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Enhancement Project in Technical Area 16 at Los Alamos National
Laboratory.

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August 2017

**Floodplain Assessment
for the Upper Cañon de Valle
Watershed Enhancement Project
in Technical Area 16 at
Los Alamos National Laboratory**

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Los Alamos Field Office

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ACRONYMS AND TERMS

CFR	Code of Federal Regulations
DOE	U.S. Department of Energy
LANL	Los Alamos National Laboratory
TA	Technical Area

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 floodplain¹ 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 to control the run-on of storm water by slowing water velocity and managing sediments from the upper portions of the Cañon de Valle watershed on Los Alamos National Laboratory (LANL) property with a number of new watershed controls near and within the 100-year floodplain (hereafter floodplain). The proposed work will comply with requirements under the Settlement Agreement and Stipulated Final Compliance Order (Settlement Agreement)² Number HWB-14-20.

The DOE prepared this floodplain assessment to evaluate the potential impacts of implementing the proposed action within a floodplain, as required by 10 CFR 1022.

PROJECT DESCRIPTION

The project is located in Technical Area (TA) 16 in the Cañon de Valle watershed adjacent to West Jemez Road and extending east-southeast to Crossroads Road (Figure 1). Storm water enters the site from the upper reaches of the Cañon de Valle watershed through a double barrel culvert under West Jemez Road (Photograph 1). A channelized section of the watershed conveys water east-southeast from the culverts (Photographs 2 – 4) and then north paralleling Anchor Ranch Road (Photograph 5). Currently, the channelized section shows a combination of steep, near vertical aggrading side slopes pushing sediments into the channel. Downstream of this area is a gravel access road where the crossing will be installed that has three culverts underneath it. Two culverts are completely buried in sediment from upstream areas. The third culvert remains operational. In past storm events, water has backed up from this area and flowed out on to Anchor Ranch road to the east of this crossing damaging LANL infrastructure in TA-16.

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

² Settlement Agreement Number HWB-14-20 is the agreement between the Hazardous Waste Bureau of the New Mexico Environmental Department and the U.S. Department of Energy and Los Alamos National Security, LLC. The agreement settles and completely resolves the alleged violations contained in the December 6, 2014, Los Alamos National Laboratory Order, and any future claims, penalties, fines, liabilities or other sanctions against the Respondents and their officers, directors, employees, agents, constituent agencies, contractors, subsidiaries, successors, assignees, trustees, receivers, and other affiliates arising from or related to the February 14, 2014, incident at the Waste Isolation Pilot Plant.



Figure 1. Proposed project area



Photograph 1. Looking west toward West Jemez Road.



Photograph 2. Looking east-southeast, note the amount of channel incision and near vertical walls.



Photograph 3. Looking west from the location of the proposed low-water crossing. The official 100-year floodplain boundary ends here and turns south.



Photograph 4. Looking east from the proposed low water crossing. This is the new channel that is not part of the official 100-year floodplain; however, the flow is this direction.



Photograph 5. Looking south along the channel that parallels Anchor Ranch Road.

Project personnel intend to control the run-on of storm water by slowing water velocity and managing sediments from the upper watershed with a number of new watershed controls in six areas. These areas are described next and follow a left to right progression in the map in Figure 1.

Area 1 is just downstream of the West Jemez Road culverts (Photograph 1). Two step-down velocity control structures (or rock check dams) will be placed in the floodplain using native boulders. The placement of the boulders will affect water velocity dissipation as it enters the site from the culverts. Native boulders in sufficient quantity exist in the project vicinity originating from an old borrow pit. Mechanized equipment is required to move the boulders.

Area 2 is just downstream of Area 1 where the channel banks are failing with undercutting and near vertical side slopes (Photograph 2). Project personnel will lay back side slopes to a safe slope and armor the slopes with a commonly used erosion control matting. Mechanized equipment will be used to layback the slopes and install articulated concrete mats. Erosion control matting will be applied by hand.

Area 3 is near the entrance to the borrow pit off of Crossroads Road (Photograph 3). The channel berms along the south bank of the main channel failed to hold back storm water in past events. This resulted in damage to downstream LANL facilities. The south berm will be reconstructed and reinforced in this area. Berm materials will be imported to build up the berm size.

Reinforcement will include erosion control matting and rock revetment (a reinforcement structure) along the toe of the slopes.

The access road is a gravel-fill road over the channel. Two of the three culverts underneath the access road have filled with sediments. The access road acts as a dam and is not constructed to hold water. Project personnel will remove the underlying culverts and fill material and install a low-flow crossing. The low-flow crossing will be at channel grade and will allow for control of water velocity through this area, preventing water buildup and flooding out of the channel. Articulated concrete mats will be put in place after grading activities are complete. The mats act to armor the channel bottom so that vehicles can pass safely through. Channel slopes upstream and downstream of the low-flow crossing will be shaped and reinforced with erosion control matting (Photographs 3 and 4).

Areas 4 and 5 are not within the current delineation of the floodplain.

Area 4 includes the installation of a low berm across a very flat and wide part of the extension of the channel (Photograph 5). The low berm will act to slow water velocity from storm events and allow sediments to settle. Larger flows will flow over the low berm.

Area 5 includes the installation of a final berm in the channelized section of the reach. This overflow berm, like that of Area 4, will act as a last defense for controlling the migration of sediments further downstream. The berm will slow water and allow sediments to settle prior to water passing downstream. Additional berm reinforcement will be required to ensure that sediments and water do not migrate out of the channelized section.

FLOODPLAIN IMPACTS

The proposed ground disturbance that is within the floodplain is approximately 0.7 acres in size. There will be negative, short-term effects to the floodplain from vehicle and heavy equipment access that will compact the soil and cause vegetation loss. The potential for erosion, sediment transport, and flood hazard will be lower at the completion of this project compared with preconstruction conditions. This project will not reduce the effectiveness of the natural floodplain processes.

No long-term negative impacts to the floodplain are expected under the proposed project. No effects to lives or property associated with floodplain disturbance are anticipated.

Negative, short-term effects from the project will be mitigated and minimized by the implementation of the following best management practices for work in floodplains during construction.

- Support structures such as personnel trailers will not be installed within the floodplain.
- Any disturbed 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.
- Hazardous materials, chemicals, fuels, and oils will not be stored within the floodplain.

- Work in a floodplain will not take place when the soil is too wet to adequately support equipment.
- Equipment will be refueled at least 100 feet from any drainage, including dry arroyos.

Compliance with the Migratory Bird Treaty Act restricts vegetation removal during the peak bird breeding season, May 15 through July 31, unless biological resources staff at LANL have conducted a nest check to ensure that there are no nesting birds present. If active nests are found, the nest tree or shrub will be left in place until the nesting is complete.

ALTERNATIVES

The only viable alternative to the proposed action is a no action alternative. This alternative was not selected because it would not allow DOE to control the run-on of storm water by slowing water velocity and managing sediments from the upper Cañon de Valle watershed nor fulfill its requirements under the 2015 Settlement Agreement Compliance Order No HWB-14-20.

CONCLUSIONS

This project will not result in long-term adverse impacts to the floodplain. Temporary disturbance within the floodplain will cease following completion of construction activities. Best management practices will be implemented. This proposed project will not significantly modify existing elevations and flow paths within the floodplain upstream and downstream of the project area (inclusive areas 1 through 5) 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 and available for public review. 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.