4.0 ENVIRONMENTAL CONSEQUENCES

4.1 Anticipated Effects of Implementing the Proposed Action and the No Action Alternative

4.1.1 Transportation, Traffic, and Infrastructure

Proposed Action

The Proposed Action would have some long-term effects on the existing transportation network at LANL because new roads would be constructed around the TA-3 area while existing roads such as Diamond Drive would no longer serve as part of the major road network. Effects on traffic and infrastructure would be minor. Project design and sequencing would be used to minimize traffic and infrastructure impacts during construction of the proposed bypass roads and related access controls, including delayed response times for emergency vehicles.

Traffic control plans would be implemented to minimize delays and congestion during the construction. Nevertheless, those traveling to and from the LANL core would experience some inconvenience and delays during construction. In the long term, traffic patterns would change for some non-LANL commuter traffic between White Rock and Los Alamos town site because unauthorized vehicles would be routed to East Jemez Road and the Main Hill Road. Most of the residents of White Rock work at LANL and could continue to use Pajarito Road. While East Jemez Road is used for most school bus trips, there are also six school buses that use Pajarito Road.

Pajarito Road currently carries an average of 8,000 vehicle trips in both directions each workday while East Jemez carries 6,000. It is estimated that approximately 7,340 of these Pajarito Road trips are LANL-related, and that 660 or fewer "non-authorized" average daily vehicle trips would divert from using Pajarito Road and use East Jemez Road once access-controls were instituted. Vehicles rerouted to East Jemez Road would use State Road 4, thereby increasing average daily trips by about seven percent over the current level of 9,500. A segment of SR4 from Rover Boulevard in White Rock to East Jemez Road traverses the Pueblo of San Ildefonso. The DOE and San Ildefonso Pueblo renegotiated a 30-year easement on this stretch of highway in 2000.

Total available parking at LANL would remain the same, but location and access would change following construction, resulting in more circuitous trips and longer walks to work places. The TA-3 parking lot shuttle would operate within the proposed access-controlled area and service would not be disrupted because new parking lot access roads would be constructed.

Infrastructure effects would primarily occur during construction of the proposed access controls. Several existing utilities, including water and telecommunications, would be relocated or rerouted. While this would have no long-term effect it would involve trenching and placement of new lines and the capping and abandonment of existing lines or removal of the lines. Most of the trenching that would impact traffic would occur for approximately 3,000 ft (900 m) along Pajarito Road to serve the access-control station proposed at the east end.

No Action Alternative

Under the No Action Alternative, the new bypass roads, access-control stations, intersection improvements, internal traffic circulation improvements, connector roads, and parking lots would not be constructed. There would be no relocation of existing utilities. LANL and non-LANL traffic would continue to use Pajarito Road which could be closed or subject to access-controls in response to daily security conditions. Diamond Drive would remain open as the principal north and south transportation link through the LANL TA-3 area. Traffic congestion and safety conditions would not be improved at and around TA-3. Access by the public to the LANL core area would not change and security concerns would not be addressed.

4.1.2 Ecological Resources

Proposed Action

The Proposed Action would result in the removal of vegetation within a 50-ft (15-m)-wide corridor for most of the length of the proposed Western Bypass Road. The Eastern Bypass Road crossing Mortandad Canyon would result in removal of vegetation on the upper slopes within a corridor approximately 200 ft (60 m) wide. The maximum amount of vegetation removed would be approximately 7.2 ac (2.0 ha).

Larger wildlife species that currently move through the Western and Eastern Bypass Road corridors would be temporarily disturbed during the construction activities. Most of these species, however, would likely continue using the areas around the proposed road for foraging and migration after construction was complete. The Western Bypass and Eastern Bypass Road corridors also would be partially within an AEI for the Mexican spotted owl. The area of potential sensitive habitat disturbed would be approximately 5.3 ac (2.2 ha). This comprises less than one percent of habitat loss in this AEI. Timing restrictions would be imposed to mitigate effects on the AEI in accordance with the LANL HMP (LANL 1998a) so that there would not likely be any adverse affects from implementing the Proposed Action.

No long-term effects are anticipated for any floodplain or wetland. The Western Bypass Road corridor is not in a floodplain or wetland area; however, portions of the Eastern Bypass Road corridor span floodplain and are located at or near wetland areas in Mortandad Canyon. These would be avoided by bridging the canyon. During construction, only selected larger trees that interfere with bridge structures would be removed. BMPs would be employed during and after the construction phase to control runoff into the floodplains and drainage areas along both of the proposed bypass road corridors.

No Action Alternative

Under the No Action Alternative, the proposed Western and Eastern Bypass Roads, access-control stations, and related facilities would not be built. There would be no biological resources effects as a result of implementing the No Action Alternative. No changes to habitat or migration corridors would result and there would be no floodplains or wetlands affected.

4.1.3 Water Quality

Proposed Action

Vegetation reduction from canyon slopes would expose mineral soils due to excavation and heavy equipment. BMPs for runoff control, such as silt barriers and straw bales, would be used during this project. Siltation into the floodplains would be minor and temporary in nature. No long-term effects to surface water quality would be likely.

The proposed bypass road corridors would cross several PRSs that would either be remediated before construction begins or avoided so that future cleanup could be accomplished. In some cases, ER Project may permit work if it determines that the PRS does not pose a threat to people or the environment. A Storm Water Pollution Prevention Plan would be developed and implemented, including the placement of BMPs to prevent erosion of disturbed soil by storm water runoff or other water discharges. A Clean Water Act Section 404 Dredge and Fill Permit and a State of New Mexico section 401 Water Quality Certification would be obtained if required. All vehicles and equipment used for construction purposes would be inspected for leaks before arrival at the construction site to avoid inadvertent surface contamination from hydrocarbon fuel products.

The addition of new impermeable road surfaces in the TA-3 area would increase storm water run-off and would decrease surface water infiltration. While decreased infiltration is not expected to have an adverse effect on groundwater quality, the increased amount of run-off from road surfaces may have a slight effect on surface water quality and on residual contaminant transport within canyon sediments, streams, and area wetlands. BMPs should keep sediment and residual contaminant transport from occurring. The wetlands in Sandia and Mortandad Canyons could also be affected by runoff from the proposed Eastern Bypass Road, but the Sandia Canyon wetland presently receives contaminants from PRSs located within TA-3 and from general runoff from TA-3.

No Action Alternative

Under the No Action Alternative, the new bypass roads would not be constructed. No effects on water quality would result from implementing the No Action Alternative. The Mortandad and Sandia Canyons wetlands would not receive any runoff from the Eastern Bypass Road since it would not be constructed.

4.1.4 Environmental Restoration

Proposed Action

There are eight PRSs within the proposed bypass road corridors (see Table 5). Most of the PRSs in the proposed area of construction are located either in storm drain pipelines, liquid radioactive waste pipelines, or sanitary waste pipelines. Sampling, characterization, and remediation of some PRSs would occur before construction. Hazardous or radioactive wastes from PRSs impacted by construction activities would be removed and disposed of by the ER Project before construction activities begin. Some PRSs would be avoided by bridging or routing the road away from the area.

Table 5. PRSs in the Path of the Bypass Roads

PRS ID	Description
SWMU 03-014(a)-99	Consolidated unit representing the former WWTP
SWMU 03-009(i)	Debris area located east of the Liquid and Compressed Gas Facility
SWMU 03-015-00	Outfall located between Eniwetok Road and security fence northeast of Building 03-141
SWMU 03-045(h)-00	Consolidated unit consisting of cooling tower outfalls
SWMU 61-002	Storage area east of the Radio Repair Shop (Building 61-23) on East Jemez Road
SWMU 61-005	30-acre Los Alamos County Landfill
SWMU 61-006	Waste oil recycling area located in Los Alamos County landfill
SWMU 03-010(a)	Surface disposal site located on the rim of Two-mile Canyon west of Building 03-30

The PRSs that would be affected by the proposed construction of the Eastern Bypass Road include the following eight sites:

SWMU 03-014(a)-99: A consolidated unit representing the former WWTP. Several of the PRSs that make up this SWMU would be affected by the proposed road construction; some would require sampling and analysis to determine the nature and extent of contamination requiring cleanup while others could need Voluntary Corrective Actions. The Proposed Action would bridge this location and also possibly apply limited remediation as appropriate.

SWMU 03-009(i): A debris area located east of the Liquid and Compressed Gas Facility (TA-3-170). This SWMU requires further investigation. The Proposed Action would include remediation of this site as appropriate.

SWMU 03-015-00: NPDES-permitted Outfall 04A140 located between Eniwetok Road and the security fence northeast of Building 3-141 (Rolling Mill Building). This SWMU has been investigated but requires further study. The Proposed Action would include remediation of this site as appropriate.

SWMU 03-045(h)-00: A consolidated unit consisting of two NPDES-permitted outfalls associated with cooling towers. Sampling for former SWMU 03-049(a) suggests no contaminants of concern exist at this SWMU. Former SWMU 03-045(h) never had hazardous constituents or hazardous wastes in its effluent, and structure 03-187 had no history of chromate use. These former SWMUs were recommended for No Further Action. This PRS would be avoided by routing the road away from the SWMU.

SWMU 61-002: A storage area east of the Radio Shop (Building 61-23) on East Jemez Road that was used to store PCB-containing wastes. The SWMU was historically used to store capacitors and transformers, unmarked containers, and several oil-filled containers. Leaking containers with PCB-contaminated oil were also stored at SWMU. Elevated PCB concentrations were found in two samples in the drainage pathway, the furthest downgradient locations that were sampled. Further investigations were recommended to identify the extent of contamination. The Proposed Action would involve cleanup as appropriate.

SWMU 61-005: The 30-acre County Landfill. The landfill is located on the rim of Sandia Canyon near East Jemez Road. The landfill consists of pits excavated into tuff designed so that stormwater runoff does not enter the canyon. Waste is deposited into the active pit and covered

with soil daily. When full, the pit is capped and a new pit is put into service. The landfill was established in 1974 and is expected to close in 2004. Long-term monitoring of ground water and surface water quality will be conducted post-closure. The Proposed Action includes relocating affected surface activities in the vicinity of the landfill entrance, offices, and scales, and remediating as appropriate.

SWMU 61-006: An active oil recycling area located at the County Landfill (SWMU 61-005). This lined pit holds a 2,500-gal. holding tank. An 8-ft-long pipe leads to a filling bin at ground level. The Proposed Action would route the road to avoid this SWMU.

One PRS that would be affected by the proposed construction of the Western Bypass Road is the following site:

SWMU 03-010(a): A surface disposal site located on a steep slope along the rim of Two-mile Canyon west of Building 3-30. Discarded vacuum pump oil containing radionuclides and mercury was disposed of at this site in the 1950s. Remediation of this mixed waste site, which also contains VOCs, has been ongoing since 1992. Many of the soil contaminants have been removed. Stormwater runoff data does not indicate that this SWMU has had an effect on surface water quality. The Proposed Action would bridge this disposal site; however, remediation would occur if necessary.

No Action Alternative

Under the No Action Alternative, the proposed bypass road would not be constructed. PRSs in the proposed road corridor would not be affected by construction activities. Site cleanups would not be accelerated to provide cleanup of these particular PRSs.

4.1.5 Waste Management

Proposed Action

The Proposed Action would not require the construction of new waste landfills. The reuse of existing recyclable materials stockpiled at LANL would be a beneficial effect to the overall waste management program at LANL. The Proposed Action would generate a very small amount of solid waste from construction that would be disposed of at the Los Alamos County Landfill or other New Mexico solid waste landfills in accordance with practices required by LANL's LIR for General Waste Management (LANL 1998c). All excavated material is expected to be re-used in the construction of the proposed bypass road. Any soil excavated during the geotechnical investigation of the Sandia Canyon rubble pile would be replaced. Concrete and asphalt removed from the top of the Sandia Canyon rubble pile or from other locations such as from existing parking areas or streets would be recycled for use as road base material. Use of the existing construction debris staging area currently located at Sigma Mesa (TA-60) may be necessary for a short period of time during road construction to stockpile soil and other recyclable materials that would be used later for roadbase and fill along the proposed bypass road corridors.

Construction waste would be generated from the demolition of the high bay portion of Building 3-40 in TA-3. Approximately 200 cubic yards (yd^3) (155 cubic meters [m^3]) of construction debris are estimated to result from demolition of the high bay area. Recyclable material would

be packaged and shipped to an appropriate recycling facility. Material that is not recyclable would be disposed of at the Los Alamos County Landfill or other New Mexico solid waste landfills.

Hazardous waste generated by implementing the Proposed Action would be asbestos from the demolition of the Building 3-40 high bay and from cleanup of PRSs. Approximately one cubic yard of asbestos-contaminated material would be appropriately disposed of offsite at permitted landfills. Hazardous wastes from PRSs would be removed, as necessary, by the ER Project before roadwork was begun; approximately 800 yds^3 (608 m^3) of hazardous waste is estimated to be generated.

Approximately 200 trees would be removed to prepare the corridor for construction activities. Brush, trees, or vegetation would be chipped onsite and spread along the corridor. Chipped material would not be spread in or near any floodplain or drainage area.

No Action Alternative

There would be no additional waste generated under the No Action Alternative. There would be no demolition, grading, or construction activities. The construction debris waste shipments to landfills or recycling centers would not occur. No beneficial effects to the environment by PRS removals or from re-use of recyclable materials stockpiled at LANL would occur.

4.1.6 Air Quality

Proposed Action

Potential temporary effects on air quality would be associated with the Proposed Action. Construction of the proposed bypass roads would result in temporary, localized emissions associated with vehicle and equipment exhaust as well as particulate (dust) emissions from excavation and construction activities. The air emissions would not be expected to exceed either the NAAQS or the NMAAQs. Effects of the Proposed Action on air quality would be negligible compared to potential annual air pollutant emissions from LANL as a whole. No increases in non-point source emissions would be expected once access controls and traffic improvements were implemented, because there would be no appreciable net increase in vehicle trips or trip lengths within Los Alamos. Distances whether using Pajarito or East Jemez are nearly identical, and rerouted trips from White Rock to East Jemez Road would account for no more than a seven percent increase in average daily trips on a road that now carries fewer than 10,000 vehicles a day. Safety improvements resulting from the Proposed Action and LANL routine maintenance projects may also result in less congestion and therefore no net increase in emissions.

Hazardous wastes from some PRSs would be removed by the ER Project before the proposed construction activities begin. ER Project remediation activities could potentially affect air quality on a temporary basis. Excavation activities for the purpose of removing contaminated soil from ER Project sites for treatment or transport could result in a minor amount of airborne fugitive dust and the dispersion of volatile contaminants. The amounts of air emissions would be kept to a minimum by the control measures proposed as part of the Proposed Action, such as the use of water spray trucks and soil tackifiers. Radionuclide emissions from the PRSs would be monitored as part of LANL's ongoing air monitoring program. Potential emissions of

radionuclides would not be expected to exceed the EPA National Emission Standards for Hazardous Air Pollutants requirement, which is designed to protect the public from hazardous air pollutants.

Emissions from internal combustion and diesel engines would result from excavation and construction activities. All air emissions associated with the operation of excavation and construction equipment would be below ambient air quality standards. Total emissions of criteria pollutants and other air emissions associated with the operation of heavy equipment for excavation and construction activities would contribute greater emissions than other vehicles due to the types of engines and their respective emission factors. Heavy equipment would emit small quantities of criteria pollutants subject to the NAAQS and NMAAQS as adopted by the State of New Mexico in its State Implementation Plan[9].

No Action Alternative

There would be no change from ambient air quality effects associated with implementing the No Action Alternative. Excavation and construction activities would not occur.

4.1.7 Geologic Setting

Proposed Action

The local geologic setting is expected to have minimal effects on the Proposed Action; and no effect on the local geology is anticipated from implementing the Proposed Action. Seismic activity could affect the new bypass roads; however, the probability of a seismic event is very low. The proposed bypass roads would be designed with structural reinforcements to meet current building codes with respect to seismic hazards.

The local soils may have a slight affect on the Proposed Action. Local soils may need to be stabilized, or possibly replaced with a more suitable substrate to support the bypass roads.

No Action Alternative

Under the No Action Alternative, the new bypass and related facilities would not be constructed. Therefore, no geological or soils effects would result from implementing the Proposed Action.

4.1.8 Cultural Resources

Proposed Action

The planned construction of the TA-3 bypass roads would not affect recorded prehistoric archaeological sites or recorded TCP in the construction area. These sites would be marked as appropriate and avoided during construction. The demolition of a portion of Building 3-40 would be an adverse effect on an historic structure. Because the demolition of a portion of this building would be an adverse effect to the property as identified in Section 106 of the National Historic Preservation Act of 1966 (as amended) and 36 CFR Part 800.5, "Assessment of Adverse

[9] The purpose of the State Implementation Plan is to ensure that federal emission standards are being implemented and NAAQs are being achieved.

Effects," a treatment plan to resolve these adverse effects would be negotiated between the SHPO and the NNSA through an interagency Memorandum of Agreement (MOA). The treatment plan would include a combination of the following elements: archival medium format photos, existing architectural blueprints, preparation of a current set of as-built drawings, preparation of a detailed report on the building's history, and interviews with past and present workers. Additions to the treatment plan could result from negotiations with the SHPO over the resolution of the adverse effects. The Advisory Council on Historic Preservation would be notified of the MOA and would have an opportunity to comment. No other adverse effects to historic structures would be expected to occur from implementing the Proposed Action.

No Action Alternative

Under the No Action Alternative, the new bypass roads would not be constructed. Therefore, there would be no adverse effects to cultural resources as a result of the No Action Alternative. The Building 3-40 high bay would not be demolished.

4.1.9 Noise

Proposed Action

The Proposed Action would result in limited short-term increases in noise levels associated with various demolition and construction activities. Following the completion of these activities, noise levels would return to existing levels. Noise generated by the Proposed Action is not expected to have an adverse effect on LANL workers, or members of the public, or on the environment.

The demolition of existing structures, earth-moving activities, and road and structure construction would require the use of heavy equipment for removal of debris, dirt, and vegetation and for paving of the new road. Heavy equipment, such as front-end loaders and backhoes, used during construction of the various structures and roadways would produce intermittent noise levels at around 73 to 94 dBA at 50 ft (15 m) from the work site under normal working conditions (Canter 1996, Magrab 1975). Truck traffic would occur frequently but would generally produce noise levels below that of the heavy equipment. PPE would protect workers hearing if site-specific work produced noise levels above the LANL action level of 82 dBA. Based upon a number of physical features, such as attenuation factors, noise levels should return to background levels within about 200 ft (66 m) of the noise source (Canter 1996). Since sound levels would be expected to dissipate to background levels before reaching most publicly accessible areas or undisturbed wildlife habitats, sounds from construction activities should not be noticeable to most members of the public and should not disturb most local wildlife. Traffic noise from commuting workers would not be expected to noticeably increase over the present traffic noise level on roads at LANL. The vehicles of workers would remain parked during the day and would not contribute to background noise levels. Therefore, noise levels are not expected to exceed the established TLV.

Long-term maintenance of the roads would not generally require the use of heavy equipment. Routine maintenance operations under the Proposed Action would result in noise of short-term duration that would be highly localized. The noise would also be consistent with noise levels in nearby developed areas and on existing roads at LANL.

No Action Alternative

Under the No Action Alternative, ambient noise levels would remain unchanged in the vicinity of TA-3. Potential noise from demolition and construction activities associated with the Proposed Action would not occur.

4.1.10 Human Health

Proposed Action

Building demolition and road and access-control station construction and maintenance work planned under the Proposed Action would not be expected to have any adverse health effects on LANL workers. LANL workers would not be directly involved in demolition, site clearing, earthmoving, heavy equipment operations, or access-control station construction. Non-UC support and maintenance contractors would be actively involved in demolition, road construction, and maintenance activities under the Proposed Action. Approximately two NNSA workers and about 20 LANL workers would perform site inspections and monitor demolition activities during periods of peak activity. Applicable safety and health training and monitoring, PPE, and work-site hazard controls would be required for these workers.

The Proposed Action is not expected to result in adverse long-term effects on the health of construction or maintenance workers. Approximately 100 peak-period construction workers would be actively involved in potentially hazardous activities at the various construction and demolition locations around the LANL core and along Pajarito Road where access controls would be placed. Building demolition and road and access-control construction activities would take up to about two years to complete and involve heavy equipment operations. Removal of dirt and vegetation would be required from the road corridors. Large earth-moving machines would be used at various times at the subject locations. Potentially serious exposures to various hazards or injuries are possible during the construction phase of the Proposed Action. Adverse effects during construction activities could range from relatively minor events (such as cuts or sprains) to major injuries (such as broken bones or fatalities). To prevent serious injuries, all non-LANL site workers are required to adhere to a Contractor Safety Plan (Plan) for construction activities. Adherence to an approved Plan, use of PPE and engineered controls, and completion of appropriate hazards training are expected to help prevent adverse long-term health effects on demolition and construction workers.

Routine maintenance of the proposed new road and access-control stations would be performed in accordance with standard practices used at LANL for conducting work on buildings and infrastructure. Hazards associated with routine maintenance operations of buildings and roads could pose a minimal health risk to non-LANL maintenance workers. Adherence to required and applicable hazard control plans and completion of appropriate training would help to prevent adverse health effects on these workers.

No Action Alternative

Under the No Action Alternative, there would be no potential for injuries to LANL workers and non-LANL demolition and construction workers from activities planned under the Proposed Action. No exposures to demolition activities, earth moving, or road and access-control station construction would take place.