United States Department of the Interior

U.S. Fish and Wildlife Service
Arizona Ecological Services Office
2321 West Royal Palm Road, Suite 103
Phoenix, Arizona 85021-4951
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In Reply Refer To:
AESO/SE
02EAAZ00-2015-F-0101

March 16, 2015

Ms. Sallie Diebolt, Division Chief
U.S. Army Corps of Engineers
Arizona Branch-Regulatory Division-Los Angeles District
3636 North Central Avenue, Suite 900
Phoenix, Arizona 85012-1939

Dear Ms. Diebolt:

Thank you for your letter requesting formal consultation with the U.S. Fish and Wildlife Service (Service) pursuant to section 7 of the Endangered Species Act of 1973 (Act) (16 U.S.C. 1531-1544), as amended. Your request for formal consultation was dated November 6, 2014, and received by us on November 10, 2014. The consultation addresses the issuance of a Clean Water Act 404 permit associated with the proposed Wiltbank Farms, LP low water crossing project on the Little Colorado River (LCR), Apache County, Arizona on the threatened Little Colorado spinedace (*Lepidomeda vitatta*) (spinedace). You also requested our concurrence with your "no effect" determinations for the endangered southwestern willow flycatcher (*Empidonax traillii extimus*), the threatened yellow-billed cuckoo (*Coccyzus americanus*), the threatened northern Mexican gartersnake (*Thamnophis eques megalops*), the threatened Chiricahua leopard frog (*Lithobates chiricahuensis*), the threatened Apache trout (*Oncorhynchus apache*), the endangered Zuni bluehead sucker (*Catostomus discobolus yarrowi*), and the candidate roundtail chub (*Gila robusta*). We concur with your determinations for spinedace. Species with "no effect" determinations do not require review from the Service and are not addressed further in this consultation. In addition, there is no designated or proposed critical habitat for any federally-listed or candidate species in the project area.

This biological opinion is based on information provided in the September 2014 biological assessment (Natural Channel Design, Inc. 2014) and other sources of information. References cited in this biological opinion are not a complete bibliography of all references available on the species of concern, the proposed action and its effects, or on other subjects considered in this opinion. A complete administrative record of this consultation is on file at this office.

CONSULTATION HISTORY

November 6, 2014	The Army Corps of Engineers (ACOE) sent a final biological assessment on the effects of the proposed action, and requested formal consultation.
March 4, 2015	We sent a draft biological opinion to the ACOE.
March 13, 2015	We received an email from the ACOE accepting the draft biological opinion and requesting that we issue the final opinion.
March 16, 2015	We sent the ACOE the final biological opinion.

BIOLOGICAL OPINION

DESCRIPTION OF THE ACTION AREA AND PROPOSED ACTION

The proposed action is the ACOE Clean Water Act 404 permit issuance to Natural Channel Design, Inc. (NCD) for the Wiltbank Low Water Crossing Project (SPL-2014-457-AP). This project removes 12 undersized culverts and replaces them with larger concrete box culverts to reduce road maintenance after flood flows.

Description of the Action Area

The action area is defined as those areas influenced by direct and indirect effects of the proposed action (USFWS 1998). The action area for this project is the LCR approximately 12-miles north of the Town of Springerville (Map 1, Appendix A). The project site is located on private land owned by Wiltbank Farms, LP at the confluence of Coyote Creek and the LCR. The construction footprint is approximately 540 linear feet of the LCR and Coyote Creek (Map 2, Appendix A). The low water crossing is a well-maintained dirt road that connects to State Highway 180. The main traffic on the road is from a gravel quarry located approximately 0.6 miles to the southeast. Heavy truck traffic passes daily across this road and low water crossing. There is a small residential area associated with the farm, located approximately 0.1 mile southwest of the crossing which contributes to additional but minimal traffic on the road crossing.

The project area lies in a wide valley where the river is a low gradient, meandering stream with a gravel stream bed and a well-vegetated floodplain. The banks are vegetated with short grass and sedges (*Carex spp.*). The overstory is limited to individual scattered tamarisk (*Tamarix spp.*), cottonwood (*Populus spp.*), coyote willow (*Salix exigua*), wax currant (*Ribes cereum*), and wild rose (*Rosa spp.*).

Proposed Action

The Army Corps of Engineers will need to issue a 404 permit for the implementation of this project. The project goal is to replace an existing low water crossing with an upgraded, more effective structure. Currently the crossing consists of 12 under-sized culverts that are covered with large concrete blocks (Photo 1, Appendix B). These culverts are too small to pass sediment during flood flows and quickly become blocked with debris. Flood flows then pass over the crossing and damage the road. Currently, fill material to repair the road crossing is obtained

from a downstream river bank. The existing culverts will be replaced with five concrete box culverts that are designed to allow passage of annual flow events (approximately 365 cubic feet per second) (Figure 1, Appendix A). Flood events, larger than approximately 855 cubic feet per second, will still flow over top of the box culverts. Concrete aprons will be installed downstream of the box culverts to protect the road, channel bed, and banks from erosion during higher flow events. The new box culverts will be installed just upstream of the existing crossing (Figure 1, Appendix A.).

Construction will occur during low flow conditions; either early winter 2014 to 2015, June 2015, or fall 2015). Timing will depend upon funding and permitting. Construction is expected to take approximately four weeks.

The LCR will need to be rerouted around the culvert installation site. The LCR will be blocked upstream from the new culvert location and a ditch will be excavated around the east side of the construction site (Figure 2, Appendix A). Water will be temporarily diverted around the project site during construction. Water will be pumped out of the construction area to allow for culvert installation.

Prior to any work in the river, blocking seines will be installed upstream and downstream from the construction site. The area in between the nets will be seined several times to capture and relocate spinedace and other native fish species. Passes will be made until biologists are confident that there are no or very few spinedace and other native fish still present in the project area. Nonnative fish and crayfish (*Orconectes virilis*) will not be released back to the LCR. Arizona Game and Fish Department (AGFD) personnel will lead the seining effort. AGFD will be responsible for capture and movement of spinedace under their authorities and permits. The number of spinedace and other aquatic species captured, killed, and/or moved will be reported to the Service spinedace and geographic area leads following completion of the project.

After removal of spinedace and other native fish, the diversion and the old culverts will be removed, new culverts installed, and the river channel configured to a more natural geomorphic cross section. The downstream river bank that is over-widened due to erosion and material removal for maintenance of the existing road crossing will be protected by an approximate 70-foot- long installation of toe rock. The river bank will then be vegetated with willows and native sedges. The blocking seines would be left in place until all construction and stream bank stabilization work is completed.

STATUS OF LITTLE COLORADO SPINEDACE

The spinedace was listed as threatened with critical habitat on October 16, 1987 (USFWS 1987). Identified threats were habitat alteration and destruction, predation by and competition with non-native aquatic organisms, and recreational fishery management.

Forty-four stream miles of critical habitat were designated in Arizona: 18 miles of East Clear Creek immediately upstream and 13 miles downstream from C.C. Cragin Reservoir (formerly called Blue Ridge Reservoir) in Coconino County; 8 miles of Chevelon Creek in Navajo County; and 5 miles of Nutrioso Creek in Apache County. When critical habitat was proposed in 1987, the Service determined the primary biological factors of critical habitat consist of clean,

permanent flowing water with pools and a fine gravel or silt-mud substrate (see USFWS 1987, p. 35038 for additional detail).

This fish occurs in disjunct populations throughout much of the LCR drainage in Apache, Coconino, and Navajo counties. Extensive collections summarized by Miller (1963) indicated that the spinedace had been extirpated from much of the historical range from 1939 to 1960. Although few collections were made of the species prior to 1939, the species is believed to have inhabited the northward flowing LCR tributaries of the Mogollon Rim, including the northern slopes of the White Mountains.

Mitochondrial DNA work on the spinedace was initiated in the 1990s and indicated the existence of three sub-groups identifiable by geographic area (Tibbets et al. 1994): the East Clear Creek drainage; Chevelon Creek; and the upper LCR including Nutrioso and Rudd creeks. The study concluded that the genetic patterns seen were likely the result of populations isolated and differentiated by both natural and human-caused events. The East Clear Creek and Chevelon Creek sub-groups are more individually distinctive, likely the result of a higher degree of isolation, and possess unique haplotypes. Individuals from the upper Little Colorado sub-group are more similar to each other. Possibly, until recent time, there was one population with considerable gene flow until various dams and diversions increased local isolation. The cause and exact time of the isolation of the three sub-groups are not known, but Tibbets et al. (1994) recommend that all of these populations be maintained to conserve genetic variation in this species.

The spinedace is found in a variety of habitats (Blinn and Runck 1990, Miller 1963, Nisselson and Blinn 1989). It is unclear whether occupancy of these habitats reflects the local preferences of the species or its ability to tolerate less-than-optimal conditions. Available information indicates that suitable habitat for the spinedace is characterized by clear, flowing pools with slow to moderate currents, moderate depths, and gravel substrates (Miller 1963, Minckley and Carufel 1967). Cover provided by undercut banks or large rocks is often a feature. Spinedace have also been found in pools and flowing water conditions over a variety of substrates, with or without aquatic vegetation, in turbid and clear water (Denova and Abarca 1992, Nisselson and Blinn 1991). Water temperatures in occupied habitats ranged from 58 to 78 degrees Fahrenheit (14.4 to 25.5 degrees Celsius) (Miller 1963).

As with most aquatic habitats in the southwest, the LCR Basin contains a variety of aquatic habitat types and is prone to rather severe seasonal and yearly fluctuations in water quality and quantity. Both mountain streams and lower-gradient streams and rivers have provided habitat for the spinedace. Residual pools and spring areas are important refuges during periods of normal low water or drought. From these refuges, spinedace are able to recolonize other stream reaches during wetter periods. This ability to quickly colonize an area has been noted in the literature (Minckley and Carufel 1967) as well as in observations by others familiar with the species. Populations seem to appear and disappear over short time frames and this has made specific determinations on status and exact location of populations difficult. This tendency has been observed by both researchers and land managers (e.g., Miller 1963, Minckley 1973) and has led to concerns for the species' survival.

Non-native fish presence was one of the primary reasons the species was listed, and may contribute to the disjunct distribution patterns observed and the spinedace's retreat to what may

be suboptimal habitats. Non-native fish may compete with, prey upon, harass, and alter habitat utilized by native fish. In the last 100 years, at least ten non-native fish species have been introduced or expanded into spinedace habitats. These include rainbow trout (*Oncorhychus mykiss*), fathead minnow (*Pimephales promelas*), and golden shiner (*Notemigonus crysoleucus*). Surveys in East Clear Creek have documented the presence of these three non-native species and brown trout (*Salmo trutta*) in the watershed (Denova and Abarca 1992). Data from research experiments and field observations indicate that at least the rainbow trout is a predator and potential competitor with the spinedace (Blinn *et al*. 1993).

The Little Colorado spinedace is assumed to still occupy the streams it is known from historically (Chevelon, Silver, Nutrioso, East Clear Creek, and the LCR). Populations are generally small and the true population size for any occupied stream is unknown due to the yearly fluctuations and difficulty in locating fish. Spinedace have a tendency to disappear from sampling sites from one year to the next and may not be found for several years. This ephemeral nature makes management of the species difficult since responses of the population to changes within the watershed cannot be measured with certainty. However, all of the known populations have decreased since 1993 and drought conditions continue to put additional strain on all known populations.

The most recent survey and habitat data for each watershed are indicated below:

Chevelon Creek Watershed: Currently, a robust spinedace population occupies a section of Chevelon Creek, several miles upstream of Chevelon Creek's confluence with the LCR on the privately owned Rock Art Ranch. In July 2008, surveys located spinedace within the perennial pools where they were originally stocked and downstream of the area in ephemeral reaches. It is unclear how many fish are still present or if they spawned in 2008. Further surveys and stockings of this area are needed to verify that spinedace persist in this Chevelon Creek tributary. The Service, AGFD, and the ASNFs stocked 150 spinedace in a large pool in Willow Creek, a tributary of Chevelon Creek, in spring 2013.

East Clear Creek Watershed: Spinedace currently occupy small, perennial pool habitats in West Leonard Canyon, Leonard Canyon (including Dines Tank), Bear Canyon, Dane Canyon, and Yeager Canyon. The populations and available habitat are all relatively small throughout the watershed, but West Leonard and Leonard Canyons continue to be the most dependable locations to find spinedace in the entire watershed.

Silver Creek: Spinedace were thought to be extirpated from Silver Creek until a small number of fish were discovered in lower Silver Creek in July 1997 (Lopez et al. 1999). However, numerous surveys since then have failed to find spinedace, including an extensive survey in 2004 (McKell 2005).

Little Colorado River (including Nutrioso Creek and Rudd Creek): Spinedace are documented in several locations in the LCR from Springerville downstream to St. Johns, Arizona (Dorum and Young 1995). Spinedace occur on both the AGFD Wenima and Becker Wildlife Areas within this reach of the LCR in small to moderate numbers. Survey efforts in July 2009 found 238 spinedace at Wenima and 90 spinedace at Becker Wildlife Area. Surveys conducted in 2008 by the AGFD and Bureau of Land Management (BLM) located spinedace above Lyman

Lake in the LCR. AGFD found spinedace approximately 1.5 miles downstream of the project site, Neilson Property, in June 2008 (USWFS 2012).

Spinedace are found in middle Nutrioso Creek from the ASNFs boundary upstream to Nelson Reservoir and from Nelson Reservoir upstream to Nutrioso, Arizona (Lopez et al. 2001a). The largest concentration is found on the EC Bar Ranch.

Spinedace were first located in Rudd Creek in 1994 (Lopez et al. 2001b). In the spring 2005, AGFD personnel surveyed several 328-foot transects in Rudd Creek. Only a single spinedace and a few speckled dace (*Rhinicthys osculus)* were captured in those surveys. No spinedace were found in Rudd Creek during April 2006 surveys. However, two months later, 74 spinedace were found in Rudd Creek. Spinedace were found on lower Rudd Creek, below AGFD's Sipes White Mountain Wildlife Area property in 2008 (USFWS 2012).

On June 18, 2011, in response to the Wallow Fire on the ASNFs, AGFD, Service, and Forest Service personnel salvaged 185 Little Colorado spinedace from Rudd and Nutrioso creeks. Upper Rudd and Nutrioso Creek watersheds burned severely and impacts to the stream from ash flows and post-fire flooding were expected, including a likely fish kill. AGFD and the Service translocated the spinedace to the spinedace refuge pond at AGFD's Grasslands Wildlife Area, near Greer, Arizona, the same day.

ENVIRONMENTAL BASELINE

The environmental baseline includes past and present impacts of all Federal, State, or private actions in the action area, the anticipated impacts of all proposed Federal actions in the action area that have undergone formal or early section 7 consultation, and the impact of State and private actions which are contemporaneous with the consultation process. The environmental baseline defines the current status of the species and its habitat in the action area to provide a platform to assess the effects of the action now under consultation.

Status of the Species in the Action Area

Spinedace are found in the vicinity of the Wiltbank project area on the LCR, with 36 documented during AGFD surveys at this location in June 2008 (NCD 2014).

Factors Affecting Spinedace in the Action Area

LCR flow and physical attributes have been affected by watershed and floodplain land use changes, dam and diversion creation, instream gravel mining, and past and present cattle grazing practices. Spinedace are most vulnerable to predation from and competition with non-native aquatic species.

EFFECTS OF THE PROPOSED ACTION

Effects of the proposed action refers to the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated and interdependent with that action, which will be added to the environmental baseline. Interrelated actions are those that are 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. Indirect effects are those that are caused by the proposed action and are later in time, but are still reasonably certain to occur.

Efforts to seine the project site will be led by AGFD personnel. The proposed action will result in adverse effects from short-term dewatering of occupied habitat. Although efforts will be made to remove spinedace and other native fish from the area, it is unlikely that all spinedace will be seined and moved, so fish may remain in the channel when water is diverted and then pumped from the site prior to construction. Any fish that remain in the channel will likely die as the area is pumped to remove water for the construction action.

Following completion of construction, spinedace habitat conditions in this LCR reach are expected to improve as excess sediment will be transported through this reach rather than accumulating upstream of the current low water crossing as occurs now. We anticipate that some spinedace could die during construction; however, following the action, effects to habitat will be positive as the project will result in reduced sedimentation to the LCR as it will no longer be necessary to clean the previously under-sized culverts and collect fill material from downstream river banks to repair the low water crossing after flood events.

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 biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation following section 7 of the Act.

The LCR in the action area flows through private land. There are numerous upstream diversions and irrigation outlets that reduce base flow in the LCR. The road crossing provides access to Highway 180 for an active gravel quarry and a small residential area. Given the small size of the action area and that it is entirely located on Witlbank Farms, LP; no other actions are known to occur in this portion of the LCR.

CONCLUSION

After reviewing the current spinedace status, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is our biological opinion that the action, as proposed, is not likely to jeopardize the continued existence of the threatened Little Colorado spinedace. The Little Colorado spinedace is found in East Clear Creek and its tributaries (Coconino County); Chevelon and Silver creeks (Navajo County); and Nutrioso Creek, Rudd Creek, and the LCR (Apache County) in Arizona. The proposed action affects a small, portion of the species' range within the LCR drainage. Although we consider the action area to contain important spinedace occupied habitat, the anticipated adverse impacts of the project will be minor and temporary when compared to the overall long-term benefits the project will confer. The conclusions of this biological opinion are based on full implementation of the project as described in the Proposed Action section of this document.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation 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 to attempt to engage in any such conduct. "Harm" is defined (50 CFR 17.3) 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. "Harass" is defined (50 CFR 17.3) as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering. "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.

AMOUNT OR EXTENT OF TAKE

We anticipate that the proposed action is reasonably certain to result in incidental take of spinedace. However, it is difficult to quantify the number of individual spinedace potentially taken because dead or impaired individuals that are not salvaged from the project area are difficult, if not impossible, to find, and we do not know the precise number of spinedace currently in the action area. We therefore anticipate that incidental take of an unknown number of spinedace will occur due to the inability of the proposed conservation measure (blocking the construction site with nets and seining fish) to completely remove spinedace from the channel prior to diverting and pumping the water. The AGFD-lead crew will monitor the blocked reach to remove any remaining spinedace that were not caught during seining efforts. However, individual fish that remain in the dewatered section of the LCR will likely die and it is unlikely that re-routing the water back into the LCR would save any remaining live fish. It is a relatively small area of habitat and most spinedace will be captured and removed. In addition, block nets will keep spinedace from re-entering the area during construction. Therefore, although we cannot state exactly how many spinedace will be trapped in the pool, we expect that the number of un-salvaged spinedace will be very small in relation to the overall spinedace population within this reach of the LCR. Therefore, the amount of incidental take authorized under this incidental take statement is equal to all unsalvaged spinedace in the blocked stream reach.

Take authorized in this biological opinion will be considered exceeded if spinedace fatality is caused by other aspects of the proposed action (*i.e.*, construction activities outside of the blocked reach result in spinedace death). Information indicating the amount of seining, numbers of native fish captured and moved, numbers of spinedace found in the dewatered area, and estimates of non-native fishes and crayfish removed from the stream (as described in the proposed action) will be sent to the Service after project completion.

Reasonable and Prudent Measures and Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the Act, the ACOE must comply with the following terms and conditions, which implement the reasonable and prudent measures

described below and outline required reporting/monitoring requirements. These terms and conditions are non-discretionary.

The following reasonable and prudent measure and term and condition are necessary and appropriate to minimize incidental take of loach minnow:

1. Eliminate or minimize adverse effects of this project to Little Colorado spinedace.

TERMS AND CONDITIONS

The following term and condition will implement reasonable and prudent measure 1:

1. The project area, outside of the blocked LCR reach, will be inspected daily to determine if other spinedace fatalities occur. If injured or dead spinedace are found during the proposed action, the Service will be notified within 24 hours, and reinitiation of consultation maybe required.

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 are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

1. After at least one year upon completion of the proposed action, conduct stream channel surveys at the project site to document the efficiency of the new box culverts in improving stream channel and bank conditions within the affected portion of the LCR. .

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 conservation recommendations.

Disposition of Dead or Injured Listed Animals

Upon finding a dead or injured threatened or endangered animal, initial notification must be made within three days to the Service Law Enforcement Office, located at 2450 West Broadway Road #113, Mesa, Arizona 85202 (480) 967-7900. Written notification must be made within five calendar days and include the date, time, and location of the animal, and any other pertinent information. Care must be taken in handling injured animals to ensure effective treatment and care and in handling dead specimens to preserve biological material in the best possible condition. If feasible, the remains of intact specimens of listed animal species shall be submitted as soon as possible to this office or the nearest AGFD office, educational, or research institutions (*e.g.*, University of Arizona in Tucson) holding appropriate State and Federal permits.

Arrangements regarding proper disposition of potential museum specimens shall be made with the institution before implementation of the action. A qualified biologist should transport injured animals to a qualified veterinarian. Should any treated listed animal survive, Service should be contacted regarding the final disposition of the animal.

REINITIATION STATEMENT

This concludes the formal consultation on the ACOE's proposal to permit construction of riparian and stream habitat improvements on private land along the LCR. As provided in 50 CFR 402.16, re-initiation 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) new information reveals effects of the agency action that may adversely affect listed species in a manner or to an extent not considered in this opinion; 2) the proposed action is subsequently modified in a way that causes an effect to a listed species that was not considered in this opinion; 3) a new species is listed or critical habitat designated that may be affected by this action; or 4) incidental take is exceeded.

We appreciate the ACOEs efforts to identify and mitigate effects to spinedace from this project. For further information please contact Dave Smith (928) 556-2183 or Mary Richardson (602) 242-0210 (x242). Please refer to consultation number 02EAAZ00-2015-F-0101 in future correspondence concerning this project.

Sincerely,

/s/ Steven L. Spangle
Field Supervisor

cc (hard copy):
Regional Supervisor, Arizona Game and Fish Department, Pinetop, AZ
Natural Channel Design, Inc., Flagstaff, AZ (Attn: Mark Wirtanen)
cc (electronic copy):
Shaula Hedwall, U.S. Fish and Wildlife Service, Flagstaff, AZ

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Appendix A
Maps and Figures of the Project Area and Proposed Action

Map 1. Wiltbank Low Water Crossing Site Location.

Map 2. Wiltbank Low Water Crossing Project Location.

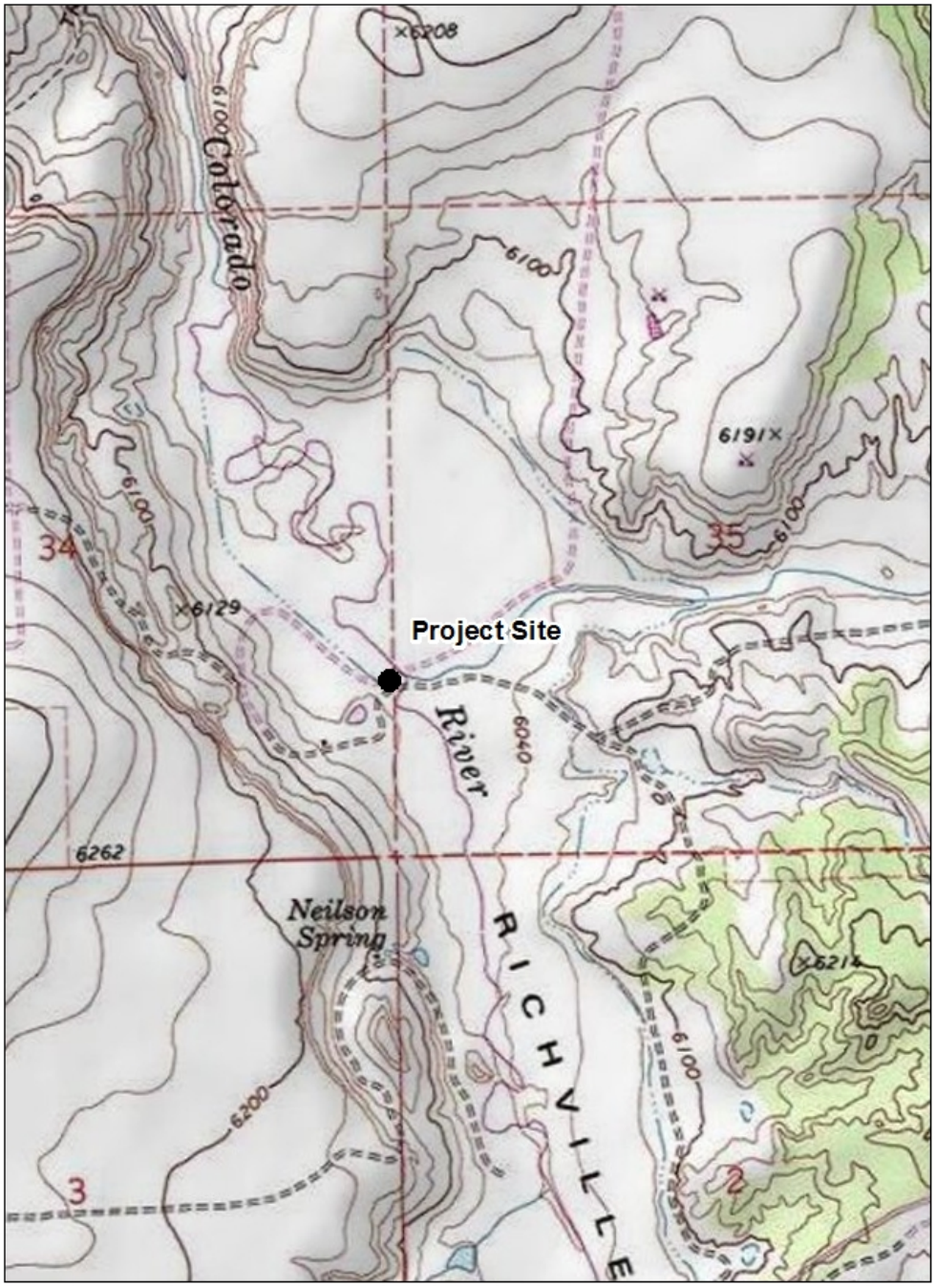


Figure 1. Cross-section view of proposed box culverts

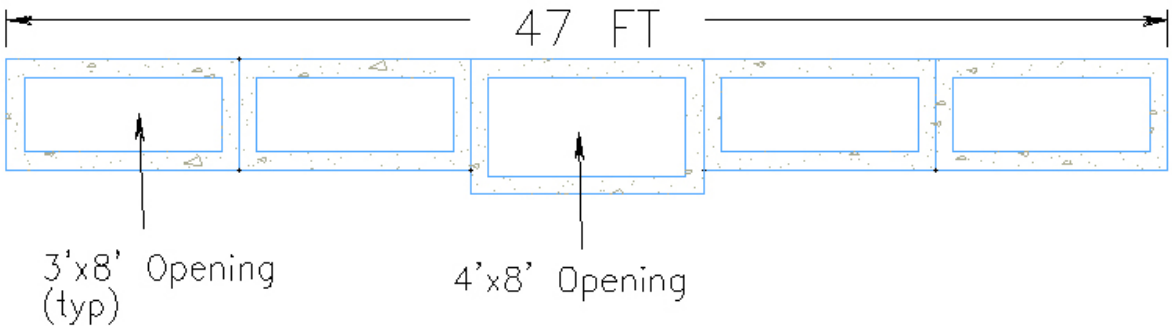
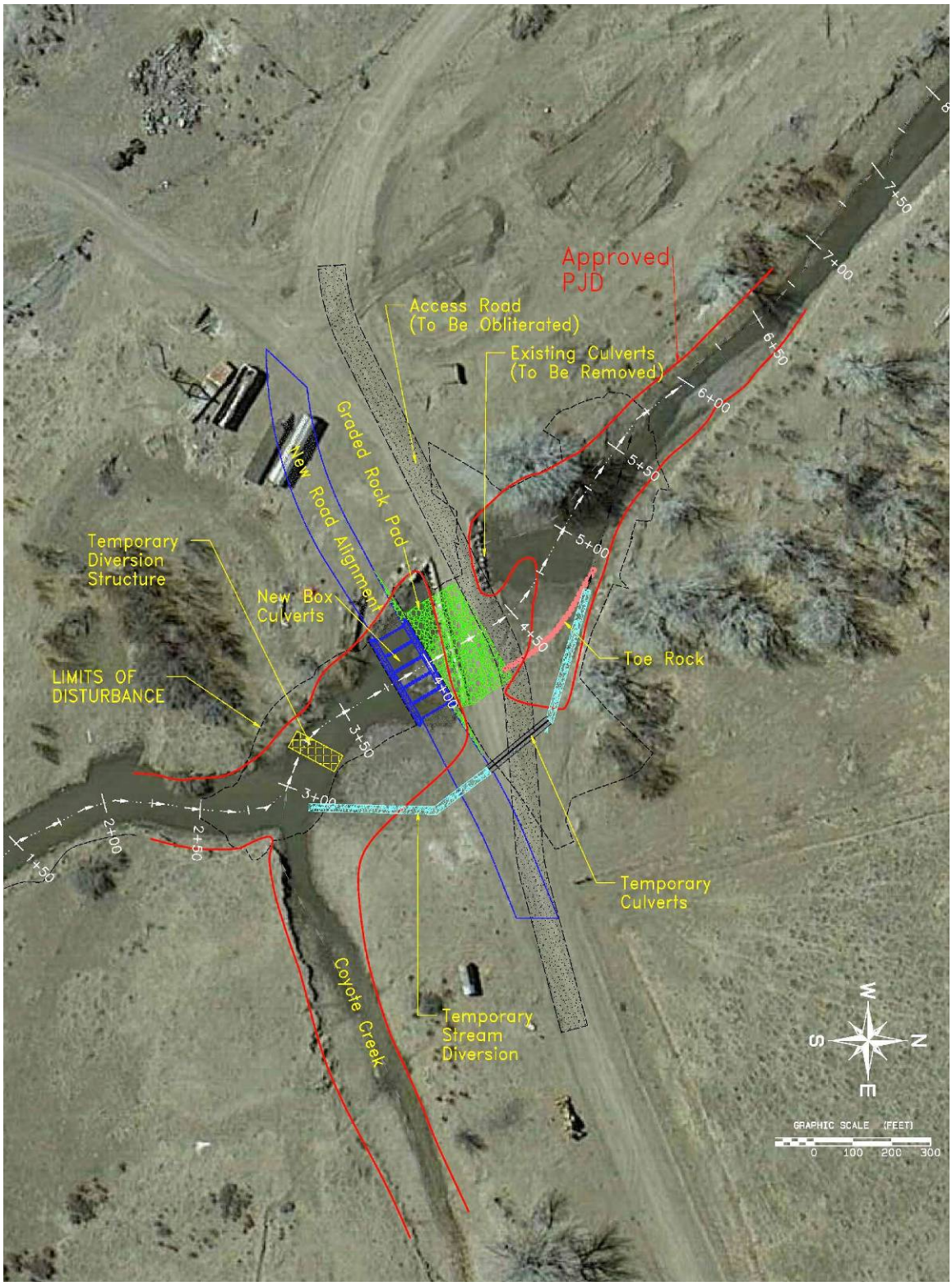


Figure 2. Schematic drawing of proposed construction activities



Ms. Sallie Diebolt

Appendix B. Photograph

Photo 1. Existing culverts at Wiltbank Farm, LP