CHAPTER 8
RESOURCE COMMITMENTS

8.0 RESOURCE COMMITMENTS

In accordance with the National Environmental Policy Act (NEPA), Section 102 (42 *United States Code* [U.S.C.] 4332), and the Council on Environmental Quality's NEPA implementing regulations (40 *Code of Federal Regulations* [CFR] 1502.16), Chapter 8 addresses the following:

- Any unavoidable adverse effects associated with implementation of the alternatives presented in Chapter 3, "Description of Alternatives"
- The relationship between short-term uses of the environment and maintenance and enhancement of long-term productivity
- Any irreversible and irretrievable commitments of resources associated with implementation of the alternatives

8.1 Unavoidable Adverse Effects

The potential environmental consequences of implementing the alternatives are discussed in Chapter 5 of this site-wide environmental impact statement (SWEIS). During implementation of any of the alternatives, the National Nuclear Security Administration (NNSA) would take all reasonable measures to avoid or minimize potential environmental impacts. These measures would include best management practices as well as the mitigation measures presented in Chapter 7 of this SWEIS. Following a Record of Decision, NNSA would also commit to development and implementation of a Mitigation Action Plan in accordance with 10 CFR 1021.331, if mitigation commitments are made in the Record of Decision. However, there could be unavoidable adverse impacts associated with implementation of the alternatives. This section provides a summary of those unavoidable adverse impacts.

8.1.1 No Action Alternative

8.1.1.1 Nevada National Security Site

Most air emissions at the Nevada National Security Site (NNSS) (formerly known as the Nevada Test Site) would be associated with mobile source (e.g., vehicles and portable equipment) activity. The NNSS contribution to the mobile source emissions in Clark and Nye Counties would continue to be small and would decrease relative to 2008 emission levels. By 2015, volatile organic compound (VOC) emissions from NNSS mobile sources in Clark County would increase relative to 2008 emission levels by 0.4 tons per year due to the widespread use of ethanol blends in southern Nevada. VOC emissions are not expected to violate the ozone air quality standard because the increase would be relatively small and such mobile source emissions would be dispersed throughout the Las Vegas Valley and the United States (U.S.) Route 95 corridor. NNSS-related activities under the No Action Alternative would create about 40,000 carbon-dioxide-equivalent tons of greenhouse gas emissions per year (40,300 tons when temporary construction worker commuting is included).

8.1.1.1.1 National Security/Defense Mission

The NNSS must maintain the capability to conduct nuclear tests under the Stockpile Stewardship and Management Program. Should nuclear testing be reinstated, it would be conducted in Pahute Mesa, Rainier Mesa, or Yucca Flat. Unavoidable adverse effects, both in terms of the magnitude of the impacts

and their duration, would result from underground testing. As noted in the *Final Environmental Impact Statement for the Nevada Test Site and Off-Site Locations in the State of Nevada* (DOE 1996c), other activities conducted at the NNSS "for the most part are registered immediately and those effects are very small in comparison with the effects of underground nuclear testing." The major unavoidable effects of underground testing include the release of large quantities of radioactivity into the subsurface, the formation of new subsidence craters, and the generation of ground motion that might be felt outside the boundaries of the NNSS.

Underground nuclear tests would contaminate the subsurface with a large amount of short- and long-lived radionuclides. Tritium is likely to be the most abundant radionuclide. Many of the other radionuclides would remain bound up in the melted glass in the test cavity. Some groundwater might be unavoidably contaminated if the test cavity is below or intercepts the water table. The surface areas below which the contaminants are released would be strictly controlled for safety and security reasons. An underground nuclear test would also unavoidably disrupt the integrity of the subsurface geologic environment. Contamination might extend as far as five times the radii of the cavity from the shot point. Following tests, subsidence craters often form because of the collapse of the geologic units. These impacts would preclude the use of the geologic values inherent at the site for the long term.

Ground motions accompanying underground nuclear tests conducted at the NNSS have been felt in Las Vegas, Nevada, and elsewhere in the surrounding region. Any potential future tests conducted at the direction of the President would likely be limited to 150 kilotons in yield. Occasionally, ground motion from a larger test might cause nonstructural offsite damage, such as plaster cracks. A larger underground test could cause perceptible motion at offsite locations, particularly in high-rise structures in Las Vegas.

Airspace restrictions would continue to prohibit commercial and general aviation use. NNSA would continue to coordinate the use of airspace with the Nellis Air Traffic Control Facility, the controlling entity responsible for NNSS airspace.

Ground-disturbing activities that encroach on undisturbed areas are likely to have adverse impacts on vegetation and soils, including essential components of the desert tortoise's habitat. These activities could potentially disturb native vegetation, although the amount of vegetation and soil that would be affected is not expected to reduce the viability of special status wildlife significantly or have substantial negative impacts on biodiversity, ecosystem functions, or springs in these areas. If native vegetation were disturbed during the nesting season for birds, the eggs or young in nests located within the project area could be destroyed. Most birds that nest within the NNSS are protected under the Migratory Bird Treaty Act. If detonations and explosives tests were to occur near vital water sources, they could cause wildlife to avoid them, adversely affecting wildlife that depend on those water sources. If detonations were to occur during the nesting season for birds, explosions could startle nesting birds, causing them to abandon their nests and resulting in a loss of eggs or young.

8.1.1.1.2 Environmental Management Mission

The Nevada Division of Environmental Protection (NDEP) issued a Resource Conservation and Recovery Act (RCRA) Part B permit to NNSA effective December 1, 2010, for a new mixed low-level radioactive waste (MLLW) disposal unit, Cell 18, at the Area 5 Radioactive Waste Management Complex (RWMC). Construction of the new MLLW disposal unit was completed and began accepting MLLW for disposal in January 2011.

By the end of the 10-year period analyzed in this SWEIS, about 61 percent (450 acres) of the approximately 740-acre Area 5 RWMC would be used for low-level radioactive waste (LLW) and

MLLW disposal cells as necessary. The remaining area would be subject to use for disposal cells beyond the 10-year period. Once filled, disposal cells would be operationally capped, pending final closure.

8.1.1.1.3 Nondefense Mission

Land preparation activities associated with the development of a commercial solar power generation facility (240 megawatts), to be located within the Renewable Energy Zone in Area 25, would disturb an area of approximately 2,400 acres. Most of the soils in Area 25 have not been modified through construction or other uses, so construction of the plant would affect topsoil and increase the potential for erosion in Jackass Flats. Ground-disturbing activities and increased vehicular access to previously undisturbed land would adversely affect wildlife in the immediate area of the solar power generation facility by direct mortality of individuals and loss of habitat. The solar power generation facility would be located within the range of the desert tortoise and its habitat. Implementation of the measures identified in the U.S. Fish and Wildlife Service's 2009 Biological Opinion (USFWS 2009a) would be required to minimize the potential for take of desert tortoises.

The solar power generation facility would introduce considerable infrastructure in Area 25 that would be directly visible in middle ground views from U.S. Route 95. Portions of the study area visible from U.S. Route 95 have a Class B scenic quality rating. Viewer sensitivity would change from moderate to high near the Area 25 Renewable Energy Zone. A solar power generation facility would introduce a considerable amount of glare from the reflective surfaces of the solar collectors, alter the existing visual character of the landscape that is largely undeveloped, be visible to highly sensitive viewers, and reduce the existing visual quality to a Class C rating because of the intrusion of manmade elements. There is no mitigation to reduce adverse effects associated with the proposed solar array; therefore, this effect is considered adverse and unavoidable.

8.1.1.2 Remote Sensing Laboratory

No unavoidable adverse impacts have been identified for this facility.

8.1.1.3 North Las Vegas Facility

No unavoidable adverse impacts have been identified for this facility.

8.1.1.4 Tonopah Test Range

Airspace restrictions would continue to prohibit commercial and general aviation use. NNSA would continue to coordinate the use of airspace with the controlling entity responsible for the Tonopah Test Range (TTR) airspace, the Nellis Air Traffic Control Facility.

Weapons impact testing, flight test operation of gravity weapons, and passive testing would occur during TTR operations using gravity weapons; passive testing would occur on the TTR. These activities could potentially disturb native vegetation. If disturbance of native vegetation occurs during the nesting season for birds, the eggs or young in nests located within the project area could be destroyed. Explosives tests and detonations could startle wildlife, resulting in adverse impacts. If these detonations and explosives tests were to occur near vital water sources, they could cause wildlife to avoid them, which could adversely affect wildlife that depends on those water sources. Additionally, if detonations were to occur during the nesting season for birds, explosions could startle nesting birds, causing them to abandon their nests and resulting in a loss of eggs or young.

8.1.2 Expanded Operations Alternative

Unavoidable adverse impacts resulting from implementation of the Expanded Operations Alternative include those presented above for the No Action Alternative. The discussion in this section focuses on the differences between the unavoidable adverse impacts under both the Expanded Operations and No Action Alternatives.

8.1.2.1 Nevada National Security Site

Most air emissions at the NNSS would be associated with mobile source (e.g., vehicles and portable combustion equipment) activity. The stationary source emissions include emissions resulting from the operation of a 1,000-megawatt commercial solar power generation facility that may be constructed under the Expanded Operations Alternative. These emissions (PM_{10}[1] and $PM_{2.5}$[2]) would mainly occur from the cooling tower and during colder ambient temperatures, as the heat transfer fluid is heated to prevent freezing. VOC and PM_{10} emissions from NNSS mobile sources in Clark County would increase relative to 2008 emission levels by 1.0 and 0.20 tons per year, respectively. The VOC increase would be due to the widespread use of ethanol blends in southern Nevada by 2015. The small increases in VOC and PM_{10} emissions would be attributable to mobile sources and would be widely distributed over the Las Vegas Valley and through the U.S. Route 95 corridor. They would not lead to any additional violations of the ozone or PM_{10} air quality standards. NNSS-related activities under the Expand Operations Alternative would create about 49,700 carbon-dioxide-equivalent tons of greenhouse gas emissions per year (51,500 tons when temporary construction worker commuting is included).

8.1.2.1.1 National Security/Defense Mission

Under the Expanded Operations Alternative, as part of the Stockpile Stewardship and Management Program, NNSA would add additional equipment and ancillary features within the existing Big Explosives Experimental Facility (BEEF) to support activities occurring in the Nuclear and High Explosives Test Zone. Depleted uranium experiment sites would occupy 40 acres per experiment, with up to 3 experiments during the period of analysis, while high-explosives experiments would occupy 5 acres per experiment, with up to 500 experiments during the period of analysis. The areas for these experiments would be located in appropriately zoned operational areas on the NNSS; however, reserving these areas for the depleted uranium and high-explosives experiments would prevent other activities or uses from occurring within these reserved areas.

New support facilities would be constructed for Office of Secure Transportation (OST) training purposes in Area 17. About 16,000 acres of currently undisturbed land would be reserved for use as an active training area, where live-fire training areas and other training facilities and supporting infrastructure would be developed. Additionally, OST would expand facilities in either Area 12 (12 Camp), Area 6 (Control Point Complex), or Area 23 (Mercury). Temporary impacts on soils would result from construction-related surface disturbance. Some localized impacts on the surface soil structure would occur from NNSA and U.S. Department of Defense training of OST personnel in offroad locations because driving vehicles through undisturbed soils and vegetation could disturb soil structures and increase soil erosion by wind. Construction of new OST facilities on previously undisturbed lands would result in a permanent loss of native vegetation and wildlife habitat. Construction of new roads would result in increased vehicular access to previously undisturbed land. Construction activities related to expansion of OST facilities would cause adverse impacts on wildlife through direct mortality of

[1] *PM_{10} is particulate matter with an aerodynamic diameter less than or equal to 10 micrometers.*
[2] *$PM_{2.5}$ is particulate matter with an aerodynamic diameter less than or equal to 2.5 micrometers.*

individuals and loss of habitat. For example, expansion of facilities in Areas 6 and 23 would occur within the range of the desert tortoise and could potentially result in an incidental taking of desert tortoises.

The proposed projects for the Nuclear Emergency Response and Nonproliferation and Counterterrorism Programs and the proposed relocation of the Federal Bureau of Investigation Disposition Forensics Program would cause environmental impacts at the NNSS. Construction of additional nonproliferation and counterterrorism facilities, which are still conceptual in nature, would result in 200 acres of surface disturbance, which would cause short- and long-term impacts on soils.

NNSA would construct additional hangars, shops, and buildings totaling approximately 200,000 square feet (4.6 acres) at Desert Rock Airport, which would result in temporary impacts on soils from surface disturbance. The additional facilities at Desert Rock Airport may include lengthening of the existing runway and construction of new hangars and support facilities. These features would be visible in the middle ground (0.5 to 5 miles) of views from U.S. Route 95 and would adversely affect visual resources. The scale and coloring of facilities would play a large part in the visual prominence of the new facilities.

8.1.2.1.2 Environmental Management Mission

Waste disposal activities would increase which would result in reactivation of the Area 3 Radioactive Waste Management Site. Within these areas, new disposal units would be constructed, filled, and closed to accommodate the waste volumes and types.

Development of new landfills in Area 23 and Area 25 would convert a combined total of 35 acres of currently unused land into waste management facilities and preclude that land from being used for other purposes. Construction of the sanitary waste disposal facility in Area 25 could also result in loss of habitat and direct mortality of tortoises. Increased roadway traffic in Area 25 could also result in incidental takes of desert tortoise from injury or mortality.

8.1.2.1.3 Nondefense Mission

Under the Expanded Operations Alternative, NNSA would allow development of one or more commercial solar power generation facilities to be located within a 39,600-acre Renewable Energy Zone, with a maximum combined generating capacity of 1,000 megawatts. Most of the soils in Area 25 have not been modified through construction or other uses, so construction of the plant would affect topsoil and increase the potential for erosion in Jackass Flats. Ground-disturbing activities and increased vehicular access to previously undisturbed land would adversely affect wildlife in the immediate area of the solar power generation facility by direct mortality of individuals and loss of habitat. The solar power generation facility would be located within the range of the desert tortoise and its habitat. The implementation of the measures identified in the U.S. Fish and Wildlife Service's 2009 Biological Opinion (USFWS 2009a) would be required to minimize the potential for take of desert tortoises.

The solar power generation facility would introduce considerable infrastructure in Area 25 that would be directly visible in middle ground views from U.S. Route 95. Portions of the study area visible from U.S. Route 95 have a Class B scenic quality rating. Viewer sensitivity would change from moderate to high near the Area 25 Renewable Energy Zone. A solar power generation facility would introduce a considerable amount of glare from the reflective surfaces of the solar collectors, alter the existing visual character of the landscape that is largely undeveloped, be visible to highly sensitive viewers, and reduce the existing visual quality to a Class C rating because of the intrusion of manmade elements. There is no mitigation to reduce adverse effects associated with the proposed solar array; therefore, this effect is considered adverse and unavoidable.

The Geothermal Power Project has the potential to introduce facilities associated with capturing, converting, and transferring geothermal power such as a power plant, transmission lines, and associated infrastructure that would occur on 30 to 50 acres of land.

8.1.2.2 Remote Sensing Laboratory

No unavoidable adverse impacts have been identified for this facility.

8.1.2.3 North Las Vegas Facility

No unavoidable adverse impacts have been identified for this facility.

8.1.2.4 Tonopah Test Range

No unavoidable adverse impacts have been identified for this facility.

8.1.3 Reduced Operations Alternative

Unavoidable adverse impacts under the Reduced Operations Alternative include those presented above for the No Action Alternative. The discussion in this section focuses on the differences between the unavoidable adverse impacts under both the Reduced Operations and No Action Alternatives.

8.1.3.1 Nevada National Security Site

Most air emissions at the NNSS would be associated with mobile source (e.g., vehicles and portable combustion equipment) activity. The NNSS contribution to the emissions in Clark County would continue to be small and would decrease relative to 2008 emission levels, except for VOCs, which could increase by 0.2 tons per year by 2015 due the widespread use of ethanol blends in southern Nevada. The small increase in VOC emissions is from mobile sources and would be widely distributed over the Las Vegas Valley and the U.S. Route 95 corridor. NNSS-related activities under the Reduced Operations Alternative would create about 37,500 carbon-dioxide-equivalent tons of greenhouse gas emissions per year (38,340 tons including temporary construction worker commuting).

Under the Reduced Operations Alternative, employment is assumed to decrease from 1,699 to 1,654, with employment from the operation of the solar power plant offsetting most losses associated with a reduction in activity associated with other NNSS programs. This decrease would be equal to about 45 jobs: 35 in Clark County and 10 in Nye County. In Clark County, this would increase the unemployment rate by about 0.03 percent (a total of 142,137 Clark County residents were unemployed as of August 2010). In Nye County, unemployment would increase by about 0.32 percent (a total of 3,133 Nye County residents were unemployed as of August 2010). Daily spending in the immediate area of the NNSS would decrease correspondingly, which would have a minor impact on economic activity.

8.1.3.1.1 National Security/Defense Mission

No unavoidable adverse impacts have been identified for this mission.

8.1.3.1.2 Environmental Management Mission

No unavoidable adverse impacts have been identified for this mission.

8.1.3.1.3 Nondefense Mission

NNSA would continue to support the development of a commercial solar power generation facility in Area 25 that would be sited on 1,200 acres of land; the net generating capacity under the Reduced Operations Alternative would be 100 megawatts. Most of the soils in Area 25 have not been modified through construction or other uses, so construction of the plant would affect topsoil and increase the potential for erosion in Jackass Flats. Ground-disturbing activities and increased vehicular access to previously undisturbed land would adversely affect wildlife in the immediate area of the solar power generation facility by direct mortality of individuals and loss of habitat. The solar power generation facility would be located within the range of the desert tortoise and its habitat. The implementation of the measures identified in the U.S. Fish and Wildlife Service's 2009 Biological Opinion (USFWS 2009a) would be required to minimize the potential for take of desert tortoises.

The solar power generation facility would introduce considerable infrastructure in Area 25 that would be directly visible in middle ground views from U.S. Route 95. Portions of the study area visible from U.S. Route 95 have a Class B scenic quality rating. Viewer sensitivity would change from moderate to high near the Area 25 Renewable Energy Zone. A solar power generation facility would introduce a considerable amount of glare from the reflective surfaces of the solar collectors, alter the existing visual character of the landscape that is largely undeveloped, be visible to highly sensitive viewers, and reduce the existing visual quality to a Class C rating because of the intrusion of manmade elements. There is no mitigation to reduce adverse effects associated with the proposed solar array; therefore, this effect is considered adverse and unavoidable.

8.1.3.2 Remote Sensing Laboratory

No unavoidable adverse impacts have been identified for this facility.

8.1.3.3 North Las Vegas Facility

Under the Reduced Operations Alternative, there would be a small reduction in employment of 144 individuals at the North Las Vegas Facility (NLVF), including 143 employees in Clark County and 1 employee in Nye County. In Clark County, this would increase the unemployment rate by about 0.10 percent (a total of 142,137 Clark County residents were unemployed as of August 2010). Within Nye County, this would increase the unemployment rate by about 0.03 percent (a total of 3,133 Nye County residents were unemployed as of August 2010). As a result of this jobs reduction, daily spending in the vicinity of NLVF would decrease correspondingly.

8.1.3.4 Tonopah Test Range

Airspace impacts would be similar to those described for the No Action Alternative in Section 8.1.1.4; however, impacts would be minimized as a result of the discontinuation of fixed rocket launch operations, cruise missile operations, and fuel-air explosives at the TTR. This would increase the restricted airspace availability for other military uses as coordinated and scheduled by the Nellis Air Traffic Control Facility.

Under the Reduced Operations Alternative, there would be a reduction in employment of 67 individuals at the TTR, including 15 in Clark County and 45 in Nye County. In Clark County, this reduction would increase the unemployment rate by about 0.01 percent (a total of 142,137 Clark County residents were unemployed as of August 2010). In Nye County, this would increase the unemployment rate by about 1.44 percent (a total of 3,133 Nye County residents were unemployed as of August 2010). As a result of the reduction in jobs, daily spending in the vicinity of the TTR would decrease.

8.2 Relationship of Short-Term Uses and Long-Term Productivity

Council on Environmental Quality regulations implementing the procedural requirements of NEPA (40 CFR 1502.16) require consideration of the relationship between short-term uses of man's environment and the maintenance and enhancement of long-term productivity. This includes using:

> *"… all practicable means and measures, including financial and technical assistance, in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans" (NEPA, Section 101, 42 U.S.C. 4331).*

Short-term uses are defined as those that would take place during the 10-year timeframe analyzed within this SWEIS. While this section discusses the short-term use of the environment and the maintenance of its long-term productivity, Chapter 5 provides a more detailed discussion of the impacts and resource utilization associated with each of the alternatives. The majority of effects on long-term productivity would result from the continuation of present land use and from future land uses associated with the three alternatives. Under each alternative, lands previously withdrawn from public use would continue to be unavailable for alternate uses by the public.

Developed areas of the NNSS, as well as offsite locations within Nevada (including facility footprints and buffer areas), would continue to be unproductive ecologically, but would continue their long-term contributions to the NNSA mission through their support of research and development and training. No new facility development is proposed for the TTR, Remote Sensing Laboratory (RSL), or NLVF under any of the three alternatives.

Establishment of new developed areas at the NNSS would occur under all alternatives in this SWEIS. As an example, construction of a commercial solar power generation facility in Area 25 of the NNSS would result in the conversion of approximately 2,400 acres of land to support energy infrastructure under the No Action Alternative, and 9,400 or 1,200 acres under the Expanded or Reduced Operations Alternatives, respectively.

Under the Expanded Operations Alternative, there would be an additional irreversible and irretrievable commitment of land resources associated with the development of facilities in Area 17, including offices, classrooms, a live-fire shoot house, a live-fire training area, and a simulated town to support training for OST. This complex in Area 17 would be approximately 10,000 acres in size (including buffer zones), and could result in up to 3,500 acres of surface disturbance. NNSA would also upgrade or construct new facilities in Areas 6, 12, or 23 to provide approximately 50,000 square feet of building space.

While some facilities would be considered for closure and demolition under the Reduced Operations Alternative, restoration of these areas to preconstruction conditions may not be practicable over the next 10 years, and these sites may also be considered for alternate uses in support of NNSS mission activities.

Underground subcritical experiments would result in the mined cavity being unavailable for the long term, but the land surface would be unaffected and unrestricted.

The Area 3 and Area 5 Waste Management Program sites would have disturbed areas that would be restricted from subsurface access for the long term, and the surface would be restricted from most uses. Rehabilitation of the surface following closure of a disposal site would restore ecological productivity unless rock armor (rocks used to protect against erosion) was used in closure. Although not expected to

be used, rock armor or other solid surface coatings would result in a sterile surface for the long term. The area in the buffer zones would have some restrictions on surface uses designed to prevent intrusion into the buried waste. Because it would likely remain undisturbed, the buffer zones' ecological productivity would remain unimpaired for the long term.

Environmental restoration activities at the NNSS and TTR under all three alternatives would contribute to long-term productivity through the remediation of surface and subsurface contamination and their return to other productive uses. The rate of return to ecological productivity would vary at individual sites, depending upon the revegetation measures employed and local soil conditions. In the short term, productivity would be reduced at some sites if contaminated soil were removed for disposal.

8.3 Irreversible and Irretrievable Commitment of Resources

NEPA Section 102 (42 U.S.C. 4332) and Council on Environmental Quality regulations implementing the procedural requirements of NEPA (40 CFR 1502.16) require environmental analyses to include identification of "… any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented." An irreversible commitment of resources represents a loss of future options. It applies primarily to nonrenewable resources, such as minerals or cultural resources, and to those factors that are renewable only over long time spans, such as soil productivity. An irretrievable commitment of resources represents opportunities that are foregone for the period of the proposed action. Examples include the loss of production, harvest, or use of renewable resources. The decision to commit the resources is reversible, but the past utilization opportunities are irretrievable.

Implementation of any of the alternatives would result in a permanent commitment of certain air, groundwater, soil, biota, mineral, surface, and subsurface resources. There would be an irreversible and irretrievable commitment of these natural resources.

Under each alternative, developed areas on the NNSS would remain in urban or industrial land uses. This long-term land use commitment would preclude other uses of the land and prohibit natural habitat productivity. Even with any removal of structures and infrastructure, completely natural conditions would be difficult to achieve. Construction of a commercial solar power generation facility in Area 25 of the NNSS and associated transmission lines would result in an irreversible and irretrievable commitment of land resources of approximately 2,650 acres under the No Action Alternative, 10,300 acres under the Expanded Operations Alternative, or 1,200 acres the Reduced Operations Alternative.

As stated previously, under the Expanded Operations Alternative, there would be an additional irreversible and irretrievable commitment of land resources associated with the development of facilities in Area 17, including offices, classrooms, a live-fire shoot house, a live-fire training area, and a simulated town to support training for OST and the proposed upgrade or construction of new facilities in Areas 6, 12, or 23. Designation and development of a 39,600-acre Renewable Energy Zone in Area 25 under the Expanded Operations Alternative would constitute an additional irreversible, but not necessarily irretrievable, commitment of land resources.

Use of the radioactive waste management facilities for waste disposal would result in an irreversible and irretrievable commitment of land resources. Land uses and access to the subsurface would be severely restricted at the sites and in surrounding buffer areas. Some areas would be rehabilitated on closure and would provide natural habitat. Although not expected, if closures were designed using rock armor, this would inhibit vegetation or burrowing animals and thereby severely limit their use as natural habitat. Sanitary and construction landfills would represent an irreversible and irretrievable commitment of the subsurface and would limit surface uses.

Underground subcritical experiments would result in an irreversible and irretrievable commitment of the mined cavity. Following subcritical experiments, the land surface would be unaffected and unrestricted.

Decontamination and decommissioning activities would produce mixed results depending on the remedy selected. Most decontamination and decommissioning activities would result in either decontamination, resulting in the consequent availability of the facility for other use, or demolition of the facility and disposal. In-place disposal of basements would result in an irretrievable and irreversible commitment of the subsurface for most land use. Reuse would entail the facility remaining in an industrial mode, which would represent a long-term commitment to that type of land use. Demolition of the facility could result in the land's availability for other development or for site rehabilitation and use as natural habitat.

Closure in place would result in an irreversible and irretrievable commitment for those Resource Conservation and Recovery Act industrial sites that are so treated. Land use on these sites and in a surrounding buffer zone would be severely constrained. Rehabilitation by revegetation would permit their functioning as natural habitat, but closure would likely be designed using rock armor to inhibit vegetation or burrowing animals.

Continued airspace restriction would represent an irreversible and irretrievable commitment because access would be limited to government use only. Airspace access would be prohibited for general aviation and commercial users.

Energy and materials utilized in the construction, operation, maintenance, decontamination, demolition, and closure of the facilities would be irreversibly and irretrievably committed. Groundwater would be withdrawn to support all NNSS programs under each alternative. This water use would represent an irreversible and irretrievable commitment of this resource.

Continued restriction of harvesting products like game, pine nuts, or grass, and maintenance of areas in development that precludes their natural productivity, would represent an irretrievable commitment of resources.

Removal of soils for environmental restoration projects would result in their irreversible and irretrievable loss because they would be landfilled and any associated natural resource services that they provide would be lost as well. Environmental restoration activities would mostly involve land that has been previously disturbed. The amount that would be redisturbed during remediation depends, first, upon the levels of contamination that would be determined during characterization and, second, upon the agreements reached with the State of Nevada regarding cleanup levels.