olive.

For the Rye Patch, Pitt, and Rogers Dams there is no vegetation in the locations where proposed improvements would be installed.

Vegetation adjacent to the Rogers Canal consists of some of the vegetation found at Rye Patch in addition to weeds and crabgrass. The area that will be affected, including the canal, will be approximately 60 feet wide for the 1.3 mile section of the canal that will be reconstructed.

Rye Patch, Pitt, and Rogers Dams and Canal Environmental Consequences

Proposed Action

There is some potential for weeds to infest areas where the soil and existing vegetation have been disturbed. Areas of the project where the soil will be disturbed include an approximately 0.25 acre section in the parking area at Rye Patch and the 60 foot wide, 1.3 mile long section of the Rogers Canal. Implementation of BMPs including a noxious weed plan will prevent the spread of invasive plant species in these areas.

No Action

No vegetation or soil would be disturbed under the “No Action” alternative and so there would be no environmental consequences.

3.2.7 Hazardous Materials

Rye Patch, Pitt, and Rogers Dams and Canal Affected Environment

None of the proposed project sites have facilities that store or use hazardous materials.

Rye Patch, Pitt, and Rogers Dams and Rogers Canal Environmental Consequences

Proposed Action

Construction of the various project elements would involve the use of common hazardous materials, including, but not limited to, fuel, such as diesel and gasoline, oil, and lubricants. To reduce the risk of the release of any pollutants, the following BMPs would be implemented:

- Gasoline, oil, and lubricants would be transported in approved containers in accordance with National Fire Protection Association Code,
- Sorbent material would be maintained on site to absorb petroleum products spills occurring during construction.
- There are two water wells near the dam. Equipment will not be allowed near the water wells

The risk of using routine hazardous materials during project construction would be minimal therefore, the potential risk for contamination is remote. Again, mitigation measures and BMPs will be incorporated while construction and maintenance activities are in progress. If an accident or spill were to occur, the construction crew will have contingency procedures in place to immediately respond and thereby prevent significant impacts on soil, surface water, or groundwater.

If during construction, contaminated soil is encountered, the project would be delayed while the contaminated material was evaluated and removed.

No Action

No hazardous materials would be transported or used under the “No Action” alternative and so there would be no environmental consequences.

3.2.8 Visual Resources

Rye Patch Dam Affected Environment

The project vicinity is characteristic of the Great Basin environment; desolate, sunny, and brush-strewn valley floors are bordered by often barren, but frequently colorful, elongated, and steep mountain ranges. Vegetation on the valley floor grows low and evenly and primarily consists of monochromatic desert brush (US Navy 2000).

Rye Patch Dam is camouflaged by its surroundings. The dam's design has three major structural features: an embankment, outlet, and spillway. On the west side of the spillway there is a small gate house. Below Rye Patch dam the Humboldt River is a low gradient meandering river.

Pitt Dam Affected Environment

The visual environment found in the Pitt Dam vicinity is similar to that found at Rye Patch Dam. Near Pitt Dam to the west there are agricultural fields, hay barns, and baled hay stack yards. To the east the terrain is similar to that seen at Rye Patch. There is dirt road on both sides of the dam and the dam has a wooden vehicular bridge across the crest.

Rogers Dam and Canal Affected Environment

The Rogers Dam vicinity is also comparable to Rye Patch. Near Rogers Dam to the north there is a heavily disturbed, well compacted area that has very little vegetation and relatively frequent vehicular traffic. There are also a few homes that can be seen in the distance.

South of the dam there is a disturbed well compacted area that also experiences vehicular traffic. The beginning of the Rogers canal can also be seen in this area with I-80 in the near distance.

The canal's visual environment is similar to that of the dam, however the canal is closer to I-80 than the dam. There are some homes nearby as well as local surface streets. There are also some agricultural fields adjacent to the canal and the area is generally flat.

Rye Patch, Pitt, and Rogers Dams and Rogers Canal Environmental Consequences

Proposed Action

The most significant visual change would occur at the Rye Patch Dam. The project there includes the construction of a power house near the existing gate house on the west side of the spillway. The new power house would be constructed to match the architecture of the existing gate house. Additionally, the hydropower turbine would be installed at the end of one of the existing penstock pipes. Both additions would have minor effects on the existing visual environment.

The improvements at Pitt Dam would only change the appearance of the top of two existing stoplog bays. The gates that would be installed on the dam would include two masts each. The masts would be approximately 6-feet high and would extend straight up above the top of the dam on either side of each gate (see Figure 5). Although this would change the appearance of the dam, the installation of the gates is non-invasive and the gates could be removed at any time.

Improvements at Rogers Dam will be nearly imperceptible and will actually improve the appearance of the Rogers Canal inlet. The water level sensor that would be installed at the Rogers Dam would not require a solar panel and would be barely noticeable. The power gate hoist (see figure 4) that would be installed on the Rogers Canal structure would replace an existing manually operated hoist and would be similar to those installed on the Rogers Dam with the exception of the additional solar panel. The water level sensor that would be installed on the Rogers Canal would be similar to that shown in Figure 3. The improvements in the Rogers dam area would be in keeping with the existing visual environment.

The reconstruction of the Rogers Canal would not change how the canal appears currently. The reconstruction would mainly affect the appearance of the inside of the canal itself. There would be some increase in the height of the canal banks at end of the reconstructed section near the river but it would be minor and would not affect the general appearance of the area.

No Action

Modifications to the existing structures would not occur under the "No Action" alternative. The structures would continue to appear as they currently do and so there would be no environmental consequences.

3.2.9 Transportation

Rye Patch Dam Affected Environment

The project area is approximately 1.2 miles west of I-80 and 1.0 mile west of the Southern Pacific Railroad. Rye Patch Reservoir Road passes over the dam.

Pitt Dam Affected Environment

The Pitt Dam is 1.0 miles west of I-80 and 0.5 miles west of the Southern Pacific Railroad. Old Pitt Dam Road crosses over the crest of the dam.

Rogers Dam and Canal Affected Environment

The Rogers Dam is 0.2 miles north of I-80 and 0.7 miles east of the Southern Pacific Railroad. Rogers Dam Road approaches the dam but does not cross it. There is an unnamed dirt road leading up to the dam that crosses the crest and continues along the Rogers Canal. At one point, the Rogers Canal passes under I-80. Regarding surface streets in Lovelock, the canal runs parallel to Reservoir Road for approximately 0.2 miles and then passes under Airport Road. The closest the canal comes to the Southern Pacific Railroad is approximately 0.6 miles.

Rye Patch, Pitt, and Rogers Dams and Rogers Canal Environmental Consequences

Proposed Action

Transportation at Rye Patch and Rogers Dam would not be affected by the project elements that would be implemented at those facilities. Traffic across Pitt Dam would be interrupted for approximately one day but only 4 or 5 vehicles pass over the dam on an average day. Additionally, Upper Valley Road provides an alternate route around the dam.

Work on Rogers Canal could interrupt traffic for ½ day but it is unlikely that that will occur. If it did occur, traffic control standards would be maintained until project completion. Otherwise the proposed action will not affect transportation.

No Action

Transportation will not be affected under the “No Action” alternative since no work will be performed on the facilities.

3.2.10 Indian Trust Assets

Rye Patch, Pitt, and Rogers Dams and Rogers Canal Affected Environment

Indian Trust Assets (ITAs) are legal interests in property held in trust by the United States for Indian Tribes or individuals. The Secretary of the Interior, acting as the trustee, holds many assets in trust. Examples of objects that may be trust assets are lands, minerals, hunting and fishing rights, and water rights. While most ITAs are on reservations, they may also be found off-reservations.

The Lovelock Paiutes are located in the town of Lovelock, Nevada and the Fallon Paiute-Shoshone are located near the town of Fallon, Nevada. However, there are no ITAs at any of the proposed project sites.

Environmental Consequences- Both Alternatives

The proposed action and the no action alternatives would not affect Indian Trust Assets, since there are no trust resources within the project areas.

3.2.11 Environmental Justice

Rye Patch, Pitt, and Rogers Dams and Rogers Canal Affected Environment

Executive Order No. 12898, Environmental Justice, requires each federal agency to achieve environmental justice as part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects, including social and economic effects, of its programs, policies, and activities on minority and low-income populations. EPA guidelines for evaluating potential adverse environmental effects of projects require identification of minority populations when a minority population either exceeds 50 percent of the population of the affected area or represents a meaningfully greater increment of the affected population than of the population of some other appropriate geographic unit.

Analysis reveals that the ethnic composition of the populations of Pershing County is less than 50 percent and is not meaningfully different than the State of Nevada. Analysis of the percentage of persons below the poverty level for Pershing County reveals that the incidence of poverty in the County is not meaningfully different than the State of Nevada. Statistics for ethnicity and income for Pershing County and the state of Nevada are shown in Table 3.

Additionally, none of the proposed project elements are located in populated areas.

Description	Pershing County	Nevada
White	81.9 %	66.2 %
Black	3.7%	8.1 %
Native Americans	3.2 %	1.2 %
Asian	1.3 %	7.2 %
Pacific Islanders	0.1 %	0.6 %
Hispanic or Latino	22.3 %	26.5 %
Per-Capita Income (2010)	\$17,519	\$27,589
Median Household Income (2010)	\$56,491	\$55,726
Persons Below Poverty (percent, 2010)	13.7%	11.9%

Table 3 – Ethnicity and Income statistics for Pershing County (2010 U.S. Census)

Environmental Consequences - Both Alternatives

Neither the proposed action nor the no action alternative would disproportionately affect minority or low-income populations.

3.2.12 Soils

The project will require soil disturbances at Rye Patch Dam and the Rogers Canal only. Work on the Pitt Dam, Rogers Dam, and Rogers Diversion structure will be on the concrete structures only and will not require any soil disturbance.

Rye Patch Dam Affected Environment

The soils in the parking area at the Dam are heavily compacted due to years of vehicle traffic. The surface is paved with approximately 6 inches of gravel.

Rogers Canal Affected Environment

The 1.3 mile section of Rogers Canal that will be reconstructed is unlined and the cross section consists of native soils.

Rye Patch Dam Environmental Consequences

The construction of the new power house will require excavation for the foundation. The excavation will be approximately 3 feet deep and will disturb an area including approximately 400 square feet.

During construction, all fugitive dust will be controlled using best management practices. Since the disturbance will be relatively small, watering will be the method used for dust control. Once the power house is complete, the area to the west of it will continue to serve as a parking area.

Rogers Canal Environmental Consequence

Work on the Rogers Canal will require excavation and reshaping of the canal cross-section. Best management practices will be used to control all fugitive dust. The primary method for controlling the dust on the project will be watering.

The project will not change the appearance of the surrounding area. The only noticeable change will be the shape of the canal cross-section.

No Action

In the absence of the proposed project, the soils would remain as they are currently.

3.2.13 Floodplains

Rye Patch Dam Affected Environment

FEMA flood insurance rate map 320032-1550B shows that the area where construction will take place at Rye Patch Dam is located just outside of flood zone A.

Pitt Dam Affected Environment

Pitt Dam is located in FEMA flood zone A and is subject to the 100 year flood.

Rogers Dam Affected Environment

Rogers Dam is located in FEMA flood zone A and is subject to the 100 year flood.

Rogers Canal Affected Environment

Rogers Canal is located outside of the 100 year flood zone.

Rye Patch Dam Environmental Consequences

The project will not be constructed in the floodway as confirmed by the County floodplain manager. The power house will be constructed at the same elevation (approximately 4,094 ft) as the existing gate house above the base flood elevation. The last 100 year flood occurred in 1984 and the existing gate house was not affected. The project will not be constructed in any special flood hazard areas.

Pitt Dam Environmental Consequences

The Pitt Dam would be inundated in a 100 year flood event however the project would not change the floodplain. In the event of a flood, the gates that are proposed for the dam would allow for more rapid opening of the buttress bays to relieve floodwater pressure on the dam.

Rogers Dam Environmental Consequences

The Rogers Dam could be inundated in a 100 year flood event. However the proposed project would not change the floodplain nor would it be adversely affected by flood waters.

Rogers Canal Environmental Consequences

The Rogers canal is used during high flow events to divert water away from the river to prevent flooding. The reconstruction of the canal will make this function more efficient by allowing for the diversion of larger flows.

No Action

In absence of the proposed project all of the facilities would remain as they are currently.

3.2.14 Historic and Cultural Resources

Rye Patch, Pitt, and Rogers Dams and Rogers Canal Affected Environment

“Cultural Resources” is a broad term that includes prehistoric, historic, architectural, and traditional cultural properties. Those cultural resources that are included in or eligible for inclusion in, the National Register of Historic Places (NRHP) are referred to as historic properties. The criteria for NRHP eligibility are outlined at 36 CFR Part 60.4. Section 106 of the National Historic Preservation Act (NHPA) requires federal agencies to take into account the effects of their undertakings on historic properties. Compliance with Section 106 of the NHPA follows a series of steps outlined at 36 CFR Part 800. These steps are used to identify and consult with interested parties, determine the area of potential effects (APE) for an undertaking, determine if historic properties are present within the APE, assess the effects the undertaking would have on historic properties, and resolve any adverse effects to historic properties before the undertaking is implemented. The Section 106 process also requires consultation with the State Historic Preservation Office (SHPO), Indian tribes, and other interested parties.

Basin Research Associates of San Leandro, California, and their subcontractors conducted class III cultural resources inventory consisting of a pre-field records search and pedestrian survey of Rye Patch

Dam, Pitt Dam, Rogers Dam, and Rogers Canal. The surveys were conducted March – April 2012. The purpose of this inventory was to identify cultural resources in the 17 acre discontinuous APE and to evaluate the eligibility of those resources for inclusion in the NRHP.

Through the surveys described above, three historic properties were identified in the APE: Rye Patch Dam, Pitt Dam, and Rogers Canal. Reclamation applied the criteria of adverse effect and Secretary of Interior Standards to all three historic properties. None of the proposed actions will adversely affect any of the characteristics that make these properties eligible for listing. There is very little to no potential to effect archaeological deposits. In summary, based on all of the available information, Reclamation finds the overall project will result in a finding of no adverse effect to historic properties pursuant to 36 CFR §800.5(b).

Rye Patch, Pitt, and Rogers Dams and Rogers Canal Environmental Consequences

Proposed Action

Reclamation has completed Section 106 compliance, including SHPO consultation, related to the Proposed Action for the Humboldt River Water Conservation Project. Reclamation has made a determination, based on all of the available compliance documents prepared by Basin Research and Associates and Reclamation and through consultation and concurrence from the SHPO, reached a finding of No Adverse Effect to historic properties affected pursuant to 36 CFR Part §800.5(b).

No Action

Under the No Action alternative, Reclamation would not allow grant funds to be used for the proposed project. Conditions related to cultural resources would remain the same as existing conditions. There would be no impacts to cultural resources under the No Action alternative.

4.0 CONSULTATION AND COORDINATION

4.1 Consultation and Coordination

The Draft EA was provided for a 25-day public review and comment period on December 4, 2012, at www.usbr.gov/mp, at the Pershing County Library, and at the Bureau of Reclamation, Lahontan Basin Area Office which is located in Carson City, Nevada. A news release was issued and notice of availability was sent to those on the mailing list.

Reclamation received written comments from 4 interested parties. The final EA and FONSI were developed after a thorough review of public comments and interest received. Based on agency and public concerns, minor revisions and mitigation measures were included in the EA. No significant impacts were identified in the Final EA or as a result of the public review process.

Of the four letters received during the comment period, primary concerns and comments focused on fish mortality as a result of turbine operation, the potential decline in water quality due to lubricating the mechanical components of the turbine and gearbox, and for the potential for proposed development to increase base flood elevation levels.

The Nevada Department of Wildlife (NDOW) suggests that Reclamation quantify “.....the percentage and total amount of fish that will likely be forced through the turbine and subsequently killed as a result of the turbine operation.” The Environmental Consequences for Wildlife section of the EA has been modified and updated to quantify the estimated percentage of fish that will pass through the turbine and dam. In summary, it is estimated that based on the irrigation season from March – September, fish mortality is estimated below:

- 50% of the fish that pass through the dam travel through the pipe with the turbine,
- approximately 82% of those fish travel past the bypass and on to the turbine and,
- 79% of the fish that pass through the turbine survive.

Consequently, of the total amount of fish that pass through the dam, approximately 91% survive.

After the comment period for the draft EA had closed and upon review of the aforementioned information, NDOW responded with suggestions to integrate pre-operation flush cycles into standard operating procedures and reduce bars on the trash rack down to 4 inches on center.

To mitigate turbine-passage losses of fish, pre-operation flush cycles of the penstock will be incorporated into standard operating procedures.

It has been determined that reducing the bars on the trash racks from 6” on center down to 4” on center is not economically feasible. Costs associated with this type of modification could range between \$500,000.00 and \$2,000,000.00. Based on Reclamation’s review of the proposed action, the potential for fish mortality is low and will only slightly decline with a 4” trash rack. Due to the high cost associated with modifying the trash rack and the potential for a modest increase of fish survival, the suggested modification cannot be justified. Reclamation has determined the proposed action will not significantly impact the fishery and the angler’s ability to fish or their experience during fishing therefore, it would not be prudent or economical to modify the trash rack.

The Bureau of Land Management (BLM) Winnemucca office expressed concerns over the possibility of lubrication coming into contact with the water when the turbine is installed and in operation. The Environmental Consequences for Water Quality section of the EA has been modified to clarify this concern. The EA addresses the concern with the following:

Installation of the turbine will require the attachment of anchor bolts to the dam. During this process best management practices will be employed to insure that any debris generated during the installation process will not be allowed to enter the river. Therefore the installation of the hydro turbine will not affect water resources.

Once the turbine is installed, it will be in contact with the water released from the dam. There are components of the hydro turbine that will be lubricated. These include a gear box and bearings that will come in contact with the water but are mechanically sealed (gaskets, etc...). Also, lubrication used in the turbine will be vegetable based and under normal operating conditions would not come in contact with the flow. Any lubrication that might come in contact with the water due to leaks caused by normal wear would be in small amounts compared to the flow and would be quickly diluted, posing no threat to wildlife. Additionally, maintenance on the gearbox can be done under non-flow conditions which would prevent water contamination by lubricants during maintenance.

The Federal Emergency Management Agency (FEMA) responded to the draft EA with concerns related to development within a Regulatory Floodway and that any development must not increase base flood elevation levels. This is not a significant issue because The project will not be constructed in the floodway as confirmed by the County floodplain manager. The power house will be constructed at the same elevation (approximately 4,094 ft) as the existing gate house above the base flood elevation.

The FONSI and Final EA will be available to the public at www.usbr.gov/mp and in the Bureau of Reclamation, Lahontan Basin Area Office. A news release will be issued and notice of availability sent to those on the mailing list.

4.2 Tribal Consultation

Tribal consultation was initiated by letter on December 3, 2012 to the Lovelock Paiute Tribe and the Winnemucca Council Colony of Nevada for comment.

4.3 Agency Consultation

4.3.1 National Historic Preservation Act

As stated above in Section 3.2.14, Section 106 of the NHPA requires Federal agencies to consider the effects of Federal undertakings on historic properties (properties determined eligible for inclusion in the National Register). Compliance with Section 106 of the NHPA is a process done in consultation with the SHPO, Indian Tribes, and other interested parties.

Reclamation entered into consultation with the SHPO as outlined in the 36 CFR Part 800 regulations describing the Section 106 process. The consultation package was sent to the SHPO on October 30, 2012. Pursuant to the regulations at 36 CFR §800.59(c), the SHPO has 30 days from receipt to review an agency finding. On December 14, 2012 the SHPO replied after a review the Draft EA and supports the document as written.

4.3.2 Endangered Species Act (1973) Section 7 Consultation

Section 7 of the ESA of 1973, as amended, prohibits Federal agencies from authorizing, funding, or carrying out activities that are likely to jeopardize the continued existence of a listed species or destroy or adversely modify its critical habitat. By coordinating with the USFWS before initiating projects, agencies review their actions to determine if these could adversely affect listed species or their habitat. If a May Affect determination is made, then either informal or formal consultation is initiated with the USFWS. Through consultation, the USFWS works with other Federal agencies to help design their programs and projects to conserve listed and proposed species. However, if a No Effect determination is made, no consultation with the USFWS is required.

Reclamation staff contacted the USFWS Reno Office biologists to determine the presence of Threatened or Endangered Species within the proposed project area. According to the U.S. Fish and Wildlife Service there are no listed species under the Endangered Species Act of 1973 (Act), as amended, in Pershing County, Nevada (U.S. Fish and Wildlife Service, 2011) that will be impacted by the proposed action or are known to occur within the project area.

4.4 Agencies and Individuals Contacted

Agency	Individual
Nevada Department of Wildlife	Tim Herrick
U.S. Fish and Wildlife Service	Ted Koch, State Supervisor
U.S. Fish and Wildlife Service	Robert Williams, Field Supervisor
U.S. Environmental Protection Agency	Environmental Review Office
U.S. Senate	Senator Dean Heller
U.S. Senate	Senator Harry Reid
Nevada Department of Transportation	Daryl James, Chief
Nevada Bureau of Water Pollution Control	Joseph Maez
Nevada Bureau of Safe Drinking Water	Jennifer Carr, Chief
Nevada Bureau of Air Quality Planning	Adele Malone, Planning Supervisor
Nevada State Historic Preservation Office	Rebecca Palmer, Historic Preservation Specialist
Nevada Division of Water Resources	Kelvin Hickenbottom, Deputy State Engineer
Nevada State Clearinghouse	Skip Canfield
Federal Emergency Management Agency	Sara Owen

Federal Energy Regulatory Commission	Regional Engineer
U.S. Army Corps of Engineers	Kristine Hansen, Senior Project Manager
Natural Resources Conservation Service	Craig McKnight
Nevada Division of State Parks	To Whom it May Concern
Nevada Natural Heritage Program	Eric Miskow, Biologist/Data Manager
Lovelock Tribal Council	Chairman
Winnemucca Council Colony	Chairman
Pershing County Commissioners	Karen Wesner, Chairman
Pershing County Floodplain Manager	Michael Johnson
Union Pacific Railroad	John Devish, Real Estate Contracts Manager
Humboldt River Ranch Association	To Whom it May Concern
Pershing County Water Conservation District	Bennie Hodges, Manager
Bureau of Land Management, Natural Resources	Raul Morales, Deputy State Director
Bureau of Land Management, Winnemucca District Office	Gene Seidlitz

4.5 List of Preparers

Bureau of Reclamation

Julia A. Long

U.S. Bureau of Reclamation

Natural Resources Specialist

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Basin Research Associates

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5.0 REFERENCES

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Hodges, Bennie. 2012 Personal communication, Pershing County Water Conservation District Manager and Board Secretary.

Nevada Natural Heritage Program 2004. State of Nevada Department of Conservation and Natural Resources. Rare Species List. Website: <http://heritage.nv.gov/>. Accessed February 2012

Pershing County Water Conservation District Title Transfer Handbook. Draft Edition February 1, 2001

U.S. Fish and Wildlife Service. 2011. Nevada's Endangered, Threatened, Proposed and Candidate Species by County. Nevada Fish and Wildlife Office list updated August 5, 2011.

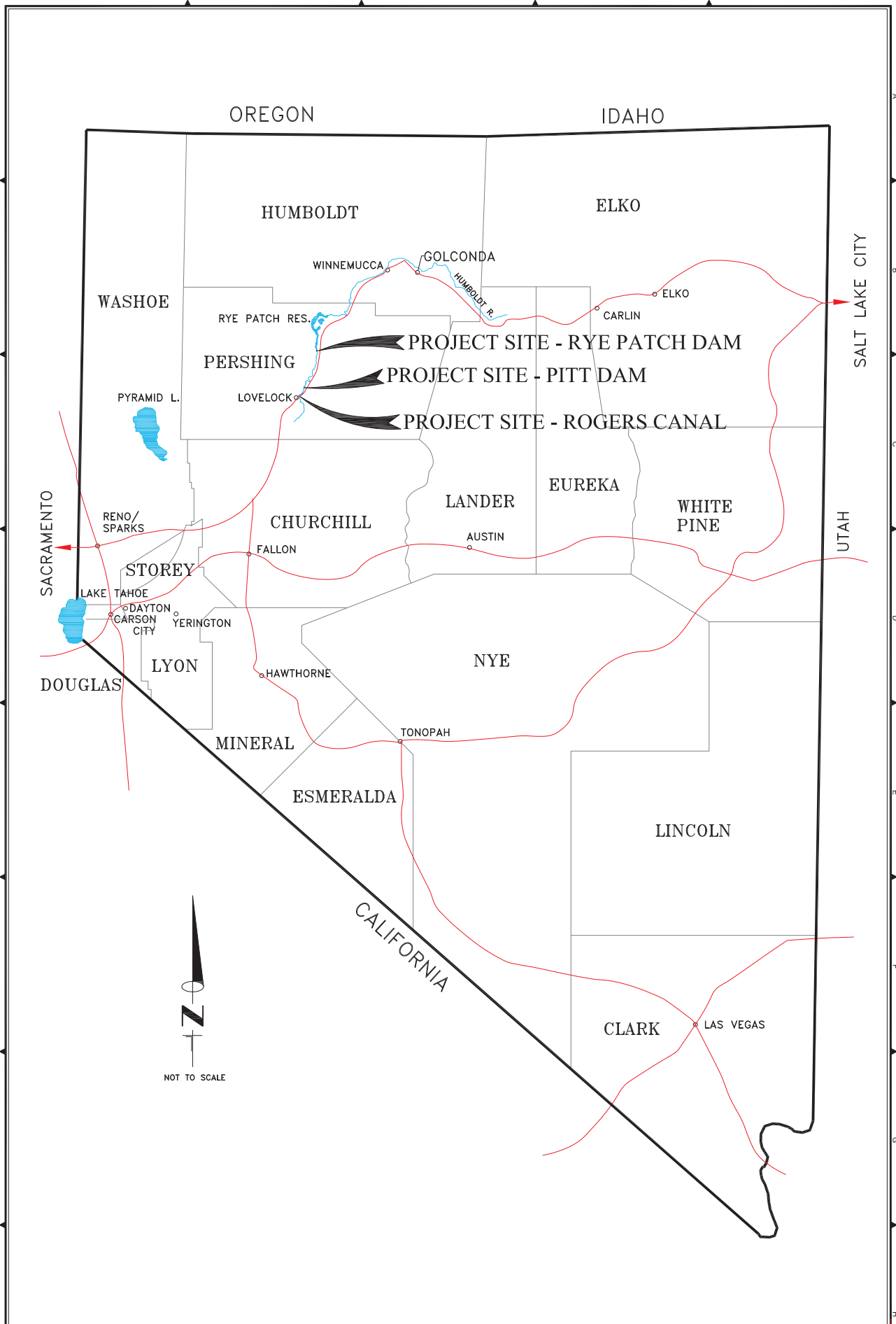
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United States Census Bureau 2010. Website: <http://www.census.gov/>. Accessed March 2012

APPENDIX

Appendix - Project Element location maps



P:\Projects\0274 PCWD Hydropower\5.0 Design\5.1.2 Exhibits\Environmental\Location Map.dwg, 4/18/2012 9:16:43 AM

SHEET NUMBER E1 1 OF 1	HUMBOLDT RIVER WATER CONSERVATION PROJECT PROJECT VICINITY PERSHING COUNTY	FARR WEST ENGINEERING 5442 LONGLEY LANE, SUITE B RENO, NEVADA 89511 PHONE: (775) 851-4788 FAX: (775) 851-0766	JOB NO.: 0274 PCWD HYDRO DATE: APRIL 2012 SCALE: AS SHOWN DESIGNED: DRAWN: CHECKED:	REVISION	DESCRIPTION	BY	APP.	DATE



RYE PATCH RESERVOIR



RYE PATCH DAM ROAD

PROP. TRANSFORMER
PAD & POWER POLE

PROP. 18'x18'
POWER HOUSE

EX. 14'x15.5'
GATE HOUSE

PROP. HYDRO
TURBINE

HUMBOLDT RIVER

FARR WEST

ENGINEERING

5442 LONGLEY LANE, SUITE B

RENO, NEVADA 89511

PHONE: (775) 851-4788

FAX: (775) 851-0766

HUMBOLDT RIVER WATER CONSERVATION PROJECT

RYE PATCH DAM SITE

PERSHING COUNTY

NEVADA

PLATE 1