DEPARTMENT OF ENERGY
National Nuclear Security Administration
Los Alamos Field Office
Los Alamos, New Mexico 87544

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Hazardous Waste
Bureau

Mr. John E. Kieling
Chief, Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park East, Building 1
Santa Fe, NM 87505

Dear Mr. Kieling:

The purpose of this letter is to serve as notification for actions proposed within a floodplain area at Los Alamos National Laboratory (LANL) in accordance with 10 Code of Federal Regulations 1022 "*Compliance with Floodplain and Wetland Environmental Review Requirements*", which was promulgated to implement the U.S. Department of Energy (DOE) requirements under Executive Order 11988 "*Floodplain Management*" and Executive Order 11990 "*Wetlands Protection*". The National Nuclear Security Administration (NNSA) Los Alamos Field Office has determined that activities associated with actions within Portillo Canyon at Technical Area (TA)-36 at LANL would occur within the 100-year floodplain.

The floodplain assessment has been prepared for the installation of engineered erosion controls at portions of TA-36 in Portillo Canyon. Erosion control measures are proposed to minimize contaminated sediment migration. These activities are a corrective action under the National Pollutant Discharge Elimination System storm water individual permit which is a requirement of the Compliance Order on Consent between the State of New Mexico Environment Department, DOE, and Los Alamos National Security, LLC.

The floodplain assessment may be viewed on the Internet at: http://permalink.lanl.gov/object/tr?what=info:lanl-repo/lareport/LA-UR-16-20393, or in hard copy at the LANL Public Reading Room, located at 94 Cities of Gold Road, Pojoaque, New Mexico. The floodplain assessment includes a map of the proposed activity locations within Portillo Canyon.

The Department of Energy will make this floodplain assessment available for review and comment for 15 days commencing with the publication of Proposed Flood Plan Action at LANL in the Santa Fe New Mexican newspaper. Comments received after this review period will be considered to the extent practicable. Please e-mail comments to vicki.loucks@nnsa.doe.gov, sent by fax to (505) 667-5948, or mailed to Ms. Vicki Loucks, NNSA Los Alamos Field Office, 3747 West Jemez Road, Los Alamos, NM 87544. For further information on this proposed floodplain action, Ms. Loucks may be contacted at the email listed above.

Sincerely,

Fo~Kimberly Davis Lebak
Manager

37533

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March 2016

Floodplain Assessment for Corrective Actions in Potrillo Canyon, Technical Area 36, Los Alamos National Laboratory, Los Alamos, New Mexico

Prepared by: Environmental Protection and Compliance Division, Resources Management Team at
Los Alamos National Laboratory.

Prepared for: U.S. Department of Energy

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ACRONYMS

CFR	Code of Federal Regulations
DOE	U.S. Department of Energy
HE	high explosives
IP	Individual Permit
LANL	Los Alamos National Laboratory
NPDES	National Pollutant Discharge Elimination System
TAL	target action level

INTRODUCTION

This floodplain assessment was prepared in accordance with 10 Code of Federal Regulations (CFR) 1022 *Compliance with Floodplain and Wetland Environmental Review Requirements*, which was promulgated to implement the U.S. Department of Energy (DOE) requirements under Executive Order 11988 *Floodplain Management* and Executive Order 11990 *Wetlands Protection*. According to 10 CFR 1022, a 100-year floodplain[1] is defined as "the lowlands adjoining inland and coastal waters and relatively flat areas and flood prone areas of offshore islands." In this action DOE is proposing areas of erosion protection that occur within the 100-year floodplain that will temporary retain and slow storm water run-off to decrease the sediment load.

In 2014, baseline storm water monitoring samples for Potrillo Canyon Sample Management Area 4.2 (Figure 1) that includes two firing sites and down canyon drainage at Los Alamos National Laboratory (LANL) exceeded the target action level[2] (TAL) of for the National Pollutant Discharge Elimination System (NPDES) Individual Permit No. NM0030759 (Permit or IP[3]) for gross-alpha radioactivity 393 pCi/L (with a TAL of 15 pCi/L) and radium-226, and radium-228 of 95.9 pCi/L (TAL of 30 pCi/L). As a result of the sample results, erosion control measures at the site are proposed to minimize sediment migration, a corrective action under the IP which is a requirement of the New Mexico Environment Department consent decree[4] and a good management practice to limit off site sediment migration as much as possible.

The area proposed for erosion controls (Figure 1) are portions of Technical Area 36 consisting of the active Lower Slobbovia Firing Site[5] (building 36-0012), the inactive Skunk Works Firing Site in Potrillo Canyon. The Lower Slobbovia Firing Site consists of two active firing points and a control building. One firing point was constructed in 1950 and is located on top of an approximately 200-foot-diameter sand and dirt pad. The second firing point consisted of a wooden tower constructed in 1986 at the northwest end of a 1,000-foot-long sled track used for conducting drop tests. Shots fired at the Lower Slobbovia Firing site primarily involved high explosives (HE) and metal (e.g., depleted uranium, lead, copper, aluminum, and steel). In addition, underground explosive tests conducted at an approximate depth of 100 feet were also conducted at the Lower Slobbovia site.

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[1] A 100-year floodplain is a base floodplain with a 1.0 percent chance of flooding in any given year.

[2] The target action levels are based on and equivalent to New Mexico water quality criteria for the subject pollutants. The applicable target action levels are not themselves effluent limitations, but are benchmarks to determine the effectiveness of control measures implemented to meet non-numeric (or site specific best management practice erosion protection structures such as check dams and berms) technology-based effluent limitations.

[3] A NPDES storm water individual permit (IP) authorizes discharge of storm water associated with historical industrial activities at LANL.

[4] The Compliance Order on Consent between the State of New Mexico Environment Department and DOE and LANL provides for specified compliance requirements for all of the solid waste management units, areas of concern, canyons, and watershed aggregates included in the Compliance Order on Consent.

[5] A firing site is an area used for explosives testing.

The Skunk Works Firing Site, located approximately 0.5 miles northwest of the Lower Slobbovia Firing Site (Project Area 1; Figure 1), was used to conduct small-explosives experiments during the 1950s. A shallow depression, located approximately 100 feet farther up the canyon, was also used as a firing pad.

Samples taken during baseline storm water monitoring were collected in sediment catchment areas in the drainages downgradient of explosive testing areas to determine if HE and metals, used as part of experiments conducted at these sites, were migrating from the site. The migration was limited to the drainages below the project area for HE and metals and does not extend beyond Potrillo Canyon.

Accordingly, DOE has prepared this floodplain assessment to evaluate the potential impacts of implementing the proposed erosion control project within a floodplain, as required by 10 CFR 1022. These watershed-based storm water controls will focus on addressing erosion occurring within the floodplain through mitigating and reducing both current and future channelization[6] and head cutting[7].

The construction of the erosion protection measures will require heavy equipment to reach the sites using the existing road. The existing road is in disrepair and is close to archaeological sites. As part of the action, the road will be improved through blading and the addition of gravel and rerouted around areas of erosion protection measures and archaeological sites.

PROJECT DESCRIPTION

Project Area 1

DOE proposes to install a coir log[8] structure in Project Area 1, constructed completely of biodegradable materials and rock riprap[9] hardening. The coir logs will provide an additional erosion control measure to minimize sediment migration from further up the canyon. Additionally, two rock check dams upgradient and two rock check dams downgradient of the coir logs structure will be constructed (Figure 2). The proposed control measures will provide run-on and run-off erosion and sedimentation controls by spreading and slowing the water flow that occurs after precipitation events.

Project Area 2

DOE proposes to install a series of low earthen berms to the east and southeast of the Lower Slobbovia active firing site mound (Figure 3). Erosion protection measures would install a berm downgradient of the Lower Slobbovia with rock check dams and riprap to direct stormwater run-

[6] Channelization is the straightening and deepening of a natural stream channel resulting in faster water movement and increasing erosion and sediment movement.

[7] A head cut is a sudden change in elevation or drop off at the leading edge of a gully.

[8] A coir log is a mesh log-shaped bag filled with coconut husk known as coir that is completely biodegradable.

[9] Riprap is rock or other material used to armor shorelines, streambeds, bridge abutments, pilings and other shoreline structures against scour and water erosion. It is made from a variety of rock types.

off back into the floodplain (Figure 3). The berm will prevent possible run-off from the Lower Slobbovia Firing Site from flowing down the dirt access road to Potrillo Canyon's main channel. Both storm water and sediment will remain on the well-vegetated floodplain outside of an active channel. A water bar[10] and bar ditch[11] run-out on the dirt access drive upgradient of the stream channel would also be installed. In addition, to correct an erosional head cut, a minimum of four Zuni bowls[12] in series will provide erosion protection features and gabion[13] armoring will be constructed to retain sediment in the head cut area and stop the head cutting by slowly filling in the area with sediment.

Project Area 3

The existing road will be improved by blading and the addition of gravel in Project Area 3 at the fire break (Figure 4). The existing road will be rerouted out of the floodplain to avoid expected ponding behind the berm at the fire break. The existing fire break has a 2-foot berm and this will be enhanced to approximately 4 feet in height to retain storm water run-off and sediments. The enhanced berm will have an inlet pipe and armored spillway to slow the flow of storm water and direct the flow of water onto the flood plain. The abandoned roadway section will be revegetated with native vegetation. In addition to the road improvements at the firebreak, the road would be rerouted around an archaeological site to ensure the archeological site is not damaged. The road would also be straightened to improve vehicle access to the Lower Slobbovia Firing Site. The road improvements may include the armoring or culverting of one drainage crossing. Some trees and vegetation will be removed during the road realignment.

FLOODPLAIN IMPACTS

Overall, the nature and extent of the floodplain's ability to retain and dissipate flooding caused by the proposed project soil disturbance is not expected to change because of the temporary construction impacts.

Construction site inspections would be conducted every seven days or after precipitation events larger than 0.25 inches according to requirements in the NPDES General Permit for uncontrolled storm water discharges from the construction project area.

The retention of the natural run-off will impact the floodplain in a positive way by enhancing native plant growth which will stabilize the soils and improve natural floodplain processes.

Negative short-term direct effects from the installation of berms, road realignment, and other related activities include soil disturbance and vegetation removal to the floodplain. These

[10] A water bar is a road construction feature used to prevent erosion on sloping roads by reducing flow length.

[11] A bar ditch is a roadside pit or channel dug for drainage purposes.

[12] This structure is placed at the "head" or beginning of a gully, preventing the head cut from eroding further upstream. In essence this is a constructed "step pool" where the impact of the waterfall is dissipated by the water in the pool of the Zuni bowl. After flow slows or stops, sediments such as sand and clay are left behind in the bowl and anchored by native vegetation growing through the rocks.

[13] A gabion is a cage, cylinder, or box filled with rocks.

impacts will be mitigated and minimized by the implementation of best management practices for work in floodplains during construction.

The best management practices include:

- Equipment staging areas will not be located within the floodplain.
- Equipment will not be refueled within 100 feet from any drainage.
- No hazardous materials, chemicals, fuels, and oils will be stored within the floodplain.
- Construction-scarred areas will be revegetated with an appropriate native seed mix or plants within 30 days or at the beginning of the growing season after construction is completed.
- All trash and debris (e.g., construction material) will be removed from the floodplain after construction is complete.

Project personnel submitted a project (PR-ID 15P-0231) and excavation (EX-ID 16X-0108) permit request through the LANL Integrated Review Tool which allowed environmental subject matter experts to review the project and project personnel to be aware of the compliance requirements associated with their project. Compliance with the Migratory Bird Treaty Act requires that no vegetation removal occurs during the peak bird breeding season, May 15 through July 31, unless biological resources staff have conducted a nest check to ensure there are no nesting birds present. If active nests are found, the nest tree or bush will be left until the nesting is complete.

No long-term negative direct or indirect impacts to the beneficial values of the 100-year floodplain would be expected under the proposed project. No negative effects to lives and property associated with floodplain disturbance are anticipated.

ALTERNATIVES

Alternatives to the proposed action that were considered but eliminated include a full investigation and removal of all affected soils and capping all of the areas for no exposure. Both the full investigation and removal and capping the areas are not practicable at this time because sections of the project areas are still permitted active firing sites. These alternatives were eliminated from further consideration because they would not meet DOE's stated purpose and need to reduce potential sediment-borne pollutants migration from DOE lands. In addition, DOE considered a No Action Alternative. This alternative was not selected because it would not allow DOE to fulfill its requirements under the IP. The reduction of potential migration of HE and metals is an important goal of LANL's operation practices.

CONCLUSIONS

It is anticipated that this project would not result in long-term adverse impacts to the 100-year floodplain. Temporary disturbance within the floodplain would cease following completion of

construction activities. Best management practices, including construction erosion and sedimentation control measures, will be implemented. This proposed project would not significantly modify existing elevations and flow paths within the floodplain from pre-project conditions to post-project conditions or result in other long-term negative impacts to the floodplain and its functionality. No effects to lives and property associated with floodplain modifications are anticipated.

In accordance with 10 CFR Part 1022, a Statement of Findings based on the information in this document will be published for public comment. This statement will include a brief description of the proposed project, an explanation of why it is located in a floodplain, the alternatives considered, a statement indicating if the action conforms to state and local floodplain requirements, and a brief description of the steps to be taken to minimize potential harm within the floodplain.

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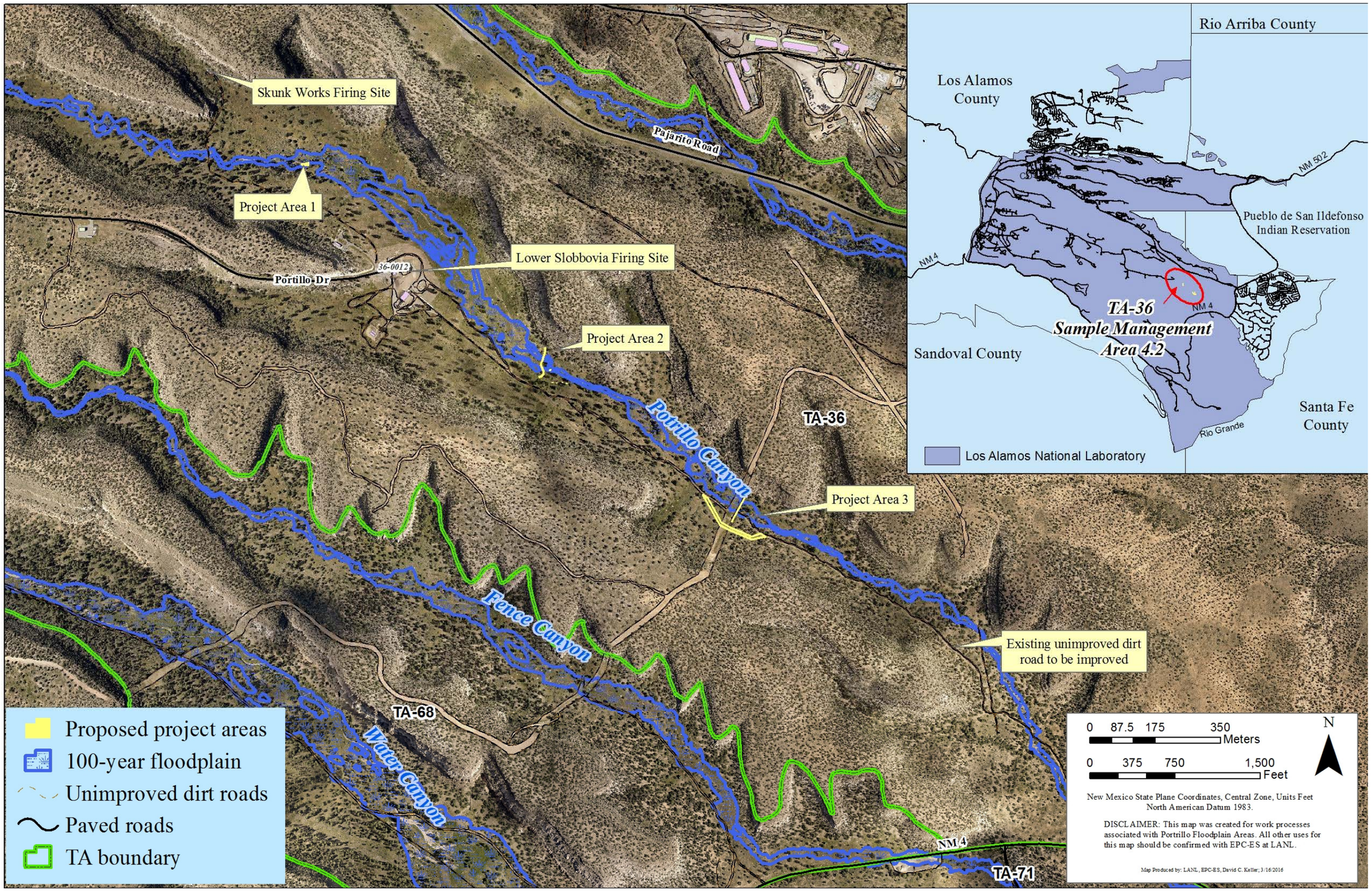

Figure 1. Proposed project areas

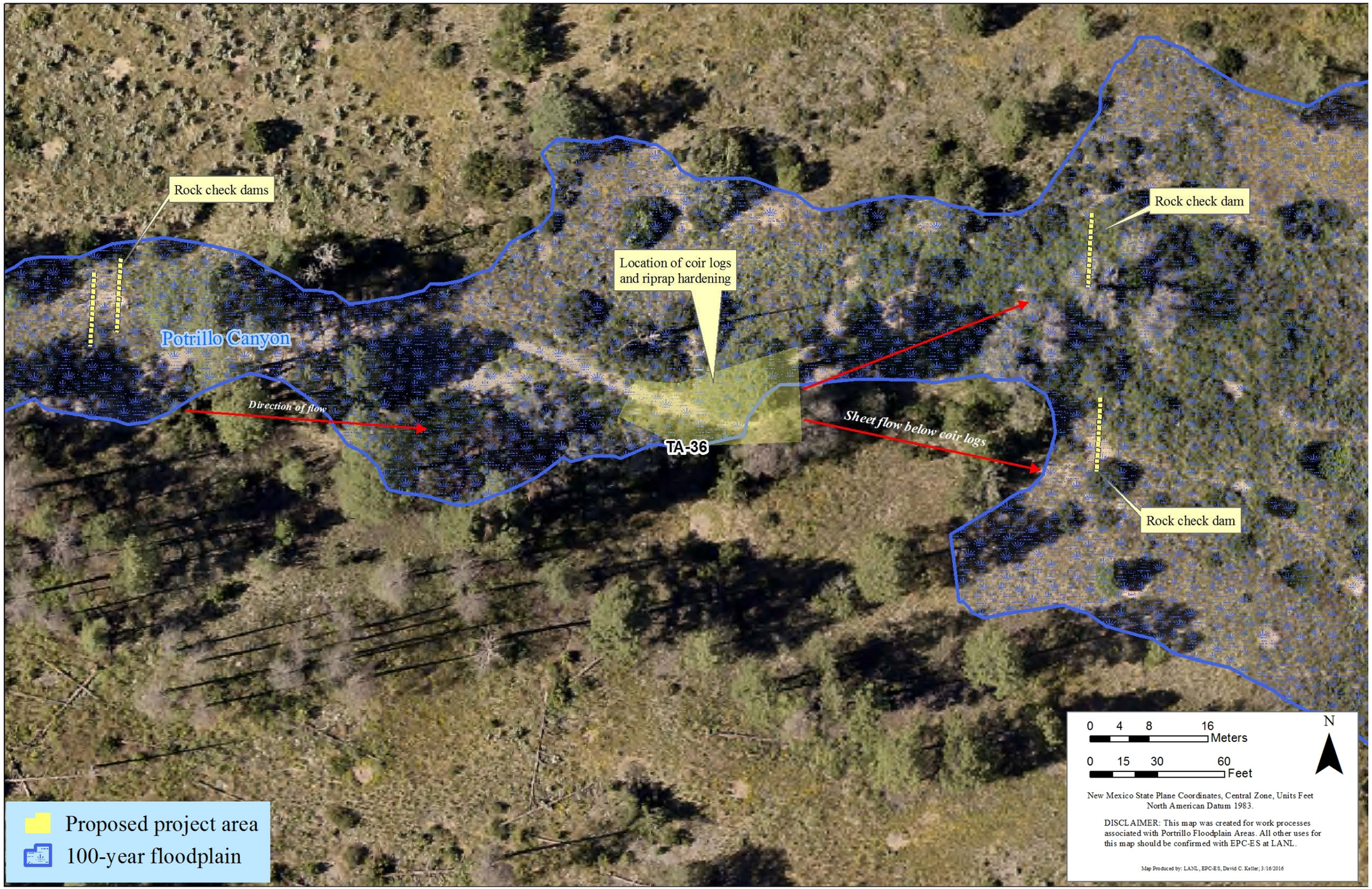

Figure 2. Project area 1

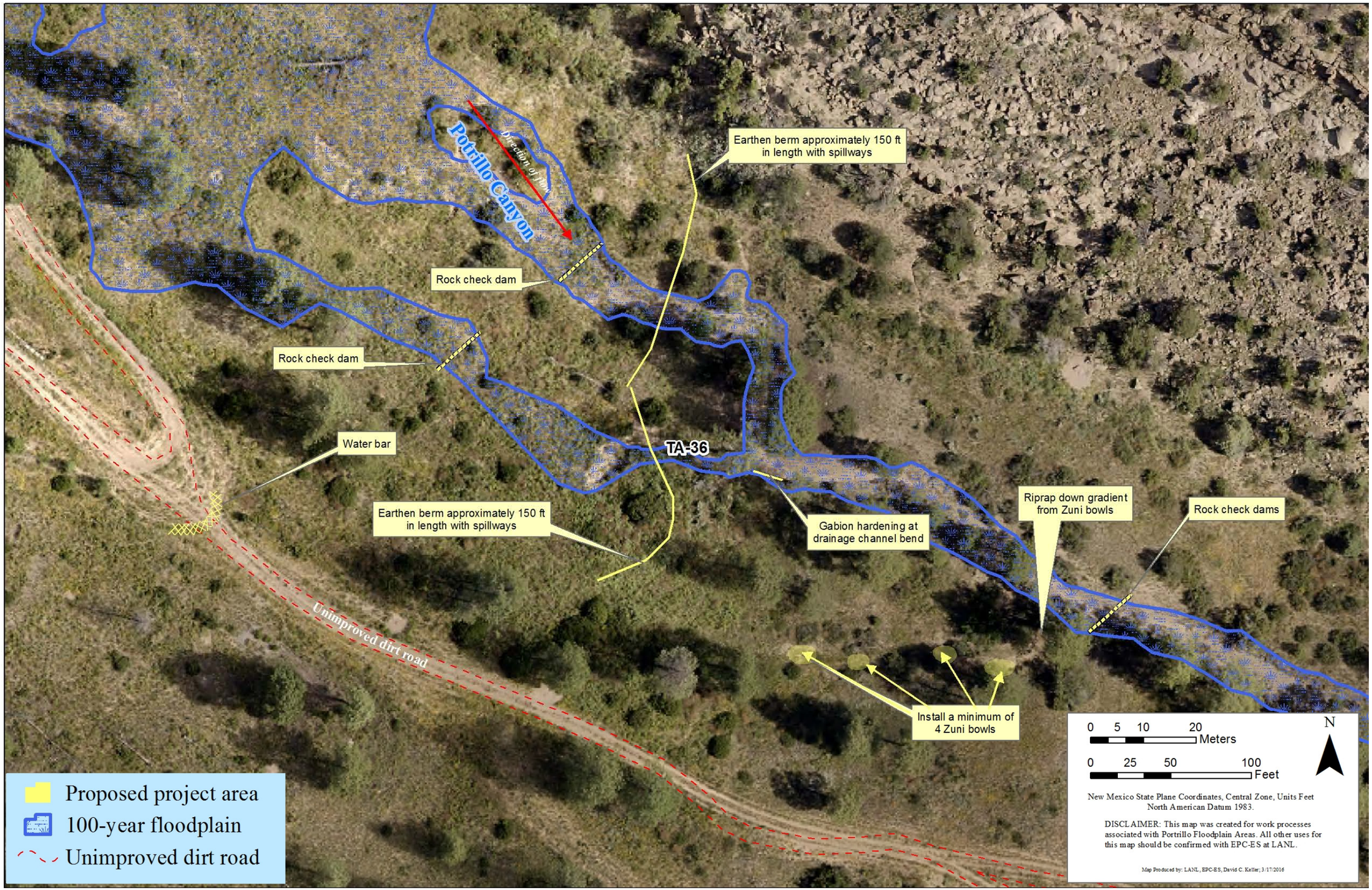

Figure 3. Project area 2

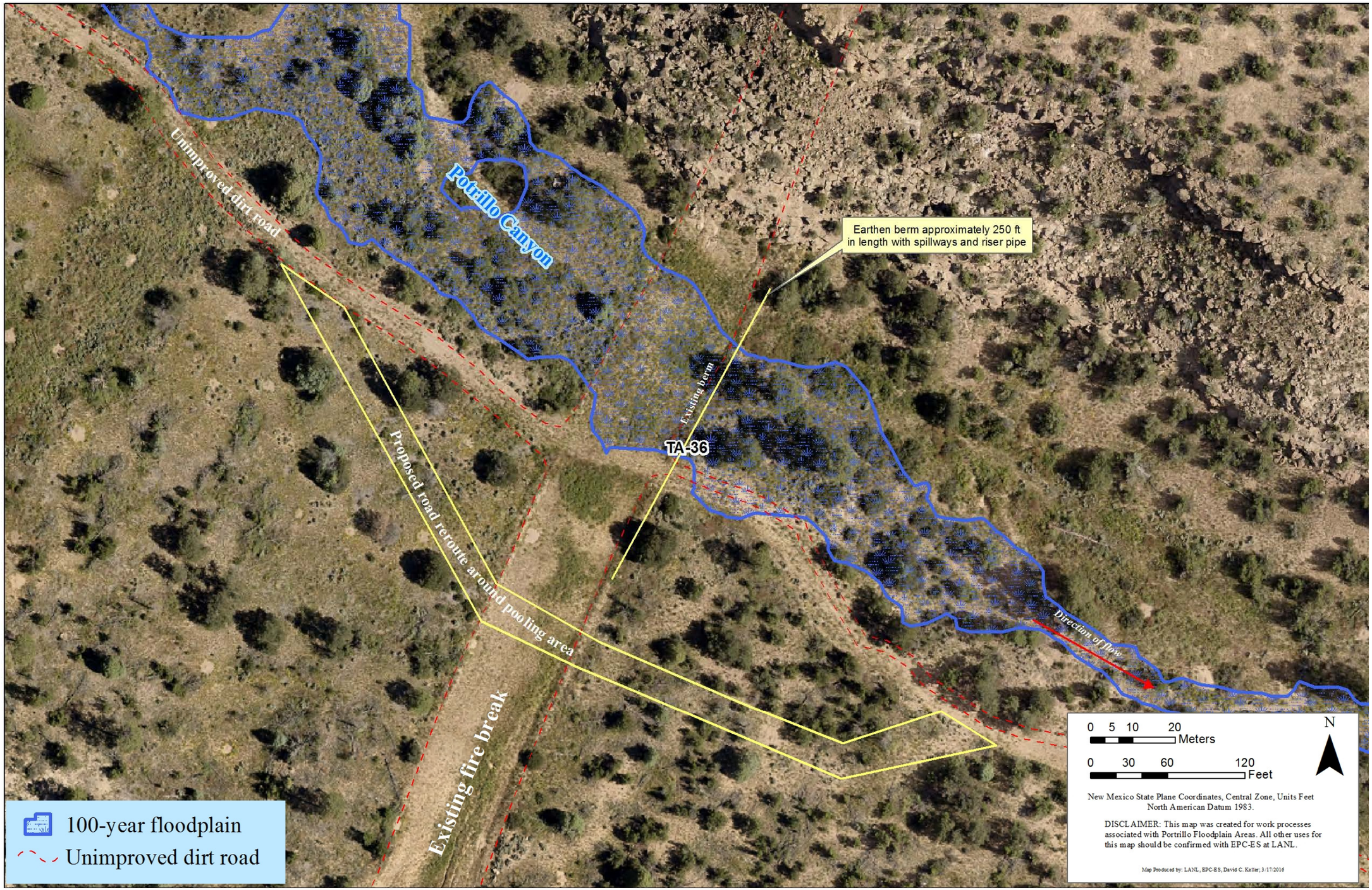

Figure 4. Project area 3