1.4 Scope of This EA

A sliding-scale approach (DOE 1993) is the basis for the analysis of potential environmental and socioeconomic effects in this EA. That is, certain aspects of the Proposed Action have a greater potential for creating environmental effects than others; therefore, they are discussed in greater detail in this EA than those aspects of the action that have little potential for effect. For example, implementation of the Proposed Action would affect water quality, biological, and cultural resources in the LANL area. This EA, therefore, presents in-depth descriptive information on these resources to the fullest extent necessary for effects analysis. On the other hand, implementation of the Proposed Action would cause only a minor effect on socioeconomics at LANL. Thus, a minimal description of socioeconomic effects is presented.

When details about a Proposed Action are incomplete, as a few are for the Proposed Action evaluated in this EA (for example, the exact amount of waste generated), a bounding analysis is often used to assess potential effects. When this approach is used, reasonable maximum assumptions are made regarding potential aspects of project activities (see Sections 2.0 and 3.0 of the EA). Such an analysis usually provides an overestimation of potential effects. In addition, any proposed future action(s) that exceeds the assumptions (the bounds of this effects analysis) would not be allowed until an additional NEPA review could be performed. A decision to proceed or not with the action(s) would then be made.

1.5 Public Involvement

NNSA provided written notification of this NEPA review to the State of New Mexico, the four Accord Pueblos (San Ildefonso, Santa Clara, Jemez, and Cochiti), Acoma Pueblo, the Mescalero Apache Tribe, and to over 30 stakeholders in the area on August 27, 2001. In addition, upon release of this draft EA, NNSA will allow for a 21-day comment period. Where appropriate and to the extent practicable, concerns and comments will be considered in the final EA.

2.0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

This section discusses the Proposed Action and the No Action Alternative. Section 2.1 describes the Proposed Action for the EA that would allow NNSA to meet its purpose and need for agency action. The No Action Alternative is presented in Section 2.2 as a baseline for comparison with the consequences of implementing the Proposed Action. Alternatives that were considered but dismissed from further analysis in this EA are discussed in Section 2.3, and related actions are discussed in Section 2.4.

2.1 Proposed Action

NNSA is considering granting a new easement to PNM to allow construction, operation, and maintenance of approximately 15,000 feet (ft) (4,500 meters [m]) of 12-in. (30-cm) of coated steel natural gas transmission mainline within LANL boundaries in Los Alamos Canyon (Figure 2). The technical areas affected include TA-21, TA-53, TA-73, and TA-72 (Figure 2). The new gas line would begin at the existing valve located in the bottom of Los Alamos Canyon, adjacent to the existing 12-in. (30-cm) PNM gas transmission mainline (Figure 3). The new gas line would cross the canyon southward and continue east paralleling the existing electrical power line

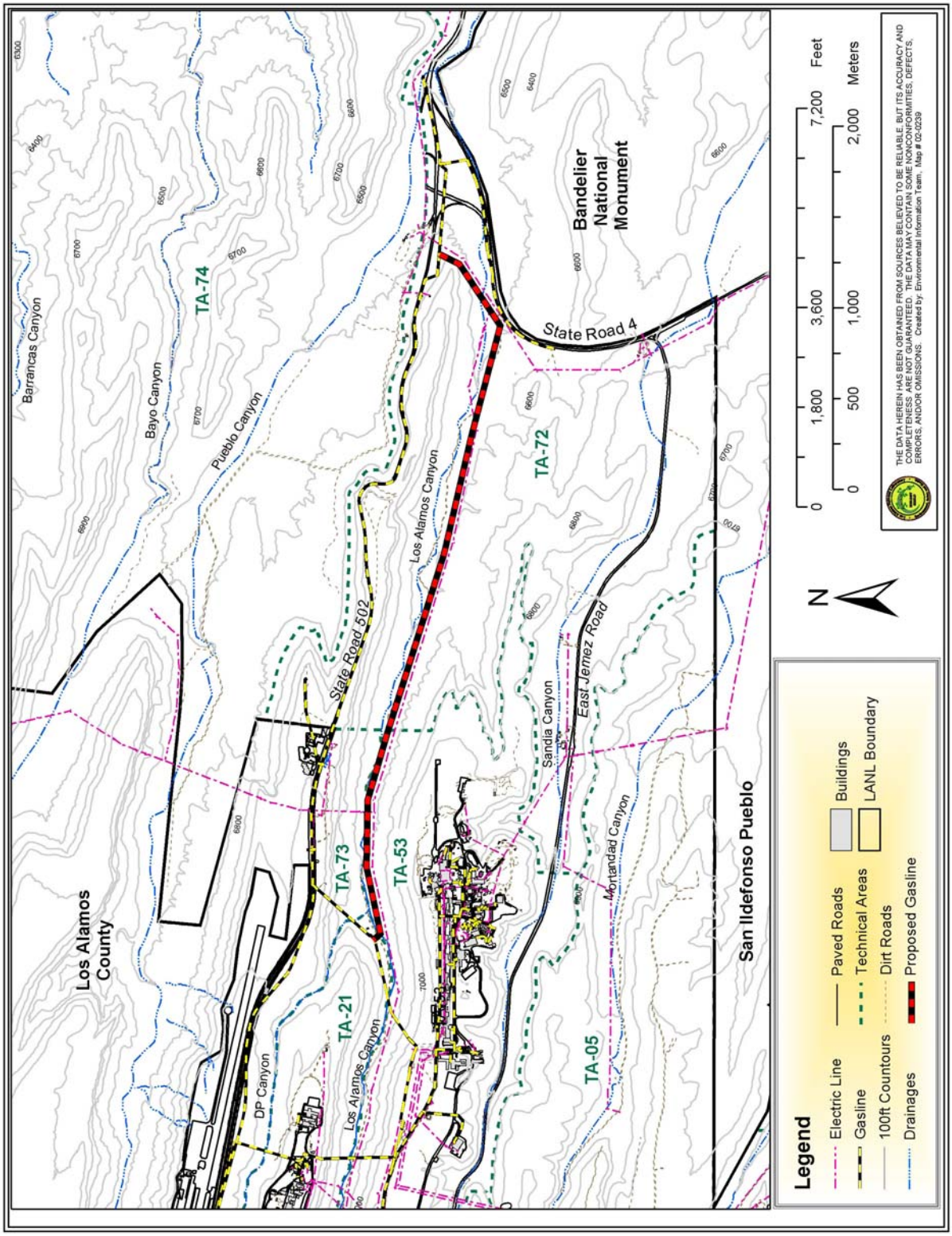

Figure 2. Proposed location of new 12-in. (30-cm) gas line in Los Alamos Canyon.

Figure 3. Existing aboveground 12-in. (30-cm) PNM gas mainline valve in Los Alamos Canyon.

along the bottom of the canyon (see Figure 2). The gas line would turn northeast near SR 4 and then be connected to the existing 12-in. (30-cm) coated steel gas transmission mainline, located within the right-of-way (ROW) of SR 502.

Los Alamos Canyon runs east-west and is roughly 300 ft (90 m) deep with steep canyon walls. The canyon is heavily wooded with piñon (*Pinus edulis* Engelm.)-juniper (*Juniperus* L.) on the south-facing slopes and ponderosa-mixed conifer on the valley floor and north-facing slopes. Cottonwood (*Populus fremontii* S. Wats.) and other scattered deciduous trees occur along a floodplain and streambed located at the bottom of the canyon. The access road leading into Los Alamos Canyon from the east end of the canyon is gated and closed to non-LANL vehicular traffic.

2.1.1 Construction

Construction work would be planned, managed, and performed to ensure that standard worker safety goals are met and that work would be performed in accordance with good management practices, regulations promulgated by the Occupational Safety and Health Administration, and LANL resource management plans, including the Wildfire Hazard Reduction Program. To prevent serious injuries, all site workers (including contractors, subcontractors, lessees and

permit or easement holders or their contractors and subcontractors) are required to submit and adhere to a Construction Safety and Health Plan. This plan is reviewed by UC staff before construction activities begin. Various DOE orders involving worker and site safety practices and environmental regulations and other laws may also apply.

Appropriate engineering controls and design features would be installed during the construction of the gas pipeline project. Engineering best management practices (BMPs) would also be implemented for the construction site as part of a site Storm Water Pollution Prevention (SWPP) Plan prepared by PNM and executed under a National Pollutant Discharge Elimination System (NPDES) construction permit obtained by PNM. These BMPs could include the use of straw bales, plywood, or synthetic sedimentation fences with appropriate supports installed to contain excavated soil and surface water discharge during construction of the pipeline. No fueling of vehicles would occur within the floodplain areas of the easement. No activities outside of the designated easement, except along the existing canyon access road, would be allowed within Los Alamos Canyon.

The proposed easement would be 50 ft (15 m) wide and for most of its length it would parallel the existing electrical power line within the canyon. The easement would avoid previously identified cultural resource sites. These cultural resources would be flagged and may be fenced to facilitate avoidance by construction activities. Similarly, small wetland areas scattered within the canyon would be identified and avoided during construction of the new gas pipeline. Mature ponderosa pine (*Pinus ponderosa* P. & C. Lawson) trees and other vegetation would be required to be removed from the easement, and a maintenance road would be constructed to allow installation and servicing of the new pipeline. Most of the easement would be located on a natural bench elevated above the floodplain. As such, contaminated soils are unlikely to be present. However, any suspected areas of potential site contamination due to prior LANL activities would be evaluated to identify procedures for working within that site area and to determine the need to remove site contamination. Contaminated soils would be removed as necessary to protect worker health or the environment before construction was initiated. The contaminated soil would either be stored outside the floodplain area and then returned to the site as fill material or characterized and disposed of appropriately at LANL or off site.

The new pipeline would be constructed by a subcontractor(s) selected by PNM. A PNM inspector would be on-site full time during construction. It is estimated that it would take approximately six months to construct the new pipeline. Work would probably start in the spring of 2003. The exact start-up time would be determined, in part, according to provisions of the LANL Threatened and Endangered Species Habitat Management Plan (HMP). Twenty to thirty people would be working on the project at any given time and would work 10 to 12 hours per day, 7 days per week. Construction workers would be drawn from communities across New Mexico. Several passenger vehicles would be present each day. Other equipment that would be used on site is listed in Table 1. Portable nondestructive radiographic equipment would be used to radiograph all welds in order to verify the integrity of the welds. Vehicles and equipment would be operated during the daylight hours and would be locked and secured onsite over night. No nighttime site illumination would be required.

Table 1. Equipment to be Used to Construct and Test Natural Gas Pipeline in Los Alamos Canyon

Equipment	Number of Units	Fuel Type
Bull Dozer	3	Diesel
Excavator	3	Diesel
Backhoe	1	Diesel
Side Boom	1–3	Diesel
Tamper Compactor	2	Gasoline
Trencher	1	Diesel
Three-quarter ton Pickup	6-8	Gasoline
1 ton Welding Truck	5	Diesel
Arc Welder	5	Diesel
Water Truck	1–2	Diesel
Graders	2	Diesel
Boring Machine	1	Diesel
Wood Chippers	3	Gasoline
Dump Trucks	2	Diesel

Not all equipment to install the pipeline would be operating at the same time. Typically, the bulldozer would clear the easement and would not be used again until it was needed to backfill the trench. The trencher or excavator and backhoe could be operating at the same or at different times from the operation of the track-mounted side boom and the welding trucks. The arc welders would only be operating during the welding process. The three-quarter ton pickups would be used for workers commuting to and from the construction site.

Construction materials would be procured primarily from New Mexico suppliers. Pipe and other supplies would be delivered to, and stored in, a fenced staging area within Los Alamos Canyon. PNM would use an existing 1.2-acre (ac) (0.5-hectare [ha]) staging area approximately 1,500 ft (450 m) southwest along SR 4 from the locked gate at the eastern end of the easement. About 20 trucks would be required to deliver pipe to the job site. The delivery and off loading of the pipe would take approximately one week. The exact material, supplies, and equipment that would be stored in the fenced staging area would be left to the discretion of the contractor but would minimally include lengths of pipe and various construction equipment. No *Resource Conservation and Recovery Act*- (RCRA-) regulated materials would be stored onsite.

Chain saws and chippers would be used to clear the 50-ft-wide easement of woody vegetation. Trees would be chipped and then spread on the ground within the easement. Dozers, backhoes, or graders may be used to remove tree stumps and rocks and to smooth the surface of the easement. Tree stumps would be chipped and then spread on the ground within the easement. Rocks would remain on site, although they would likely be moved around the easement so that they would not impede the proposed pipeline installation. The length of time required to clear the 17.5 ac (7.0 ha) of easement would likely be accomplished over a one-week period. Clearing or excavation activities during site construction have the potential to generate dust and to encounter previously buried materials. If buried material or cultural remains are encountered during construction, activities would cease until their significance was determined and

appropriate subsequent actions taken. Standard dust suppression methods (such as water spraying or soil tackifiers[3]) would be used to minimize the generation of dust during construction activities. New Mexico Environment Department (NMED) does not regulate dust from excavation or construction, but best achievable control measures (BACMs) would be used when appropriate to control fugitive dust and particulate emissions.

Once the easement is cleared, a 4- to 8-ft-deep by 2-ft-wide (1.2- to 2.4-m-deep by 0.6-m-wide) trench would be dug along the length of the easement. Equipment involved in trenching would include a trencher, backhoe, and possibly a trackhoe. Soil would be placed next to the trench for use in backfilling once the pipe is laid. No placement of excavation spoils in or near drainage swales or streambeds would occur. Excavated materials that were unsuitable for backfilling along the trench (such as large rocks) would be properly disposed of either along the easement or at an appropriate receiving site elsewhere within LANL or offsite. Where the pipeline crosses the floodplain and streambed, a boring machine would be used to bore under the streambed. The hole would be slightly bigger than the 12-in. (30 cm) pipe and would not need to be packed with a clay slurry material known as "drilling mud." However, drilling mud would be used as a lubricant for the boring machine. The trenching work would also require the use of a variety of hand tools (such as shovels). Noise at the site would be audible primarily to the involved workers. Involved site workers would be required to wear appropriate personal protective equipment (PPE), including hearing protection. The length of time necessary to dig the entire trench would depend upon several factors such as terrain, access, and compaction of the soil. It would likely be accomplished over a one- to two-month period.

Sections of pipe would be placed along the trench and then several of these pipe sections would be welded together. Welding trucks would be used for this purpose. Generally, three lengths of 40-ft (12-m) pipe would be welded together before being placed into the trench with three side booms (truck-mounted cranes). Once in the trench, the newly welded section would then be welded to the previous section. The length of welded pipe that could be placed into the trench in one piece depends upon the number of side booms available. Before placement of the welded section of pipe into the trench, the welds would be radiographed to ensure a proper weld. The portable radiographic equipment would be mounted in a pick-up truck. Re-welding would be performed if needed. The amount of time necessary to perform all of the welds would depend upon a number of issues such as the equipment available, number of bends or curves in the pipeline, and the nature of the soils and excavations; the period of performance is estimated to be two months or less. Because of the short length of pipeline (about 3 mi [5 km]) in a remote area, no new valves would be required for the pipeline except for the existing valve in Los Alamos Canyon.

Before the new pipeline would be placed into service, it would undergo hydrostatic tests. Approximately 91,000 gallons (344,890 liters) of potable water (obtained from a commercial supplier and delivered to the site in tanker trucks) would be pumped into the new pipeline. Pressure readings would be taken automatically, with a pressure recording chart, each hour for 24 hours to determine if there are any leaks within the pipeline. If leaks were found, they would be repaired be re-welding the leaking area.

[3] Tackifiers are chemical dust suppressants often added to water that acts to disperse the chemicals, then evaporates after application. The chemicals that are left behind bind the soil particles together into larger particles that are less easily blown into the air.

The hydrostatic test will be conducted in accordance with PNM's 5-Year Renewable Hydrostatic Test Waters Discharge Permit HBP-NM-007 from the New Mexico Energy, Minerals, and Natural Resources Department Oil Conservation Division (OCD). PNM is required to notify the OCD annually of any discharges under this permit. Testing the water quality prior to discharge is not required by the OCD as a fresh water supply system or other potable source shall be used. No test waters will be discharged to any lakes, perennial streams, rivers, or any surface bodies of water or their respective tributaries. The test water will be released upon the ground within the easement using BMPs in such a way that there would be no erosion.

Connecting the new pipeline to the existing pipelines would require the excavation of the existing line at the connection points. Backhoes would be used for excavation. Gas service would be stopped in the existing line at the point of connection using specialized "stopple" equipment. Basically, plugs (also known as "stops') would be placed within the existing line to stop the flow of gas at the connection point. The existing line would then be cut with a welder and the new pipeline welded to the existing line. The welds would be radiographed and, if acceptable, the plugs would be removed from the gas line resuming the flow of gas. It is estimated to take approximately eight hours to make this type of connection.

Upon completion of the new pipeline installation and successful testing, the trench would be backfilled using backhoes. The soil would be roller compacted and the easement would be graded and reseeded with native grasses. A maintenance service road would remain on the easement to facilitate future servicing of the pipeline. The width of the service road would not exceed 10 ft (3 m). Signs designating a buried gas pipeline would be placed along the easement, directly above the pipeline at a frequency determined by line-of-sight (each sign must be visible from the next one). Cathodic protection[4] test stations would also be placed above the pipeline approximately every 1,000 ft (300 m). These test stations would have sacrificial magnesium cathodic protection anodes, which would be replaced over the years of pipeline operation as necessary.

The existing 8.1-in. (20.3-cm) high carbon steel gas line under SR 502 would be capped and left in place. This gas pipeline would be exposed at each end by excavation with a backhoe. The gas line would be cut with welders and then would be purged with air. Once all of the gas has been removed from the pipeline, steel end caps would be welded on each end and the trenches backfilled. No concrete grout material would be placed within the pipeline. It is anticipated that this work could be accomplished without damage to the existing road surface but traffic may need to be temporarily re-routed for a period of a few hours while this action is performed. PNM would also legally abandon the ROW along this pipeline.

2.1.2 Operation and Maintenance of New Pipeline

The new pipeline easement would be monitored by PNM to ensure seed germination and would be reseeded as necessary. The 10-ft- (3-m-) wide service road would be maintained for the useful life of the pipeline within the easement for access to the pipeline for maintenance activities. PNM would repair soil erosion and would remove trees and brush within the easement

[4] Cathodic protection is the elimination or reduction of corrosion on pipe by attachment of an anode. An anode is the negatively charged terminal of a primary cell or of a storage battery that is supplying current.

as part of their continuing maintenance of the pipeline. Equipment used for these purposes would likely include backhoes, shovels, chain saws, and handheld pruners and trimmers.

The pipeline would be operated at a maximum allowable operating pressure of 600 pounds per square inch (psi) (42 kilograms per square centimeters [kg/cm^2]). The pipeline would be leak surveyed once every year by personnel walking the length of the pipeline. These personnel would survey the pipeline trench area with hand-held natural gas detectors. The pipeline would also be monitored for corrosion and vegetation regrowth. The pipeline would be maintained cathodically and the magnesium anodes serviced once a year or sooner if needed.

No utility service would be required for the operation and maintenance of the new gas pipeline. Any power generators, welding trucks, water trucks, or other equipment needed for required maintenance activities would be brought in by PNM on an "as needed" basis.

The expected operational lifetime of the new pipeline would be at least 50 years. At the end of the pipeline's useful life, it would be purged and capped (as described previously for the existing gas line present underneath SR 502), and may be abandoned in place or removed. Additional NEPA compliance review may be necessary at that time.

2.2 No Action Alternative

The No Action Alternative provides a description of the potential effects of taking no action to compare to the potential effects of the Proposed Action. This alternative must be considered even if DOE is under a court order or legislative command to act [10 CFR 1021.32 (c)]. Under the No Action Alternative, NNSA would not grant an easement in Los Alamos Canyon and PNM would not construct a new 12-in. (30-cm) natural gas pipeline as described in the Proposed Action. No disturbance of the canyon floor in Los Alamos Canyon would occur. The existing 8.1-in. (20.3-cm) gas line under SR 502 would continue to be used and maintained. Maintenance and repairs of the existing gas line would remain problematic. Traffic disruption would be required to maintain the gas line. Natural gas service to LANL, Los Alamos County, and surrounding communities would continue to be limited by the diameter of this pipe and service could not be increased through this pipeline. If any of the pipeline beneath SR 502 failed, major disruption of gas service could occur for a period of time over days or weeks before a repair could occur. Traffic would have to be routed to the other three roads that lead out of Los Alamos County.

2.3 Alternatives Considered but Dismissed from Further Consideration

2.3.1 Replace Existing Pipeline Under SR 502

Replacement of the existing 8.1-in. (20.3 cm) pipeline under SR 502 with a new 12-in. (30 cm) pipeline would disrupt traffic along this main artery into Los Alamos for a period of more than six months. There is no room outside of the narrow road for the pipeline. Replacing the pipeline under the road would require that the existing road surface be partially or wholly removed. After placement of the new pipe, a new road surface would have to be installed. Future maintenance and repairs would also disrupt the traffic flow at both scheduled and at unpredictable times. This alternative was considered to be unreasonable and was not analyzed further in this EA.

2.3.2 Install Pipeline in Pueblo Canyon

Under this alternative, a new pipeline would be installed in the canyon floor along the south side of Pueblo Canyon from the intersection of SR 4 and SR 502 to approximately 6,000 ft (1,800 m) to the west. From here the pipeline would traverse the canyon wall to the south and then continue west along the mesa top to the existing 12-in. (30 cm) mainline tie-in at East Gate. Building a pipeline up the steep canyon wall would significantly increase costs, would require that the pipeline traverses the canyon wall, and be exposed (not buried). Exposed pipelines increase the risk of vandalism and reliability issues. This alternative was considered to be unreasonable due to pipeline exposure and costs and was not analyzed further in this EA.

2.3.3 Install Pipeline Under Existing Gravel Roadway in Los Alamos Canyon

Another alternative would be to install the new pipeline under the existing gravel road in Los Alamos Canyon. This road has numerous turns that would require bending the pipeline or the installation of fittings to allow for curves in the pipeline. Additionally, the road would have to be improved and widened and vegetation would need to be removed at some locations. This road also crosses the streambed more than six times, thus adverse effects to the streambed and floodplain would be greater than if the pipeline were constructed as described in the Proposed Action. The numerous curves in the pipeline would also increase the duration of construction and costs. This alternative was considered to be unreasonable and was not analyzed further in this EA.

2.3.4 Install Pipeline in Sandia Canyon

Installing the new pipeline in Sandia Canyon instead of Los Alamos Canyon would result in a much longer pipeline being required thereby increasing installation and maintenance costs. Much of the pipeline would need to be installed under East Jemez Road. This would increase costs and disrupt traffic along this road, which is one of the four roads to LANL and the Los Alamos town site. Truck traffic is routed along this road and inspections of delivery trucks are performed. Closing this road for an extended period of time could potentially delay shipments of goods into LANL. There are also potential release sites (PRSs) and a radioactive waste line nearby which would have to be avoided, thus increasing the length of the pipeline and the number of curves it would require. This alternative was also considered to be unreasonable and was not analyzed further in this EA.

2.4 Related Actions

2.4.1 Site-Wide Environmental Impact Statement

The SWEIS (DOE 1999a), dated January 1999, was issued in February of that year. A Record of Decision (ROD) was issued in September 1999, and a Mitigation Action Plan was issued in October 1999. In the ROD, DOE decided to continue operating LANL at the level of Expanded Operations analyzed in the SWEIS. The SWEIS included the information that portions of the existing gas distribution system are over 50 years old and would require modification and upgrades in the future.

2.4.2 Land Conveyance and Transfer

A portion of the proposed alignment of the 12-in. (30-cm) gas pipeline is located within the White Rock Y Tract identified in the ROD for the *Conveyance and Transfer of Certain Lands Administered by the DOE and Located at Los Alamos National Laboratory, Los Alamos and Santa Fe Counties, New Mexico* (DOE 1999b). To be conveyed or transferred, these tracts must not be necessary for required DOE mission-related use and must have undergone any necessary environmental restoration or remediation activities. If transferred, it is anticipated that these lands would be used for natural areas or used for transportation and utility improvements by Los Alamos County. However, DOE determined that part of the White Rock Y Tract considered for the proposed easement to PNM should be retained by the DOE. This part of the White Rock Y Tract would serve as a health and safety buffer area for the proposed Advanced Hydrotest Facility (AHF) if NNSA decides to build the facility at LANL's TA-53. Should this conveyance decision change, any utility easements would be transferred with the land. The proposed gas pipeline would be buried from 4 ft to 8 ft (1.2 m to 2.4 m) deep and would not be expected to affect or be affected by the AHF project if it were constructed at LANL.

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

Chapter 3.0 describes the natural and human environment that could be affected by the Proposed Action and the No Action Alternative and the potential environmental consequences of those actions. Based on the Proposed Action description, environmental resources that may potentially be affected as a result of implementing the Proposed Action have been considered. Environmental issues were identified and either addressed in this section or not, based on the "Sliding Scale Approach" discussed earlier in this EA (Section 1.4). Table 2 identifies the subsection where potential environmental issues are discussed in this document. Table 3 identifies the environmental issues that were dismissed from further consideration.

Table 2. Potential Environmental Issues

Environmental Category	Applicability	Subsection
Land Use	Yes	3.2.1
Geologic Setting	Yes	3.2.2
Water Resources	Yes	3.2.3
Floodplains/Wetlands	Yes	3.2.4
Biological Resources	Yes	3.2.5
Air Quality	Yes	3.2.6
Visual Resources	Yes	3.2.7
Cultural Resources	Yes	3.2.8
Utilities and Infrastructure	Yes	3.2.9
Noise	Yes	3.2.10
Human Health	Yes	3.2.11
Waste Management/Environmental Restoration	Yes	3.2.12
Transportation and Traffic	Yes	3.2.13

3.1 Regional Setting

The Proposed Action would be located within the areas of Los Alamos and Santa Fe Counties that include LANL. LANL comprises a large portion of Los Alamos County and extends into Santa Fe County. LANL is situated on the Pajarito Plateau along the eastern flank of the Jemez