

LA-UR-17-30209

Approved for public release; distribution is unlimited.

| | |
|---------------|--|
| Title: | Floodplain Assessment for the North Ancho and Lower Sandia Controls Supplemental Environmental Projects at Los Alamos National Laboratory |
| Author(s): | Hathcock, Charles Dean |
| Intended for: | Environmental Regulatory Document |
| Issued: | 2017-12-01 (rev.1) |

Disclaimer:

Los Alamos National Laboratory, an affirmative action/equal opportunity employer, is operated by the Los Alamos National Security, LLC for the National Nuclear Security Administration of the U.S. Department of Energy under contract DE-AC52-06NA25396. By approving this article, the publisher recognizes that the U.S. Government retains nonexclusive, royalty-free license to publish or reproduce the published form of this contribution, or to allow others to do so, for U.S. Government purposes. Los Alamos National Laboratory requests that the publisher identify this article as work performed under the auspices of the U.S. Department of Energy. Los Alamos National Laboratory strongly supports academic freedom and a researcher's right to publish; as an institution, however, the Laboratory does not endorse the viewpoint of a publication or guarantee its technical correctness.

LA-UR-17-30209

*Approved for public release;
distribution is unlimited.*

November 2017

Floodplain Assessment for the North Ancho and Lower Sandia Controls Supplemental Environmental Projects at Los Alamos National Laboratory

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

Prepared for: U.S. Department of Energy
National Nuclear Security Administration
Los Alamos Field Office

An Affirmative Action/Equal Opportunity Employer

Los Alamos National Laboratory, an affirmative action/equal opportunity employer, is operated by the Los Alamos National Security, LLC, for the National Nuclear Security Administration of the U.S. Department of Energy under contract DE-AC52-06NA25396. By acceptance of this article, the publisher recognizes that the U.S. Government retains a nonexclusive, royalty-free license to publish or reproduce the published form of this contribution, or to allow others to do so, for U.S. Government purposes. Los Alamos National Laboratory requests that the publisher identify this article as work performed under the auspices of the U.S. Department of Energy. Los Alamos National Laboratory strongly supports academic freedom and a researcher's right to publish; as an institution, however, the Laboratory does not endorse the viewpoint of a publication or guarantee its technical correctness.

CONTENTS

| | |
|----------------------------|----|
| Acronyms | iv |
| Introduction | 1 |
| Project Descriptions | 1 |
| Floodplain Impacts..... | 14 |
| Alternatives | 14 |
| Conclusions | 15 |

FIGURES

| | |
|---|----|
| Figure 1. Proposed project areas in the north Ancho Canyon watershed in TA-39..... | 2 |
| Figure 2. The 60% engineering design map for the upper project site | 4 |
| Figure 3. The 60% engineering design map for the lower project site | 7 |
| Figure 4. Proposed project areas in the lower Sandia Canyon watershed in TA-72..... | 9 |
| Figure 5. The 60% engineering design map for the upper project site | 11 |
| Figure 6. The 60% engineering design map for the lower project site | 13 |

PHOTOGRAPHS

| | |
|---|----|
| Photograph 1. The upper project site in the stream channel facing up-canyon | 3 |
| Photograph 2. The lower project site in the stream channel facing up-canyon | 5 |
| Photograph 3. An unstable bank in the lower project site | 6 |
| Photograph 4. The upper work area in the stream channel facing up-canyon | 10 |
| Photograph 5. The lower work area in the stream channel facing down-canyon | 12 |

ACRONYMS

| | |
|------|--------------------------------|
| 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 install controls to improve water quality and allow surface water management in two watersheds at Los Alamos National Laboratory (LANL). The proposed work will occur in the north Ancho Canyon watershed in Technical Area (TA) 39 and the lower Sandia Canyon watershed in TA-72. The purpose of this work is to reduce peak discharge from storm water run-off and sediment load within the LANL watersheds. There are active detonation testing sites in Ancho Canyon and this canyon does not have watershed scale stormwater management controls. Controls will be installed 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.

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 DESCRIPTIONS

The first project is located in TA-39 in the north Ancho Canyon watershed adjacent to Ancho Road. Ancho Road begins at New Mexico State Route 4 and runs northward up the canyon. Two sets of structures will be built in this area (Figure 1). The upper project site is in the canyon bottom (Photograph 1). The ground cover is sparse with primarily blue grama (*Bouteloua gracilis*), sand dropseed (*Sporobolus cryptandrus*), and tarragon (*Artemisia dracuncululus*), with a shrubby component of skunkbush sumac (*Rhus trilobata*) and oneseed juniper (*Juniperus monosperma*), and an overstory of ponderosa pine (*Pinus ponderosa*). The work includes, but is not limited to, the installation of a Redi-Rock® block wall across the channel, with a riser pipe to allow low flows to pass through the structure, and a rip rap apron (Figure 2). Any temporary access roads will be reseeded at the completion of the project.

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 Environment 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.

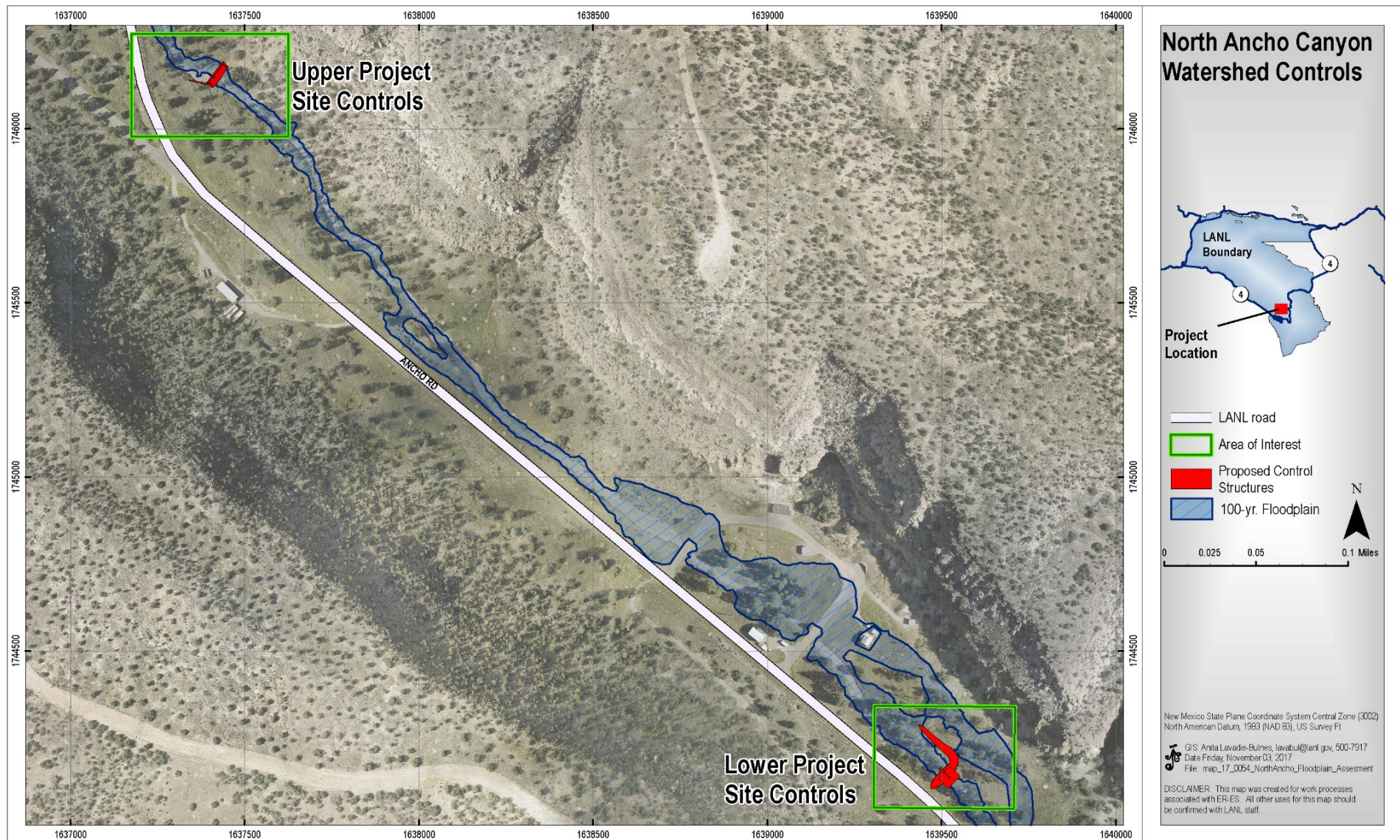


Figure 1. Proposed project areas in the north Ancho Canyon watershed in TA-39



Photograph 1. The upper project site in the stream channel facing up-canyon

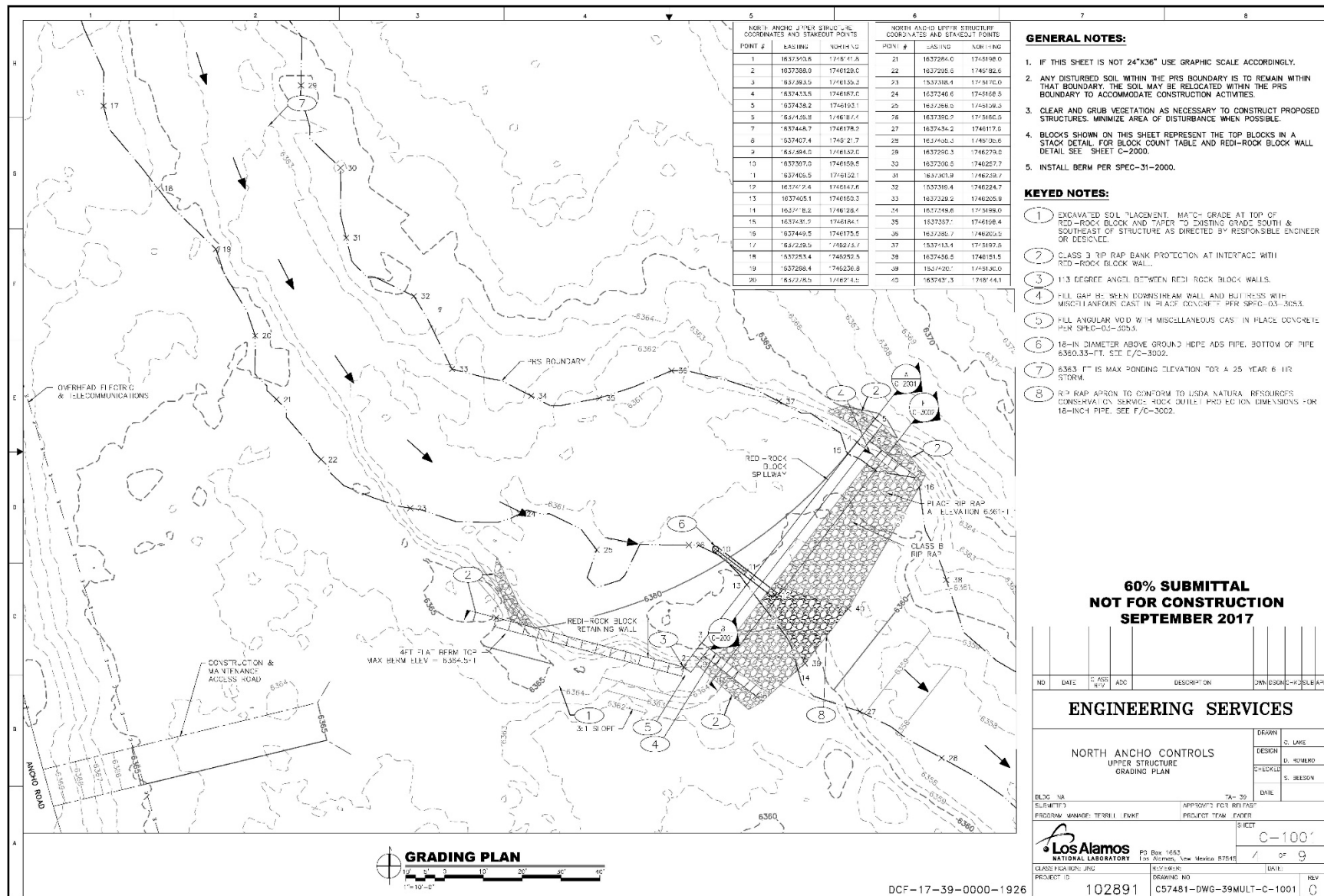


Figure 2. The 60% engineering design map for the upper project site

The lower project site is approximately 0.5 mi (0.8 km) downstream from the upper project site and will also be constructed in the canyon bottom (Photographs 2 and 3). The vegetation cover at this site is similar to the upper site. The work includes, but is not limited to, the installation of an earthen berm covered with turf reinforcement mats across the channel and along the southeast channel bank, a pipe riser, and rip rap at the lower terminus (Figure 3). Any temporary access roads will be reseeded at the completion of the project.



Photograph 2. The lower project site in the stream channel facing up-canyon



Photograph 3. An unstable bank in the lower project site

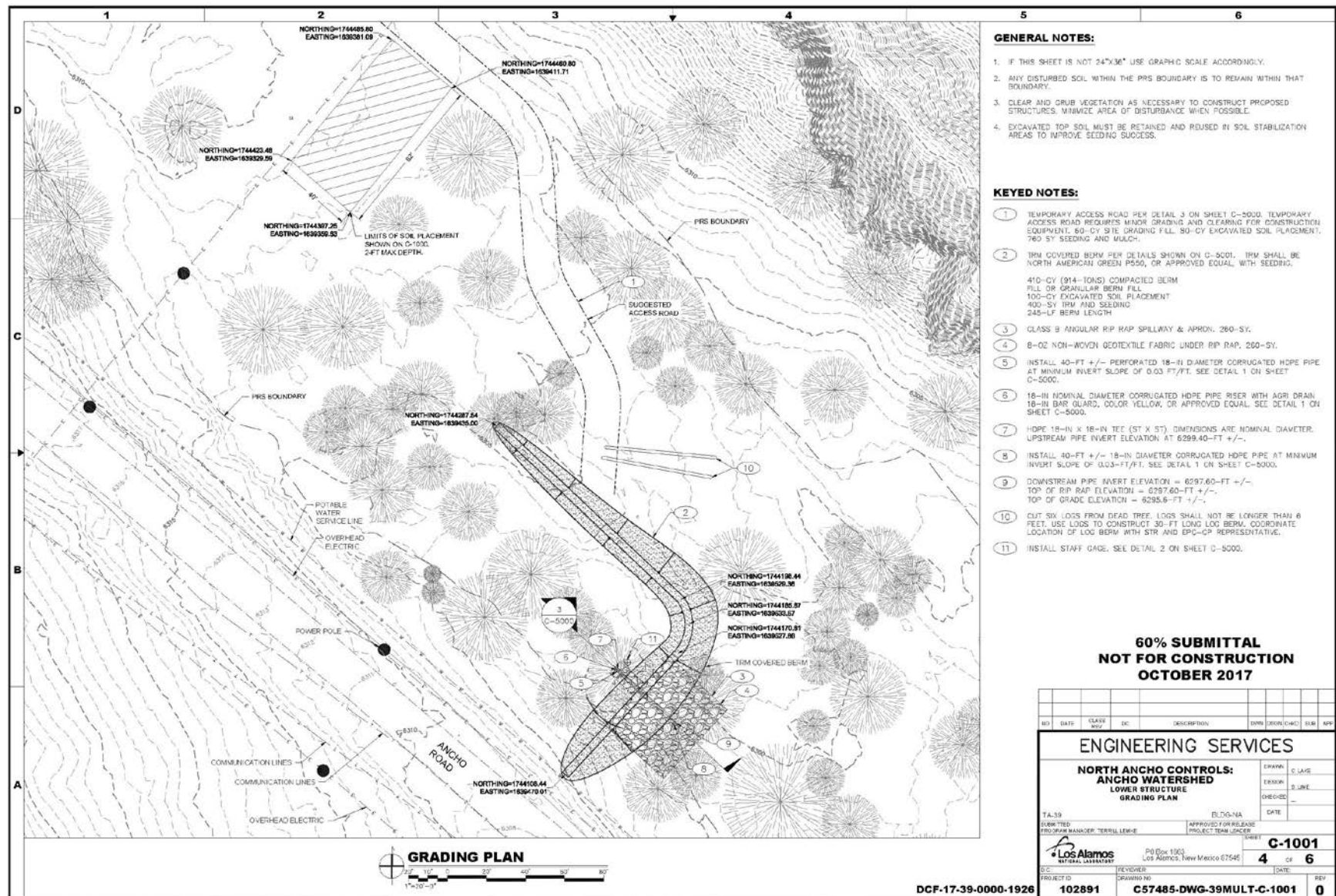


Figure 3. The 60% engineering design map for the lower project site

The second project is located in TA-72 in the lower Sandia Canyon watershed on the north side of East Jemez Road. Two sets of structures will be built in this area (Figure 4).

The upper project site is in the canyon bottom (Photograph 4). The ground cover is dominated by tarragon, with a shrubby component of skunkbush sumac and oneseed juniper, without any overstory. The work includes, but is not limited to, the installation of two sinuous Redi-Rock® grade control structures with associated smaller Redi-Rock® energy dissipation structures (Figure 5). Any temporary access roads will be reseeded at the completion of the project.

The lower project site is approximately 0.38 mi (0.6 km) down-canyon from the upper project site. This site is also in the canyon bottom (Photograph 5). The vegetation cover at this site is similar to the upper site. The work includes, but is not limited to, the installation of rock plunge pools at locations with headcuts, and the installation of several rock check dams that will supplement the functionality of the plunge pools. Concrete armoring A-Jack® units will be installed below all structures to provide bank stabilization for 90 ft (27 m) of the channel at the bend erosion area (Figure 6). Any temporary access roads will be reseeded at the completion of the project.

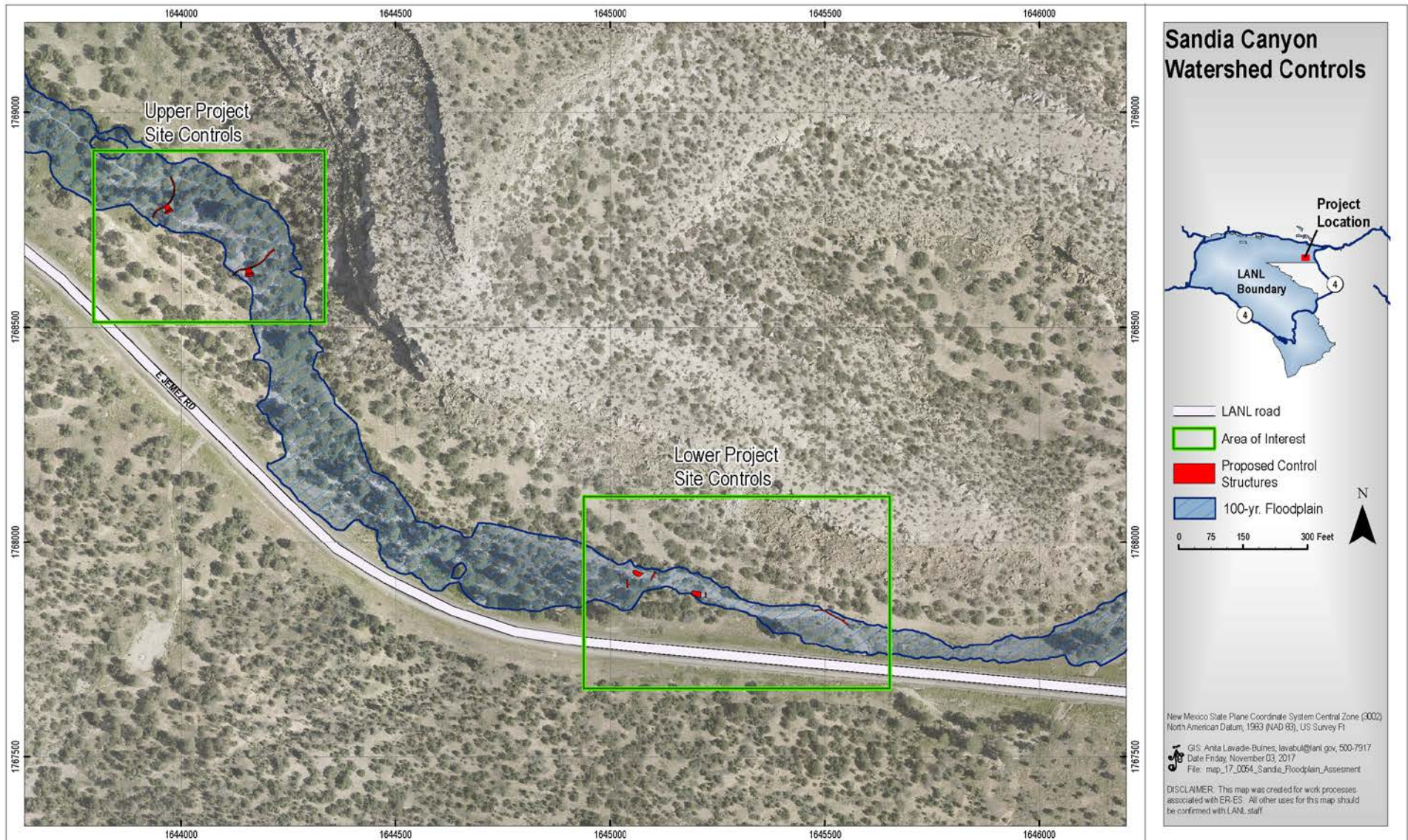


Figure 4. Proposed project areas in the lower Sandia Canyon watershed in TA-72



Photograph 4. The upper work area in the stream channel facing up-canyon

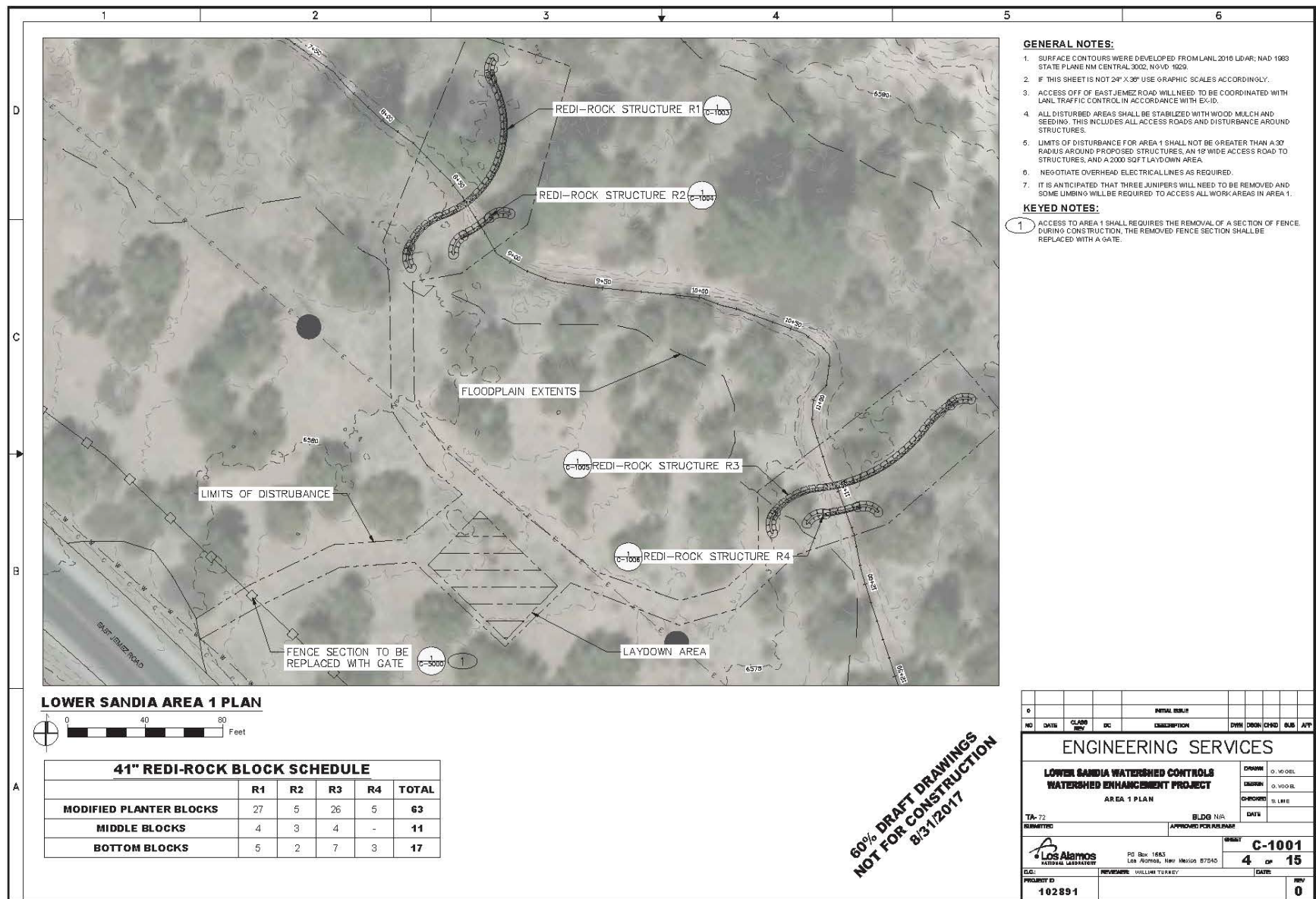
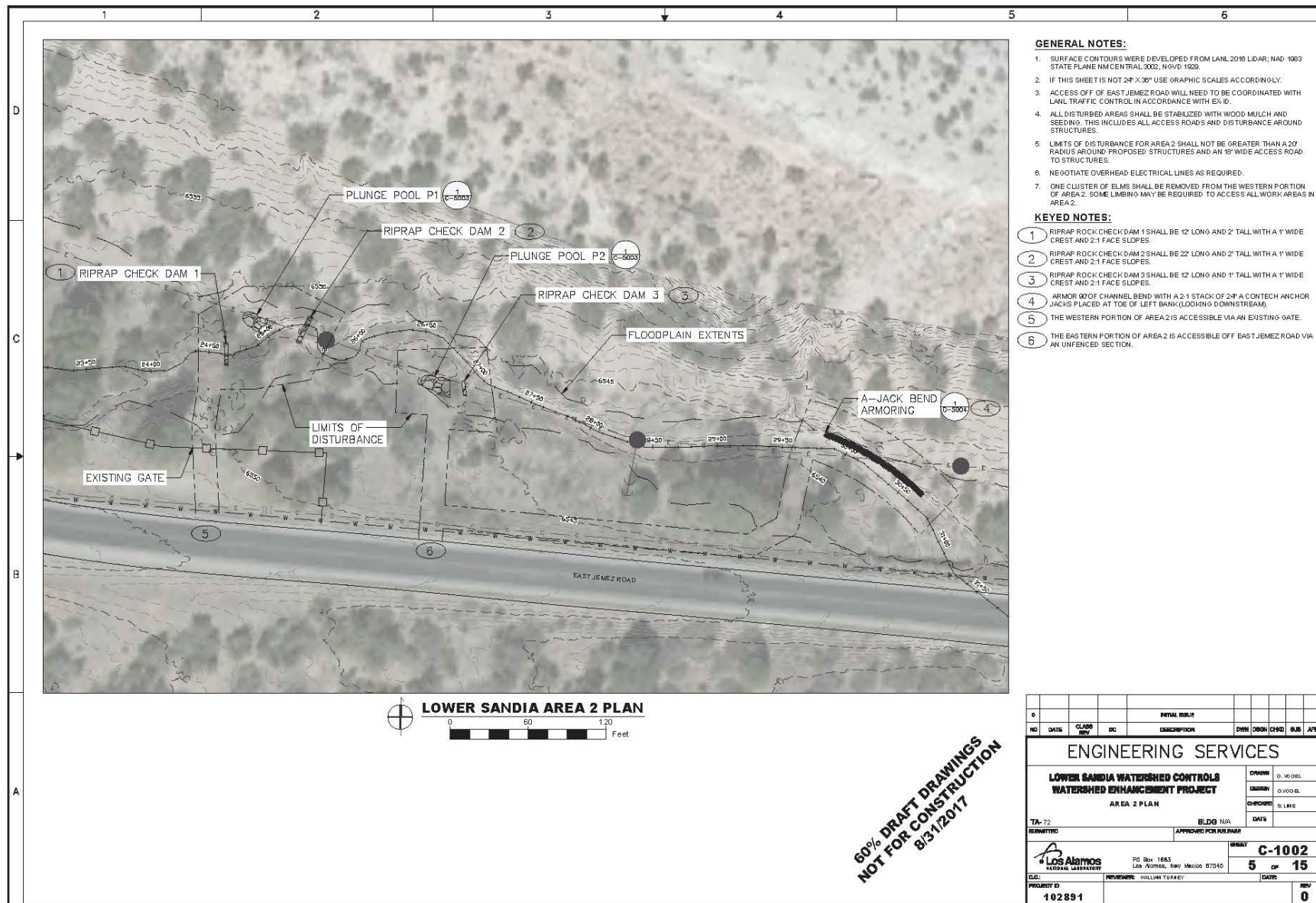


Figure 5. The 60% engineering design map for the upper project site



Photograph 5. The lower work area in the stream channel facing down-canyon



FLOODPLAIN IMPACTS

The total proposed ground disturbance that is within the floodplain in the north Ancho Canyon watershed is approximately 0.75 ac (0.30 ha) in size. The total proposed ground disturbance that is within the floodplain in the lower Sandia Canyon watershed is approximately 1.25 ac (0.5 ha) 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. Some trees and large shrubs will need to be removed on a case-by-case basis to accommodate the control structures at all sites. 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 negative, long-term 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 located 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 ft (30 m) 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

Larger structures and sediment ponds were evaluated for the north Ancho Canyon watershed; however, the proposed smaller project without sediment ponds achieves the goal of reducing peak runoff and sediment load. A no action alternative was not selected because it would not allow DOE to control storm water by slowing water velocities and manage sediments from the two watersheds.

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 projects 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 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.