United States Department of the Interior

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Memorandum

To: Area Manager, Lahontan Basin Area Office, Bureau of Reclamation, Carson City, Nevada

From: Field Supervisor, Nevada Fish and Wildlife Office, Reno, Nevada

Subject: Biological Opinion and Concurrence for the Lower Truckee River Restoration Projects at the Lockwood, Mustang Ranch, and 102 Ranch segments

This document transmits the U.S. Fish and Wildlife Service's (Service) Biological Opinion (BO) and concurrence based on our review of the proposed Lower Truckee River Restoration (LTRR) projects at the Lockwood, Mustang Ranch, and 102 Ranch segments on the Truckee River in Washoe and Storey Counties, Nevada, and its effects on threatened Lahontan cutthroat trout (LCT; *Oncorhynchus clarkii henshawi*) and endangered cui-ui (*Chasmistes cujus*) in accordance with section 7 of the Endangered Species Act of 1973 (Act), as amended (16 U.S.C. 1531 *et seq.*). The Bureau of Reclamation's (Reclamation) written request for formal consultation for both species was dated February 8, 2008 and received by this office on February 11, 2008. In an April 14, 2008, telephone conversation with the Service, Reclamation amended its determination for cui-ui and requested informal consultation for that species. No other listed or proposed species and/or designated or proposed critical habitat occur in the Action Area[1] or would be affected by implementation of the projects.

Our BO and concurrence are based on documents supplied to us by Reclamation [including the Biological Assessment or BA (Reclamation and Bureau of Land Management (BLM) 2008a) and the Environmental Assessment or EA (Reclamation and BLM 2008b)], telephone conversations with technical experts, published literature and unpublished reports, the recovery plans for the LCT (Service 1995) and cui-ui (Service 1992), and other sources of information. A complete administrative record of this consultation is on file in the Service's Nevada Fish and Wildlife Office (NFWO).

[1] See section 1.1 of the BO for a definition of the project's "Action Area".

For relevant sections of this BO, the Service has attempted to maintain brevity by summarizing from the BA and other documents. Additional details can be obtained from the referenced sections identified herein.

Consultation History

Reclamation and the BLM are the action agencies for the proposed LTRR projects. Reclamation (through its Desert Terminal Lakes program) and other partners are providing funds for the proposed project; BLM and Washoe County are primary landowners of the targeted segments. The Nature Conservancy (TNC) is also a partial landowner for one of the segments and is Reclamation's principal agent for implementing the project.

The Service has been involved in several coordination meetings involving the proposed action:

- November 20, 2006 – Project kickoff meeting held at the offices of TNC Nevada. Participants included representatives from Reclamation, BLM, Washoe County, City of Reno, TNC Nevada, and North State Resources (NSR; consultants for TNC).
- November 29, 2006 – Species list provided by the Service to Reclamation for the LTRR projects (File No. 1-5-07-SP-026).
- April 13, 2007 – Coordination meeting held via conference call. Participants included representatives from Reclamation, BLM, Washoe County, TNC, and NSR.
- September 18, 2007 – Coordination meeting held via conference call. Participants included representatives from Otis Bay Ecological Consultants (consultant for TNC), Nevada Department of Water Resources, Nevada Division of State Lands, and Nevada Department of Wildlife (NDOW).

Notes from these coordination meetings may be available in the administrative record for Reclamation's Environmental Assessment under the National Environmental Policy Act.

INFORMAL CONSULTATION

Cui-ui are large (up to 28 inches and 8 pounds), long-lived (40+ years) lake suckers endemic to Pyramid Lake in Washoe County, Nevada (Service 1992). The saline lake provides rearing habitat for larvae, juveniles, and adults. Cui-ui congregate and migrate up the lower Truckee River as obligate stream spawners (Snyder 1917). The maximum extent of cui-ui spawning habitat and occupancy in the lower Truckee River currently is limited to the 39-mile reach from Derby Dam downstream to Pyramid Lake, which is about 3.6 miles downstream of the proposed projects' Action Area.

Cui-ui spawning runs typically occur from April to June, but may begin earlier with higher flows. While most spawners spend only a few days in the river, some individuals remain up to 16 days (Scoppettone *et al.* 1983). Collectively, spawning runs may continue from 4 to 8 weeks,

but most fish migrate during a 1-2 week period. After cui-ui adults have successfully spawned, they immediately migrate back to Pyramid Lake. Typical spawning substrate is dominated by gravels, followed by sand, rubble/cobble, and silt (Scoppettone *et al.* 1983). Fertilized eggs hatch in 1-2 weeks, depending on water temperature (Service 1992). Yolk-sac larvae remain in the gravel from 5 to 10 days before emerging. Upon emergence, most larvae are immediately swept passively downstream to Pyramid Lake. This is usually completed about 16 days after the end of spawning (Scoppettone *et al.* 1983).

Direct effects of the LTRR projects to cui-ui will not occur. Indirect effects to cui-ui from the proposed LTRR projects would also be discountable or insignificant. Construction would occur after the cui-ui spawning/incubation period and migration of all life stages back to Pyramid Lake has been largely completed. Impacts to water quality of the lower Truckee River (*i.e.*, below Derby Dam) and Pyramid Lake would be nominal with the implementation of Best Management Practices (BMPs) and adherence to applicable standards. BMPs would primarily address sediments from erosion or stream channel disturbance and petroleum products from heavy equipment use. If sediments are mobilized during construction, they would likely be flushed from the system during peak flow events immediately prior to the next cui-ui spawning season. Mobilized sediments resulting from construction of the proposed LTRR projects are likely to be insignificant compared to the background level, which was once estimated (in a wet year) to be over 600,000 tons as measured at Nixon, Nevada (Glancy *et al.* 1972). Mobilized sediments associated with high flows also may be partially responsible for triggering the cui-ui's spawning response (G. Scoppettone, U.S. Geological Survey, pers. comm. 2006).

In summary, the proposed LTRR projects will not have any direct effects and are unlikely to have any indirect adverse effects to cui-ui, because:

- Cui-ui do not currently occupy or have access to the Action Area.
- The Action Area is 3.6 miles or more upstream of existing cui-ui spawning habitat because of existing fish passage barriers.
- Cui-ui adult spawners only occupy the river during a short period in the spring during years when adequate flows are realized.
- The construction period for the proposed projects (summer/early fall) largely does not overlap the cui-ui migration, spawning, and incubation seasons.
- Impacts to water quality in the Truckee River and Pyramid Lake will be minimized with the implementation of conservation measures and construction BMPs.

Based on the information provided in the permit application package and other supporting materials, the Service concurs with the Reclamations' determination that the proposed LTRR projects "may affect, but are not likely to adversely affect" cui-ui. This concludes informal consultation for cui-ui pursuant to promulgated in 50 CFR §402, which establish procedures governing interagency consultation under section 7 of the Act. If these projects change from the description provided, or if new biological information becomes available concerning this listed

species which reveals that the action may affect this listed species in a manner or to an extent not considered in this informal consultation, you should reinitiate consultation with the Service.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

Action Area

The Action Area is defined as all areas to be affected directly or indirectly by the proposed Federal action and not merely in the immediate area involved in the action (50 CFR §402.02). The Action Area for the LTRR projects encompasses the footprint of the proposed construction activity, including staging and storage areas, plus the area within 100 feet (ft) of these boundaries. The Action Area also includes additional reaches of the Truckee River approximately 1,400 ft downstream of each of the segment boundaries. This area is large enough to encompass any potential direct and indirect effects associated with construction activities, including effects associated with sediment disturbance and increased turbidity in the Truckee River downstream of project segments. Although site-specific studies were not conducted to determine the distance of transient turbidity in the lower Truckee River, Reclamation has determined that 1,400 ft downstream of construction activities should be adequate to encompass any potential indirect effects because of the existing high background levels of turbidity in the river, the installation of silt fences, implementation of BMPs, and generally low flow velocities.

The lower Truckee River (*i.e.*, the river from the Truckee Meadows to Pyramid Lake) has suffered ecological and physical degradation from many human-caused changes over the past century, which have significantly damaged the ecological integrity and functioning of river and associated riparian habitat. Of particular significance was the channelization of the river in the 1960s by the Army Corps of Engineers (Corps). Impacts have included channel downcutting, depression of the local groundwater table, loss of riparian vegetation, proliferation of invasive and noxious plant species, and general degradation of the riparian and aquatic habitats. Ecosystem restoration in this reach has been, and continues to be, implemented to improve the river environment in support of wildlife and fishery resources.

General Restoration Design

The proposed restoration design for the Lockwood, Mustang Ranch, and 102 Ranch segments involves a variety of activities to restore the physical river channel and riverbed, as well as to improve habitat for native vegetation, fish, and wildlife. More natural, meandering stream channel sections will be created with raised channel beds to allow connectivity of the river to the floodplain. Wetlands will be constructed in the floodplain to provide flood attenuation and

habitat. Riffles will be created in the river to improve oxygen content for fish and other aquatic species and create habitat for benthic macroinvertebrates. Invasive and noxious plant species will be eradicated and replaced with native forbs, grasses, shrubs, and trees. Riparian and upland areas will be revegetated with native plant species of value to wildlife, including special status species. The plant species to be used in restoration also include plants of value to Native American tribes for traditional uses. Hillocks and other features are proposed to improve cover, nesting, and shelter for wildlife. The proposed channel and floodplain restoration at the three sites will create a variety of benefits in terms of flood management, water quality, habitat for special-status species, biological productivity and diversity, noxious weed eradication, restoration of native plants, and recreation opportunities.

Specific details on the design for each segment can be found in Sections 2.3.1 to 2.3.3 of the BA.

Construction Season/Methods

All in-channel construction will be conducted during the low-flow season (from July 1 to September 30). For the Lockwood and 102 Ranch segments, construction will occur during 2008, and for the Mustang segment, during the 2009 season.

New river meanders will be constructed in all three segments. The in-channel construction work will involve the use of heavy equipment to contour new river sections and backwater areas. During construction of new meanders, earthen plugs will be left at both ends (upstream and downstream) of the channel to prevent water from entering prematurely. During channel excavation, crews will place channel-bed cobble and boulder rock to the finished elevations. All rock will be washed with water sprayed from water trucks within contained areas. Newly-created riffles will use rounded river rock. After the meanders are finished, wash water from the new channels will be pumped into settling ponds prior to gradually introducing river flows. Portions of the original river channel that are converted into other habitat types (*e.g.*, wetlands or uplands) will either be contoured or filled. In these areas, no dewatering is anticipated that may lead to isolated pools or backwaters, *i.e.*, flows will be gradually and systematically displaced by fill.

There are also some segment-specific actions as follows. At the Lockwood segment, new riffles will be constructed to "step down" the elevation change caused by the existing Peri Diversion Dam to improve conditions for fish passage. This segment's activities also include the removal of a former residential structure and associated utilities. At the Mustang Ranch segment, construction work will include the relocation of a Kinder Morgan petroleum products pipeline largely outside of the restoration area. At the 102 Ranch segment where the river now flows through a former gravel pit, a significant portion of the area will be used to create emergent wetlands.

Specific details on construction methods and sequence by segment can be found in Section 2.4 of the BA.

Summary of Proposed Conservation Measures and Best Management Practices (BMPs)

Construction site management conservation measures have been identified to avoid and minimize the potential for adverse effects that address:

- turbidity or suspended sediment from in-water and upland construction;
- stormwater pollution;
- potential spills from hazardous materials (from heavy equipment use and relocation of the Kinder Morgan pipeline); and
- channel migration.

Guidance for proposed BMPs is based on the *Truckee Meadows Construction Site Best Management Practices Handbook* (Kennedy Jenks 2003). Construction will be phased at each of the three restoration sites, combining various activities and BMPs to minimize surface water contact with exposed cuts and fills and reduce or prevent associated impacts. In general, erosion control and maintenance measures (*e.g.*, hydro-mulch, erosion control blankets, and sediment logs) will be installed along newly constructed stream banks. Certified weed-free straw mulch will be applied within forested/scrub shrub areas and sagebrush shrub lands, where needed.

Specific details on Conservation Measures and BMPs can be found in Section 2.4.4 of the BA.

STATUS OF THE SPECIES

LCT were listed by the Service on October 13, 1970, as endangered and subsequently reclassified as threatened on July 16, 1975, under the Act, to facilitate management and allow regulated angling (40 *FR* 29864). There is no designated critical habitat for LCT (Service 1995). LCT is an inland subspecies (one of 14 recognized subspecies of cutthroat trout in the western United States) of cutthroat trout endemic to the Lahontan Basin of northern Nevada, eastern California and southern Oregon (Behnke 1992).

Cutthroat trout have the most extensive range of any inland trout species of western North America and occur in anadromous, non-anadromous, fluvial, and lacustrine populations (Behnke 1979). Differentiation of the species into approximately 14 recognized subspecies occurred during subsequent general desiccation and isolation of the Great Basin and Inter-mountain Regions since the end of the Pleistocene, and indicates presence of cutthroat trout in most of their historic range prior to the last major Pleistocene glacial advance (Loudenslager and Gall 1980).

Relevant information on the status of the species, habitat requirements, life history traits, population dynamics, distribution, and management can be found in the LCT Recovery Plan (Service 1995) and the LCT Short-Term Action Plan for the Truckee River Basin (Truckee River Basin Recovery Implementation Team 2003).

ENVIRONMENTAL BASELINE

Regulations implementing the Act (50 CFR §402.02) define the environmental baseline as the past and present impacts of all Federal, State, or private actions and other human activities in the Action Area. Also included in the environmental baseline are the anticipated impacts of all proposed Federal projects in the Action Area which have already undergone section 7 consultation, and the impacts of State and private actions which are contemporaneous with the consultations in progress. Such actions include, but are not limited to, diversions, previous timber harvests, and other land management activities. The environmental baseline is a snapshot of a species' health at a specified point in time. It does not include the effects of the action under review in this consultation.

This section analyzes the current condition of LCT in the Action Area, the factors responsible for that condition, and the intended role of the Action Area in the conservation of LCT in the Truckee River basin. Characterizing the environmental baseline for a mobile species like LCT requires a multi-scale analysis that evaluates the condition of all areas used by the affected population. The population of LCT found in the Action Area has the potential for inhabiting a much broader area throughout the course of its life cycle.

Status of the Species in the Action Area

See Section 4.3.1 of the BA.

Factors Affecting the Species in the Action Area

See Section 4.3.1 of the BA.

EFFECTS OF THE PROPOSED ACTION

Service regulations for implementing the Act (50 CFR §402.02) define "effects of the action" as the direct and indirect effects of an action on the species or critical habitat together with the effects of other activities that are interrelated or interdependent with that action, that will be added to the environmental baseline (50 CFR §402.02). "Direct effects" are defined as the direct or immediate effects of the action on the species or its habitat. Direct effects result from the agency action, including the effects of interrelated and interdependent actions. "Indirect effects" are those that are caused by or result from the proposed action and are later in time, but still are reasonably certain to occur. Indirect effects may occur outside of the immediate footprint of the area of the LTRR projects, but would occur within the Action Area, as defined.

The Service considers proximity, distribution, timing (duration, frequency), type, intensity, and severity of effects in order to evaluate the degree of effect resulting from project implementation. The Service typically expresses degree of effect in terms of impacts to individual fish and fish

populations and deviations of habitat from their baseline condition. LCT using the Truckee River in the Action Area may be affected by the proposed action both during implementation and after completion. Overall, habitat quantity and quality in the Truckee River within the Action Area are also likely to be affected by the proposed action.

In determining effects to LCT, the Service also considered the current LCT use of the Action Area and the likelihood of individuals to be present during the period of disturbance. This is an area where no known spawning activities occur, and water temperatures during the summer period may exceed chronic and acute levels of the species (*e.g.*, see Figures 3.1-4 and 3.1-5 of the BA). For these reasons, LCT are currently viewed as seasonal occupants that may/can use the area as a migration corridor or for rearing and holding purposes. Future restoration efforts involving habitat enhancement and flow management may broaden this use to include spawning activities and year-round occupancy.

Direct and indirect effects to LCT are summarized below, and are described in greater detail in Section 4.4.1 of the BA.

Direct Effects

Direct, short-term effects to LCT are possible from construction and temporary operations associated with the proposed projects during the construction season (July 1 to September 30) involving sedimentation and turbidity, contamination, compaction, and habitat displacement. These causal factors may result in direct mortality, stress, injury, behavioral avoidance, and temporary loss of habitat.

Sedimentation/Turbidity. In the Action Area, silt and sand in the newly constructed channel and material in the sediment plugs could be mobilized during excavation and introduction of flows. In addition, there will be temporary and permanent modifications to existing streambanks. Removal of trees and shrubs followed by construction access and re-contouring of the banks will temporarily destabilize sections of the banks. Site rehabilitation and revegetation will be implemented after construction has been completed. Re-planting within the Action Area will accelerate stabilization of the banks, minimizing the duration of the effects of the projects on streambank condition. It is anticipated that stabilization will be reached 3 years after construction is completed, once new vegetation is established.

The introduction of sediment and resulting increase in turbidity (usually measured as nephelometric turbidity units or NTUs) can have multiple effects on stream channel condition and processes as well as aquatic biota, especially fish (Table 1). Sediment can degrade fish spawning and rearing habitats by simplifying and damaging habitat structure and complexity, reducing the area of suitable habitat, decreasing connectivity between habitats, and diminishing water quality (Bash *et al.* 2001). The biological implications of this habitat damage include avoidance and underutilization of stream habitat, abandonment of traditional spawning habitat, displacement of fish from their habitat (Newcombe and Jensen 1996), decreased survival of fish, and changes in food web dynamics. The deposit of fine sediments in food-producing riffles may

also reduce the abundance and availability of aquatic insects on which juvenile and adult LCT feed and result in the loss of cover for juvenile salmonids (Bjornn and Reiser 1991). Fine sediments fill interstitial spaces between gravel and cobble substrates which may force juvenile salmonids to abandon these areas and use cover that is more susceptible to ice scour, predation, and decreased food availability. The severity of detrimental effects on fish are linked to frequency and duration of exposures.

Table 1. Summary of adverse effects to fish resulting from elevated sediment levels.

Gill trauma	Clogs gills which impedes circulation of water over the gills and interferes with respiration.
Prey base	Disrupts both habitat for and reproductive success of macroinvertebrates and other salmonids (LCT prey) that spawn and rear downstream of the construction activities.
Feeding efficiency	Reduces visibility and impacts feeding rates and prey selection.
Habitat	Fills pools, simplifies and reduces suitable habitat.
Physiological	Increases stress, resulting in decreased immunological competence, growth and reproductive success.
Behavioral	Results in avoidance and abandonment of preferred habitat.

The Service anticipates several pulses of sediment appreciably above background levels over the course of the 2-year construction window. These anticipated pulse events are associated with the water-up of newly-constructed river sections. The Service also expects that runoff from disturbed areas, water seepage from the dewatered construction, revegetation activities, and sediment mobilized from spring high flows will also contribute excess sediment to the Truckee River. The duration and severity of these pulses will vary depending on how long it takes to complete various components of the construction and the extent of disruption to the channel and banks. It is expected that some project-generated suspended sediments may be transported downstream of the project segments, but will largely be contained within the Action Area.

Disturbances due to increased sedimentation and turbidity are expected to be localized and temporary and be largely restricted by the implementation of a Storm Water Pollution Prevention Plan (SWPPP) and construction-related BMPs (*e.g.*, use of silt fences). Proposed in-channel work will increase turbidity in the Truckee River, but will be short-term (weeks) and largely limited to the Action Area. Evidence supporting this has been observed for TNC's McCarran Ranch Restoration Project which was constructed in the summer of 2006 and used many of the same BMPS proposed for the LTRR projects (Anderson 2006; Orphan 2006a,b).

Moreover, these disturbances are not expected to contribute significantly to the already high annual sediment budget in the Action Area (the Truckee River between Lockwood and Derby Dam is listed under Section 303(d) of the Clean Water Act for excessive turbidity). Sediments that contribute to embeddedness are likely to be short-lived until freshets redistribute these fines further downstream.

In summary, with project implementation that includes SWPPP and BMPs, the timing of sediment pulses in relation to LCT life history, and the ability of LCT to escape from affected areas, there is little likelihood that concentrations will be high enough to cause any significant adverse biological effects to LCT. The existing aquatic habitat conditions are poor in the Action Area and the temporary short-term deposit of fine sediments in food producing riffles is insignificant and will be overshadowed by the long-term benefits to aquatic organisms resulting from the proposed action. Over the long-term, the proposed LTRR projects will improve the streambank stability of the Action Area. The proposed projects will reduce downstream localized shear stress, which in turn, will reduce scour. This will benefit aquatic habitat by minimizing bank erosion that contributes sediments to the system.

Contaminants. Chemical contamination from the proposed projects would only result from an accidental release, primarily associated with petroleum products used by heavy equipment (*e.g.*, diesel fuel). If any LCT are within or downstream of project segments, they may be exposed to degraded water quality as a result of such an incident. However, this effect will be unlikely with the implementation of BMPs and a water pollution control plan. An effective example of BMPs would be the requirement that all maintenance and fueling of heavy equipment is only to be conducted in areas at least 150 ft away from the waters of the Truckee River. If a spill does occur, it will be quickly isolated and contained as a contingency measure. Consequently, the Service expects that the risk of adverse effects to LCT or their habitat from chemical contamination is minor.

Compaction. The proposed in-water construction activities (excavation of sediment plugs, installation and removal of silt fences, redirection of the existing river channel, and riffle construction) will occur within 2,300 ft of the Lockwood segment, 3,900 ft of the Mustang Ranch segment, and 2,500 ft of the 102 Ranch segment (See Table 4.4-1 of the BA). In-channel work will involve the placement of temporary structures in the river for purposes of stilling river flows to reduce turbidity. Heavy equipment will also require access to the river.

Construction activities do not anticipate dewatering river sections that may result in stranded fish. However, construction could result in fish that are compacted or buried from heavy equipment, temporary in-channel structures, and fill material. Like other salmonids, LCT orient to the substrate, making them susceptible to being trapped or crushed when they hide in interstitial spaces. This may result in direct injury or death of any juvenile or adult LCT present (if any) at the time of the work.

Habitat Displacement. During in-channel construction, fish may be displaced from existing areas of valued habitat. If any LCT are found within the construction areas, disturbance will likely force these fish to areas that may be less favorable. However, this effect will be temporary and limited to the footprint of heavy equipment and structures. Fish will be able to return to these areas immediately after the disturbance.

The proposed LTRR projects will also have direct, permanent changes to aquatic habitat. The dimensions of new river sections will function to concentrate water during low flows, which may improve water temperatures. The main benefit of the proposed changes to the channel shape is the creation of a defined "low-flow" channel with additional complexity (*i.e.*, pool-riffle sequences) that creates a variety of depths and velocities as well as an overall improvement for fish and benthic macroinvertebrate habitats. LCT will benefit from this habitat complexity in comparison to existing conditions.

A summary of existing and proposed aquatic habitat features for each segment is shown in Table 4.4-2 of the BA. The proposed action will create 3,117 lineal ft of riffle habitat and 4,925 lineal ft of restored channel that will provide hydraulically diverse habitat, including cover and access to the floodplain. The Lockwood segment would lose about 4 acres of riffle and run habitats, but would gain about 5.4 acres of pool habitat where none exists. In addition, channel sinuosity would be increased from 1.07 to 1.16, and pool:riffle:run ratios would go from 0.0/7.0/9.0 to a more balanced ratio of 1.1/1.0/1.0. The Mustang Ranch segment would lose about 15 acres of run habitat, but would gain about 11 acres of pool and over 3 acres of riffle habitats. Channel sinuosity would be increased from 1.20 to 1.32, and pool:riffle:run ratios would go from 1.0/5.7/16.3 to 1.0/1.0/1.0. The 102 Ranch segment would lose less than 7 acres of riffle habitat, but would gain about 6 acres of pool habitat. Channel sinuosity would be increased from 1.09 to 1.15, and pool:riffle:run ratios would go from 1.0/5.0/3.1 to a more balanced 1.1/1.0/1.1. These features would align more closely to the habitat preferences of LCT than existing conditions as suggested by habitat suitability index models (*e.g.*, Hickman and Raleigh 1982).

Some level of disturbance would also be incurred on the existing riparian habitat, which is valuable to the river by providing shade, large woody debris, and allochthonous materials (*i.e.*, a source of carbon from outside the river). However, this will be replaced during an extensive post-construction re-vegetation effort that will re-create a natural, multi-dimensional riparian plant community. Summarizing from Table 3.2-1 of the BA, the Lockwood segment would realize a net gain about 1.2 acres of native herbaceous cover, 2.7 acres of native shrubs, and 5.7 acres of native trees. The Mustang Ranch segment would realize a net loss of 3.2 acres of native herbaceous cover, but would gain about 68.5 acres of native shrubs and 36 acres of native trees. The 102 Ranch segment would realize a net gain of 16.8 acres of herbaceous cover, 5.9 acres of native shrubs, and 56 acres of native trees. These gains in desired vegetation types would increase functionality of the riparian habitat for enhancing stream conditions in support of LCT.

Indirect Effects

Indirect, long-term effects to LCT are possible associated with maturation of the proposed LTRR projects as described below.

Future LCT population expansion may incorporate large numbers of migratory individuals moving upstream from Pyramid Lake and passing through the project segments. The proposed LTRR projects would benefit these LCT by enhancing conditions in the river. Water

temperatures would be lowered by the newly-configured river channel (*i.e.*, narrower and deeper) and increased shading from riparian vegetation. The increased sinuosity of the river will also create a more gradual downstream gradient that integrates with the establishment of a series of pool-riffle sequences favorable to salmonids. The proposed LTRR projects will also help re-establish proper hydrologic conditions necessary for healthy riparian and wetland plant communities in support of the establishment of desirable native species, reduce competition from weedy species, and ensure successful revegetation of these areas (Corps 2003).

Effects of Interrelated or Interdependent Actions

Interrelated actions are those that are a part of a larger action and depend on the larger action for their justification. Interdependent actions are those that have no independent utility apart from the action under consideration. Both interdependent and interrelated activities are assessed by applying the "but for" test, which asks whether any action and its associated impacts would occur "but for" the proposed action.

The LTRR projects might be considered an interrelated action of the Corps' proposed Truckee Meadows Flood Control Project (TMFCP), which is in the final planning stages with four identified alternatives and with implementation to begin in 2 – 5 years. Common to all action alternatives of the TMFCP would be the construction of flood damage reduction, ecosystem restoration, and, to a lesser extent, recreational components. All action alternatives of the TMFCP would protect the cities of Reno and Sparks from flooding and increase the amount of native cover types along restoration segments targeted in the lower Truckee River. In addition, all action alternatives would allow for some of the river's natural functions to occur such as deposition and erosion along the banks. Much of the ecosystem restoration work is anticipated for up to eight additional river segments in the lower Truckee River that are in close proximity to (and in some cases overlapping) the Action Area. In general, the ecosystem restoration proposed for these other segments would use conceptually-similar engineering solutions as that proposed for the LTRR projects. In this regard, many of direct and indirect effects to LCT are expected to be same, but possibly at a different scale. However, the Service anticipates that specific effects of the TMFCP to listed species (including LCT and cui-ui) will be described in a future BO.

Effects Summary

In general, we expect elements of the proposed LTRR projects will have up to 3 years of short-term adverse effects on river habitat that include increased sedimentation/turbidity, potential chemical contamination, and temporary riparian vegetation and in-channel habitat loss. LCT may be adversely affected by requiring individual fish to leave areas that are disturbed, compacting individual fish in areas used by heavy equipment or that require fill, delayed migration, and poor water quality associated with increased sediment/turbidity levels and contaminants.

The Service expects many of these adverse effects to be limited primarily to the construction period during the summer-fall months in 2008 and 2009. Beneficial effects that will begin as soon as the projects are completed and continue in the future are associated with improved riparian and river habitats. Riparian habitat areas that are either disturbed and/or dominated by undesirable non-native vegetation will be converted to highly productive marshes, native shrubs, grasses, and woodlands, and provide increased benefits over time. Portions of the river will be contoured to create a more narrow, deep, and sinuous channel that will improve water quality and re-gain connectivity to the floodplain. These changes are expected to be beneficial to LCT over the long-term.

The balance of adverse and beneficial effects from the proposed projects is difficult to estimate. The Service expects a small decrease in LCT population growth and survival in 2008 and 2009 due to construction-related lethal and sublethal effects. This decrease is not expected to be large enough to result in any changes to population indicators. In contrast, the Service also expects future improved habitat conditions to increase population growth and survival. Overall, long-term beneficial effects are expected to outweigh the short-term adverse effects associated with implementation.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, Tribal, local or private actions that are reasonably certain to occur in the Action Area considered in this BO. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act. These future actions include the Corps' proposed TMFCP. A number of other ongoing or reasonably foreseeable future activities on private land within the Action Area will continue to affect LCT habitat. For example, it is anticipated that the lower Truckee River corridor will experience increased housing and business development along with associated infrastructure improvements such as expansion of Interstate 80. However, the extent of that impact is unknown at this time. Activities on private lands could also exacerbate the potential adverse effects of activities occurring on public lands described previously and cause further degradation and fragmentation of LCT habitat.

Recreational fishing for LCT can also affect both abundance and age class distribution of the population and deplete age class structure of populations during periods of low abundance which may delay recovery of population levels. Introduction of non-native species are frequently attributed to use of live bait for fishing and unauthorized introductions of non-native gamefish species are sometimes associated with recreational fishing. Introduced species have adversely affected LCT through competition, predation, and hybridization and may contribute to disease problems.

CONCLUSION

After reviewing the current status of LCT, the environmental baseline for the Action Area, the effects of the proposed action, and the cumulative effects, it is the Service's BO that implementation of the proposed action is not likely to jeopardize the continued existence of LCT. No critical habitat has been designated for this species, therefore, none will be affected.

The Service bases this conclusion on the following: 1) the majority of adverse impacts of the proposed LTRR projects will be minimized or eliminated by specific conservation measures; 2) LCT use of the Action Area is limited during the summer low flow season when in-channel construction will occur; 3) it is believed there is limited spawning habitat in the Action Area at this time; 4) volitional escapement and temporary displacement of LCT in areas of active construction; 5) short-term increases in suspended sediment have the potential to harass LCT that may be within the Action Area, but with BMP implementation, are not expected to reach levels lethal to fish or that would substantially degrade habitat from current conditions; and 6) the action will provide for long-term enhancement and restoration of LCT habitat by improving water quality, increasing channel habitat complexity, stabilizing streambanks, enhancing fish passage, and restoring riparian and floodplain habitat functions. The Service believes that any negative effects will be short in duration and that the long term benefits of improving aquatic and riparian habitat outweigh any short term negative impacts from project implementation.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulations pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering (50 CFR §17.3). Harass is defined by the Service as an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering (50 CFR §17.3). Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

The measures described below are nondiscretionary and must be undertaken by Reclamation so that they become binding conditions of any grant or permit issued to responsible parties as appropriate, for the exemption in section 7(o)(2) to apply. Reclamation has a continuing duty to regulate the activity covered by this incidental take statement. If Reclamation (1) fails to assume

and implement the terms and conditions of the incidental take statement or (2) fails to require responsible parties to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, Reclamation must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement [50 CFR §402.14(i)(3)].

The Service understands that Reclamation's agent, TNC, has an integral role in project implementation and is best positioned to act on Reclamation's behalf in terms of monitoring and reporting requirements associated with this BO's Incidental Take Statement. In this regard, the Service welcomes direct communications with TNC with respect to the proposed project, contingent upon Reclamation's approval and involvement. However, this in no way relieves Reclamation's responsibilities under the Act as the lead federal agency.

ANTICIPATED AMOUNT OR EXTENT OF TAKE

The Service anticipates the proposed project will result in incidental take of LCT in the form of harm, harass, injury, and kill. The primary mechanisms of incidental take will be: (1) exposure to increased sediment/turbidity levels and potential contaminants during construction and watering of new river sections; (2) compaction from in-channel construction activities; and (3) construction-related disturbance associated with the temporary and permanent displacement of habitat. Activities within and adjacent to the stream corridor in the area of the projects may result in additional non-lethal taking of juvenile and adult LCT in the form of harm and harassment related to disruptions of fish passage, bank stability, food supplies, and foraging. The majority of these impacts is expected to be of relatively short duration, but could last until high spring flows flush out any sediment deposited during construction and until the reconstructed streambanks revegetate and stabilize, which will take more than one growing season. Over the long-term, the Service believes the **adverse** effects as a result of the project are not expected to be measurable to LCT habitat or population levels.

The Service anticipates incidental take of LCT via harm in the Action Area will be difficult to detect for the following reasons: 1) the inherent biological characteristics of aquatic species (small body size, behavioral modification before death); 2) the likelihood of discovering an individual death or injury and relating it to the proposed action given the extensive Action Area and stream flows; and 3) the rapid rate of fish carcass decomposition and probability of scavenging by predators. The best scientific and commercial data available are not sufficient to enable the Service to estimate a specific amount of incidental take of the species themselves.

In instances such as this, the Service has determined that incidental take is quantified in terms of water quality conditions as surrogate measures to identify when take has been exceeded, and is limited to the Action Area. The authorized level of take of LCT from the proposed action will be exceeded if the following conditions are not met:

1. During construction, no discharge of substances from the project causing an increase in turbidity of greater than 5 NTUs above background levels that contributes to repeated violations of applicable water quality standards;
    a. The standard for turbidity is defined in Nevada Administrative Code (NAC) 445A.188 and NAC 445A.189 as <=10 NTUs (single value).
    b. Repeated violations shall constitute consecutive sampling events over a five-day period.

2. Project construction is halted by the Nevada Division of Environmental Protection (NDEP) or the Corps due to violations of applicable permits or certifications dealing with water quality.

Turbidity is good surrogate measure for determining incidental take because: 1) it relates to beneficial uses that include fish; 2) it is directly related to anticipated disturbance associated with the project; 3) it is easily measured in the field; and 4) assessment methodology is clearly defined in the associated NDEP's permits.

The Reasonable and Prudent Measures (RPMs) listed below, with their implementing T&Cs, are designed to minimize the impact of incidental take that might otherwise result from the proposed action. If, during the course of project implementation, this level of incidental take is exceeded, such incidental take represents new information requiring reinitiation of consultation and review of the reasonable and prudent measures provided. Reclamation must immediately provide an explanation of the causes of the taking and review with the Service the need for reinitation of consultation.

EFFECT OF THE TAKE

The Truckee River within the Action Area primarily is believed to be used by LCT for foraging, rearing, migration, and overwintering habitat, with currently limited potential for spawning. Consequently, potential effects to LCT and their habitat attributed to the proposed LTRR projects are anticipated to be moderate. The likelihood of encountering LCT of any life stage (except eggs or larvae) or life form (resident, migratory) during implementation is probable. However, instream work is of limited duration, and effective measures to reduce or eliminate harm and harassment of LCT will be employed. Furthermore, the short-term, potentially deleterious effects are offset by the long-term beneficial effects of the projects that provide enhanced in-river and riparian habitat. It is unlikely that effects from the projects will appreciably reduce the likelihood of the survival and recovery of the listed species in the wild by reducing reproduction, numbers, or distribution of LCT. In the accompanying BO, the Service determined that the level of anticipated take is not likely to result in jeopardy to the species.

REASONABLE AND PRUDENT MEASURES

Minimizing the amount and extent of take is essential to avoid jeopardy to the listed species. The Service believes that the following RPMs are necessary and appropriate to minimize take of LCT:

RPM 1. Measures shall be taken to minimize mortality, injury, harm, and harassment of LCT.

RPM 2. Monitor and report compliance with Terms and Conditions and implementation of Conservation Recommendations in this BO.

TERMS AND CONDITIONS

In order to be exempt from the prohibitions of section 9 of the Act, Reclamation must comply with the following T&Cs which implement the RPMs described above, and outline monitoring/reporting requirements. These T&Cs shall be incorporated into construction contracts and subcontracts, permits, grants, and/or agreements to ensure that the work is carried out in the manner prescribed. These T&Cs are non-discretionary.

To implement RPM 1:

T&C 1. Reclamation shall be responsible for implementation of all conservation measures/BMPs in the BA.

T&C 2. Reclamation shall be responsible to meet monitoring requirements of all applicable permits and certifications for water quality.

T&C 3 In instances when consecutive sampling events over a two day period shows project contributions of greater than 5 NTUs over background levels for turbidity, Reclamation must immediately halt construction activities and identify the sources. Background and project-related levels should be measured at stations located at the upstream and downstream extents of the Action Area. Reclamation must implement corrective problems before construction resumes.

To implement RPM 2:

T&C 1. Reclamation shall be responsible to collect, analyze, and report data results for identified water quality parameters of background and with-project levels during the construction season as specified (in terms of methods, timing, and sampling location) in the applicable water quality permits and certifications.

- Daily reports should be immediately provided in instances when the turbidity standard is exceeded and project contributions to background levels are above 5 NTUs. The report should include remediation measures reduce project contributions.
- Summary reports displaying results for all water quality parameters identified in applicable water quality permits and certifications.

T&C 2. Reclamation shall provide copies of all reports to the Nevada Fish and Wildlife Office by January 31 of the year following implementation of the proposed actions for each segment:

Field Supervisor
U.S. Fish and Wildlife Service
1340 Financial Boulevard, Suite 234
Reno, Nevada 89502
Telephone: (775) 861-6300

The Service believes that no more than the take previously stated will occur as a result of the proposed action. The RPMs, with their implementing T&Cs, are designed to minimize the impact of incidental take that might otherwise result from the proposed action. If, during the course of the actions, this level of incidental take is exceeded, such incidental take represents new information requiring reintiation of consultation and review of the RPMs provided. Reclamation must immediately provide an explanation of the causes of the taking and review with the Service the need for possible modification of the RPMs.

REPORTING REQUIREMENTS

In order to monitor the impact of incidental take, Reclamation must report the progress of the action and its impact on the species to the Service as specified in the **Terms and Conditions** section under the *Incidental Take Statement*. Reclamation shall prepare an annual report describing progress of the proposed LTRR projects, including implementation of the associated T&Cs, and impacts to LCT [50 CFR §402.14(i)(3)]. The reports, which shall be submitted to the NFWO January 31 each year (2009 for the first year construction and 2010 for the second year construction), shall list and describe:

1. The year's construction activities in terms of schedule and work completed.

2. Compliance with identified conservation measures/BMPs and their effectiveness.

3. Water quality monitoring results showing project contributions above background levels during the construction season in accordance with applicable water quality permits and

certifications. The reports should specifically address project contributions to turbidity and its attenuation throughout the Action Area over sampling events.

4. Adverse effects to LCT resulting from project activities including number and life stages of individuals affected (if known).

5. Deviations from proposed designs and procedures.

6. Any recommendations for improvements to implement during any ongoing or future project-related activities.

Upon locating dead, injured, or sick LCT in the Action Area, initial notification must be made to the Service's Division of Law Enforcement in Reno, Nevada at telephone number 775-861-6360 within 3 working days. Instructions for proper handling and disposition of such specimens will be issued by the Division of Law Enforcement. Caution must be taken in handling sick or injured LCT to ensure effective treatment and care, and in handling dead specimens to preserve biological material in the best possible state. In conjunction with the care of sick and injured fish and the preservation of biological materials from a dead specimen, Reclamation has the responsibility to ensure that information relative to the date, time, and location of the fish, when found, and possible cause of injury or death of each must be recorded and provided to the Service.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation Recommendations (CR) are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery programs, or to develop information. The Service recommends that Reclamation:

CR 1. Work with the Service, NDOW, Corps, and operators (if available) to monitor fish passage conditions at the Peri Diversion Dam (Lockwood Segment). If problems are identified, develop and implement a plan to improve the efficiency of the fish passage conditions.

CR 2. Work with stakeholders of the proposed TMFCP (if available) to develop and implement a monitoring program to assess the effectiveness of the LTRR projects. The monitoring program should include physical and biological components.

CR 3. Work with private landowners in the vicinity of the LTRR project segments to encourage development of continuous functional riparian areas along the Truckee River.

CR 4. Post-construction, work with TNC (if available) to further refine the *River Restoration Best Management Practice: A Planned Approach to In-Channel River Restoration* (Kennedy Jenks 2005) which can serve as guidance for additional restoration efforts in the Truckee River.

CR 5. Minimize contributions above background levels to meet all applicable water quality standards within the Action Area during construction.

In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, the Service requests notification of the implementation of any CRs.

REINITIATION—CLOSING STATEMENT

This concludes formal consultation for the potential effects of the LTRR projects on LCT. As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been maintained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this BO; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this BO; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must be stopped in the interim period between the initiation and completion of the new consultation if any additional taking is likely to occur.

We appreciate the cooperation and coordination of Reclamation, BLM, TNC, and other entities in developing the proposed LTRR projects. Please reference File No. 2008-F-0187 in future correspondence concerning this consultation. Any questions or comments should be directed to me or David Potter of the NFWO at (775) 861-6300.

for Robert D. Williams

cc: Truckee River Project Director, The Nature Conservancy-Nevada, Reno, Nevada
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Director, Truckee River Flood Project, Reno, Nevada
Project Manager, North States Resources, Inc. Sacramento, California

Biologist, Technical Services Center, U.S. Bureau of Reclamation, Denver, Colorado (Attn: Pat Mangan)
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Supervisory Wildlife Biologist, Carson City Field Office, U.S. Bureau of Land Management, Carson City, Nevada
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Manager, Wetlands Regulatory Office, Environmental Protection Agency, San Francisco, California (Attn: Elizabeth Goldmann)
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Tribal Chairman, Reno-Sparks Indian Colony, Reno, Nevada
Tribal Chairman, Washoe Tribe of Nevada and California, Gardnerville, Nevada
Special Agent, Division of Law Enforcement, Fish and Wildlife Service, Reno, Nevada

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