4.2.6.3 Air Quality and Noise

Construction and operation activities associated with the No Action Alternative and the proposed storage alternatives would generate criteria and toxic/hazardous pollutants. To evaluate the air quality impacts at SRS, criteria and toxic/hazardous concentrations from the No Action Alternative and the proposed storage alternatives are compared with Federal and State standards and guidelines. Impacts from radiological airborne emissions are described in Section 4.2.6.9.

In general, all of the proposed storage facilities would emit the same types of air pollutants during construction. It is expected emissions would not exceed Federal, State, or local air quality regulations. PM_{10} and TSP concentrations will be increased during peak construction periods.

The principal sources of emissions during construction include the following:

- Fugitive dust from land clearing, site preparation, excavation, and wind erosion of exposed ground surfaces
- Exhaust and road dust generated by construction equipment, vehicles delivering construction materials, and vehicles carrying construction workers

During operation, the concentrations of criteria and toxic/hazardous air pollutants of the individual storage facilities are predicted to be in compliance with Federal, State, and local air quality regulations or guidelines. The estimated pollutant concentrations presented in Table 4.2.6.3–1 for each of the fissile materials storage alternatives indicate little difference between alternatives with respect to impacts to air quality.

Emission rates attributable to operation of the proposed storage facilities are presented in Tables F.1.3–1 to F.1.3–3. [Text deleted.] Air pollutant emission sources associated with operations include the following:

- Operation of existing boilers for space heating
- Operation of diesel generators and periodic testing of emergency diesel generators
- Exhaust and road dust generated by vehicles delivering supplies and bringing employees to work
- Toxic/hazardous pollutant emissions from facility processes

Noise impacts during either construction or operation are expected to be low. Air quality and noise impacts for each storage alternative are described separately. Supporting data for the air quality and noise analyses are presented in Appendix F.

AIR QUALITY

An analysis was conducted of the potential air quality impacts of emissions from each of the fissile material storage alternatives as described in Section 4.1.3.

Section 176 (c) of the 1990 CAA Amendments requires that all Federal actions conform with the applicable SIP. EPA has implemented rules that establish the criteria and procedures governing the determination of conformity for all Federal actions in nonattainment and maintenance areas. These are discussed in Section 4.1.3. The attainment status of the area in which SRS is located is discussed in Section 3.7.3. Since the area is considered an attainment area for criteria pollutants, the proposed actions at this site do not require that a conformity analysis be performed.

Table 4.2.6.3–1. Estimated Operational Concentrations of Pollutants at Savannah River Site and Comparison With Most Stringent Regulations or Guidelines—No Action (2005) and Storage Alternatives

Pollutant	Averaging Time	Most Stringent Regulations or Guidelines[a] (μg/m³)	No Action (μg/m³)	Upgrade With RFETS Non-Pit Material (μg/m³)	Upgrade With RFETS and LANL Material (μg/m³)	Consolidation (μg/m³)	Collocation (μg/m³)
Criteria Pollutants							
Carbon monoxide	8-hour	10,000[b]	22	22.12	22.17	24.15	24.4
	1-hour	40,000[b]	171	171.58	171.78	181.14	182.28
Lead	Calendar Quarter	1.5[b]	0.0004	0.0004	0.0004	0.0004	0.0004
Nitrogen dioxide	Annual	100[b]	5.7	5.77	5.8	6.62	6.78
Ozone	1-hour	235[b]	c	c	c	c	c
Particulate matter less than or equal to 10 microns in diameter	Annual	50[b]	3	3.01	3.01	3.06	3.07
	24-hour	150[b]	50.6	50.71	50.75	51.83	52.04
Sulfur dioxide	Annual	80[b]	14.5	14.71	14.79	15.95	16.28
	24-hour	365[b]	196	200.1	201.65	224.04	230.49
	3-hour	1,300[b]	823	849.46	859.65	1,003.95	1,045.58
Mandated by South Carolina							
Total suspended particulates	Annual	75[d]	12.6	12.6	12.61	12.66	12.67
Gaseous fluorides (as HF)	30-day	0.8[d]	0.09	0.09	0.09	0.09	0.09
	7-day	1.6[d]	0.39	0.39	0.39	0.39	0.39
	24-hour	2.9[d]	1.04	1.04	1.04	1.04	1.04
	12-hour	3.7[d]	1.99	1.99	1.99	1.99	1.99
Hazardous and Other Toxic Compounds							
3,3-Dichlorobenzidine	24-hour	0.15[d]	0.002	0.002	0.002	0.002	0.002
Acrolein	24-hour	1.25[d]	0.016	0.016	0.016	0.016	0.016
Benzene	24-hour	150.00[d]	31.711	31.711	31.711	31.711	31.711
Bis (chloromethyl) ether	24-hour	0.03[d]	0.002	0.002	0.002	0.002	0.002
Cadmium oxide	24-hour	0.25[d]	0.021	0.021	0.021	0.021	0.021
Chlorine	24-hour	75[d]	7.63	7.63	7.63	7.63	7.63
Chloroform	24-hour	250.00[d]	4.957	4.957	4.957	4.957	4.957
Cobalt	24-hour	0.25[d]	0.206	0.206	0.206	0.206	0.206

Table 4.2.6.3–1. Estimated Operational Concentrations of Pollutants at Savannah River Site and Comparison With Most Stringent Regulations or Guidelines—No Action (2005) and Storage Alternatives—Continued

Pollutant	Averaging Time	Most Stringent Regulations or Guidelines[a] (μg/m³)	No Action (μg/m³)	Upgrade With RFETS Non-Pit Material (μg/m³)	Upgrade With RFETS and LANL Material (μg/m³)	Consolidation (μg/m³)	Collocation (μg/m³)
Hazardous and Other Toxic Compounds (continued)							
Formic acid	24-hour	225.00[d]	2.420	2.420	2.420	2.420	2.420
Hydrogen chloride	24-hour	175[d]	[e]	[e]	[e]	<0.01[f]	<0.01[f]
Hydrazine	24-hour	0.5[d]	[e]	[e]	[e]	<0.01[f]	<0.01[f]
Manganese	24-hour	25.00[d]	0.821	0.821	0.821	0.821	0.821
Mercury	24-hour	0.25[d]	0.014	0.014	0.014	0.014	0.014
Nickel	24-hour	0.50[d]	0.271	0.271	0.271	0.271	0.271
Nitric acid	24-hour	125[d]	50.96	50.96	50.96	50.96	51.01
Parathion	24-hour	0.50[d]	0.007	0.007	0.007	0.007	0.007
Phosphoric acid	24-hour	25[d]	0.462	0.462	0.462	0.462	0.462
Sulfuric acid	24-hour	10[d]	[e]	[e]	[e]	<0.01[f]	<0.01[f]

[a] The more stringent of the Federal and State standard is presented if both exist for the averaging time.

[Text deleted.]

[b] Federal and State standard.

[c] Ozone, as a criteria pollutant, is not directly emitted nor monitored by the candidate site. See Section 4.1.3 for a discussion of ozone-related issues.

[d] State standard or guideline.

[e] No sources of this pollutant have been identified.

[f] The concentration represents the alternative contribution only.

Note: Concentrations are based on site contribution, including concentrations from ongoing activities (No Action), and do not include the contribution from non-facility sources (for example, traffic).

Source: 40 CFR 50; DOE 1996e; DOE 1996f; SC DHEC 1991a; SC DHEC 1992b; SR DOE 1995b; SR DOE 1995e; WSRC 1994e.

No Action Alternative

The No Action Alternative is based upon estimated air emissions data from total site operations at SRS assuming continuation of site missions as described in Section 3.7. These data reflect conservative estimates of criteria and toxic/hazardous emissions at SRS. The emission rates for the criteria and toxic/hazardous pollutants for No Action are presented in Table F.1.2.7–1. Table 4.2.6.3–1 presents the No Action concentrations. During dry and windy conditions, increased PM_{10} and TSP concentrations may occur due to ongoing construction associated with other activities (that are outside of the scope of this PEIS) under the No Action Alternative. Concentrations of all other criteria and toxic/hazardous air pollutants at the site boundary or public access highways are expected to remain within applicable Federal, State, and local ambient air quality standards.

Upgrade Alternative

Preferred Alternative: Upgrade With Rocky Flats Environmental Technology Site Non-Pit Plutonium Subalternative

Modify Actinide Packaging and Storage Facility for Continued Plutonium Storage

Incremental air quality impacts attributable to increased pollutant concentration during operations are expected to be negligible for this subalternative relative to the No Action Alternative as presented in Table 4.2.6.3–1.

[Text deleted.]

Upgrade With All or Some Rocky Flats Environmental Technology Site and Los Alamos National Laboratory Plutonium Subalternative

Modify Actinide Packaging and Storage Facility for Continued Plutonium Storage

Incremental air quality impacts attributable to increased pollutant concentration during operations are expected to be negligible for this subalternative relative to the No Action Alternative as presented in Table 4.2.6.3–1.

Consolidation Alternative

Construct New Plutonium Storage Facility

Air quality impacts for construction of this alternative include increased PM_{10} and TSP concentrations that would typically not exceed Federal, State, or local air quality regulations. During operation, concentrations of criteria and toxic/hazardous air pollutants are predicted to be in compliance with Federal, State, and local air quality regulations or guidelines. Estimated pollutant concentrations attributable to increased operations associated with this storage alternative plus the No Action concentrations are presented in Table 4.2.6.3–1.

Collocation Alternative

Construct New Plutonium and Highly Enriched Uranium Storage Facilities

The collocation storage facilities would be located in the same area as the new Pu storage facility and would have similar air quality impacts, with the following exceptions. During operation, emissions would be higher, as shown in Appendix F. Concentrations of criteria and toxic/hazardous air pollutants are predicted to be in compliance with Federal, State, and local air quality regulations or guidelines. Estimated pollutant concentrations, attributable to increased operations associated with this storage alternative, plus the No Action concentrations are presented in Table 4.2.6.3–1.

Subalternative Not Including Strategic Reserve and Weapons Research and Development Materials

Air quality impacts for construction and operation for this subalternative are expected to be similar to those for the No Action Alternative, the Upgrade With All or Some RFETS and LANL Pu Subalternative, the Consolidation Alternative, and the Collocation Alternative. [Text deleted.]

Phaseout

Phaseout of existing Pu inventories as a result of consolidating Pu at another site is expected to result in a small reduction in air pollutant concentrations from the No Action concentrations and would be in compliance with Federal and State standards.

NOISE

The location of the proposed storage facilities relative to the site boundary and sensitive receptors was examined to evaluate the potential for onsite and offsite noise impacts. Noise sources during construction may include heavy construction equipment and increased traffic. Increased traffic would occur onsite and along offsite local and regional transportation routes used to bring construction material and workers to the site.

No Action Alternative

Nontraffic noise sources associated with continued interim storage and other ongoing missions are the same as described in Chapter 3. The continuation of operations at SRS would result in no appreciable change in traffic noise and onsite operational noise sources from current levels. Nontraffic noise sources are located at sufficient distance from offsite areas that the contribution to offsite noise levels would continue to be small. Due to the size of the site, noise emissions from construction equipment and operations activities would not be expected to cause annoyance to the public. Some noise sources may be located close enough to onsite noise-sensitive areas to result in impacts, such as disturbance of wildlife.

Upgrade (Preferred Alternative), Consolidation, and Collocation Alternatives

Nontraffic noise sources associated with the storage upgrade alternative would be similar to those for existing facilities, as discussed in Chapter 3. Nontraffic, operational noise sources associated with the storage alternatives include existing and additional equipment and machines (cooling systems, vents, motors, and material handling equipment). These noise sources would be located at sufficient distance from offsite areas that the contribution to offsite noise levels would be small. Due to the size of the site, noise emissions from construction equipment and operations activities would not be expected to cause annoyance to the public. Some noise sources may result in impacts, such as disturbance of wildlife.

Subalternative Not Including Strategic Reserve and Weapons Research and Development Materials

Noise impacts for construction and operations for this option are expected to be almost the same as those previously described for the No Action Alternative, the Upgrade With All or Some RFETS and LANL Pu Subalternative, the Consolidation Alternative, and the Collocation Alternative because noise impacts are based on the use of the facility and not the size. [Text deleted.]

Phaseout

A reduction in noise levels associated with facility operations may result from the phaseout of storage facilities.

4.2.6.4 Water Resources

Impacts associated with the construction and operation of the potential long-term storage facilities at SRS would affect water resources. The proposed facilities would be located outside the 100-year floodplain. Information on the location of the 500-year floodplain at SRS is currently available only for a limited number of specific project areas, but this information could be developed in future environmental documentation. Groundwater would be used for construction and operation of the facilities. The water withdrawals from groundwater would not affect regional groundwater levels. No wastewater would be discharged directly to groundwater, so groundwater quality would not be affected. Any construction-related impacts would be mitigated by standard erosion control practices. During operation of the facilities, treated wastewater would be discharged to nearby streams. All discharges would be monitored to comply with permit limits. During operation, stormwater runoff would be collected and treated, if necessary, before discharge to natural drainage channels. Table 4.2.6.4–1 presents No Action water resources uses and discharges and the potential change resulting from long-term storage alternatives.

No Action Alternative

Surface Water. [Text deleted.] A description of the activities that would continue at SRS is provided in Section 3.7. Because the K-Reactor is shutdown with no provisions for restart, surface water withdrawals from the Savannah River would decrease from 140,400 million l/yr (37,100 million gal/yr) to 127,000 million l/yr (33,600 million gal/yr), or 2.6 percent of the river's minimum flow, by the year 2005. As a result of reduced discharges to site streams, water quality would improve. Treated wastewater discharged is expected to continue at a rate of 700 million l/yr (185 million gal/yr).

Groundwater. Under this alternative, no additional impacts to groundwater resources are anticipated beyond those of existing and future activities, which are independent of and not affected by the proposed action. Groundwater withdrawals for operations of facilities at SRS are expected to remain the same as current usage of 13,247 million l/yr (3,500 million gal/yr) by the year 2005. With the K-Reactor shutdown, and, given the continued implementation of strict waste handling/management practices, it is expected that groundwater quality would not be further degraded.

Upgrade Alternative

Preferred Alternative: Upgrade With All or Some Rocky Flats Environmental Technology Site Non-Pit Plutonium Subalternative

Modify Actinide Packaging and Storage Facility for Continued Plutonium Storage

Surface Water. No surface water withdrawals would be made. Groundwater would be used for construction and operation of the F-Area facilities. The primary surface water impacts during construction would result from soil erosion of disturbed land and siltation of surface drainage channels. To minimize soil erosion impacts, stormwater management and erosion control measures would be employed. In most cases, impacts from runoff would be temporary and manageable. During operation, stormwater runoff would be collected, monitored, and treated, if necessary, before discharge to natural drainage channels.

During construction of the new F-Area facilities, sanitary wastewater (approximately 1.7 million l/yr [0.4 million gal/yr]), would be generated and discharged to the sitewide wastewater treatment system, which would not require any modifications to this system. This would represent a 0.2-percent increase in the effluent from this facility. During operation, approximately 1.5 million l/yr (0.4 million gal/yr) of sanitary wastewater would be discharged to this wastewater treatment system. This would represent a 0.2-percent increase in the effluent discharged to Fourmile Branch from this facility. All discharges would be monitored to comply with discharge requirements. Minimal impacts are expected.

Table 4.2.6.4–1. No Action and Potential Changes to Water Resources at Savannah River Site—No Action (2005) and Storage Alternatives

Affected Resource Indicator	No Action	Upgrade With RFETS Non-Pit Materials	Upgrade With RFETS and LANL Material	Consolidation	Collocation	Phaseout
Water Source	Surface/Ground	Ground	Ground	Ground	Ground	Ground
Construction						
Water Availability and Use						
Total water requirement (million l/yr)	NA[a]	2.2	3.0	85	104.7	0
Percent increase in projected water use[b]	NA[a]	0.02	0.02	0.6	0.8	0
Water Quality						
Total wastewater discharge (million l/yr)	NA[a]	1.7	2.4	8	13.0	0
Percent change in wastewater discharge[c]	NA[a]	0.2	0.3	1.1	1.9	0
Percent change in streamflow[d]	NA[a]	0.03	0.05	0.2	0.3	0
Operation						
Water Availability and Use						
Total water requirement (million l/yr)	127,000/13,247	5.7	7.1	360	460	0
Percent increase in projected water use[e]	0	0.04	0.05	2.7	3.5	0
Water Quality						
Total wastewater discharge (million l/yr)	700	1.5	1.8	169	215	0
Percent change in wastewater discharge[f]	0	0.2	0.3	24.1	30.7	0
Percent change in streamflow[d]	13.9	0.03	0.04	3.3	4.3	0

Table 4.2.6.4–1. No Action and Potential Changes to Water Resources at Savannah River Site—No Action (2005) and Storage Alternatives—Continued

Affected Resource Indicator	No Action	Upgrade With RFETS Non-Pit Materials	Upgrade With RFETS and LANL Material	Consolidation	Collocation	Phaseout
Floodplain						
Is action in 100-year floodplain?	NA	No	No	No	No	No
Is critical action in 500-year floodplain?	NA	Unlikely	Unlikely	Uncertain	Uncertain	Unlikely

[a] See operations section of table for No Action water data.

[b] Percent increases in projected water use during construction at SRS are calculated by dividing No Action water requirements (13,247 million l/yr) with that for each storage option: upgrade with RFETS non-pit material (2.2 million l/yr), RFETS and LANL material (3.0 million l/yr), new Pu storage facility (85 million l/yr), new Pu and HEU storage facility (104.7 million l/yr), and storage phaseout (0 l/yr [0 gal/yr).

[c] Percent changes in wastewater discharge during construction at SRS are calculated by dividing No Action wastewater discharges (700 million l/yr) with that for each storage alternative: upgrade with RFETS non-pit material (1.7 million l/yr), RFETS and LANL material (2.4 million l/yr), new Pu storage facility (8 million l/yr), new Pu and HEU storage facility (13.0 million l/yr), and storage phaseout (0 l/yr).

[d] Percent changes in stream flow wastewater discharges are calculated using the minimum flow of Fourmile Branch (0.16 m^3/s).

[e] Percent increases in projected water use during operation at SRS are calculated by dividing No Action water requirements (13,247 million l/yr) with that for each storage alternative: upgrade with RFETS non-pit material (5.7 million l/yr), RFETS and LANL material (7.1 million l/yr), new Pu storage facility (360 million l/yr), new Pu and HEU storage facility (460 million l/yr), and storage phaseout (0 l/yr).

[f] Percent changes in wastewater discharge during operation at SRS are calculated by dividing No Action wastewater discharges (700 million l/yr) with that for each storage alternative: upgrade with RFETS non-pit material (1.5 million l/yr), RFETS and LANL material (1.8 million l/yr), new Pu storage facility (169 million l/yr), new Pu and HEU storage facility (215 million l/yr), and storage phaseout (0 l/yr).

Note: Construction impacts are considered to be temporary, lasting only throughout the construction period. Impacts from operations would occur continuously.
NA=not applicable.

Source: DOE 1996e; DOE 1996f; SR DOE 1994e; SRS 1995a:2; SRS 1996a:4.

The annual quantities of cooling water blowdown and steam condensate generated would be 3.78 million l (1 million gal) and 2.0 million l (530,000 gal), respectively. Cooling system blowdown would be routed to existing storm drains. Steam condensate from heating would also be routed to the storm drain after quenching. Condensation from air conditioning would be recycled as cooling water makeup. All discharges would be monitored. Fire sprinkler water and truck hosedown water would be collected in tanks, monitored for radioactivity, and then transferred by pipeline or tanker to sanitary waste treatment or the ETF as required. Uncontaminated water would be pumped to storm drains.

The potential location of the new F-Area storage facility is outside the 100-year floodplain. Information on the location of the 500-year floodplain at SRS is currently available only for a limited number of specific project areas. However, the new storage facility at SRS would not likely affect, or be affected by the 500-year floodplain of either the Fourmile Branch or Upper Three Runs Creek because the facility would be located at an elevation of about 91 m (300 ft) above mean sea level (MSL) and is approximately 33 m (107 ft) and 64 m (210 ft) above these streams and at distances from these streams of 0.8 km (0.5 mi) to 1.5 km (0.94 mi), respectively. The maximum flow that has occurred on the Upper Three Runs Creek was in 1990, with a flow rate of about 58 m^3/s (2,040 ft^3/s). At that time the creek reached an elevation of almost 30 m (98 ft) above MSL (SR USGS 1996a:1). The elevation of the buildings in F-Area are more than 62 m (202 ft) above the highest flow elevation of the Upper Three Runs Creek. The maximum flow that has occurred on the Fourmile Branch was in 1991 with a rate of approximately 5 m^3/s (186 ft^3/s), and an elevation of about 61 m (199 ft) above MSL (SR USGS 1996a:1). Elevations of the buildings in F-Area are more than approximately 31 m (101 ft) higher than the maximum flow level that has occurred.

Groundwater. Water requirements during construction would be approximately 2.2 million l/yr (0.6 million gal/yr), which would represent a much less than 1-percent increase over the projected annual No Action groundwater withdrawal. This additional withdrawal should cause minimal impacts to groundwater availability. During operation, water used for cooling system makeup would be obtained from existing supply systems in the F-Area. The water for these systems is groundwater from the Cretaceous Aquifer. Water requirements shown in Table 4.2.6.4–1 represent a maximum of 0.05 percent of the present groundwater usage at SRS. These additional withdrawals would have minimal impact on regional groundwater levels. Previous studies using numerical simulations of groundwater withdrawals over 100 times greater than that required for the F-Area facilities from the Cretaceous Aquifer indicate that drawdown could be almost 2.1 m (7 ft) at the well head, but would be smaller in overlying aquifers and would not extend beyond SRS boundaries in any aquifer (DOE 1991c:5-196). Based on this analysis, it is expected that the withdrawals attributed to the upgraded Pu storage facilities would have a minor drawdown at the well head and would not affect any aquifers in the area.

Construction and operation of the proposed upgraded Pu storage facilities would not result in direct discharges to groundwater. Impacts to groundwater quality are therefore not expected. Since the supply wells draw from the deep Cretaceous Aquifer, the existing plume in the near surface aquifer under the F-Area should not be affected by the upgraded Pu storage facilities.

[Text deleted.]

Upgrade With All or Some Rocky Flats Environmental Technology Site Plutonium and Los Alamos National Laboratory Plutonium Subalternative

Modify Actinide Packaging and Storage Facility for Continued Plutonium Storage

Surface Water. Impacts to surface water from this subalternative are similar to those discussed above for the Upgrade with RFETS Non-Pit Pu Material Subalternative. During both construction and operation, the quantities of wastewater discharged to the sitewide wastewater treatment system would be slightly greater than for the previous subalternative. As shown in Table 4.2.6.4–1, the increases in wastewater discharge during construction and operation are 0.1-percent grater than those for the previous subalternative; no impacts are expected. Other surface water impacts are identical to those discussed above for the previous subalternatives.

Groundwater. Impacts to groundwater from this subalternative are also similar to those discussed above for the Upgrade with RFETS Non-Pit Pu Material Subalternative. Water requirements during construction and operation of this subalternative are slightly greater than for the previous subalternative. The quantities required for this subalternative represent a maximum increase of 0.05-percent over the No Action groundwater requirements; no impacts to groundwater availability are expected. Impacts to groundwater quality are not expected to be minimal for the same reasons described above for the previous subalternative.

Consolidation Alternative

Construct New Plutonium Storage Facility

The impacts associated with a new consolidated Pu storage facility are the same as those discussed above for the new F-Area facility, with the following exceptions. The water requirements of this alternative are greater than those for the previous alternative. This alternative would require approximately 85 million l/yr (22.5 million gal/yr) and 360 million l/yr (95 million gal/yr) of water for construction and operation, respectively. These additional requirements represent 0.6- and 2.7-percent increases, respectively, in the projected annual withdrawals from the Cretaceous Aquifer. Based on the previous discussion of potential groundwater level declines due to increased withdrawals, minor declines at the well head could be expected to occur from these additional withdrawals during construction. Water requirements during operation are approximately 7 percent less than the quantity analyzed in the groundwater level decline study previously discussed. Based on the results of that study, minimal impacts to regional groundwater levels are expected.

Sanitary wastewater quantities generated during construction and operation of this alternative are approximately 8 million l/yr (2.1 million gal/yr) and 169 million l/yr (44.6 million gal/yr), respectively. These effluents would be treated at the sitewide wastewater treatment system and then discharged to Fourmile Branch. This quantity of additional wastewater during operation would represent a 24.1-percent increase in the effluent discharged to Fourmile Branch from this facility. The sitewide wastewater treatment system can control its effluent flow to Fourmile Branch, and restrictions are specified in the NPDES permit.

Surface water would not be used for this alternative, so no impacts to surface water availability would occur. The area proposed for the new Pu storage facility is outside the 100-year floodplain. No assessment of the 500-year floodplain has been conducted in this area but could be developed during the siting process.

Collocation Alternative

Construct New Plutonium and Highly Enriched Uranium Storage Facilities

Because the consolidated and collocated storage facilities would be located in the same area as the Pu storage facility (that is, northeast of the Z-Area at SRS), the impacts associated with it are the same as those discussed above, with the following exceptions. The water requirements for construction and operation of this alternative are slightly greater. This alternative would require approximately 104.7 million l/yr and 460 million l/yr (27.7 million gal/yr and 121.5 million gal/yr) for construction and operation, respectively. These additional requirements represent 0.8- and 3.5-percent increases, respectively, in the projected annual withdrawals from the Cretaceous Aquifer. Based on the previous discussion of potential groundwater level declines due to increased withdrawals, minor declines at the well head during construction could be expected to occur. Water requirements during operation would be approximately 18 percent greater than those analyzed during the potential groundwater level decline previously discussed. Impacts from these additional withdrawals would be analyzed in tiered NEPA documents, as appropriate.

Sanitary wastewater quantities generated during construction and operation of this alternative would be greater than for the previous alternative and are approximately 13.0 million l/yr and 215 million l/yr (3.4 million gal/yr and 56.8 million gal/yr), respectively. These effluents would be treated at the sitewide wastewater treatment system and then discharged to Fourmile Branch. This quantity of additional wastewater during operation would represent a 30.7-percent increase in the discharge to Fourmile Branch and would be approximately 4.3 percent of the minimal flow. [Text deleted.]

Subalternative Not Including Strategic Reserve and Weapons Research and Development Materials

Water resource impacts during construction and operation for this subalternative are expected to be slightly less than those for the No Action Alternative, the Upgrade With All or Some RFETS Pu and LANL Pu Subalternative, the Consolidation Alternative, and the Collocation Alternative because of the reduction in the amount of material. [Text deleted.]

Phaseout

For phaseout of the current Pu storage mission at SRS, groundwater withdrawals from the Cretaceous aquifer and nonhazardous wastewater discharge to Fourmile Branch would decrease by negligible quantities. By decreasing groundwater withdrawals, SRS would lessen its impact on the Cretaceous Aquifer by a negligible amount. Lowering wastewater discharges to Fourmile Branch by this quantity should not cause or alleviate any noticeable impacts.

[Text deleted.]

4.2.6.5 Geology and Soils

Construction and operation of the alternatives at SRS would have no impact on the geologic resources. Based on the seismic history of the area, a low seismic risk exists, and would be considered in the design of the proposed alternatives. The existing seismic risk does not preclude the safe construction and operation of the proposed alternative facilities. The facilities would be designed for earthquake-generated ground acceleration in accordance with DOE O 420.1, *Facility Safety*. Because there are no known capable faults at SRS, ground rupture as a result of an earthquake during the lifetime of the facility is minimal; ground shaking is more likely. Intensities of more than VII on the MMI scale are possible but infrequent and are not likely at SRS. Ground shaking could affect the integrity of inadequately designed or nonreinforced structures but would not affect newly designed facilities. Human health effects from accidents initiated by natural phenomena (for example, earthquakes) are discussed in Section 4.2.6.9. There is no evidence to suggest that seismically induced liquefaction of soils represents a hazard at SRS (DOE 1995p:4-23). Volcanic activity is improbable during the life of a facility and is not anticipated to affect the construction and operation of the alternatives. It is unlikely that landslides or other nontectonic events would affect the proposed alternatives. Calcium carbonate dissolution (within thin, discontinuous calcareous sand zones) may be an active process in the area, but no surface expression of sinkholes or fractures associated with calcium carbonate dissolution have been identified at SRS. Potential effects due to subsidence should be negligible because calcium carbonate dissolution is a slow process relative to human activities. Properties and conditions of soils underlying SRS typically have no limitations on construction. No economically viable geologic resources are known to be present at SRS.

Construction of the alternatives may involve ground-disturbing activities that could affect the soil resources. The amount of land disturbed is specified below for each alternative. Effects to the soil resource would depend on the specific soil units in the disturbed area, the extent of land disturbing activities, and the amount of soil disturbed. Within SRS, the soil erosion potential is directly related to the amount of land disturbed because soil and climatic conditions are similar throughout the site. Control measures would be employed to minimize soil erosion.

[Text deleted.]

No Action Alternative

[Text deleted.] Under this alternative, DOE would continue current and ongoing activities at SRS. There would be no ground-disturbing activities beyond those associated with existing and future site improvements. Because no new construction and the associated ground disturbance for potential soil erosion would occur, the No Action Alternative would have no effect to geologic or soil resources at the site.

Upgrade Alternative

Preferred Alternative: Upgrade With Rocky Flats Environmental Technology Site Non-Pit Plutonium Subalternative

Modify Actinide Packaging and Storage Facility for Continued Plutonium Storage

Construction would occur on previously disturbed land as described in Section 4.2.6.1. Soil disturbance would occur primarily from ground-disturbing construction activities (foundation preparation) and activities associated with building construction laydown areas that can expose the soil profile and lead to a possible increase in soil erosion as a result of wind and water action. Soil loss would depend on the frequency and severity of storms; wind velocities (increased wind velocities and durations increase potential soil erosion); and the size, location, and duration of ground-disturbing activities with respect to local drainage and wind patterns.

Net soil disturbance during operations would be considerably less than during construction because areas temporarily used for construction laydown would be restored. Although erosion by stormwater runoff and wind action could occur occasionally during operations, they are anticipated to be minimal.

[Text deleted.]

Upgrade With Rocky Flats Environmental Technology Site Plutonium and Los Alamos National Laboratory Plutonium Subalternative

Modify Actinide Packaging and Storage Facility for Continued Plutonium Storage

Construction and operation effects on geology and soil resources for this option would be the same as those described for the Upgrade With RFETS Non-Pit Pu Subalternative, because the amount of land disturbed during modification of the APSF would be the same.

Consolidation Alternative

Construct New Plutonium Storage Facility

No apparent direct or indirect effects on the geologic resource are anticipated because neither facility construction and operational activities nor site infrastructure improvements would restrict access to potential geologic resources. Analysis in this section is the same as that provided for the Upgrade Alternative.

[Text deleted.] Additional soil impacts would be expected from construction of the Consolidation Alternative. Construction would occur completely on undisturbed land, as described in Section 4.2.6.1. Approximately 58.5 ha (144 acres) will be disturbed during construction of the new facilities, affecting the soil profile and leading to a possible temporary increase in erosion as a result of stormwater runoff and wind action. Soil losses would depend on frequency of storms; wind velocity; location of the facility with respect to drainage and wind patterns; slope, shape, and area of the tracts of ground disturbed; and the duration of time the soil is bare.

Collocation Alternative

Construct New Plutonium and Highly Enriched Uranium Storage Facilities

No apparent direct or indirect effects on the geologic resource are anticipated, because neither facility construction and operational activities nor site infrastructure improvements would restrict access to potential geologic resources.

[Text deleted.] Additional soil impacts would be expected from the construction of the storage facilities which will occur completely on undisturbed land, as described in Section 4.2.6.1. During construction, approximately 89.5 ha (221 acres) would be disturbed for the new facilities, affecting the soil profile and leading to a possible temporary increase in erosion as a result of stormwater runoff and wind action. [Text deleted.]

Subalternative Not Including Strategic Reserve and Weapons Research and Development Materials

Excluding strategic reserve and weapons R&D materials would give almost the same effects to the geologic and soil resources. By excluding these materials, the size of a facility would be similar, thus not changing the amount of land disturbed by construction activities. No effect to the geologic resource is anticipated as a result of this option. [Text deleted.]

Phaseout

The phaseout of storage capacity would have no apparent effects on the geology resources. However, phaseout could result in beneficial effects on the soils of the area. Hazardous radioactive and mixed waste sources would be eliminated from the area, thus decreasing the potential for future soil contamination.

[Text deleted.]

4.2.6.6 Biological Resources

No Action Alternative

Under No Action, the Pu storage mission described in Section 2.2.6 would continue at SRS. These activities would result in no appreciable change to current conditions of biological resources at SRS as described in Section 3.7.6. [Text deleted.]

Upgrade Alternative

Preferred Alternative: Upgrade With Rocky Flats Environmental Technology Site Non-Pit Plutonium Subalternative

Modify Actinide Packaging and Storage Facility for Continued Plutonium Storage

Upgrading the APSF to accommodate RFETS non-pit Pu material would result in no appreciable change over the No Action Alternative since all activities would take place within a previously disturbed area.

[Text deleted.]

Upgrade With All or Some Rocky Flats Environmental Technology Site Plutonium and Los Alamos National Laboratory Plutonium Subalternative

Modify Actinide Packaging and Storage Facility for Continued Plutonium Storage

Upgrading the APSF to accommodate all or some RFETS and LANL materials would result in no appreciable change over the No Action Alternative since all activities would take place within a previously disturbed area.

Consolidation Alternative

Construct New Plutonium Storage Facility

Under this alternative, Pu materials would be consolidated in a new storage facility at SRS. Impacts to terrestrial resources, wetlands, aquatic resources, and threatened and endangered species are described below.

Terrestrial Resources. Construction of the consolidated Pu storage facility would result in the disturbance of 58.5 ha (144 acres), or less than about 0.07 percent of SRS. This includes areas on which permanent facilities would be constructed, as well as areas revegetated following construction. Vegetation within the proposed site would be lost during land-clearing activities. The majority of the proposed site consists of old fields and pine plantations that are common on SRS and throughout the region. Bottomland hardwoods and wetlands would be avoided to the extent possible.

Construction of a Pu storage facility would affect animal populations. Less mobile animals, such as amphibians, reptiles, and small mammals within the project area would not be expected to survive. Construction activities and noise would cause larger mammals and birds in the construction and adjacent areas to move to similar habitat nearby. If the area to which they moved was below its carrying capacity, these animals would be expected to survive. However, if the area was already supporting the maximum number of individuals, the additional animals would compete for limited resources, which could lead to habitat degradation and eventual loss of the excess population. Nests and young animals living within the assumed site may not survive. The site would be surveyed as necessary for the nests of migratory birds prior to construction. Upon completion of construction, revegetated areas would be of minimal value to most types of wildlife because they would be maintained as landscaped areas.

Activities associated with facility operations, such as noise and human activity, could affect wildlife living immediately adjacent to the facility. These disturbances may cause some species to move from the area. Disturbance to wildlife living adjacent to the facility would be minimized by preventing workers from entering undisturbed areas. Salt drift generated by mechanical draft cooling systems would be minimal and negligible impacts are expected.

Wetlands. Since the majority of the proposed site is upland, the facility could be located to avoid direct impacts to wetlands. Implementation of soil erosion and sediment control measures would control secondary impacts. Due to the relatively small amount of water required during both construction and operation, existing discharge structures would be used. Thus, it would not be necessary to disturb wetlands along the site streams. Any unavoidable impacts to wetlands would be mitigated according to DOE policy set forth in 10 CFR 1022 and in accordance with the requirements of a COE permit. Wastewater discharge to Fourmile Branch from construction and operation would be minimal and would not be expected to affect wetlands associated with the stream. All discharges would be treated as necessary to comply with NPDES-permit requirements.

Aquatic Resources. Stormwater runoff during construction of a Pu storage facility at SRS could cause temporary water quality changes in Fourmile Branch, Upper Three Mile Creek, and in Carolina bays. Increased turbidity could affect some fish spawning and feeding habitat. Fish populations probably would move to less-disturbed areas of the stream and recolonize disturbed areas shortly after construction is complete and water quality improves. Direct disturbance to aquatic resources in site streams are not expected since groundwater would be used for both construction and operation, and new discharge structures would not be required. During construction and operation, wastewater would be discharged to Fourmile Branch. These discharges (found in Section 4.2.6.4) would be minimal and would not be expected to affect aquatic resources. All wastewater would be treated as required.

Threatened and Endangered Species. It is unlikely that federally listed threatened or endangered species are expected to be affected by construction or operation of a consolidated Pu storage facility. Although suitable foraging habitat for the red-cockaded woodpecker exists in the area, the woodpecker colonies are located far enough from the site that this species would not be directly affected by the storage facility. Special status species that would potentially be affected by construction of the facility include the green fringed orchid, eastern tiger salamander, nailwort, and beak-rush. If present, individuals of each of these species would be lost due to land clearing activities or suffer impacts to habitat due to sedimentation of Carolina bays. Preactivity surveys would be conducted as appropriate prior to construction to determine the occurrences of these and other special status species, including the federally listed smooth coneflower (Table 3.7.6–1). Consultation with USFWS and State agencies would be conducted at the site-specific level, as appropriate.

As described in previous sections, operation of the facility would have minor effects on biotic resources. Therefore, impacts to special status species during facility operations are not expected.

Collocation Alternative

Construct New Plutonium and Highly Enriched Uranium Storage Facilities

Under this alternative, consolidated Pu materials would be stored with HEU inventories in a new collocated storage facility at SRS. Construction and operation of collocated storage facilities at SRS would have similar, but somewhat greater, effects on biological resources as those described for the consolidated storage facility. Construction of the collocated storage alternative would disturb 89.5 ha (221 acres) of habitat.

Subalternative Not Including Strategic Reserve and Weapons Research and Development Materials

The exclusion of strategic reserve and weapons R&D materials would have almost the same effects to the No Action Alternative, the Upgrade With All or Some RFETS and LANL Pu Subalternative, the Consolidation

Alternative, and the Collocation Alternative. The size of the facility would be similar and would not reduce the amount of habitat and thus lessen potential impacts to biological resources would be similar. [Text deleted.]

Phaseout

The phaseout of Pu storage facilities at SRS would not be expected to affect biological resources. Increased human activity could temporarily disturb some wildlife species in the vicinity of the site.

4.2.6.7 Cultural and Paleontological Resources

No Action Alternative

Under this alternative, DOE would continue the existing and planned missions at SRS. This includes continued storage of Pu material in F-Area in stabilized form pursuant to DNFSB Recommendation 94-1. Any impacts to cultural or paleontological resources from these missions would be independent of the proposed action and would be addressed through separate NHPA, *American Indian Religious Freedom Act*, and *Native American Graves Protection and Repatriation Act* regulatory compliance procedures. An extensive archaeological survey program began at SRS in 1974 and includes numerous field studies. A Programmatic Agreement was signed by the DOE Savannah River Operations Office, the South Carolina SHPO, and the Advisory Council on Historic Preservation in 1990 with the purpose of ensuring that appropriate measures are taken to inventory, evaluate, protect and enhance sites on SRS. In addition, there is an *Archaeological Resource Management Plan* in place at SRS.

Upgrade Alternative

Preferred Alternative: Upgrade With Rocky Flats Environmental Technology Site Non-Pit Plutonium Subalternative

Modify Actinide Packaging and Storage Facility for Continued Plutonium Storage

This option involves additions to a new facility on previously disturbed land located north of the 235-F Building and east of the 247-F Building in F-Area to accommodate SRS non-pit Pu and RFETS non-pit Pu material. Portions of the F-Area have been surveyed and contain sites potentially eligible for the NRHP. However, the areas under consideration are disturbed and the potential for cultural resources is extremely low. Some paleontological remains may occur on this acreage, but impacts would be considered negligible because the fossil assemblages known to occur at SRS are of low research value. During operation, no additional ground disturbance is expected, so there would be no additional impact to prehistoric, historic, or paleontological sites.

Some Native American resources may be affected by the proposed action. Resources such as prehistoric sites, cemeteries, and traditional plants could be affected by construction. Facility operation could result in reduced access to traditional use areas or sacred space. Visual or auditory intrusions to the areas may also result from the proposed option. These resources would be identified through consultation with the potentially affected tribes.

[Text deleted.]

Upgrade With All or Some Rocky Flats Environmental Technology Site Plutonium and Los Alamos National Laboratory Plutonium Subalternative

Modify Actinide Packaging and Storage Facility for Continued Plutonium Storage

Impacts for the addition of All or Some RFETS Pu and LANL Pu would be similar to the Upgrade With RFETS Non-Pit Pu Subalternative because no additional land would be disturbed.

[Text deleted]

Consolidation Alternative

Construct New Plutonium Storage Facility

This alternative involves the construction of a new facility on land east of the Z-Area. The total amount of land to be disturbed during construction is 58.5 ha (144 acres). The total operational land requirement is 56 ha (138 acres). A reduced-access buffer zone would exist around the facility. This acreage may contain some prehistoric and historic resources. Surveys would be conducted prior to construction. Some paleontological remains may occur on this acreage, but impacts would be considered negligible because the fossil assemblages known to occur at SRS are of low research value. During operation, no additional ground disturbance is expected, so there would be no additional impact to prehistoric, historic, or paleontological sites. Native American resources may be identified in the area. Potential impacts to these resources are also discussed under the Upgrade Alternative.

Collocation Alternative

Construct New Plutonium and Highly Enriched Uranium Storage Facilities

Under this alternative, a new facility would be constructed east of the Z-Area to accommodate all Pu and HEU within the scope of this PEIS. Land disturbed during construction would be 89.5 ha (221 acres). The operational land disturbance would be 87 ha (215 acres), and the facilities would be located in the same place as the previously discussed new Pu storage facility. A reduced-access buffer zone would exist around the facility. Effects to cultural and paleontological resources would be similar to those discussed under the Consolidation Alternative.

Subalternative Not Including Strategic Reserve and Weapons Research and Development Materials

Under this subalternative, facility and other resource requirements will be almost the same as the No Action Alternative, the Upgrade Alternative, the Consolidation Alternative, and the Collocation Alternative. Therefore, impacts to cultural and paleontological resources would be equal to those previously discussed. [Text deleted.]

Phaseout

Under this activity, all SRS Pu material would be moved out of F-Area to the consolidation or collocation sites or to disposition. No acreage is expected to be disturbed during phaseout, so impacts to archaeological and paleontological resources are not anticipated. It is possible, however, that some of the buildings involved in phaseout would be NRHP-eligible, because their original construction and function may be associated with the Cold War Era.

4.2.6.8 Socioeconomics

No Action Alternative

Regional Economy Characteristics. Total employment in the REA is projected to increase approximately 1 percent annually between 1995 and 2000, reaching about 257,000 in the latter year. Long-term projections indicate slower growth after the year 2000, when employment would increase by less than 1 percent annually and reach approximately 354,500 persons in 2040. Unemployment in the REA was 6.7 percent in 1994 and is expected to remain at this level into the near future. Per capita income is projected to increase from approximately $17,332 in 1995 to $25,297 in 2040. Projections for the No Action Alternative are presented in Table L.1–55.

Population and Housing. Population in the ROI is projected to increase from approximately 457,500 in 1995 to 640,200 by 2040. The total number of available housing units in the ROI is projected to increase from about 171,400 in 1995 to 239,700 in 2040. Population and housing projections for the No Action Alternative are presented in Tables L.1–56 and L.1–57, respectively.

Community Services. Education, public safety, and health care characteristics are used to assess the level of community services in the SRS ROI. School enrollments are projected to increase from about 86,730 students in 1995 to 121,620 students by 2040. The current student-to-teacher ratio is 17.5:1. To maintain this level of service, the number of teachers in the ROI would need to increase from approximately 4,966 in 1995 to 6,948 in 2040. These projections are presented in Tables L.1–58 and L.1–59.

The projected number of sworn police officers and firefighters serving in ROI communities over the period 1995 to 2040 are shown in Tables L.1–60 and L.1–61, respectively. Under No Action, the number of sworn police officers is projected to increase from approximately 952 in 1995 to 1,322 in 2040 to maintain the current service level of 2.1 sworn officers per 1,000 persons. The number of firefighters in the ROI would need to increase from about 1,363 in 1995 to 1,919 in 2040 to maintain the current service level of 3.0 firefighters per 1,000 persons.

Hospital occupancy rates are based on current capacity. These rates and the estimated number of practicing physicians serving the ROI population between 1995 and 2040 are presented in Tables L.1–62 and L.1–63, respectively. Hospital occupancy rates are projected to increase from approximately 65 percent in 1995 to 90 percent in 2040. To maintain the current service level of 3.0 physicians per 1,000 persons, the total number of physicians in the ROI would need to increase from approximately 1,350 in 1995 to 1,848 in 2040.

Local Transportation. Any increases in traffic would be due to projected growth in the area unrelated to DOE activities. [Text deleted.]

Upgrade Alternative

Preferred Alternative: Upgrade With Rocky Flats Environmental Technology Site Non-Pit Plutonium Subalternative

Modify Actinide Packaging and Storage Facility for Continued Plutonium Storage

Under this alternative, the RFETS non-pit material would be transferred to SRS. An addition to the APSF to accommodate the RFETS non-pit material would require up to 193 workers and take four months to complete. This construction project may be performed as an extension of work already being conducted under No Action. Under this scenario, there would be no additional socioeconomic impacts over the No Action level because the workers would already be on site. If, however, the construction of the RFETS non-pit addition takes place some time after No Action construction is completed, there would be some minor socioeconomic effects.

During the operation phase, 160 workers would be employed if the RFETS non-pit material is stored at SRS. However, 30 of these positions would be filled by existing SRS employees. The other 130 positions would be created as part of No Action. Thus, there would be minimal socioeconomic impacts associated with the operation of the upgraded storage facility beyond those that would result from No Action.

Regional Economy Characteristics. A maximum of 346 jobs (193 direct and 153 indirect) would be generated during construction. Total employment would increase by much less than 1 percent during construction while unemployment would drop from the No Action level of 6.7 percent to 6.6 percent. Per capita income would increase by much less than 1 percent over the No Action Alternative (Socio 1996a).

Population, Housing, Community Services, and Local Transportation. All newly created employment would be filled by the resident labor force. Therefore, there would be no change to the region's population beyond the No Action level. Accordingly, there would be no impacts to either the housing sector, or demand for community services as a result of the construction of these facilities. Local transportation would also be unaffected by the proposed action.

[Text deleted.]

Upgrade With Rocky Flats Environmental Technology Site and Los Alamos National Laboratory Plutonium Subalternative

Modify Actinide Packaging and Storage Facility for Continued Plutonium Storage

Under this alternative, all or a portion of the RFETS and LANL material would be transferred to SRS. The upgraded facility would be comparable in size to the upgraded facility described above. Therefore, the number of workers required for construction and operation of the two facilities would be the same. The socioeconomic impacts for the two alternatives would also be identical.

Consolidation Alternative

Construct New Plutonium Storage Facility

To consolidate storage of Pu currently stored at multiple DOE sites, a new storage facility would be built at SRS. Workers would in-migrate to fill a portion of the direct jobs created during construction and operation of this facility.

Regional Economy Characteristics. Construction would generate a total of 2,044 jobs (1,140 direct and 904 indirect). Operation would generate a total of 1,460 jobs (485 direct and 951 indirect). Total employment would increase by less than 1 percent for construction and operation of the facility. Unemployment would decrease to 6.0 percent during construction and 6.2 percent during operation. Per capita income would increase by less than 1 percent over the No Action Alternative during either phase (Socio 1996a).

Population, Housing, and Community Services. Most of the newly created employment would be filled by the resident labor force. There would only be approximately 35 workers in-migrating during operation and no in-migration during construction. Therefore, there would be a minimal change to the region's population beyond the No Action level. Accordingly, there would be minimal impacts to the housing sector or community services as a result of the construction and operation of this facility. [Text deleted.]

Local Transportation. A total of 2,188 and 931 vehicle trips per day would be generated during construction and operation, respectively. During construction, South Carolina State Route 230 from U.S. 25 Business at North Augusta to U.S. 1/25/78/278, a rural two-lane highway, would drop from level of service E to level of service F. Traffic generated from facility operations would not affect the level of service on the local road segments analyzed (Socio 1996a).

Collocation Alternative

Construct New Plutonium and Highly Enriched Uranium Storage Facilities

To collocate storage of Pu and HEU currently stored at multiple DOE sites, new storage facilities would have to be built at SRS. Workers would in-migrate to fill a portion of the direct jobs created during construction and operation of these facilities.

Regional Economy Characteristics. Construction would generate a total of 2,623 jobs (1,463 direct and 1,160 indirect). Operation would generate a total of 1,818 jobs (614 direct and 1,204 indirect). Total employment would increase by about 1 percent for construction and less than 1 percent for operation. Unemployment would decrease to 5.8 percent during construction and 6.1 percent during operation. Per capita income would increase by less than 1 percent during both phases (Socio 1996a).

Population and Housing. The in-migration of workers during the construction and operation periods would increase the ROI population by much less than 1 percent over No Action projections. The largest increase would occur during construction. Some new housing may be needed. However, expected vacancies and historic housing construction rates indicate that housing would be available to accommodate the population growth (Socio 1996a).

Community Services. The additional population would slightly increase the demand for some community services. Worker in-migration would lead to an increase in ROI school enrollments by about 62 students during construction and 47 students during operation. To maintain the No Action student-to-teacher ratio of 17.5:1, the number of teachers would have to increase by three during both the construction and operation periods (Socio 1996a). This additional need for teachers would be distributed over the various jurisdictions in the ROI; therefore, the effect on any single school district would be minimal.

To maintain the No Action level of service, only one police officer would need to be hired during both construction and operation. To maintain the No Action firefighter level of service, only one firefighter would need to be hired during both phases (Socio 1996a).

The small population increase would have a negligible effect on health services, increasing hospital occupancy slightly greater than the No Action projection. The number of physicians in the ROI would need to increase by only one during construction and no additional physicians would be needed during operation (Socio 1996a).

Local Transportation. A total of 2,809 and 1,179 vehicle trips per day would be generated during construction and operation, respectively. During construction, South Carolina State Route 230 from U.S. 25 Business at North Augusta to U.S. 1/25/78/278, a rural two lane highway, would drop from level of service from E to level of service F (Socio 1996a). Traffic generated from facility operations would not affect the level of service on the local road segments analyzed (Socio 1996a).

Subalternative Not Including Strategic Reserve and Weapons Research and Development Materials

The requirements for each storage option considered, including No Action, would decrease slightly if strategic reserve and weapons R&D materials were not included for storage at SRS. This should also result in a decrease in the number of required operation employees for each of the considered alternatives. Therefore, socioeconomic effects on the REA/ROI for the storage alternatives with no strategic reserve and weapons R&D materials should be equal to or somewhat less than the No Action Alternative, Upgrade With All or Some

RFETS and LANL Pu Subalternative, Consolidation Alternative, and the Collocation Alternative. [Text deleted.]

Phaseout

Phasing out Pu storage at SRS would result in the loss of 592 total (direct and indirect) jobs in the REA. Should all personnel be phased out at the same time, unemployment would increase to 6.9 percent and per capita income will be reduced by much less than 1 percent (Socio 1996a).

Some displaced workers may out-migrate from the ROI to seek other employment opportunities. Under the bounding case (all unemployed workers and their families leaving the ROI at the same time), population would decrease by less than 1 percent. Some of the projected ROI occupied housing units would likely become vacant as a result of population losses (Socio 1996a).

Out-migration of population during phaseout would slightly lessen the demand for community services. However, it is unlikely that communities would lower service levels unless decreased revenues made it necessary.

ROI school enrollments are projected to decrease by much less than 1 percent under the bounding case scenario. The No Action student-to-teacher ratio of 17.5:1 could be maintained if the number of teachers does not decrease from predicted No Action levels by more than 17 (Socio 1996a).

During phaseout, the number of sworn police officers could decrease by four from projected No Action levels if the No Action service level of 2.1 officers per 1,000 persons is to be maintained. The number of firefighters could decrease by five before the No Action service level of 3.0 firefighters per 1,000 persons would be affected (Socio 1996a).

Projected hospital occupancy rates during the bounding case scenario for phaseout would be slightly lower than the No Action projections. The number of physicians in the ROI could decrease by three from predicted No Action levels before the No Action service level of 3.0 physicians per 1,000 persons would be affected (Socio 1996a).

Phaseout at SRS would result in the loss of 384 vehicle trips per day. There would be minimal effects to the local road network due to this activity.

4.2.6.9 Public and Occupational Health and Safety

The assessments of potential radiological and chemical impacts associated with the storage alternatives at SRS are presented in this section. Summaries of the radiological impacts from normal operations are presented in Tables 4.2.6.9–1 and 4.2.6.9–2 for the public and workers, respectively. Impacts from hazardous chemicals are presented in Table 4.2.6.9–3. Summaries of impacts associated with postulated accidents are given in Tables 4.2.6.9–4 through 4.2.6.9–7. Detailed results are presented in Appendix M.

No Action Alternative

This section describes the radiological and hazardous chemical releases and their associated impacts resulting from normal operations involved with the SRS sitewide missions, including interim storage of Pu. The impacts to the public and to workers would be within applicable regulatory limits. For facility accidents, the risks and consequences are described in site safety documentation.

Normal Operation. The current mission at SRS, where Pu is in interim storage, is described in Section 3.7. The site has identified those facilities that will continue to operate under the No Action Alternative, including interim Pu storage facilities, the APSF, and others, if any, that will or may become operational by 2005. Based on that information, the radiological and chemical releases to the environment in 2005 and beyond (future operation) were developed and used in the impact assessments. The resulting doses and potential health effects to the public and workers at SRS are described below.

Radiological Impacts. The calculated annual dose to the average and maximally exposed members of the public from total site operation; the associated fatal cancer risks to these individuals from 50 years of operation; the dose to the population within 80 km (50 mi) from total site operation in the year 2030; and the projected number of fatal cancers in this population from 50 years of operation are presented in Table 4.2.6.9–1 under this alternative at SRS. The annual dose of 0.79 mrem to the MEI is within the radiological limits specified in NESHAPS (40 CFR 61, Subpart H) and DOE Order 5400.5. From 50 years of operation, the corresponding risk of fatal cancer to this individual would be $2.0x10^{-5}$. The annual dose to the population would be within the limit in proposed 10 CFR 834 and would be 44 person-rem. The corresponding number of fatal cancers in this population from 50 years of operation would be 1.1. To put operational doses into perspective, comparisons with doses from natural background radiation are included in the table.

Under the No Action Alternative shown in Table 4.2.6.9–2, the annual average dose from total site operations to a noninvolved (No Action) site worker and the annual dose from total site operations to the noninvolved (No Action) total site workforce would be 32 mrem and 226 person-rem, respectively, as shown in Table 4.2.6.9–2. The associated risk of fatal cancer to the average worker from 50 years of total site operations would be $6.5x10^{-4}$, and the potential maximum number of fatal cancers among all workers from 50 years of total site operations would be 4.5. Doses to individual workers would be kept low by instituting badged monitoring and ALARA programs and worker rotations. As a result of the implementation of these mitigation measures, the estimated number of potential latent cancer fatalities for the operation of this facility would be reduced.

Hazardous Chemical Impacts. Hazardous chemical impacts to the public resulting from the normal operation under No Action at SRS are presented in Table 4.2.6.9–3. The hazardous chemical impacts from current site operations estimate the baseline site impacts for the various storage and disposition operation alternatives. The noncancer health effects expected and the risk of cancer due to the total chemical exposures were estimated for each site. Since the major releases due to normal operation at SRS would make up nearly all of the exposures to onsite workers and to the public in adjacent communities, contributions to the hazardous chemical concentrations from all other sources (for example, industrial operations), are considered negligible for purposes of risk calculations.

Table 4.2.6.9–1. Potential Radiological Impacts to the Public During Normal Operation at Savannah River Site—No Action and Storage Alternatives

Receptor	No Action	Upgrade		Consolidation		Collocation	
	Total Site	Facility[a]	Total Site[b]	Facility	Total Site[b]	Facility	Total Site[b]
Annual Dose to the Maximally Exposed Individual Member of the Public[c]							
Atmospheric release pathway (mrem)	0.42	6.2×10^{-6}	0.42	1.4×10^{-5}	0.42	1.4×10^{-5}	0.42
Drinking water pathway (mrem)	0.081	d	0.081	0	0.081	0	0.081
Total liquid release pathway (mrem)	0.37	6.1×10^{-7}	0.37	0	0.37	0	0.37
Atmospheric and liquid release pathways combined (mrem)	0.79	6.8×10^{-6}	0.79	1.4×10^{-5}	0.79	1.4×10^{-5}	0.79
Percent of natural background[e]	0.27	2.3×10^{-6}	0.27	4.7×10^{-6}	0.27	4.7×10^{-6}	0.27
50-year fatal cancer risk	2.0×10^{-5}	1.7×10^{-10}	2.0×10^{-5}	3.5×10^{-10}	2.0×10^{-5}	3.5×10^{-10}	2.0×10^{-5}
Population Dose Within 80 Kilometers for Year 2030[f]							
Atmospheric release pathway (person-rem)	40	2.8×10^{-4}	40	9.2×10^{-4}	40	8.8×10^{-4}	40
Total liquid release pathway (person-rem)	3.6	1.0×10^{-5}	3.6	0	3.6	0	3.6
Atmospheric and liquid release pathways combined (person-rem)	44	2.9×10^{-4}	44	9.2×10^{-4}	44	8.8×10^{-4}	44
Percent of natural background[e]	0.017	1.1×10^{-7}	0.017	3.5×10^{-7}	0.017	3.3×10^{-7}	0.017
50-year fatal cancers	1.1	7.2×10^{-6}	1.1	2.3×10^{-5}	1.1	2.2×10^{-5}	1.1
Annual Dose to the Average Individual Within 80 Kilometers[g]							
Atmospheric and liquid release pathways combined (mrem)	0.049	3.2×10^{-7}	0.049	1.0×10^{-6}	0.049	9.9×10^{-7}	0.049
50-year fatal cancer risk	1.2×10^{-6}	8.0×10^{-12}	1.2×10^{-6}	2.6×10^{-11}	1.2×10^{-6}	2.5×10^{-11}	1.2×10^{-6}

[a] The dose results are scaled from the APSF which is based on 5,000 storage positions. The SRS Upgrade with RFETS Pu and LANL Pu Subalternative doses shown here contain 4,100 storage positions for the additional material at the upgraded APSF. The health impacts shown here assume that the upgraded storage facility at SRS would include all of the Pu materials from both RFETS and LANL. For the Preferred Alternative, the additional materials to be stored in the upgraded storage facility at SRS would only include the surplus non-pit Pu materials from RFETS. Therefore, the health impacts from the Preferred Alternative at SRS would be slightly less than the impacts presented in the Upgrade Alternative in this table. The difference would be below detection limits.

[b] Includes impacts from No Action facilities. The location of the MEI may be different under No Action than for the other alternatives. Therefore, the impacts may not be directly additive.

[c] The applicable radiological limits for an individual member of the public from total site operations are 10 mrem per year from the air pathways, as required by NESHAPS (40 CFR 61, Subpart H) under the CAA; 4 mrem per year from the drinking water pathway, as required by the SDWA; and 100 mrem per year from all pathways combined. Refer to DOE Order 5400.5.

[d] The dose from the drinking water pathway has been included in the total liquid release pathway.

[e] The annual natural background radiation level at SRS is 298 mrem for the average individual; the population within 80 km in the year 2030 receives 266,000 person-rem.

[f] For DOE activities, proposed 10 CFR 834 (see 58 FR 16268) would generally limit the potential annual population dose to 100 person-rem from all pathways combined, and would require an ALARA program.

[Text deleted.]

[g] Obtained by dividing the population dose by the number of people projected to live within 80 km of the site in 2030 (893,000).

Note: The No Action site total included a very small contribution from the current no action storage.

Source: Section M.2.

Table 4.2.6.9–2. Potential Radiological Impacts to Workers During Normal Operation at Savannah River Site—Storage Alternatives

Receptor	Upgrade[a,b]	Consolidation[a]	Collocation[a]
Involved Workforce[c]			
Average worker dose (mrem/yr)[d]	250	258	264
50-year risk of fatal cancer	5.0×10^{-3}	5.2×10^{-3}	5.3×10^{-3}
Total dose (person-rem/yr)	7.5	24	25
50-year fatal cancers	0.15	0.48	0.50
Noninvolved Workforce[e]			
Average worker dose (mrem/yr)[d]	36	36	36
50-year risk of fatal cancer	7.2×10^{-4}	7.2×10^{-4}	6.5×10^{-4}
Total dose (person-rem/yr)	259	259	259
50-year fatal cancers	5.2	5.2	5.2
Total Site Workforce[f]			
Dose (person-rem/yr)	266	283	284
50-year fatal cancers	5.3	5.7	5.7

[a] Under the Upgrade Alternative, an estimated additional 30 involved workers would be needed if Pu is transferred from RFETS and LANL. The impacts given in the Upgrade column include those associated with these additional workers. The number of involved badged workers for the Consolidation and Collocation Alternatives would be 92 and 95, respectively.

[b] The health impacts shown here assume that the upgraded storage facility at SRS would include all of the Pu materials from both RFETS and LANL. For the Preferred Alternative, the additional materials to be stored in the upgraded storage facility at SRS would only include the surplus non-pit Pu materials from RFETS. Therefore, the health impacts from the Preferred Alternative at SRS would be slightly less than the impacts presented in the Upgrade Alternative in this table. The difference would be below detection limits.

[c] The involved worker is associated with operations of the proposed action. The maximum dose to an involved worker would be kept below 500 mrem per year. Based on a review of worker doses associated with similar operations (Section M.2.3.2), an average worker dose of 250 mrem per year was conservatively assumed. However, an effective ALARA program will ensure that the exposure will be reduced to that level which is as low as reasonably achievable.

[d] The radiological limit for an individual worker is 5,000 mrem/year (10 CFR 835). However, DOE has also established an administrative control level of 2,000 mrem/yr (DOE 1992t); the site must make reasonable attempts to maintain worker doses below this level.

[e] The noninvolved worker is onsite but not associated with operations of the proposed action. The projected number of noninvolved badged workers in 2005 is 7,199. The noninvolved workforce is equivalent to the No Action workforce in addition to a proposed 130 workers associated with future operation of the APSF.

[f] The impact to the total site workforce is the summation of the involved worker impact and the noninvolved worker impact.

[Text deleted.]

Source: Section M.2.

Table 4.2.6.9–3. ***Potential Hazardous Chemical Impacts to the Public and Workers During Normal Operation at Savannah River Site—No Action and Storage Alternatives***

Receptor	No Action	Upgrade With RFETS Non-Pit Material		Upgrade With RFETS and LANL Material		Consolidation		Collocation	
	Total Site[a]	Facility[b]	Total Site[a]	Facility[b]	Total Site[a]	Facility[b]	Total Site[a]	Facility[b]	Total Site[a]
Maximally Exposed Individual (Public)									
Hazard index[c]	$5.2x10^{-3}$	$1.5x10^{-6}$	$5.2x10^{-3}$	$1.6x10^{-6}$	$5.2x10^{-3}$	$2.8x10^{-6}$	$5.2x10^{-3}$	$6.2x10^{-6}$	$5.2x10^{-3}$
Cancer risk[d]	$1.3x10^{-7}$	0	$1.3x10^{-7}$	0	$1.3x10^{-7}$	$7.5x10^{-9}$	$1.4x10^{-7}$	$7.5x10^{-9}$	$1.4x10^{-7}$
Worker Onsite									
Hazard index[e]	1.2	$2.1x10^{-4}$	1.2	$2.2x10^{-4}$	1.2	$6.0x10^{-4}$	1.2	$1.0x10^{-3}$	1.2
Cancer risk[f]	$1.9x10^{-4}$	0	$1.9x10^{-4}$	0	$1.9x10^{-4}$	$1.1x10^{-5}$	$2.1x10^{-4}$	$1.1x10^{-5}$	$2.0x10^{-4}$

[a] Total=Sum of the No Action plus the contributions of the above activity.
[b] Contribution from above facilities operations only. These values bound the addition of RFETS and LANL.
[c] Hazard Index for MEI=Sum of individual Hazard Quotients (noncancer health effects) for MEI.
[d] Cancer risk for MEI= (Emissions for 8-hr) x (0.286 [converts concentrations to doses]) x (slope factor [SF]).
[e] Hazard Index for workers=Sum of individual Hazard Quotients (noncancer health effects) for workers.
[f] Cancer risk for workers=(emissions for 8-hr) x (0.286 [converts concentrations to doses]) x (0.237[fraction of year exposed]) x (0.571 [fraction of lifetime working]) x (SF).

Note: Where there are no known carcinogens among the hazardous chemicals emitted, there are no slope factors, therefore the calculated cancer risk value is 0.

Source: Section M.3; Tables M.3.4–22 through M.3.4–25.

The HI to the MEI of the public at SRS resulting from normal operation under the No Action Alternative is $5.2x10^{-3}$, and the cancer risk is $1.3x10^{-7}$. The HI to the onsite worker is 1.2, and the cancer risk is $1.9x10^{-4}$. The HIs and cancer risks would remain constant over 50 years of operation because the exposures would be expected to remain the same.

Facility Accidents. Under the No Action Alternative, Pu would continue to be stored at the site in existing facilities. Estimates of facility accident impacts under No Action are described in the *Environmental Impact Statement, Interim Management of Nuclear Materials* for SRS (DOE/EIS-0220).[2]

[2] The EIS estimated the amount of radioactive material that could be released from the F-Canyon into the environment as a result of a severe earthquake. Using up-to-date seismic data, SRS completed a detailed evaluation of the likelihood of a severe earthquake and a structural analysis quantifying the likelihood of structural failure of F-Canyon for a range of ground motions in the *Supplemental Analysis of Seismic Activity on F-Canyon* (August 1996). Based on the evaluation, an earthquake that could occur about once every 8,000 years could cause a level of structural damage to F-Canyon similar to the level of damage attributed to the earthquake considered in the *Environmental Impact Statement, Interim Management of Nuclear Materials*. Additionally, the response spectrum associated with the 8,000-year earthquake was determined to encompass (be more severe than) the Blume response spectra. The earthquake used in the accident analysis was an event with a response spectrum (a profile of ground acceleration over a range of frequencies of motion) and peak ground acceleration as defined by J.A. Blume & Associates Engineers for SRS in the early 1980s. A frequency of occurrence (or return period) of once every 5,000 years was stated to correspond to the Blume earthquake. Thus, the capability of the F-Canyon to survive an earthquake more severe than that evaluated in the EIS, in combination with the fact that the likelihood of this level of damage was less than assumed in the EIS (1 per 8,000 years compared to 1 per 5,000 years), indicates that F-Canyon is seismically as safe, or safer, than indicated in the EIS. Two other analyses were also completed; they concluded that F-Canyon, as built, would withstand an earthquake of a magnitude of the Blume spectrum, with less damage than estimated for the EIS earthquake analysis, and that there would be no greater releases to the environment. Thus, estimates of the health effects (latent cancer fatalities) would not be greater than those described in the EIS and could be smaller than those previously analyzed in the EIS.

For the long-term storage alternatives at SRS in this PEIS, a severe earthquake was postulated with sufficient magnitude to cause major destruction of the facility. The probability of a severe earthquake and release of radioactive material was estimated at $1x10^{-7}$/yr. The *Environmental Impact Statement, Interim Management of Nuclear Materials* for SRS postulates a severe earthquake with a probability of occurrence of $2x10^{-4}$/yr. These two severe earthquake probabilities are not the same because of differences in the underlying assumptions and building characteristics. For example the storage facility in the Storage and Disposition PEIS would be new and designed with features to reduce the potential for earthquake damage and release of radioactive materials. The SRS facilities are not new and would react differently to an earthquake. These facilities would continue to operate in accordance with DOE Orders which ensure that the risk to the public of prompt fatalities due to accidents or cancer fatalities due to operations will be minimized. The safety to workers and the public from accidents at existing facilities is also controlled by Technical Safety Requirements specified in SARs or a Basis for Interim Operations document prepared and maintained specifically for a facility or process within a facility. Under these controls, any change in approved operations or to facilities would cause a halt in operations until it can be established that worker and public safety has not been compromised.

Upgrade Alternative

[Text deleted.]

Preferred Alternative: Upgrade With Rocky Flats Environmental Technology Site Non-Pit Plutonium Subalternative

Modify Actinide Packaging and Storage Facility for Continued Plutonium Storage

This section describes the radiological and hazardous chemical releases and their associated impacts resulting from either normal operation or accidents involved with storing SRS Pu and RFETS non-pit Pu in the upgraded APSF at SRS. The section describes the impacts of normal facility operations, then describes impacts of facility accidents.

During normal operation at SRS, the operation of the modified APSF would result in impacts that are within applicable regulatory limits, due in part to worker rotation.

Normal Operation. There would be no radiological releases during construction activities associated with the facility upgrade at SRS. Construction worker exposures to material potentially contaminated with radioactivity (for example, from construction activities involved with existing contaminated soil) would be limited to assure that doses are maintained ALARA. Toward this end, construction workers would be monitored, as appropriate. Limited hazardous chemical releases are anticipated as a result of the construction activities. However, concentrations would be within the regulated exposure limits.

Radiological Impacts. Doses to the public from storage under the Upgrade Alternative are included in Table 4.2.6.9–1. The dose to the MEI under the Preferred Alternative would be less. The dose to the MEI of the public due to annual operations under the Upgrade Alternative With RFETS Non-Pit Pu Material would be $6.8x10^{-6}$ mrem. From 50 years of operation, the corresponding risk of fatal cancer to this individual would be $1.7x10^{-10}$. The impacts to the average individual would be less. As a result of operation under this alternative in the year 2030, the population dose would be $2.9x10^{-4}$ person-rem. The corresponding number of fatal cancers in this population due to 50 years of operation would be$7.2x10^{-6}$. The health impacts shown here assume that the upgraded storage facility at SRS would include the Pu materials from both RFETS and LANL. Therefore, the health impacts from the Preferred Alternative at SRS (only RFETS non-pit Pu) would be slightly less than the impacts presented in the Upgrade With All or Some RFETS Pu and LANL Pu Subalternative as shown in Table 4.2.6.9–1. The difference would be below detection limits.

The dose to the MEI from annual total site operations is within the radiological limits specified in NESHAPS (40 CFR 61, Subpart H) and DOE Order 5400.5, and would be 0.79 mrem. From 50 years of total site operations, the corresponding risk of fatal cancer to this individual would be $2.0x10^{-5}$. These values are presented in Table 4.2.6.9–1. The impacts on the average individual would be less. This activity would be included in a program to ensure that doses to the public are ALARA. As a result of total site operations in the year 2030, the population dose would be within the limit in proposed 10 CFR 834 and would be 44 person-rem. The corresponding number of fatal cancers in this population from 50 years of total site operations would be 1.1. The health impacts shown here assume that the upgraded storage facility at SRS would include the Pu materials from both RFETS and LANL. Therefore, the health impacts from the Preferred Alternative at SRS (only RFETS non-pit Pu) would be slightly less than the impacts presented in the Upgrade With All or Some RFETS Pu and LANL Pu Subalternative as shown in Table 4.2.6.9–1. The difference would be below detection limits.

Doses to onsite workers from normal operations are given in Table 4.2.6.9–2. Included are involved workers directly associated with the new storage facility, workers who are not involved with this facility, and the entire workforce at SRS. All doses fall within regulatory limits and administrative control levels. The associated risks and numbers of fatal cancers among the different workers from 50 years of operations are included in the table. Dose to individual workers would be kept low by instituting badged monitoring and ALARA programs and also workers rotations. As a result of the implementation of these mitigation measures, the actual number of fatal cancers calculated would be lower for the operation of this facility. The health impacts shown here assume that the upgraded storage facility at SRS would include the non-pit Pu materials from both RFETS and LANL. Therefore, the health impacts from the Preferred Alternative at SRS (only RFETS non-pit Pu) would be slightly less than the impacts presented in the Upgrade With All or Some RFETS Pu and LANL Pu Subalternative as shown in Table 4.2.6.9–2. The difference would be below detection limits.

Hazardous Chemical Impacts. Hazardous chemical impacts to the public and to the onsite worker resulting from the normal operations of the upgraded storage facilities at SRS are presented in Table 4.2.6.9–3. The impacts from all site operations, including the upgraded storage facilities are also included in this table. Total site impacts which include the No Action impact plus the upgrade facility impacts, are provided. All analyses to support the values presented in this table are provided in Section M.3.

The HI to the MEI of the public is $1.5x10^{-6}$, and the cancer risk is zero (because no carcinogens are released from the hazardous chemicals used) as a result of operation of the upgraded storage facilities in the year 2030. The HI and cancer risk would remain constant over 50 years of operation, because exposures would be expected to remain the same. The total site operation, including the upgrade facility, would result in an HI of $5.2x10^{-3}$ and a cancer risk of $1.3x10^{-7}$ for the MEI in the year 2030. This would be expected to remain constant as a result of 50 years of operation.

The HI to the onsite worker would be $2.1x10^{-4}$ and the cancer risk is zero (because no carcinogens are released from the hazardous chemicals used) as a result of operation of the upgraded storage facilities in the year 2030. The HI and cancer risk from hazardous chemicals would remain constant over 50 years of operation, because exposures would be expected to remain the same. The total site operation, including the upgrade facility, would result in a HI of 1.2 and a cancer risk of $1.9x10^{-4}$ for the onsite worker in the year 2030 and would be expected to remain constant as a result of 50 years of operation. The HI to the worker resulting from operation of the upgraded storage facilities at SRS may exceed the acceptable health regulatory level. The total site HI of 1.2 is a screening level value which does not necessarily mean that workers will incur hazardous health effects. Moreover, since one of the assumptions used in the ISCST2 model to calculate HI is that the entire emissions inventory is from a single stack and all emissions impact the onsite worker, it may overstate the actual conditions being analyzed. This would be true at a large site, like SRS, where emission sources and receptors are widely dispersed, over 830 km^2 (320 mi^2), and the primary contributor to the HI is CO which is not concentrated in any single emissions stack.

Facility Accidents. Under this upgrade subalternative, non-pit Pu from RFETS would be stored at SRS in a modified APSF. The modified APSF facility is expected to result in a reduced risk of accidents to workers and the public. Design modifications to the storage facility will ensure that the continued storage of Pu will be in accordance with contemporary DOE Orders, and that the risks to the public of prompt fatalities due to accidents and of latent cancer fatalities due to operations would be minimized as shown in Table 4.2.6.9–4. The safety of workers and the public during operations is routinely controlled and monitored through Technical Safety Requirements that are specified in approved safety analyses that would be prepared and implemented for the upgraded facilities.

A set of potential accidents have been postulated for upgraded Pu storage with RFETS non-pit Pu at SRS for which there may be releases of Pu that may impact onsite workers and the offsite population. The accident consequences and risks to a worker located 1,000 m (3,280 ft) from the accident release point, the maximum offsite individual located at the site boundary, and the population located within 80 km (50 mi) of the accident release point are summarized in Table 4.2.6.9–4. For the set of accidents analyzed, the maximum number of cancer fatalities in the population with 80 km (50 mi) would be 0.098 at SRS for the beyond design basis earthquake accident with an estimated probability of 1.0×10^{-7} per year (that is, possibility of severe earthquake occurring is estimated to be about 1.0×10^{-5}, once in 100,000 years, multiplied by a damage and release probability of 0.01). The corresponding 50-year facility lifetime risk from the same accident scenario for the population, maximum offsite individual, and worker at 1,000 m (3,280 ft), would be 4.9×10^{-7}, 9.8×10^{-11}, and 5.0×10^{-9}, respectively. The maximum population 50-year facility lifetime risk would be 4.6×10^{-4} (that is, one fatality in about 100,000) at SRS for the PCV penetration by corrosion accident scenario with a probability of 4.8×10^{-3} per year. The corresponding maximum offsite individual and worker 50-year facility lifetime risks would be 7.0×10^{-8} and 2.9×10^{-6}, respectively. Section M.5 presents additional facility accident data and summary descriptions of the accident scenarios identified in Table 4.2.6.9–4.

Involved workers, those that would work in the facilities associated with the proposed action, may be subject to injury and, in some cases, fatality as a result of potential accidents. The locations of workstations, number of workers, personnel protective features, engineered safety features, and other design details affect the extent of worker exposures to accidents. Certain accidents such as fires, explosions and criticality could cause fatalities to workers close to the accident. Prior to construction of a new or modification of an existing facility, DOE Orders require detailed safety analyses to assure that facility designs and operating procedures limit the number of workers in hazardous areas and minimize risk of injury or fatality in the event of an accident.

[Text deleted.]

Upgrade With All or Some Rocky Flats Environmental Technology Site Plutonium and Los Alamos National Laboratory Plutonium Subalternative

Modify Actinide Packaging and Storage Facility for Continued Plutonium Storage

Normal Operation. The impacts from radiological and hazardous chemical emissions would be slightly greater than the impacts for the Upgrade With RFETS Non-Pit Pu Subalternative. The difference would be below detection limits. The radiological dose to the public and workers are shown in Tables 4.2.6.9–1 and 4.2.6.9–2, respectively. Impacts from hazardous chemicals are given in Table 4.2.6.9–3.

Facility Accidents. Under the Upgrade Alternative, Pu from RFETS and LANL would be stored at SRS. The upgraded facility is expected to result in a reduced risk of accidents to workers and the public. Design modifications to the storage facility will ensure that the storage of Pu will be in accordance with contemporary DOE Orders, and that the risks to the public of prompt fatalities due to accidents and of latent cancer fatalities due to operations would be minimized as shown in Table 4.2.6.9–5. The safety of workers and the public during operations is routinely controlled and monitored through Technical Safety Requirements that are specified in approved safety analyses that would be prepared and implemented for the upgraded facilities.

Table 4.2.6.9–4. Upgrade With Rocky Flats Environmental Technology Site Non-Pit Plutonium Subalternative—Accident Impacts at Savannah River Site

Accident Description	Worker at 1,000 m		Maximum Offsite Individual		Population to 80 km		
	Risk of Cancer Fatality (per 50 yr)[a]	Probability of Cancer Fatality[b]	Risk of Cancer Fatality (per 50 yr)[a]	Probability of Cancer Fatality[b]	Risk of Cancer Fatality (per 50 yr)[a]	Number of Cancer Fatalities[c]	Accident Frequency (per yr)
PCV puncture by forklift	8.6×10^{-8}	2.9×10^{-6}	2.1×10^{-9}	7.1×10^{-8}	1.0×10^{-5}	3.4×10^{-4}	6.0×10^{-4}
PCV breach by firearms discharge	5.0×10^{-9}	2.9×10^{-7}	1.2×10^{-10}	7.1×10^{-9}	6.0×10^{-7}	3.4×10^{-5}	3.5×10^{-4}
PCV penetration by corrosion	2.9×10^{-6}	1.2×10^{-5}	7.0×10^{-8}	2.9×10^{-7}	3.4×10^{-4}	1.4×10^{-3}	4.8×10^{-3}
Vault fire	2.6×10^{-9}	5.2×10^{-4}	5.6×10^{-11}	1.1×10^{-5}	2.7×10^{-7}	0.054	1.0×10^{-7}
Truck bay fire	2.0×10^{-9}	4.0×10^{-4}	4.9×10^{-11}	9.9×10^{-5}	2.4×10^{-7}	0.048	1.0×10^{-7}
Spontaneous combustion	2.0×10^{-11}	5.8×10^{-7}	5.0×10^{-13}	1.4×10^{-8}	2.4×10^{-9}	6.9×10^{-5}	7.0×10^{-7}
Explosion in the vault	3.5×10^{-10}	7.1×10^{-5}	9.0×10^{-12}	1.7×10^{-6}	4.2×10^{-8}	8.3×10^{-3}	1.0×10^{-7}
Explosion outside of vault	2.2×10^{-11}	4.3×10^{-6}	5.3×10^{-13}	1.5×10^{-7}	2.6×10^{-9}	5.1×10^{-4}	1.0×10^{-7}
Nuclear criticality	1.4×10^{-11}	2.8×10^{-6}	2.8×10^{-13}	5.7×10^{-8}	2.3×10^{-10}	4.7×10^{-5}	1.0×10^{-7}
Beyond evaluation basis earthquake	5.0×10^{-9}	9.8×10^{-4}	9.8×10^{-11}	2.0×10^{-5}	4.9×10^{-7}	0.098	1.0×10^{-7}
Expected risk[d]	3.0×10^{-6}	–	7.2×10^{-8}	–	3.5×10^{-4}	–	–

[a] The risk values are calculated by multiplying the probability of cancer fatality (for the worker at 1,000 m or the maximum offsite individual) or the number of cancer fatalities (for the population to 80 km) by the accident frequency and the number of years of operation.

[b] Increased likelihood (or probability) of cancer fatality to a hypothetical individual (a single worker at a distance of 1,000 m or the site boundary, whichever is smaller, or to a hypothetical individual in the offsite population located at the site boundary) if exposed to the indicated dose. The value assumes the accident has occurred.

[c] Estimated number of cancer fatalities in the entire offsite population out to a distance of 80 km if exposed to the indicated dose. The value assumes the accident has occurred.

[d] Expected risk is the sum of the risks over the 50-year lifetime of the facility.

Note: All values are mean values.

Source: Calculated using the source terms in Tables M.5.2.1.1–4 and M.5.2.1.1–5 and the MACCS computer code.

Involved workers, those that would work in the facilities associated with the proposed action, may be subjec injury and, in some cases, fatality as a result of potential accidents. The locations of workstations, numbe workers, personnel protective features, engineered safety features, and other design details affect the exte worker exposures to accidents. Certain accidents such as fires, explosions and criticality could cause fataliti workers close to the accident. Prior to construction of a new or modification of an existing facility, DOE Or require detailed safety analyses to assure that facility designs and operating procedures limit the number of wo in hazardous areas and minimize risk of injury or fatality in the event of an accident.

Consolidation Alternative

Construct New Plutonium Storage Facility

This section includes a description of radiological and hazardous chemical releases and their associated im resulting from either normal operation or accidents involved with the construction and operation of the consolidated Pu storage facility at SRS.

Table 4.2.6.9–4. Upgrade With All or Some Rocky Flats Environmental Technology Site Plutonium and Los Alamos National Laboratory Plutonium Subalternative—Accident Impacts at Savannah River Site

	Worker at 1,000 m		Maximum Offsite Individual		Population to 80 km		
Accident Description	Risk of Cancer Fatality (per 50 yr)[a]	Probability of Cancer Fatality[b]	Risk of Cancer Fatality (per 50 yr)[a]	Probability of Cancer Fatality[a]	Risk of Cancer Fatality (per 50 yr)[a]	Number of Cancer Fatalities[c]	Accident Frequency (per year)
PCV puncture by forklift	$8.6x10^{-8}$	$2.9x10^{-6}$	$2.1x10^{-9}$	$7.1x10^{-8}$	$1.0x10^{-5}$	$3.4x10^{-4}$	$6.0x10^{-4}$
PCV breach by firearms discharge	$5.0x10^{-9}$	$2.9x10^{-7}$	$1.2x10^{-10}$	$7.1x10^{-9}$	$6.0x10^{-7}$	$3.4x10^{-5}$	$3.5x10^{-4}$
PCV penetration by corrosion	$3.9x10^{-6}$	$1.2x10^{-5}$	$9.5x10^{-8}$	$2.9x10^{-7}$	$4.6x10^{-4}$	$1.4x10^{-3}$	$6.6x10^{-3}$
Vault fire	$3.5x10^{-9}$	$7.1x10^{-4}$	$7.6x10^{-11}$	$1.5x10^{-5}$	$3.7x10^{-7}$	0.072	$1.0x10^{-7}$
Truck bay fire	$2.0x10^{-9}$	$4.0x10^{-4}$	$4.9x10^{-11}$	$9.9x10^{-6}$	$2.4x10^{-7}$	0.048	$1.0x10^{-7}$
Spontaneous combustion	$2.0x10^{-11}$	$5.8x10^{-7}$	$5.0x10^{-13}$	$1.4x10^{-8}$	$2.4x10^{-9}$	$6.9x10^{-5}$	$7.0x10^{-7}$
Explosion in the vault	$4.8x10^{-10}$	$9.6x10^{-5}$	$1.2x10^{-11}$	$2.4x10^{-6}$	$5.7x10^{-8}$	0.011	$1.0x10^{-7}$
Explosion outside of vault	$2.2x10^{-11}$	$4.3x10^{-6}$	$5.3x10^{-13}$	$1.5x10^{-7}$	$2.6x10^{-9}$	$5.1x10^{-4}$	$1.0x10^{-7}$
Nuclear criticality	$1.4x10^{-11}$	$2.8x10^{-6}$	$2.8x10^{-13}$	$5.7x10^{-8}$	$2.3x10^{-10}$	$4.7x10^{-5}$	$1.0x10^{-7}$
Beyond evaluation basis earthquake	$6.9x10^{-9}$	$1.3x10^{-3}$	$1.3x10^{-10}$	$2.8x10^{-5}$	$6.7x10^{-7}$	0.13	$1.0x10^{-7}$
Expected risk[d]	$3.9x10^{-6}$	–	$9.7x10^{-8}$	–	$4.7x10^{-4}$	–	–

[a] The risk values are calculated by multiplying the probability of cancer fatality (for the worker at 1,000 m or the maximum offsite individual) or the number of cancer fatalities (for the population to 80 km) by the accident frequency and the number of years of operation. Impacts not dependent on the quantity of Pu would be the same as those for the Upgrade With RFETS Non-Pit Pu Subalternative.

[b] Increased likelihood (or probability) of cancer fatality to a hypothetical individual (a single worker at a distance of 1,000 m or the site boundary, whichever is smaller, or to a hypothetical individual in the offsite population located at the site boundary) if exposed to the indicated dose. The value assumes the accident has occurred.

[c] Estimated number of cancer fatalities in the entire offsite population out to a distance of 80 km if exposed to the indicated dose. The value assumes the accident has occurred.

[d] Expected risk is the sum of the risks over the 50-year lifetime of the facility.

Note: All values are mean values.

Source: Calculated using the source terms in Tables M.5.2.1.1–4 and M.5.2.1.1–5 and the MACCS computer code.

[Text deleted.]

Normal Operation. There would be no radiological releases during the construction of a new consolidated Pu storage facility at SRS. Construction worker exposures to material potentially contaminated with radioactivity (for example, from construction activities involved with existing contaminated soil) would be limited to assure that doses are maintained ALARA. Toward this end, construction workers would be monitored as appropriate. Limited hazardous chemical releases are anticipated as a result of construction activities. However, concentrations would be within the regulated exposure limits and would not result in any health effects. During normal operation, there would be both radiological and hazardous chemical releases to the environment and also direct in-plant exposures. The resulting doses and potential health effects to the public and workers at SRS are described below.

Radiological Impacts. Radiological impacts to the public resulting from the normal operation of the new consolidated Pu storage facility are presented in Table 4.2.6.9–1. The impact from all site operations, including the new consolidated storage facility, are also given in the table. To put operational doses into perspective, comparisons with doses from natural background radiation are included in the table.

The dose to the MEI from annual storage facility operation would be 1.4×10^{-5} mrem. From 50 years of operation, the corresponding risk of fatal cancer to this individual would be 3.5×10^{-10}. The impacts to the average member of the public would be less. As a result of storage facility operation in the year 2030, the population dose would be 9.2×10^{-4} person-rem. The corresponding number of fatal cancers in this population from 50 years of operation would be 2.3×10^{-5}.

The dose to the MEI from annual total site operations is within the radiological limits specified in NESHAPS (40 CFR 61, Subpart H) and DOE Order 5400.5, and would be 0.79 mrem. From 50 years of operation, the corresponding risk of fatal cancer to this individual would be 2.0×10^{-5}. The impacts to the average member of the public would be less This activity would be included in a program to ensure that doses to the public are ALARA. As a result of total site operations in the year 2030, the population dose would be within the limit in proposed 10 CFR 834 and would be 44 person-rem. The corresponding number of fatal cancers in this population from 50 years of operation would be 1.1.

Doses to onsite workers from normal operations are given in Table 4.2.6.9–2. Included are involved workers directly associated with the new consolidated Pu storage facility, workers who are not involved with the storage facility, and the entire workforce at SRS. All doses fall within regulatory limits and administrative control levels. The associated risks and number of fatal cancers among the different workers from 50 years of operation are included in the table. Dose to individual workers would be kept low by instituting badged monitoring and ALARA programs and also workers rotations. As a result of the implementation of these mitigation measures, the actual number of fatal cancers calculated would be lower for the operation of this facility.

Hazardous Chemical Impacts. Hazardous chemical impacts to the public and to the onsite worker resulting from the normal operations of the new consolidated Pu storage facility at SRS are presented in Table 4.2.6.9–3. The impacts from all site operations, including the consolidated storage facility, are also included in this table. Total site impacts, which include the No Action impact plus the facility impacts, are provided. All analyses to support the values presented in this table are provided in Section M.3.

The HI to the MEI of the public is 2.8×10^{-6}, and the cancer risk is 7.5×10^{-9} as a result of operation of the new consolidated Pu storage facility in the year 2030. The HI and cancer risk from hazardous chemicals would remain constant over 50 years of operation, because exposures would be expected to remain the same. The total site operation, including the upgrade facility, would result in an HI of 5.2×10^{-3} and a cancer risk of 1.4×10^{-7} for the MEI in the year 2030. This would be expected to remain constant over the 50 years of operation.

The HI to the onsite worker would be 6.0×10^{-4} and the cancer risk is 1.1×10^{-5} as a result of operation of the new consolidated Pu storage facility in the year 2030. The HI and cancer risk from hazardous chemicals would remain constant over 50 years of operation, because exposures would be expected to remain the same. The total site operation, including the facility, would result in a HI of 1.2 and a cancer risk of 2.1×10^{-4} for the onsite worker in the year 2030 and would be expected to remain constant over the 50 years of operation.

Facility Accidents. A set of potential accidents have been postulated for consolidation of Pu at SRS for which there may be releases of Pu that may impact onsite workers and the offsite population. The accident consequences and risks to a worker located 1,000 m (3,280 ft) from the accident release point, the maximum offsite individual located at the site boundary, and the general population located within 80 km (50 mi) of the accident release point are summarized in Table 4.2.6.9–6. For the set of accidents analyzed, the maximum number of cancer fatalities in the population within 80 km (50 mi) would be 1.3 at SRS for the beyond design basis earthquake accident with an estimated probability of 1.0×10^{-7} per year (that is, probability of severe earthquake occurring is estimated to be about 1.0×10^{-5}, once in 100,000 years, multiplied by a damage and release probability of 0.01). The corresponding 50-year facility lifetime risk from the same accident scenario

Table 4.2.6.9–6. Consolidation Alternative Accident Impacts at Savannah River Site

	Worker at 1,000 m		Maximum Offsite Individual		Population to 80 km		
Accident Description	Risk of Cancer Fatality (per 50 yr)[a]	Probability of Cancer Fatality[b]	Risk of Cancer Fatality (per 50 yr)[a]	Probability of Cancer Fatality[b]	Risk of Cancer Fatalities (per 50 yr)[a]	Number of Cancer Fatalities[c]	Accident Frequency (per yr)
PCV puncture by forklift	8.6×10^{-8}	2.9×10^{-6}	2.1×10^{-9}	7.1×10^{-8}	1.0×10^{-5}	3.4×10^{-4}	6.0×10^{-4}
PCV breach by firearms discharge	5.0×10^{-9}	2.9×10^{-7}	1.2×10^{-10}	7.1×10^{-9}	6.0×10^{-7}	3.4×10^{-5}	3.5×10^{-4}
PCV penetration by corrosion	3.8×10^{-5}	1.2×10^{-5}	9.3×10^{-7}	2.9×10^{-7}	4.5×10^{-3}	1.4×10^{-3}	0.064
Vault fire	3.4×10^{-8}	6.9×10^{-3}	7.4×10^{-10}	1.5×10^{-4}	3.6×10^{-6}	0.72	1.0×10^{-7}
Truck bay fire	2.0×10^{-9}	4.0×10^{-4}	4.9×10^{-11}	9.9×10^{-6}	2.4×10^{-7}	0.048	1.0×10^{-7}
Spontaneous combustion	2.0×10^{-11}	5.8×10^{-7}	5.0×10^{-13}	1.4×10^{-8}	2.4×10^{-9}	6.9×10^{-5}	7.0×10^{-7}
Explosion in the vault	4.7×10^{-9}	9.4×10^{-4}	1.2×10^{-10}	2.3×10^{-5}	5.6×10^{-7}	0.11	1.0×10^{-7}
Explosion outside of vault	2.2×10^{-11}	4.3×10^{-6}	5.3×10^{-13}	1.1×10^{-7}	2.6×10^{-9}	5.1×10^{-4}	1.0×10^{-7}
Nuclear criticality	1.4×10^{-11}	2.8×10^{-6}	2.8×10^{-13}	5.7×10^{-8}	2.3×10^{-10}	4.7×10^{-5}	1.0×10^{-7}
Beyond evaluation basis earthquake	6.7×10^{-8}	0.013	1.3×10^{-9}	2.7×10^{-4}	6.5×10^{-6}	1.3	1.0×10^{-7}
Expected risk[d]	3.8×10^{-5}	–	9.3×10^{-7}	–	4.5×10^{-3}	–	–

[a] The risk values are calculated by multiplying the probability of cancer fatality (for the worker at 1,000 m or the maximum offsite individual) or the number of cancer fatalities (for the population to 80 km) by the accident frequency and the number of years of operation.

[b] Increased likelihood (or probability) of cancer fatality to a hypothetical individual (a single onsite worker at a distance of 1,000 m or the site boundary, whichever is smaller or to a hypothetical individual in the offsite population located at the site boundary) if exposed to the indicated dose. The value assumes the accident has occurred.

[c] Estimated number of cancer fatalities in the entire offsite population out to a distance of 80 km if exposed to the indicated dose. The value assumes the accident has occurred.

[d] Expected risk is the sum of the risks over the 50-year lifetime of the facility.

Note: All values are mean values.

Source: Calculated using the source terms in Tables M.5.2.1.1–4 and M.5.2.1.1–5 and the MACCS computer code.

for the population, maximum offsite individual, and worker at 1,000 m (3,280 ft), would be 6.5×10^{-6}, 1.3×10^{-9}, and 6.7×10^{-8}, respectively. The maximum population 50-year facility lifetime risk would be 4.5×10^{-3} (that is, one fatality in about 10,000 years) at SRS for the PCV penetration by corrosion accident scenario with a probability of 0.064 per year. The corresponding maximum offsite individual and worker 50-year facility lifetime risks would be 9.3×10^{-7} and 3.8×10^{-5}, respectively. Section M.5 presents additional facility accident data and summary descriptions of the accident scenarios identified in Table 4.2.6.9–6.

Involved workers, those that would work in the facilities associated with the proposed action, may be subject to injury and, in some cases, fatality as a result of potential accidents. The locations of workstations, number of workers, personnel protective features, engineered safety features, and other design details affect the extent of worker exposures to accidents. Certain accidents such as fires, explosions and criticality could cause fatalities to workers close to the accident. Prior to construction of a new facility, DOE Orders require detailed safety analyses to assure that facility designs and operating procedures limit the number of workers in hazardous areas and minimize risk of injury or fatality in the event of an accident.

Collocation Alternative

Construct New Plutonium and Highly Enriched Uranium Storage Facilities

This section includes a description of radiological and hazardous chemical releases and their associated impacts resulting from either normal operation or accidents involved with the consolidation of Pu storage and collocation with HEU storage facilities at SRS. This storage would take place in a new Pu and HEU storage facility.

[Text deleted.]

Normal Operation. There would be no radiological releases during the construction of a new collocated storage facility at SRS. Construction worker exposures to material potentially contaminated with radioactivity (for example, from construction activities involved with existing contaminated soil) would be limited to assure that doses are maintained ALARA. Toward this end, construction workers would be monitored, as appropriate. Limited hazardous chemical releases are anticipated as a result of construction activities. However, concentrations would be within the regulated exposure limits. During normal operation, there would be both radiological and hazardous chemical releases to the environment and also direct in-plant exposures. The resulting doses and potential health effects to the public and workers are described below.

Radiological Impacts. Radiological impacts to the public resulting from the normal operation of the new collocated storage facility at SRS are presented in Table 4.2.6.9–1. The impacts from all site operations, including the new storage facility, are also given in the table. To put operational doses into perspective, comparisons with doses from natural background radiation are included in the table.

The dose to the MEI from annual storage facility operation is 1.4×10^{-5} mrem. From 50 years of operation, the corresponding risk of fatal cancer to this individual would be 3.5×10^{-10}. The impacts to the average member of the public would be less. As a result of storage facility operation in the year 2030, the population dose would be 8.8×10^{-4} person-rem. The corresponding number of fatal cancers in this population from 50 years of operation would be 2.2×10^{-5}.

The dose to the MEI from annual total site operations is within the radiological limits specified in NESHAPS (40 CFR 61, Subpart H) and DOE Order 5400.5, and would be 0.79 mrem. From 50 years of operation, the corresponding risk of fatal cancer to this individual would be 2.0×10^{-5}. The impacts to the average member of the public would be less. This activity would be included in a program to ensure that doses to the public are ALARA. As a result of total site operation in the year 2030, the population dose would be within the limit in proposed 10 CFR 834 and would be 44 person-rem. The corresponding number of fatal cancers in this population from 50 years of operation would be 1.1.

Doses to onsite workers from normal operations are given in Table 4.2.6.9–2. Included are involved workers directly associated with the new storage facility, workers who are not involved with the storage facility, and the entire workforce at SRS. All doses fall within regulatory limits and administrative control levels. The associated risks and numbers of fatal cancers among the different workers from 50 years of operations are included in the table. Dose to individual workers would be kept low by instituting badged monitoring and ALARA programs and also workers rotations. As a result of the implementation of these mitigation measures, the actual number of fatal cancers calculated would be lower for the operation of the facility.

Hazardous Chemical Impacts. Hazardous chemical impacts to the public and to the onsite worker resulting from the normal operations of the new consolidation of Pu and collocation with HEU storage facilities at SRS are presented in Table 4.2.6.9–3. The impacts from all site operations, including the consolidation of Pu and collocation with HEU storage facilities are also included in this table. Total site impacts, which include the No

Action impact plus the facility impacts, are provided. All analyses to support the values presented in this table are provided in Section M.3.

The HI to the MEI of the public is 6.2×10^{-6}, and the cancer risk is 7.5×10^{-9} as a result of operation of the new consolidation of Pu and collocation with HEU storage facilities in the year 2030. The HI and cancer risk from hazardous chemicals would remain constant over 50 years of operation, because exposures would be expected to remain the same. The total site operation, including the new facility, would result in an HI of 5.2×10^{-3} and a cancer risk of 1.4×10^{-7} for the onsite worker in the year 2030. This would be expected to remain constant as a result of 50 years of operation.

The HI to the onsite worker would be 1.0×10^{-3}, and the cancer risk is 1.1×10^{-5} as a result of operation of the new consolidation of Pu and collocation with HEU storage facilities in the year 2030. The HI and cancer risk from hazardous chemicals would remain constant over 50 years of operation, because exposures would be expected to remain the same. The total site operation, including the new facility, would result in an HI of 1.2 and a cancer risk of 2.0×10^{-4} for the onsite worker in the year 2030 and would be expected to remain constant as a result of 50 years of operation.

Facility Accidents. A set of potential accidents have been postulated for which there may be releases of Pu or uranium that may impact onsite workers and the offsite population. Impacts of accidents that release both Pu and HEU are bounded by exposures to Pu. The accident consequences and risks to a worker located 1,000 m (3,280 ft) from the accident release point, the maximum offsite individual located at the site boundary, and the general population located within 80 km (50 mi) of the accident release point are summarized in Table 4.2.6.9–7. For the set of accidents analyzed, the maximum number of cancer fatalities in the population within 80 km (50 mi) would be 1.3 at SRS for the beyond design basis earthquake accident scenario with an estimated probability of 1.0×10^{-7} per year (that is, probability of severe earthquake occurring is estimated to be about 1.0×10^{-5}, once in 100,000 years, multiplied by a damage and release probability of 0.01). The corresponding 50-year facility lifetime risk from the same accident scenario for the population, maximum offsite individual, and worker at 1,000 m (3,280 ft), would be 6.6×10^{-6}, 9.2×10^{-10}, and 6.7×10^{-8}, respectively. The maximum population 50-year facility lifetime risk would be 4.6×10^{-3} (that is, one fatality in about 11,000 years) at SRS for the PCV penetration by corrosion accident scenario with a probability of 0.064 per year. The corresponding maximum offsite individual and worker 50-year facility lifetime risks would be 6.3×10^{-7} and 3.8×10^{-5}, respectively. Section M.5 presents additional facility accident data and summary descriptions of the accident scenarios identified in Table 4.2.6.9–7.

Involved workers, those that would work in the facilities associated with the proposed action, may be subject to injury and, in some cases, fatality as a result of potential accidents. [Text deleted.] The locations of workstations, number of workers, personnel protective features, engineered safety features, and other design details affect the extent of worker exposures to accidents. Certain accidents such as fires, explosions, and criticality could cause fatalities to workers close to the accident. Prior to construction and operation of the facility, DOE Orders require detailed safety analyses to assure that facility designs and operating procedures limit the number of workers in hazardous areas and minimize risk of injury or fatality in the event of an accident.

Subalternative Not Including Strategic Reserve and Weapons Research and Development Materials

If the strategic reserve and weapons R&D materials are not included, the impacts to the public and to workers from the accident-free storage activities would be reduced approximately in proportion to the decrease in the amount of material stored. The impacts from total site operations would decrease slightly. This subalternative applies to the No Action Alternative, the Upgrade Alternative, the Consolidation Alternative, and the Collocation Alternative. The risks due to accidents would also tend to be lower.

Table 4.2.6.9–7. Collocation Alternative Accident Impacts at Savannah River Site

	Worker at 1,000 m		Maximum Offsite Individual		Population to 80 km		
Accident Description	**Risk of Cancer Fatality (per 50 yr)[a]**	**Probability of Cancer Fatality[b]**	**Risk of Cancer Fatality (per 50 yr)[a]**	**Probability of Cancer Fatality[b]**	**Risk of Cancer Fatalities (per 50 yr)[a]**	**Number of Cancer Fatalities[c]**	**Accident Frequency (per yr)**
PCV puncture by forklift	8.6×10^{-8}	2.9×10^{-6}	1.4×10^{-9}	4.8×10^{-8}	1.0×10^{-5}	3.5×10^{-4}	6.0×10^{-4}
PCV breach by firearms discharge	5.0×10^{-9}	2.9×10^{-7}	1.5×10^{-11}	4.8×10^{-9}	6.1×10^{-7}	3.5×10^{-5}	3.5×10^{-4}
PCV penetration by corrosion	3.8×10^{-5}	1.2×10^{-5}	6.3×10^{-7}	2.0×10^{-7}	4.6×10^{-3}	1.4×10^{-3}	0.064
Vault fire	3.4×10^{-8}	6.9×10^{-3}	5.1×10^{-10}	1.0×10^{-4}	3.7×10^{-6}	0.73	1.0×10^{-7}
Truck bay fire	2.0×10^{-9}	4.0×10^{-4}	3.4×10^{-11}	6.7×10^{-6}	2.4×10^{-7}	0.049	1.0×10^{-7}
Spontaneous combustion	2.0×10^{-11}	5.8×10^{-7}	3.4×10^{-13}	9.7×10^{-9}	2.5×10^{-9}	7.0×10^{-5}	7.0×10^{-7}
Explosion in the vault	4.7×10^{-9}	9.4×10^{-4}	7.9×10^{-11}	1.6×10^{-5}	5.8×10^{-7}	0.12	1.0×10^{-7}
Explosion outside the vault	2.2×10^{-11}	4.3×10^{-6}	3.6×10^{-13}	7.3×10^{-8}	2.6×10^{-9}	5.2×10^{-4}	1.0×10^{-7}
Nuclear criticality	1.4×10^{-11}	2.8×10^{-6}	1.8×10^{-13}	3.5×10^{-8}	2.2×10^{-10}	4.4×10^{-5}	1.0×10^{-7}
Beyond evaluation basis earthquake	6.7×10^{-8}	0.013	9.2×10^{-10}	1.8×10^{-4}	6.6×10^{-6}	1.3	1.0×10^{-7}
Expected risk[d]	3.8×10^{-5}	–	6.4×10^{-7}	–	4.6×10^{-3}	–	–

[a] The risk values are calculated by multiplying the probability of cancer fatality (for the worker at 1,000 m or the maximum offsite individual) or the number of cancer fatalities (for the population to 80 km) by the accident frequency and the number of years of operation.

[b] Increased likelihood (or probability) of cancer fatality to a hypothetical individual (a single onsite worker at a distance of 1,000 m or the site boundary, whichever is smaller or to a hypothetical individual in the offsite population located at the site boundary) if exposed to the indicated dose. The value assumes the accident has occurred.

[c] Estimated number of cancer fatalities in the entire offsite population out to a distance of 80 km if exposed to the indicated dose. The value assumes the accident has occurred.

[d] Expected risk is the sum of the risks over the 50-year lifetime of the facility.

Note: All values are mean values.

Source: Calculated using the source terms in Tables M.5.2.2.1–3 and M.5.2.2.1–4 and the MACCS computer code.

Phaseout

Normal Operation. A phaseout of existing Pu storage facilities at SRS would reduce the impacts from radiological and chemical releases and exposures to levels slightly below the No Action levels. All workers involved in the transfer of the Pu from existing storage would be monitored to assure that their doses remain within regulatory limits and as low as reasonably achievable.

Facility Accidents. The phaseout operation will be conducted in accordance with DOE Orders to ensure that the risk to the public of prompt fatalities due to accidents or of cancer fatalities due to operations will be minimized. For current operations in the facility that would be phased out, the safety of workers and the public from accidents is controlled by Technical Safety Requirements that are specified in SARs or Basis for Interim Operations documents that have been prepared for the facility. Prior to initiating phaseout, the potential for accidents that could impact workers and the public will be assessed, and if necessary, applicable existing safety documentations will be modified to ensure safety for workers and the public.

4.2.6.10 Waste Management

This section summarizes the impacts on waste management at SRS under No Action, for each of the long-term storage alternatives, and for the phaseout of Pu storage. There is no spent nuclear fuel or HLW associated with Pu or HEU storage. Table 4.2.6.10–1 lists the projected sitewide waste generation rates and treatment, storage, disposal capacities under No Action for 2005. Projections for No Action were derived from the most recent available environmental data, with the appropriate adjustments made for those changing operational requirements where the volume of wastes generated were identifiable. The projection does not include wastes from future, yet uncharacterized, environmental restoration activities. The projections for No Action could change significantly depending on the decisions resulting from the PEIS being prepared by the Department on waste management. Table 4.2.6.10–2 provides the estimated incremental operational waste volumes projected to be generated at SRS as a result of the various storage alternatives prior to treatment. Some of the waste values described in this section are different than the waste values in the table. For those values that differ (for example LLW), the table gives waste generated pre-treatment values and the text discusses post-treatment values (indicated as after treatment and volume reduction). For example, the new consolidated Pu storage facility would generate 10 m^3 (13 yd^3) of solid TRU waste. Since SRS already stores Pu, the waste volumes associated with the phaseout of Pu storage (8 m^3 [10.5 yd^3]) must be subtracted out to avoid double counting waste volumes associated with Pu storage. This results in a net incremental increase from the alternative of 2 m^3 (2.6 yd^3). The subtraction of the phaseout volumes to avoid the double counting of waste volumes is only applicable to the consolidation and collocation alternatives. The waste volumes generated from the various storage alternatives and the resultant waste effluent used for the waste impact analysis can be found in Section E.3.1. For the consolidation and collocation alternatives, the waste effluent volumes in the impact analysis refer only to wastes from the applicable storage facility, not the net incremental increase/decrease for SRS as a whole. Facilities that would support the storage of Pu and/or HEU would treat and package all waste generated into forms that would enable staging and/or disposal in accordance with RCRA, and other applicable statutes. Depending on decisions in waste-type-specific RODs for the Waste Management PEIS, wastes could be treated, and depending on the type of waste disposed of onsite or at regionalized or centralized DOE sites. For the purposes of analyses only, this PEIS assumes that TRU and mixed TRU waste would be treated onsite to the current planning-basis WIPP WAC, and shipped to WIPP for disposal. This PEIS also assumes that LLW, mixed LLW, hazardous, and nonhazardous waste would be treated and disposed of in accordance with current site practice.

No Action Alternative

Under No Action, high-level, TRU, low-level, mixed, hazardous, and nonhazardous wastes, and spent nuclear fuel would continue to be managed from the missions outlined in Section 3.7. SRS's mission would include tritium recycling, management of nuclear materials, isotopes, and aluminum-clad and research reactor spent fuel, decommissioning of reactors and site facilities, and remediation. Under No Action, SRS would continue to store its inventory of Pu, and treat, store, and dispose of its legacy and newly generated wastes in current and planned facilities.

Under No Action, the processing of legacy wastes would require new facilities, since the necessary treatment, storage, and disposal facilities either do not exist or are nearing capacity. Spent nuclear fuel would be managed in accordance with the ROD (60 FR 28680) from the *Department of Energy Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs Final Environmental Impact Statement* (DOE/EIS-0203-F) as amended on March 8, 1996 (61 FR 9441) and the ROD from the *Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel Final Environmental Impact Statement* (61 FR 25092), which state that SRS would be responsible for the management of aluminum-clad spent nuclear fuel from the Department's nationwide complex, as well as receiving spent nuclear fuel from domestic and foreign research reactors. The ROD also states that SRS non-aluminum-clad spent nuclear fuel from past production reactor operations would be shipped to INEL by the year 2035.

Table 4.2.6.10–1. Projected Spent Nuclear Fuel and Waste Management Under No Action (2005) at Savannah River Site

Category	Annual Generation (m³)	Treatment Method	Treatment Capacity (m³/yr)	Storage Method	Storage Capacity (m³)	Disposal Method	Disposal Capacity (m³)
Spent nuclear fuel	None (offsite receipts expected)[a]	Stabilization	Under development[a]	Fuel pools and dry storage	Planned[a]	To HLW Program	Not designed
High-Level							
Liquid	126	Adsorption, evaporation, vitrification	53,700[b]	Tank farm	133,000[c]	NA	NA
Solid	127 canisters[d]	None	None	Shielded vault	2,286 canisters[e]	To HLW Program	NA
Transuranic							
Liquid	None	Vitrify	559[f]	None	None	NA	NA
Solid	338	Sort, shred, vitrify	2,280[g]	Trupact II Containers	34,400[h]	None - WIPP or alternate facility	NA
Low-Level							
Liquid	74,000	Chemical, filtration, saltstone	503,000[i]	Ponds, tanks–awaiting processing	NA	NPDES discharge after treatment	NA
Solid	16,400	Compact, shred, smelt, vitrify, incinerate, soil sort	73,000[j]	Vaults	3,330[k]	Burial vaults and trenches	2,580,000[l]
Mixed Low-Level							
Liquid	1,330	Chemical, filtration, saltstone	516,000[m]	Tanks, ponds, containers in buildings	10,800[n]	NA	NA
Solid	7,700	Incineration, vitrification, stabilization	26,900[o]	DOT containers (solid), facility	5,700[p]	To solid LLW burial onsite	47,570[q]
Hazardous							
Liquid	1,260	Incineration, stabilize, pump, and treat	2,860[r]	Planned RCRA facility	Included in solid	Offsite RCRA facilities	NA
Solid	15,100	Incineration, offsite	9,500[s]	Planned RCRA facility	2,618[t]	Offsite RCRA facility	NA

Table 4.2.6.10–1. Projected Spent Nuclear Fuel and Waste Management Under No Action (2005) at Savannah River Site—Continued

Category	Annual Generation (m^3)	Treatment Method	Treatment Capacity (m^3/yr)	Storage Method	Storage Capacity (m^3)	Disposal Method	Disposal Capacity (m^3)
Nonhazardous (Sanitary)							
Liquid	703,000	Filter, strip, settle	1,450,000[u]	Flowing ponds	NA	NPDES discharge	Planned
Solid	61,200	Incinerate, compact	Expandable as required	None	None	Onsite lined pit	Planned
Nonhazardous (Other)							
Liquid	Included in sanitary	Included in sanitary	Included in sanitary	Included in sanitary	Included in sanitary	Included in sanitary	Included in sanitary
Solid	Included in sanitary	NA	NA	NA	NA	NA	NA

[a] Treatment and storage have been evaluated in the *Department of Energy Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs Final Environmental Impact Statement*, and the *Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel Draft Environmental Impact Statement*. Final evaluation will be accomplished in a tiered site-specific EIS.
[b] Evaporation and ion exchange capacity. Capacity of liquid and sludge processing for vitrification is 24,600 m^3/yr. Capacity to vitrify salts and sludge is 18,800 m^3/yr.
[c] F- and H- Area tank farms.
[d] From vitrification of salts and sludge, not new waste.
[e] Planned construction will add capacity for additional 2,286 logs in 2007.
[f] Alpha Vitrification Facility.
[g] TRU Waste Characterization/Certification Facility, Alpha Vitrification Facility.
[h] TRU waste storage pads.
[i] F- and H-Area Effluent Treatment facility.
[j] Onsite and offsite compactors, Consolidated Incineration Facility, offsite smelter, soil sort.
[k] E-Area Long-lived Waste Vaults.
[l] Saltstone vaults, E-Area vaults, slit trenches.
[m] F-and H-Area Effluent Treatment Facility, M-Area Effluent Treatment Facility, and Savannah River Technology Center Ion Exchange.
[n] Hazardous and Mixed Waste Container Storage, Process Waste Interim Treatment, DWPF Storage Tanks, SRTC Mixed Waste Storage Tanks.
[o] Containment building, M-Area Vendor Treatment, Non-Alpha Vitrification, offsite mixed waste treatment, recycling units, Consolidated Incineration Facility, Soil Sort Facility.
[p] Mixed waste storage buildings.
[q] Hazardous/mixed waste disposal vaults.
[r] Consolidated Incineration Facility, M-Area stripper.
[s] Consolidated Incineration Facility.
[t] Hazardous Waste Storage Facility (buildings T-10B, 645-N, 316-M and Pads 1,2, & 3).
[u] Centralized Sanitary Wastewater Treatment Facility.
Note: NA=not applicable.
Source: 60 FR 28680; 61 FR 25092; DOE 1995kk; SR DOE 1993c; SR DOE 1994b, SR DOE 1994c; SR DOE 1995b; SR DOE 1995c; SR MMES 1993a; SRS 1995a:2; WSRC 1995a; WSRC 1995b; Tables E.2.6–1, E.2.6–2, E.2.6–3, E.2.6–4, E.2.6–5, E.2.6–6, E.2.6–7, E.2.6–8, E.2.6–9, E.2.6–10, and E.2.6–11.

Table 4.2.6.10–2. Estimated Annual Generated Waste Volumes at Savannah River Site—No Action (2005) and Net Incremental for Storage Alternatives

Category	No Action[a] (m³)	Upgrade With RFETS Non-Pit Material[b] (m³)	Upgrade With RFETS and LANL Material[b] (m³)	Consolidation[b] (m³)	Collocation[b] (m³)	Phaseout (m³)
Transuranic						
Liquid	None	0	0	0.02[c]	0.02[c]	0
Solid	338	0	0	2	2	-8
Mixed Transuranic						
Liquid	None	0	0	0	0	0
Solid	Included in TRU	0	0	4	4	0
Low-Level						
Liquid	74,000	0	0	2[c]	2.1[c]	0
Solid	16,400	0	0	1,220	1,260	-38
Mixed Low-Level						
Liquid	1,330	0	0	0.2	0.2	0
Solid	7,700	0	0	65	66	0
Hazardous						
Liquid	1,260	0	0	2	2	0
Solid	15,100	0.56	0.8	2	2	0
Nonhazardous (Sanitary)						
Liquid	703,000	1,490	1,806	149,720	195,780	-19,100
Solid	61,200	13	18	-814	-414	-2,290
Nonhazardous (Other)						
Liquid	Included in sanitary	Included in sanitary	Included in sanitary	Included in sanitary	Included in sanitary	Included in sanitary
Solid	Included in sanitary	13[d]	18[d]	1,800[d]	2,300[d]	Included in sanitary

[a] The No Action waste volumes are from Table 4.2.6.10–1.

[b] Waste volumes for storage alternatives are found in Section E.3.1 (Tables E.3.1.1–8, E.3.1.1–9, E.3.1.2–7, and E.3.1.3–8) net incremental volumes for Consolidation and Collocation Alternatives were derived by subtracting phaseout volumes so as not to double count waste volumes associated with Pu storage. Waste effluents (that is, after treatment and volume reduction) that are used in the narrative description of the impacts are also provided in the tables.

[c] Liquid TRU and LLW would be treated and solidified prior to disposal.

[d] Recyclable wastes.

Since the K-Reactor is shutdown with no provision for restart, there would be no additional spent reactor fuel generated. A site-specific EIS is planned for SRS, which is expected to result in an ROD that specifies where and how spent nuclear fuel would be managed at SRS.The Pu addressed in this PEIS is limited to materials currently stored within protected vaults and gloveboxes, and additional materials within process lines and process equipment. Pu processing operations such as Pu purification, Pu recovery, oxide production, metal production, and parts fabrication have been conducted onsite, as well as receipt and large-scale storage of onsite and offsite Pu scrap and product materials. Under No Action, SRS would not be able to maintain the inventory of Pu scrap and metal in a state that provides for long-term storage while awaiting a decision for future disposition. The APSF would be constructed to meet current regulations. Maintenance, assay, packaging, and monitoring of the inventory would produce TRU, low-level, hazardous, and nonhazardous wastes. These wastes would be treated, stored, and disposed of in compliance with existing regulations.

Transuranic waste already packaged to WIPP WAC would either be stored or would have been shipped. Vitrification is planned to reduce waste shipment volume. If shipments to WIPP are delayed, or should the Department decide not to dispose of TRU waste at WIPP, additional storage facilities would be designed and constructed as needed. Mixed waste would have been incinerated, stabilized and the remaining residues disposed of onsite as LLW, according to the SRS Site Treatment Plan, which was developed to comply with the *Federal Facility Compliance Act.*

Liquid LLW would be sent to collection tanks that would be batch transferred to treatment and storage facilities onsite such as the ETF or the F-Area Tank Farm. Liquid LLW concentrate would be processed into saltstone. Solid LLW would continue to be compacted and disposed of by burial onsite in engineered trenches or vaults, depending on the LLW category. The burial ground expansion in the E-Area is expected to accommodate the current waste disposal requirements through 2024. Additional waste disposal facilities would be constructed as needed to ensure compliance. The Consolidated Incineration Facility would also be utilized to reduce the volume of LLW requiring disposal. Discussion of additional LLW disposal capacity was addressed in the *Savannah River Site Waste Management Final Environmental Impact Statement* (DOE/EIS-0217).

Savannah River Site plans to ship hazardous waste offsite for treatment and disposal in RCRA-permitted facilities. A RCRA-permitted hazardous waste storage and disposal facility is currently being designed to handle projected wastes from current operations. Specific areas are being reserved for future expansion.

Sanitary and nonhazardous process waste liquids are treated by various means to remove water and must comply with two CWA settlement agreements. Liquid sanitary waste would be piped to existing wastewater treatment facilities. The treated sanitary and process water would be discharged through NPDES outfalls and the resultant solids would be disposed of with solid nonhazardous waste in a permitted landfill sized to handle projected future waste volumes. SRS-generated municipal solid waste is currently being sent to a permitted offsite disposal facility. DOE is evaluating a proposal to participate in an interagency effort to establish a regional solid waste management center at SRS.

Upgrade Alternative

Preferred Alternative: Upgrade With Rocky Flats Environmental Technology Site Non-Pit Plutonium Subalternative

Modify Actinide Packaging and Storage Facility for Continued Plutonium Storage

Modification of the APSF to incorporate RFETS non-pit Pu would have a small impact on existing SRS waste management activities. Construction waste volumes as presented in Table E.3.1.1–8 would consist of wastewater and solid nonhazardous and hazardous waste. Nonhazardous waste would be disposed of as part of the construction project by the contractor, and the hazardous waste would be shipped offsite to commercial

RCRA-permitted treatment and disposal facilities. As shown in Table 4.2.6.10–2, the generation of TRU, mixed TRU, low-level, mixed low-level, or liquid hazardous wastes would not increase over that of No Action. The 0.56-m^3 (0.73-yd^3) increase in solid hazardous waste generation would have no impact on SRS hazardous waste management facilities. The 1,490-m^3 (392,500-gal) increase in liquid nonhazardous waste can be accommodated in existing wastewater treatment facilities. After volume reduction, the 11 m^3 (14 yd^3) of solid nonhazardous waste such as clean non-Pu metals, packing materials, trash, defective and damaged equipment, and industrial waste from utility and maintenance operations would be shipped in accordance with site practice to a sanitary landfill with minimal impact.

[Text deleted.]

Upgrade With All or Some Rocky Flats Environmental Technology Site Plutonium and Los Alamos National Laboratory Plutonium Subalternative

Modify Actinide Packaging and Storage Facility for Continued Plutonium Storage

Modification of the APSF to incorporate RFETS and LANL material would have a small impact on existing SRS waste management activities. Construction waste volumes as presented in Table E.3.1.1–9 would consist of wastewater and solid nonhazardous and hazardous waste. Nonhazardous waste would be disposed of as part of the construction project by the contractor, and the hazardous waste would be shipped offsite to commercial RCRA-permitted treatment and disposal facilities. As shown in Table 4.2.6.10–2 the generation of TRU, mixed TRU, low-level, mixed low-level, or liquid hazardous wastes would not increase over that of No Action. The 0.8 m^3 (1 yd^3) increase in solid hazardous waste generation would have minimal impact on SRS hazardous waste management facilities. The 1,806 m^3 (477,000 gal) increase in liquid nonhazardous waste can be accommodated in existing wastewater treatment facilities. After volume reduction, the 14 m^3 (18 yd^3) of solid nonhazardous waste such as clean non-Pu metals, packing materials, trash, defective and damaged equipment, and industrial waste from utility and maintenance operations would be shipped to a sanitary landfill with minimum impact. Distributing the RFETS and LANL material to more than one site would reduce the operational waste volumes. The decrease would be proportional to the amount of material.

Consolidation Alternative

Construct New Plutonium Storage Facility

Construction and operation of a consolidated Pu storage facility would have an impact on existing SRS waste management activities, increasing the generation of TRU, low-level, mixed, hazardous, and nonhazardous wastes. Waste generated during construction would consist of wastewater and solid nonhazardous and hazardous wastes. The nonhazardous waste would be disposed of as part of the construction project by the contractor, and the hazardous waste would be shipped to commercial RCRA-permitted treatment and disposal facilities. No soil contaminated with hazardous material or radioactive constituents is expected to be generated during construction. However, if any is generated it would be managed in accordance with site practice and all applicable Federal and State regulations. The types of operational wastes from the consolidated Pu storage facility would be the same as those from the upgrade, but the quantity would change, as shown in Table 4.2.6.10–2.

After treatment and volume reduction of TRU waste, approximately 5 m^3 (7 yd^3) of TRU waste and 4 m^3 (5 yd^3) of mixed TRU waste from leaded gloves and windows, and contaminated lead shielding would be treated and packaged to meet the current planning-basis WIPP WAC or alternative treatment level. While awaiting shipment to WIPP (depending on decisions resulting from the supplemental EIS noted earlier), the TRU waste would be stored in special purpose containers in above-grade storage facilities. One additional truck shipment per year or, if applicable, one regular train shipment every 2 years or one dedicated train shipment every 6 years would be required to transport these wastes to WIPP.

Following treatment and reduction, approximately 630 m^3 (824 yd^3) of LLW would be compacted and buried onsite in engineered trenches or vaults, depending on the LLW category. Assuming a land usage of 8,600 m^3/ha (4,500 yd^3/acre), this would require 0.07 ha/yr (0.2 acres/yr) of LLW disposal area. The 0.2 m^3 (55 gal) of liquid mixed LLW and 65 m^3 (85 yd^3) of solid mixed LLW would be incinerated, stabilized and the remaining residues disposed of onsite as LLW, in accordance with the SRS Site Treatment Plan through the use of existing and planned facilities. The 2 m^3 (476 gal) and 2 m^3 (3 yd^3) of solid hazardous wastes would have minimal impact on waste management activities at SRS as existing and planned facilities are adequate to handle this increase. The 168,830 m^3 (44,600,000 gal) of liquid nonhazardous wastes (sanitary, utility, and process wastewater) may impact existing F-Area utility and process wastewater treatment capabilities and may require construction or expansion of utility and/or process wastewater treatment systems. The centralized sanitary wastewater treatment system is adequate to treat the sanitary portion of the liquid waste. After volume reduction, 740 m^3 (968 yd^3) of solid nonhazardous waste would require disposal at a permitted sanitary landfill.

Collocation Alternative

Construct New Plutonium and Highly Enriched Uranium Storage Facilities

Construction and operation of a consolidated Pu storage facility collocated with HEU storage would have an impact on existing SRS waste management activities, increasing the generation of TRU, low-level, mixed, hazardous, and nonhazardous wastes. Waste generated during construction would consist of wastewater, and solid nonhazardous and hazardous wastes. The nonhazardous waste would be disposed of as part of the construction project by the contractor and the hazardous waste would be shipped to commercial RCRA-permitted treatment and disposal facilities. No soil contaminated with hazardous material or radioactive constituents is expected to be generated during construction. However, if any is generated it would be managed in accordance with site practice and all applicable Federal and State regulations.

Because there is no TRU or mixed TRU wastes associated with HEU storage, the impacts from TRU and mixed TRU wastes are identical to those identified in the consolidated Pu storage alternative. The sources of waste are similar to those of the upgraded Pu storage facility except the source of radioactive contamination from the HEU storage is uranium.

After treatment and volume reduction, approximately 630 m^3 (824 yd^3) of LLW contaminated with Pu and 20 m^3 (26 yd^3) of LLW contaminated with uranium would be compacted and buried onsite in engineered trenches or vaults, depending on the LLW category. Assuming a land usage of 8,600 m^3/ha (4,500 yd^3/acre), this would require 0.08 ha/yr (0.2 acre/yr) of LLW disposal area. The 0.2 m^3 (55 gal) of liquid mixed LLW and 66 m^3 (86 yd^3) of solid mixed LLW would be incinerated and stabilized, and the remaining residues disposed of onsite as LLW, in accordance with the SRS Site Treatment Plan through the use of existing and planned facilities. The 2 m^3 (528 gal) of liquid and 2 m^3 (3 yd^3) of solid hazardous waste would have minimal impact on waste management activities at SRS, as existing planned facilities are adequate to handle the increase.

The 214,890 m^3 (56,800,000 gal) of liquid nonhazardous waste may impact existing F-Area utility and process wastewater treatment capabilities and may require construction or expansion of utility and/or process wastewater treatment systems. The centralized sanitary wastewater treatment system is adequate to treat the sanitary portion of the liquid waste. After volume reduction, 940 m^3 (1,230 yd^3) of solid nonhazardous waste would require disposal at a permitted sanitary landfill.

Subalternative Not Including Strategic Reserve and Weapons Research and Development Materials

The exclusion of strategic reserve and weapons R&D materials would reduce the amount of operational waste volumes shown in Table 4.2.6.10–2 for the No Action Alternative, the Upgrade Alternative, the Consolidation

Alternative, and the Collocation Alternative. The decrease would be proportional to the amount of material excluded. [Text deleted.]

Phaseout

The phaseout of Pu storage would have a small impact on SRS waste management activities. Solid TRU waste generation would decrease by 8 m^3 (11 yd^3), solid LLW by 38 m^3 (50 yd^3), and the sanitary waste would decrease by 19,100 m^3 (5,050,000 gal) for liquid and 2,290 m^3 (3,000 yd^3) for solid. All other waste streams would remain unchanged.

4.2.7 Rocky Flats Environmental Technology Site

A list of the proposed long-term storage alternatives, subalternatives, and related actions, including the No Action Alternative, at RFETS is provided below. The potential impacts of implementing these alternatives and related actions at RFETS are described in the following sections: land resources, site infrastructure, air quality and noise, water resources, geology and soils, biological resources, cultural and paleontological resources, socioeconomics, public and occupational health and safety, and waste management.

> **Preferred Alternative**
>
> **Phaseout:** RFETS Pu material within the scope of this PEIS would be moved out of RFETS. Pits would be sent to Pantex and non-pit material would be sent to SRS.

Proposed Storage Activities at Rocky Flats Environmental Technology Site

- **No Action Alternative:** Continue to store RFETS Pu material within the scope of this PEIS in a new or modified facility in stabilized form pursuant to DNFSB Recommendation 94-1.
- **Upgrade Alternative:** This storage alternative does not apply to RFETS.
- **Consolidation Alternative:** This storage alternative does not apply to RFETS.
- **Collocation Alternative:** This storage alternative does not apply to RFETS.

  [Text deleted.]
- **Phaseout (Preferred Alternative):** RFETS Pu material within the scope of this PEIS would be moved out of RFETS. Pits would be sent to Pantex and non-pit material would be sent to SRS.

4.2.7.1 Land Resources

No Action Alternative

Under this alternative, Pu storage would continue in a new or modified facility in stabilized form pursuant to DNFSB Recommendation 94–1. The ongoing (no new action as covered in the June 1995 EA and FONSI for the *Consolidation and Interim Storage of Special Nuclear Material at Rocky Flats Environmental Technology Site*) activities conform with present and future land-use plans, policies, and controls; therefore, no direct or indirect effects to land use or visual resources would be anticipated at RFETS beyond those of existing and future activities that are independent of the proposed action.

Preferred Alternative: Phaseout

No new construction or modification of existing facilities would occur under phaseout of the storage mission. RFETS Pu material would be moved out of RFETS to the upgrade, consolidation, or collocation sites, or to disposition. Potential impacts on visual resources could occur if facilities are not maintained.

4.2.7.2 Site Infrastructure

For selected site infrastructure parameters, Table 4.2.7.2–1 shows the site availability, projected usage under No Action, and projected usage following phaseout of the Pu storage mission. Adequate infrastructure is available to accommodate all projected site missions.

Table 4.2.7.2–1. ***Site Infrastructure Changes Required for Operation at Rocky Flats Environmental Technology Site (Annual)—No Action (2005) and Storage Phaseout***

	Transportation		Electrical		Fuel		
	Roads (km)	**Rail (km)**	**Energy (MWh/yr)**	**Peak Load (MWe)**	**Oil (l/yr)**	**Natural Gas (m^3/yr)**	**Coal (t/yr)**
No Action							
Site Availability	40	5	184,000	26	8,140,000	18,600,000	0
Projected usage	40	5	184,000	26	8,140,000	18,600,000	0
Amount required in excess of site availability	0	0	0	0	0	0	0
Phaseout							
Projected usage with storage phaseout	40	5	184,000	26	8,140,000	18,600,000	0
Amount required in excess of site availability	0	0	0	0	0	0	0

Source: RFETS 1995a:1.

No Action Alternative

Under No Action, RFETS would continue to consolidate surplus and strategic reserve Pu into a single interim storage facility. Processing of Pu materials is addressed in the RFETS SISMP (including solid and liquid Pu residues). The RFETS SISMP describes all near-term actions necessary to place special nuclear material into safe interim storage as well as actions designed to prepare and place the material for safe long-term storage in accordance with DNFSB Recommendation 94-1 and the *DOE Criteria for Safe Storage of Plutonium Metals and Oxides* (DOE-STD-3013-94). The RFETS SISMP is a comprehensive management plan to handle issues and vulnerabilities associated with the RFETS storage and handling of Pu and other special nuclear material and describes actions currently being implemented at RFETS.

Preferred Alternative: Phaseout

Phaseout of the Pu storage mission at RFETS would have no impact on the facilities and site infrastructure. The storage facilities would remain for D&D and/or waste management, and utility consumption would remain constant.

4.2.7.3 Air Quality and Noise

Activities associated with the No Action Alternative would generate criteria and toxic/hazardous pollutants. The Pu Storage Phaseout Alternative would result in a decrease of criteria and toxic/hazardous pollutants over the No Action Alternative. To evaluate the air quality impacts at RFETS, criteria and toxic/hazardous concentrations from the No Action Alternative are compared with Federal and State standards and guidelines. Impacts from radiological airborne emissions are described in Section 4.2.7.9.

[Text deleted.]

Emission rates attributed to site operations (No Action) are presented in Table F.1.2.8–1. Air pollutant emission sources associated with operations include the following:

- Operation of existing boilers for space heating
- Operation of diesel generators and periodic testing of emergency diesel generators
- Exhaust and road dust generated by vehicles delivering supplies and bringing employees to work
- Toxic/hazardous pollutant emissions from facility processes

Noise impacts during phaseout are expected to be low. Air quality and noise impacts for each storage alternative are described separately. Supporting data for the air quality and noise analyses are presented in Appendix F.

AIR QUALITY

An analysis was conducted of the potential air quality impacts of emissions for the storage phaseout alternative as described in Section 4.1.3.

Section 176 (c) of the 1990 CAA amendments requires that all Federal actions conform with the applicable SIP. EPA has implemented rules that establish the criteria and procedures governing the determination of conformity for all Federal actions in nonattainment and maintenance areas. These are discussed in Section 4.1.3. The attainment status of the area in which RFETS is located is discussed in Section 3.8.3. Since the area is considered a nonattainment area for O_3, PM_{10}, and CO, proposed actions at this site need to be evaluated for applicability of the conformity regulations. Total direct and indirect emissions from the No Action Alternative result in no change in emissions from RFETS. Therefore, the requirement for a conformity determination is not applicable to the No Action Alternative. Total direct and indirect emissions from Phaseout, which would include transportation emissions, have been estimated based on SST shipments of material from RFETS. These emissions are about 510 kg/yr (0.56 tons/yr) for NO_2, 56 kg/yr (0.061 tons/yr) for hydrocarbons (assumed to be VOC), and 225 kg/yr (0.25 tons/yr) for CO. These emissions are a small fraction of the total emissions from transportation emissions in the Denver area and are less than the applicability levels of 90,700 kg/yr (100 tons/yr) for VOC, NO_2, and CO for the Denver area (40 CFR 51; 40 CFR 93). Emissions of PM_{10} consist primarily of reentrainment of road dust and emissions from diesel-powered SSTs and are expected to be a small fraction of total emissions from vehicles in the Denver area. There is expected to be minimal change in emissions from other activities related to Pu storage phaseout at RFETS. Therefore, no further analysis of conformity of phaseout at RFETS is required.

No Action Alternative

This alternative utilizes estimated air emissions data from total site operations at RFETS, assuming continuation of site missions as described in Section 3.8. These data reflect conservative estimates of criteria and toxic/hazardous emissions at RFETS. The emission rates for the criteria and toxic/hazardous pollutants for No

Action are presented in Table F.1.2.8–1. Table 3.8.3–1 presents the No Action concentrations. During dry and windy conditions, increased PM_{10} and TSP concentrations may occur due to ongoing construction associated with other activities (that are outside of the scope of the PEIS) under the No Action Alternative. It is expected that the site will continue to comply with applicable Federal, State, and local ambient air quality standards.

Preferred Alternative: Phaseout

Phaseout of existing Pu inventories as a result of consolidating Pu at another site is expected to result in a small reduction in air pollutant concentrations from the No Action concentrations. The reduction in emissions associated with the reduction in activities at RFETS should contribute to the goal of meeting the standards for O_3, PM_{10}, and CO. Concentrations for other pollutants would be in compliance with Federal and State standards.

NOISE

The location of the fissile materials storage facilities relative to the site boundary and sensitive receptors was examined to evaluate the potential for onsite and offsite noise impacts. Traffic would occur onsite and along offsite large and regional transportation routes used to bring construction materials and workers to the site.

No Action Alternative

Nontraffic noise sources associated with continued interim storage and other ongoing missions are the same as described in Section 3.8. The continuing operations at RFETS would result in no appreciable change from current levels in traffic noise and onsite operational noise. Nontraffic noise sources are located at sufficient distance from offsite areas that the contribution to offsite noise levels would continue to be small. Due to the size of the site, noise emissions from construction equipment and operations activities would not be expected to cause annoyance to the public. Some noise sources may result in some impacts, such as disturbance of wildlife.

Preferred Alternative: Phaseout

A reduction in noise levels associated with facility operations may result from the phaseout of storage facilities.

4.2.7.4 Water Resources

Impacts associated with the No Action and phaseout of Pu storage facilities at RFETS would not affect water resources. All required water would be supplied by the City of Denver via the South Boulder Diversion Canal from the South Boulder Creek and Ralston Reservoir. Wastewater would be discharged to Walnut and Woman Creeks. Table 4.2.7.4–1 presents No Action water resources uses and discharges and the potential changes to water resources at RFETS resulting from phaseout.

Table 4.2.7.4–1. No Action and Potential Changes to Water Resources at Rocky Flats Environmental Technology Site—No Action (2005) and Storage Phaseout

Affected Resource Indicator	No Action	Phaseout
Water Source	Surface	Surface
Construction		
Water Availability and Use		
Total water requirements (million l/yr)	NA[a]	0
Percent increase in projected water usage[b]	NA[a]	0
Water Quality		
Total wastewater discharge	NA[a]	0
Percent change in wastewater discharge[c]	NA[a]	0
Operation		
Water Availability and Use		
Total water requirements (million l/yr)	439	0
Percent increase in projected water usage[d]	0	0
Water Quality		
Total wastewater discharge	130	0
Percent change in wastewater discharge[e]	0	0
Floodplain		
Is action in 100-year floodplain?	No	No
Is critical action in 500-year floodplain?	No	No

[a] See operations section of table for No Action water data.
[b] Percent increase in projected water usage during phaseout at RFETS is calculated by dividing No Action water requirements (439 million l/yr) with that for storage phaseout (0 l/yr).
[c] Percent change in wastewater discharge during phaseout at RFETS is calculated by dividing No Action water discharges (130 million l/yr) with that for storage phaseout (0 l/yr).
[d] Percent increase in projected water usage during operation at RFETS is calculated by dividing No Action water requirements (439 million l/yr) with that for storage phaseout (0 l/yr).
[e] Percent change in wastewater discharge during operation at RFETS is calculated by dividing No Action water discharges (130 million l/yr) with that for storage phaseout (0 l/yr).
Note: NA= not applicable.
Source: RFETS 1995a:1.

No Action Alternative

Surface Water. [Text deleted.] A description of the activities that would continue at RFETS is provided in Section 3.8. Under this alternative, because of reduced operating requirements of existing facilities at RFETS, treated wastewater from RFETS would continue to be discharged to Walnut and Woman Creeks, and the volume would decrease from current discharge of 150 million l/yr (40 million gal/yr) to 130 million l/yr (34 million gal/yr) by the year 2005. Water requirements (439 million l/yr [116 million gal/yr]) would continue to be obtained from the city of Denver via the South Boulder Diversion Canal from the South Boulder Creek and Ralston Reservoir and are not anticipated to increase by 2005.

Groundwater. Under this alternative, no additional impacts to groundwater resources are anticipated. Water quality data obtained from monitoring wells at RFETS indicate that water quality meets or exceeds drinking water standards for a number of parameters. Under this alternative, current restoration programs would continue. Pumped, treated, and released groundwater from restoration activities is anticipated to decrease in volume from the current removal rate of 10.6 million l/yr (2.8 million gal/yr) to 7.8 million l/yr (2.1 million gal/yr) by the year 2005.

Preferred Alternative: Phaseout

Phaseout of missions at RFETS would not involve any new construction. Because existing facilities are not located in the 100- or 500-year floodplain, phaseout would not affect the floodplain area.

Surface Water. The phaseout would not result in an incremental change in the total wastewater volume handled by the plant. No impact to flow and water quality of Walnut and Woman Creeks would result. There would be no impact to water quality from phaseout activities.

Groundwater. Because RFETS does not withdraw groundwater, there would be no impact on the availability of this resource. A minor beneficial impact on groundwater resources would occur due to the lessened potential for degradation of water quality. Spill protection systems and plans exist to contain and minimize effects of releases of hazardous substances during phaseout activities. Given normal safeguards and procedures, no impact to groundwater quality would be expected to result from activities associated with the phaseout of Pu storage functions at RFETS. Current restoration activities would continue under this alternative.

4.2.7.5 Geology and Soils

RFETS is considered only for the No Action Alternative and under storage phaseout. As discussed below, neither of these activities involves new construction and would therefore have no effect on the geologic and soil resources at the site. Impacts to geologic and soil resources occur during, or as a result of, ground-disturbing activities.

No Action Alternative

Under the No Action Alternative, DOE would continue current and ongoing activities at RFETS. There would be no new ground-disturbing activities beyond those already associated with existing and future site improvements. Because no new construction (associated with this program) or associated ground disturbance for potential soil erosion would occur, the No Action Alternative would have no effect on geologic or soil resources at the site.

Preferred Alternative: Phaseout

The phaseout of storage capacity would have no apparent effects on the geology. However, phaseout could result in beneficial effects on the soils of the area. Hazardous, radioactive, and mixed waste sources would be eliminated from the area, thus decreasing the potential for future soil contamination.

4.2.7.6 Biological Resources

No Action Alternative

The Pu storage mission described in Section 2.2.7 would continue at RFETS. This would result in no appreciable change in current conditions of biological resources at RFETS as described in Section 3.8.6.

Preferred Alternative: Phaseout

Pu materials at RFETS would be phased out of operation. The phaseout of Pu storage facilities is not expected to affect biological resources, although increased human activity could, as a result of phaseout activities, temporarily disturb some wildlife species in the vicinity of the site.

4.2.7.7 Cultural and Paleontological Resources

No Action Alternative

Under this alternative, DOE would continue the existing and planned missions at RFETS, including the continued storage of Pu material in a new facility in stabilized form pursuant to DNFSB Recommendation 94-1. Any impacts to cultural or paleontological resources from these missions would be independent of the proposed action and would be addressed through separate NHPA, *American Indian Religious Freedom Act*, and *Native American Graves Protection and Repatriation Act* regulatory compliance procedures. A cultural resources management plan is in preparation for RFETS.

Preferred Alternative: Phaseout

For this alternative, all Pu materials at RFETS within the scope of this PEIS would be transferred to another site and the storage mission would be phased out. Impacts to prehistoric resources are not anticipated because phaseout is not expected to result in ground-breaking activity. Likewise, no impacts to paleontological remains are expected. It may affect, through alteration, if subsequently proposed, some of the 65 historic structures at RFETS that have been identified as NRHP-eligible. DOE has recently begun efforts to identify Native American groups with ties to the land at RFETS, however, phaseout is not expected to affect important Native American resources.

4.2.7.8 Socioeconomics

No Action Alternative

Regional Economy Characteristics. Total employment in the REA is projected to increase approximately 2 percent annually between 1995 and 2000, reaching 1,985,400 in the latter year. Long-range projections indicate slower growth after the year 2000, when employment would increase about 1 percent annually and reach approximately 2,970,500 persons in 2040. Unemployment in the REA was 4.1 percent in 1994 and is expected to remain at this level into the near future. Per capita income is projected to increase from approximately $22,721 in 1995 to $37,025 in 2040. Projections for the No Action Alternative are presented in Table L.1–64.

Population and Housing. Population in the ROI is projected to increase from approximately 1,991,700 in 1995 to 3,245,300 by 2040. The total number of housing units in the ROI is projected to increase from about 855,200 in 1995 to 1,371,600 in 2040. Population and housing projections for the No Action Alternative are presented in Tables L.1–65 and L.1–66, respectively.

Community Services. Education, public safety, and health care characteristics are used to assess the level of community services in the RFETS ROI. School enrollments are projected to increase from about 336,840 students in 1995 to 562,320 students by 2040. The current student-to-teacher ratio is 19.0:1. To maintain this level of service, the number of teachers in the ROI would need to increase from approximately 17,751 in 1995 to 29,417 in 2040. These projections are presented in Tables L.1–67 and L.1–68.

The projected numbers of sworn police officers and firefighters serving in ROI communities over the period 1995 to 2040 are shown in Tables L.1–69 and L.1–70, respectively. Under No Action the number of sworn police officers is projected to increase from approximately 3,871 in 1995 to 6,036 in 2040 to maintain the current service level of 2.0 sworn officers per 1,000 persons. The number of firefighters in the ROI would need to increase from about 5,408 in 1995 to 9,118 in 2040 to maintain the present service level of 2.7 firefighters per 1,000 persons.

Hospital occupancy rates are based on current capacity. These rates and the estimated number of physicians serving the ROI population between 1995 and 2040 are presented in Tables L.1–71 and L.1–72, respectively. Hospital occupancy rates are projected to increase from approximately 56 percent in 1995 to 91 percent in 2040. To maintain the current service level of 2.6 physicians per 1,000 persons, the total number of physicians in the ROI would need to increase from approximately 5,085 in 1995 to 7,387 in 2040.

Local Transportation. Any increases in traffic would be due to projected growth in the area unrelated to DOE activities. The only alternative considered at RFETS is phaseout, which involves decreasing employment, and, therefore, decreasing traffic. Since there would be no impacts, modeling was not done.

Preferred Alternative: Phaseout

Phasing out Pu storage at RFETS would result in the loss of 10,051 (2,129 direct and 7,922 indirect) jobs in the REA, which would be considered a potential impact. Should all personnel be phased out at the same time, unemployment would increase to 4.6 percent and per capita income would be reduced by less than 1 percent (Socio 1996a).

Some displaced workers may out-migrate from the ROI to seek other employment opportunities. Under the bounding case (all unemployed workers and their families leaving the ROI at the same time), population would decrease by about 1 percent. Some of the projected ROI occupied housing units would become vacant as a result of population losses (Socio 1996a).

The out-migration of population during phaseout would slightly lessen the demand for community services. It is unlikely that communities would lower service levels unless decreased revenues made it necessary.

School enrollments in the ROI could decrease by about 1 percent under the bounding-case scenario for phaseout. The No Action student-to-teacher ratio of 19.0:1 could be maintained if the number of teachers does not decrease from predicted No Action levels by more than 193 (Socio 1996a).

During phaseout, the number of sworn police officers could decrease by as many as 35 officers from projected No Action levels before the No Action service level of 2.0 officers per 1,000 persons would not be maintained. Additionally, the number of firefighters could decrease by as much as 50 before the No Action service level of 2.7 firefighters per 1,000 persons would be affected (Socio 1996a).

Projected hospital occupancy rates under the bounding-case scenario for phaseout would be slightly lower than the No Action projections. The number of physicians in the ROI could decrease by up to 43 from predicted No Action levels before the No Action service level of 2.6 physicians per 1,000 persons would be affected (Socio 1996a).

If the phaseout of Pu storage at RFETS led to a reduction of the ROI population, traffic conditions should improve over the No Action baseline.

4.2.7.9 Public and Occupational Health and Safety

Assessments have been made of potential radiological and chemical impacts associated with the No Action Alternative at RFETS. A discussion of reduced impacts associated with the phaseout of existing Pu storage is also presented. Summaries of radiological impacts from normal operations are presented in Tables 4.2.7.9–1 and 4.2.7.9–2 for the public and workers, respectively. Impacts from hazardous chemicals are presented in Table 4.2.7.9–3. Impacts associated with postulated accidents are addressed in this section.

No Action Alternative

This section describes the radiological and hazardous chemical releases and their associated impacts resulting from either normal operation or accidents involved with the current sitewide mission including interim storage of Pu at RFETS. The section describes the impacts from normal operation, then describes the potential risks of impacts from facility accidents.

The impacts on the public and on workers under the No Action Alternative during normal operation at RFETS would be within applicable regulatory limits.

Normal Operation. The current mission at RFETS, where Pu is in interim storage, is described in Section 3.8. The site has identified those facilities that will continue to operate under the No Action Alternative, including interim Pu storage facilities. Radiological and chemical impacts on the public and workers at RFETS are described below.

Radiological Impacts. The calculated annual dose to the average and maximally exposed members of the public, the associated fatal cancer risks to these individuals from 50 years of total site operation, the dose to the population within 80 km (50 mi) from total site operation in the year 2030, and the projected number of fatal cancers in this population from 50 years of operation are presented in Table 4.2.7.9–1 under this alternative at RFETS. The annual dose of 0.48 mrem to the MEI is within the radiological limits specified in NESHAPS (40 CFR 61, Subpart H) and DOE Order 5400.5. The annual dose of 0.10 person-rem to the population is within the proposed reporting limit. To put operational dose impacts into perspective, comparisons with doses from natural background radiation are included in the table.

The average annual dose to a site worker and the associated risk of fatal cancer from 50 years of total site operations, and the annual dose to the total site workforce and the projected number of fatal cancers from 50 years of total site operations, are presented in Table 4.2.7.9–2 for the No Action Alternative at RFETS.

Hazardous Chemical Impacts. Hazardous chemical impacts on the public resulting from the normal operation under No Action at RFETS are presented in Table 4.2.7.9–3. The noncancerous health effects expected and the risk of cancer due to the total chemical exposures, must be estimated for each site. Since the major releases due to normal operation at RFETS would make up nearly all of the exposures to onsite workers and to the public in adjacent communities, contributions to the hazardous chemical concentrations from all other sources, for example, industrial operations, are considered negligible for purposes of risk calculations.

The HI for the MEI of the public at RFETS resulting from normal operation under the No Action Alternative is 1.2×10^{-3}, and the cancer risk is 2.1×10^{-8}. The HI to the onsite worker is 1.3×10^{-2}, and the cancer risk is 2.3×10^{-6}.

Table 4.2.7.9–1. Potential Radiological Impacts to the Public During Normal Operation at Rocky Flats Environmental Technology Site—No Action

Receptor	No Action
Annual Dose to the Maximally Exposed Individual Member of the Public[a]	
Atmospheric release pathway (mrem)	0.13
Drinking water pathway (mrem)	0.35
Total liquid release pathway (mrem)	0.35
Atmospheric and liquid release pathways combined (mrem)	0.48
Percent of natural background[b]	0.14
50-year fatal cancer risk	1.2×10^{-5}
Population Dose Within 80 Kilometers for Year 2030[c]	
Atmospheric release pathways (person-rem)	0.10
Total liquid release pathways (person-rem)	0
Atmospheric and liquid release pathway combined (person-rem)	0.10
Percent of natural background[b]	9.1×10^{-6}
50-year fatal cancers	2.5×10^{-3}
Annual Dose to the Average Individual Within 80 Kilometers[d]	
Atmospheric and liquid release pathways combined (mrem)	3.2×10^{-5}
50-year fatal cancer risk	8.0×10^{-10}

[a] The applicable radiological limits for an individual member of the public from site operations are 10 mrem per year from the air pathways, as required by NESHAPS (40 CFR 61, Subpart H) under the CAA; 4 mrem per year from the drinking water pathway as required by the SDWA; and 100 mrem per year from all pathway combined. Refer to DOE Order 5400.5.

[b] The annual natural background radiation level at RFETS is 353 mrem for the average individual; the population within 80 km in the year 2030 receives 1.1×10^{6} person-rem.

[c] For DOE activities, proposed 10 CFR 834 (see 58 FR 16268) would generally limit the potential annual population dose to 100 person-rem from all pathways combined, and would require an ALARA program.

[Text deleted.]

[d] Obtained by dividing the population dose by the number of people projected to live within 80 km of the site in 2030 (3,116,000).

Note: It is assumed that these doses will not be exceeded in the future since no additional activities are planned at the RFETS under the No Action Alternative.

Source: RFETS 1994a.

Table 4.2.7.9–2. Potential Radiological Impacts to Workers During Normal Operation at Rocky Flats Environmental Technology Site—No Action

Receptor	No Action
Involved Workforce[a]	
Average worker dose (mrem/yr)[b]	250
50-year risk of fatal cancer	$5.0x10^{-3}$
Total dose (person-rem/yr)	25
50-year fatal cancers	0.50
Noninvolved Workforce[c]	
Average worker dose (mrem/yr)[b]	122
50-year risk of fatal cancer	$2.4x10^{-3}$
Total dose (person-rem/yr)	775
50-year fatal cancers	15
Total Site Workforce[d]	
Dose (person-rem/yr)	800
50-year fatal cancers	16

[a] The involved worker is a worker associated with operations of interim Pu storage. It is assumed that there are 100 workers, badged with dosimeters to monitor radiation exposure, with a conservatively estimated average dose of 250 mrem/yr per worker. However, an effective ALARA program will ensure that the exposure will be reduced to that level which is as low as reasonably achievable.

[b] The radiological limit for an individual worker is 5,000 mrem/year (10 CFR 835). However, DOE has also established an administrative control level of 2,000 mrem/yr (DOE1992t); the site must make reasonable attempts to maintain doses below this level.

[c] The noninvolved worker is a worker onsite but not associated with interim Pu storage operations. The projected number of noninvolved badged workers in 2005 is 6,350.

[d] The impact to the total workforce is the summation of the involved worker impact and the noninvolved worker impact.

[Text deleted.]

Source: DOE 1993n:7.

Table 4.2.7.9–3. Potential Hazardous Chemical Impacts to the Public and Workers During Normal Operation at Rocky Flats Environmental Technology Site—No Action

Receptor	Total Site[a]
Maximally Exposed Individual (Public)	
Hazard Index[b]	$1.2x10^{-3}$
Cancer risk[c]	$2.1x10^{-8}$
Worker Onsite	
Hazard Index[d]	$1.3x10^{-2}$
Cancer risk[e]	$2.3x10^{-6}$

[a] Total=The No Action contributions.

[b] Hazard Index for MEI: sum of individual Hazard Quotients (noncancerous health effects) for MEI.

[c] Cancer risk for MEI=(emissions for 8-hr) x (0.286 [converts concentrations to doses]) x (slope factor [SF]).

[d] Hazard Index for workers: sum of individual Hazard Quotients (noncancerous health effects) for workers.

[e] Cancer risk for workers= (emissions for 8-hr) x (0.286 [converts concentrations to doses]) x (0.237[fraction of year exposed]) x (0.571 [fraction of lifetime working]) x (SF).

Source: Section M.3, Table M.3.4-26.

Facility Accidents. Under the No Action Alternative, Pu would continue to be stored at the site in existing facilities. These facilities currently operate in accordance with DOE Orders which ensure that the risk to the public of prompt fatalities due to accidents or cancer fatalities due to operations will be in accordance with the DOE safety goals. The safety to workers and the public from accidents at existing facilities is also controlled by technical safety requirements specified in detail in a SAR or Basis for Interim Operations document prepared and maintained specifically for a facility or process within a facility. Under these controls, any change in approved operations or to facilities would cause a halt in operations until it can be established that worker and public safety has not been compromised.

Preferred Alternative: Phaseout

Normal Operation. The phaseout of Pu storage at RFETS would reduce the impacts from radiological and chemical releases and exposures to levels below the No Action levels. All workers involved in the removal of Pu from RFETS would be monitored to ensure that their doses remain within acceptable levels.

Facility Accidents. The phaseout operation will be conducted in accordance with DOE Orders to ensure that the risk to the public of prompt fatalities due to accidents or of cancer fatalities due to operations will be minimized. For current operations in the facility that would be phased out, the safety of workers and the public from accidents is controlled by Technical Safety Requirements that are specified in SARs or Basis for Interim Operations documents that have been prepared for the facility. Prior to initiating phaseout, the potential for accidents that could impact workers and the public will be assessed and, if necessary, applicable existing safety documentation will be modified to ensure safety for workers and the public.

4.2.7.10 Waste Management

This section summarizes the impacts on waste management at RFETS under No Action and the phaseout of Pu storage. There is no spent nuclear fuel or HLW associated with Pu storage. Table 4.2.7.10–1 lists the projected waste generation rates and treatment, storage, and disposal capacities under No Action for 2005. Projections for No Action were derived from the most recent available environmental data, with the appropriate adjustments made for those changing operational requirements where the volume of wastes generated are identifiable. The projection does not include wastes from future, yet uncharacterized, environmental restoration activities. The projections for No Action could change depending on decisions resulting from the Waste Management PEIS. Facilities that would support the storage of Pu would treat and package all waste generated into forms that would enable staging and/or disposal in accordance with RCRA and other relevant statutes. Depending in part on decisions in waste-type-specific RODs for the Waste Management PEIS, wastes could be treated and disposed of onsite or at regionalized and centralized DOE sites. For the purpose of analyses only, this PEIS assumes that TRU and mixed TRU waste would be treated onsite to the current planning-basis WIPP WAC, and shipped to WIPP for disposal. This PEIS also assumes that LLW, mixed LLW, hazardous, and nonhazardous waste would be treated and disposed of in accordance with current site practice.

No Action Alternative

Under No Action, TRU, low-level, mixed residues, hazardous, and nonhazardous waste would continue to be managed at RFETS from the missions described in Section 3.8. Waste management activities at RFETS are categorized as regulatory compliance and project administration, waste minimization, waste treatment, waste storage, and waste disposal. Within each category of waste management activity, various wastes are handled according to waste type as defined by various DOE orders, as well as Federal and State regulations. Applicable permitting, treatment, storage, and disposal requirements are determined according to these waste types. Under No Action, RFETS would continue to store quantities of Pu in various forms. This storage would generate small quantities of TRU, low-level, hazardous, mixed, and nonhazardous wastes. The primary focus for waste management at RFETS would be the continued processing of existing wastes, transition of facilities, and environmental restoration. It is anticipated that the Pu storage mission would have minimal impact on the waste management program at RFETS. The plant has stored Pu since 1956 and is adequately equipped to manage the wastes from the storage mission using the existing waste management infrastructure. Waste generated by cleanup activities is expected to be much greater than wastes generated from continued storage of Pu. The impacts of the wastes generated as part of environmental restoration and D&D activities would be addressed in individual remedial action feasibility studies. The Rocky Flats Cleanup Agreement provides the legal enforcement framework for assessing the native and extent of contamination, determining the risks imposed by that contamination to workers, the public, and the environment; and implementing actions designed to remediate the contamination.

Transuranic waste would be treated and packaged to meet the current planning-basis WIPP WAC or alternative treatment level and then stored in one of the RCRA-permitted storage units pending approval of WIPP as a repository for these wastes. Assuming WIPP is determined to be a suitable repository for these wastes, pursuant to the requirements of 40 CFR 191 and 40 CFR 268, these wastes would be packaged in accordance with DOE and DOT requirements for transport to WIPP depending on decisions made in the ROD associated with the Supplemental EIS being prepared for the proposed continued phased development of WIPP for disposal of TRU wastes.

Low-level waste would be compacted whenever possible, packaged to meet the WAC of the NTS low-level disposal facility, and then shipped to NTS for disposal. Mixed LLW would be treated and disposed in accordance with the *RFETS Treatment Plan* that was developed to comply with the *Federal Facility Compliance Act*. Hazardous wastes would be collected and packaged in DOT-approved containers for shipment to offsite RCRA-permitted commercial treatment, storage, and disposal facilities. Solid nonhazardous wastes would be disposed in the onsite permitted landfill.

Table 4.2.7.10–1. Projected Waste Management Under No Action (2005) at Rocky Flats Environmental Technology Site

Category	Annual Generation (m^3)	Treatment Method	Treatment Capacity (m^3/yr)	Storage Method	Storage Capacity (m^3)[a]	Disposal Method	Disposal Capacity (m^3)
Transuranic							
Liquid	<1	Solidification	149,000[b]	None	None	NA	NA
Solid	1, 583	Compaction	4,630[c]	Drums on pads	6,220[d]	WIPP or alternate facility	NA
Mixed Transuranic							
Liquid	<1	Solidification	Included in TRU liquid	None	None	NA	NA
Solid	1,505	Compaction	Included in TRU solid	Drums on pads	Included in solid TRU	WIPP or alternate facility	NA
Low-Level							
Liquid	<1	Evaporation and solidification	Included in liquid mixed LLW	Staged	105[e]	NA	NA
Solid	701	None	5,600[f]	Staged	4,540[e]	Offsite	NA
Mixed Low-Level							
Liquid	None[g]	Solidification	47,500[h]	Staged for treatment	Included in solid mixed LLW	NA	NA
Solid	6,019	None	7,100[i]	DOT containers	17,700[j]	Offsite	NA
Hazardous							
Liquid	<1	Neutralization & precipitation	None	Staged in DOT containers	Included in solid hazardous	Offsite	NA
Solid	25	None	None	Staged in DOT containers	260[k]	Offsite	NA
Hazardous (Residues)		None	None				
Liquid	None	None	None	Staged only	Included in liquid hazardous	Offsite	NA
Solid	None	None	None	Staged only	Included in liquid hazardous	Offsite	NA
Nonhazardous (Sanitary)							
Liquid	457,600[l]	Sedimentation	565,000	None	None	Surface water	NA
Solid	11,400	None	None	None	None	Onsite landfill	Expandable[m]

Table 4.2.7.10–1. Projected Waste Management Under No Action (2005) at Rocky Flats Environmental Technology Site—Continued

Category	Annual Generation (m^3)	Treatment Method	Treatment Capacity (m^3/yr)	Storage Method	Storage Capacity (m^3)[a]	Disposal Method	Disposal Capacity (m^3)
Nonhazardous (Other)							
Liquid	Included in sanitary	Sedimentation	Included in sanitary	None	None	Surface water	NA
Solid	73	None	None	None	None	Onsite landfill	Expandable[l]

[a] Additional storage capacity requirements depend upon the existing storage requirements, existing storage capacity, and existing permit conditions.
[b] Value taken from Draft Waste Management PEIS and includes Process Waste Treatment Facility and Organic and Sludge Immobilization System.
[c] Value taken from Draft Waste Management PEIS and includes Supercompaction and Repackaging Facility, Advance Size Reduction Facility, and Size Reduction Vault.
[d] Value taken from Draft Waste Management PEIS and includes the current TRU inventory and the projected 20-year generation.
[e] Cumulative volume of LLW stored at end of 1993 as per a Memorandum from McGlochlin, EG&G to Reece, DOE on updated information for Nonnuclear Consolidation EA.
[f] Value taken from Draft Waste Management PEIS and reflects compaction activities.
[g] No waste in this category is expected to be generated in 2005. Treatment, storage, and disposal are expected to continue for waste generated from past activities.
[h] Based on the operating capacities of Building 374 and 774 as described in the 1995 Mixed Waste Inventory Report.
[i] Based on the operating capacities of Building 776 as described in the 1995 Mixed Waste Inventory Report. Value calculated using the conversion ratio of 1,500 kg/m^3.
[j] Value taken from Draft Waste Management PEIS and reflects Mixed Waste container storage activities.
[k] Value based on the 1991 Waste Storage Inventory Report and the Memorandum from McGlochlin, EG&G to Reece, DOE on updated information for Nonnuclear Consolidation EA.
[l] Value taken from 1993 *RFETS Site Environmental Report* and reflects Annual Discharge from main collection pond (Pond A-4).
[m] Landfill will provide additional 20 years of capacity.

Note: NA=not applicable.

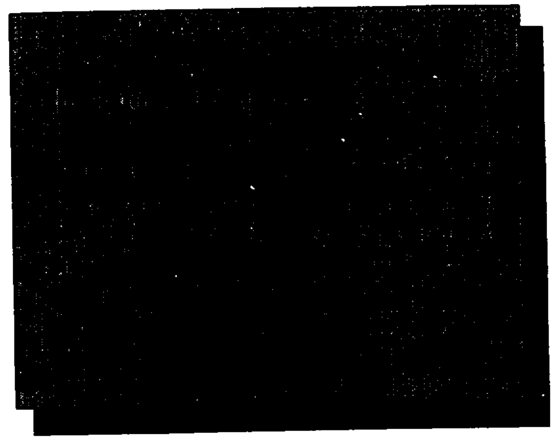
Source: DOE 1995cc; DOE 1995gg; RF EG&G 1992e; RFETS 1994a; RFETS 1995a:1; RFP 1993a:1; RFP 1993a:2.

Preferred Alternative

Phaseout

[Text deleted.] The small amount of waste associated with Pu storage would no longer be generated, but the total wastes generated at RFETS could increase as a result of the cleanup activities of facilities formerly used for Pu storage.

4.2.8 Los Alamos National Laboratory



A list of the proposed long-term storage alternatives, subalternatives, and related actions, including the No Action Alternative, at LANL is provided below. The potential impacts of implementing these alternatives and related actions at LANL are described in the following sections: land resources, site infrastructure, air quality and noise, water resources, geology and soils, biological resources, cultural and paleontological resources, socioeconomics, public and occupational health and safety, and waste management.

Proposed Storage Activities at Los Alamos National Laboratory

- **No Action Alternative (Preferred Alternative):** Continue to store LANL Pu material in the modified NMSF in stabilized form pursuant to DNFSB Recommendation 94-1.
- **Upgrade Alternative:** This storage alternative does not apply to LANL.
- **Consolidation Alternative:** This storage alternative does not apply to LANL.
- **Collocation Alternative:** This storage alternative does not apply to LANL.
- **Subalternative Not Including Strategic Reserve and Weapons Research and Development Materials:** This storage subalternative does not apply to LANL.
- **Phaseout:** LANL Pu material would be moved out of LANL to the upgrade, consolidation, or collocation sites (located at another DOE site) or to disposition (for surplus Pu).

4.2.8.1 Land Resources

Preferred Alternative: No Action Alternative

Under this alternative, LANL would continue to store Pu material in the upgraded NMSF in stabilized form pursuant to DNFSB Recommendation 94-1. The ongoing (no new action) activities conform with present and future land-use plans, policies, and controls; therefore, no direct or indirect impacts to land resources would be anticipated beyond those of existing and future activities that are independent of the proposed action.

Phaseout

No new construction or upgrade of existing facilities would occur under the phaseout of the Pu mission at LANL. Pu material would be moved out of LANL to the upgrade, consolidation or collocation sites, or to disposition. Potential impacts on visual resources could occur if facilities are not maintained.

4.2.8.2 Site Infrastructure

For selected site infrastructure parameters, Table 4.2.8.2–1 shows the site availability, projected usage under No Action, and projected usage following phaseout of surplus Pu storage at LANL. Adequate infrastructure is available to accommodate all projected site missions.

Table 4.2.8.2–1. Site Infrastructure Changes Required for Operation at Los Alamos National Laboratory (Annual)—No Action (2005) and Storage Phaseout

	Transportation		Electrical		Fuel		
	Roads (km)	Rail (km)	Energy (MWh/yr)	Peak Load (MWe)	Oil (l/yr)	Natural Gas (m^3/yr)	Coal (t/yr)
No Action							
Site Availability	137	0	500,000	100	0	103,368,000	0
Projected usage	137	0	381,425	87	0	43,414,560	0
Amount required in excess of site availability	0	0	0	0	0	0	0
Phaseout							
Projected usage with storage phaseout	137	0	381,425	87	0	43,414,560	0
Amount required in excess of site availability	0	0	0	0	0	0	0

Source: LANL 1995b:1.

Preferred Alternative: No Action Alternative

Under No Action, weapons-usable Pu materials would be stabilized pursuant to DNFSB Recommendation 94-1, with all identified Pu ES&H vulnerabilities addressed in accordance with LANL's proposed *Corrective Action Plan*. Consistent with this plan, Pu materials not required for operational use would be stored in the renovated NMSF.

Phaseout

Phaseout of the Pu storage mission at LANL would have no impact on the existing facilities and site infrastructure. The storage facilities would remain for operational use, and utility consumption would remain constant.

4.2.8.3 Air Quality and Noise

Activities associated with the No Action Alternative would generate criteria and toxic/hazardous pollutants. The Pu Storage Phaseout Alternative would result in a decrease of criteria and toxic/hazardous pollutants over the No Action Alternative. To evaluate the air quality impacts at LANL, criteria and toxic/hazardous concentrations from the No Action Alternative are compared with Federal and State standards and guidelines. Impacts from radiological airborne emissions are described in Section 4.2.8.9.

Emission rates attributed to site operations (No Action) are presented in Table F.1.2.9–1. Air pollutant emission sources associated with operations include the following:

- Operation of existing boilers for space heating
- Operation of diesel generators and periodic testing of emergency diesel generators
- Exhaust and road dust generated by vehicles delivering supplies and bringing employees to work
- Toxic/hazardous pollutant emissions from facilities processes

Noise impacts during phaseout are expected to be low. Air quality and noise impacts for each alternative are described separately. Supporting data for the air quality and noise analyses are presented in Appendix F.

AIR QUALITY

An analysis was conducted of the potential air quality impacts of emissions for the Pu Storage Phaseout Alternative as described in Section 4.1.3.

Section 176 (c) of the 1990 CAA amendments requires that all Federal actions conform with the applicable SIP. The EPA has implemented rules that establish the criteria and procedures governing the determination of conformity for all Federal actions in nonattainment and maintenance areas. These are discussed in Section 4.1.3. The attainment status of the area in which LANL is located is discussed in Section 3.9.3. Since the area is considered to be an attainment area for the criteria pollutants, the proposed actions at this site do not require that a conformity analysis be performed.

Preferred Alternative: No Action Alternative

This alternative utilizes estimated air emissions data from total site operations at LANL, assuming continuation of site missions to calculate pollutant concentrations at or beyond the LANL site boundary. The emission rates for criteria and toxic/hazardous pollutants for No Action are presented in Table F.1.2.9–1. Table 4.2.8.3–1 presents the No Action concentrations calculated from the 2005 emission rates. In this table, pollutant concentrations are compared with applicable Federal and State regulations and guidelines. Concentrations are expected to remain within these standards.

Phaseout

Phaseout of existing Pu inventories as a result of consolidating Pu at another site is expected to result in a small reduction in air pollutant concentrations from the No Action concentrations. Concentrations are expected to remain within the standards.

Table 4.2.8.3–1. Estimated Operational Concentrations of Pollutants at Los Alamos National Laboratory and Comparison With Most Stringent Regulations or Guidelines—No Action (2005)

Pollutant	Averaging Time	Most Stringent Regulations or Guidelines ($\mu g/m^3$)	No Action ($\mu g/m^3$)
Criteria Pollutants			
Carbon monoxide	8-hour	7,689[a]	115
	1-hour	11,578[a]	630
Lead	Calendar Quarter	1.5[b]	<0.01
Nitrogen dioxide	Annual	73[a]	3.8
	24-hour	145[a]	[c]
Ozone	1-hour	235[b]	[d]
Particulate matter	Annual	50[b]	8
	24-hour	150[b]	21
Sulfur dioxide	Annual	40[a]	1.3
	24-hour	202[a]	[c]
	3-hour	1,300[b]	[c]
Mandated by New Mexico			
Hydrogen sulfide	1-hour	11[a]	[c]
Total reduced sulfur	30-minute	3[a]	[c]
Total suspended particulates	Annual	60[a]	8
	30-day	90[a]	<21
	7-day	110[a]	<21
	24-hour	150[a]	21
Hazardous and Other Toxic Compounds			
Acetic acid	8-hour	250[a]	2.87
Ammonia	8-hour	180[a]	4.27
2-Butoxyethanol	8-hour	1,200[a]	0.66
Chloroform	8-hour	[e]	2.61
Ethyl acetate	8-hour	14,000[a]	0.44
Ethylene glycol	8-hour	[e]	0.39
Formaldehyde	8-hour	[e]	0.24
Heptane (N-heptane)	8-hour	[e]	9.06
Hexane (N-hexane)	8-hour	[e]	0.41
Hydrogen chloride	8-hour	[e]	3.41
Hydrogen fluoride	8-hour	[e]	1.29
Isopropyl alcohol	8-hour	9,800[a]	2.88
Kerosene	8-hour	[e]	1.27
Methyl alcohol	8-hour	[e]	3.14
Methyl ethyl ketone	8-hour	[e]	9.95
Methylene chloride	8-hour	[e]	5.90
Nickel	8-hour	10[a]	0.27
Nitric acid	8-hour	50[a]	3.53
Nitrogen oxide	8-hour	[e]	2.29
Propane sultone	8-hour	400[a]	1.00
Stoddard solvent	8-hour	5,250[a]	1.41
Toluene	8-hour	[e]	13.26

Table 4.2.8.3–1. Estimated Operational Concentrations of Pollutants at Los Alamos National Laboratory and Comparison With Most Stringent Regulations or Guidelines—No Action (2005)—Continued

Pollutant	Averaging Time	Most Stringent Regulations or Guidelines (μg/m³)	No Action (μg/m³)
Hazardous and Other Toxic Compounds (continued)			
Tungsten (as W) (insoluble)	8-hour	50[a]	0.53
1,1,2-Trichloroethane	8-hour	e	4.95
Trichloroethylene	8-hour	e	1.12
VM&P naphtha	8-hour	13,500[a]	3.27
Xylene	8-hour	e	9.41

[a] State standard or guideline. The conversion from ppm to mg/m³ for ambient air quality standards is calculated with the corrections for temperature (21 °C) and pressure (elevation) (2,250 m MSL).
[b] Federal standard.
[c] No monitoring data available, concentration assumed less than applicable standard.
[d] Ozone, as a criteria pollutant, is not directly emitted or monitored by the site. See Section 4.1.3 for a discussion of ozone-related issues.
[e] No State standard for indicated averaging time.
Source: 40 CFR 50; LANL 1994a; NM EIB 1995a; NM EIB 1996a.

NOISE

The location of the fissile materials storage facilities relative to the site boundary and sensitive receptors was examined to evaluate the potential for onsite and offsite noise impacts. Traffic would occur onsite and along offsite large and regional transportation routes used to bring materials and workers to the site.

Preferred Alternative: No Action Alternative

Nontraffic noise sources associated with continued interim storage and other ongoing missions are the same as described in Section 3.9.3. The continuing operations at LANL would result in no appreciable change from current levels in traffic noise and onsite operational noise. Nontraffic noise sources are located at sufficient distance from offsite areas that the contribution to offsite noise levels would continue to be small. Noise emissions from construction equipment and operations activities would not be expected to cause annoyance to the public due to the size of the site. Some noise sources may result in impacts, such as disturbance of wildlife.

Phaseout

A reduction in noise levels associated with facility operations may result from the phaseout of storage facilities.

4.2.8.4 Water Resources

Impacts associated with the No Action and phaseout of Pu storage facilities at LANL would not affect water resources. The vast majority of water used at LANL would be to continue to be supplied by three DOE-owned well fields. Wastewater would continue to be discharged to Los Alamos, Sandia, and Mortandad Canyons. Table 4.2.8.4–1 presents No Action water resources uses and discharges and the potential changes to water resources at LANL resulting from phaseout.

Table 4.2.8.4–1. No Action and Potential Changes to Water Resources at Los Alamos National Laboratory—No Action (2005) and Storage Phaseout

Affected Resource Indicator	No Action	Phaseout
Water Source	Ground	Ground
Construction		
Water Availability and Use		
Total water requirements (million l/yr)	NA[a]	0
Percent increase in projected water usage[b]	NA[a]	0
Water Quality		
Total wastewater discharge (million l/yr)	NA[a]	0
Percent change in wastewater discharge[c]	NA[a]	0
Operation		
Water Availability and Use		
Total water requirements (million l/yr)	5,760[a]	0
Percent increase in projected water usage[d]	0	0
Water Quality		
Total wastewater discharge (million l/yr)	693	0
Percent change in wastewater discharge[e]	0	0
Floodplain		
Is action in 100-year floodplain?	No	No
Is critical action in 500-year floodplain?	No	No

[a] See operations section of table for No Action water data.

[b] Percent increase in projected water usage during phaseout at LANL is calculated by dividing No Action water requirements (5,760 million l/yr) with that for storage phaseout (0 l/yr).

[c] Percent change in wastewater discharge during phaseout at LANL is calculated by dividing No Action water discharges (693 million l/yr) with that for storage phaseout (0 l/yr).

[d] Percent increase in projected water usage during operation at LANL is calculated by dividing No Action water requirements (5,760 million l/yr) with that for storage phaseout (0 l/yr).

[e] Percent change in wastewater discharge during operation at LANL is calculated by dividing No Action water discharges (693 million l/yr) with that for storage phaseout (0 l/yr).

Note: NA=not applicable.

Source: LANL 1995b:1.

Preferred Alternative: No Action Alternative

Surface Water. A description of the activities that would continue at LANL is provided in Section 3.9. For No Action, treated wastewater discharged to Los Alamos, Sandia, and Mortandad Canyons is expected to remain at 693 million l/yr (183 million gal/yr). No surface water would be withdrawn for drinking water or facility operations.

Groundwater. Under this alternative, minimal impacts to groundwater resources are anticipated. Groundwater withdrawals are expected to increase from 5,519 million l/yr to 5,760 million l/yr (1,460 million gal/yr to 1,520 million gal/yr). No additional impacts to groundwater quality are expected because there are no direct discharges to groundwater.

Phaseout

Phaseout of Pu storage at LANL would not involve any new construction. Because existing facilities are not located in the 100- or 500-year floodplains, phaseout would not affect floodplains.

Surface Water. The phaseout would not result in an incremental change in the total wastewater volume handled at LANL. No impacts to flow or water quality of the receiving canyons would occur. There would be no impact to surface waters from phaseout activities.

Groundwater. The phaseout would not result in an incremental change in the total volume of groundwater withdrawn at LANL. No impacts to groundwater availability would occur. A minor beneficial impact on groundwater resources would occur due to the lessened potential for degradation of water quality. Spill protection systems and plans exist to contain and minimize effects of releases of hazardous substances during phaseout activities. Given normal safeguards and procedures, no impact to groundwater quality would be expected to result from activities associated with the phaseout of Pu storage functions at LANL.

4.2.8.5 Geology and Soils

Impacts to the geologic and soil resources occur during, or as a result of, ground-disturbing activities. LANL is considered only for the No Action Alternative and under the phaseout process. As discussed below, neither of these activities involves new construction and therefore would have no effect on geologic and soil resources at the site.

Preferred Alternative: No Action Alternative

Under the No Action Alternative, DOE would continue current and ongoing activities at LANL. There would be no new ground-disturbing activities beyond those already associated with existing and future site improvements. Because no new construction (associated with this program) or associated ground disturbance for potential soil erosion would occur, the No Action Alternative would have no effect on geologic or soil resources at the site.

Phaseout

The phaseout of storage capacity would have no apparent effects on the geology. However, phaseout could result in beneficial effects on the soils of the area. Hazardous, radioactive and mixed waste sources would be reduced or eliminated from the area, thus decreasing the potential for future soil contamination.

4.2.8.6 Biological Resources

Preferred Alternative: No Action Alternative

The Pu storage mission described in Section 2.2.8 would continue at LANL. This would result in no appreciable change in current conditions of biological resources at LANL as described in Section 3.9.6.

Phaseout

Pu materials at LANL would be phased out of operation. The phaseout of Pu storage facilities is not expected to affect biological resources, although increased human activity could temporarily disturb some wildlife species in the vicinity of the site.

4.2.8.7 Cultural and Paleontological Resources

Preferred Alternative: No Action Alternative

Under this alternative, DOE would continue the existing and planned mission at LANL. This includes continued storage of Pu material in the upgraded NMSF in stabilized forms pursuant to DNFSB Recommendation 94-1. Any impacts to cultural or paleontological resources from these missions would be independent of the proposed action and would be addressed through separate NHPA, *American Indian Religious Freedom Act*, and *Native American Graves Protection and Repatriation Act* regulatory compliance procedures.

Phaseout

For this alternative, all Pu materials at LANL within the scope of this PEIS would be transferred to another site and the storage mission would be phased out. Impacts to prehistoric resources are not anticipated because phaseout is not expected to result in ground-breaking activity. None of the formations within LANL are known to be fossiliferous, so no effects to paleontological resources are expected either. Phaseout may affect, through alteration, if subsequently proposed, some of the historic structures at LANL that have been identified as NRHP-eligible. Native American resources are not expected to be affected.

4.2.8.8 Socioeconomics

Preferred Alternative: No Action Alternative

Regional Economy Characteristics. Total employment in the REA is projected to increase less than 2 percent annually between 1995 and 2000, reaching 122,000 in the latter year. Long-range projections indicate slower growth after the year 2000, when employment would increase over 1 percent annually and reach approximately 179,300 persons in 2040. Unemployment in the REA was 6.2 percent in 1994 and is expected to remain at this level into the near future. Per capita income is projected to increase from approximately $18,259 in 1995 to $29,221 in 2040. Projections for the No Action Alternative are presented in Table L–73.

Population and Housing. Population in the ROI is projected to increase from approximately 169,900 in 1995 to 272,000 by 2040. The total number of housing units in the ROI is projected to increase from about 71,100 in 1995 to 113,900 in 2040. Population and housing projections for the No Action Alternative are presented in Tables L–74 and L–75, respectively.

Community Services. Education, public safety, and health care characteristics are used to assess the level of community services in the LANL ROI. School enrollments are projected to increase from about 26,310 students in 1995 to 42,130 students by 2040. The current student-to-teacher ratio is 17.3:1. To maintain this level of service, the number of teachers in the ROI would need to increase from approximately 1,518 in 1995 to 2,431 in 2040. These projections are presented in Tables L–76 and L–77.

The projected numbers of sworn police officers and firefighters serving in ROI communities over the period 1995 to 2040 are shown in Tables L–78 and L–79, respectively. Under No Action, the number of sworn police officers is projected to increase from approximately 267 in 1995 to 428 in 2040 to maintain the current service level of 1.6 sworn officers per 1,000 persons. The number of firefighters in the ROI would need to increase from about 800 in 1995 to 1,280 in 2040 to maintain the present service level of 4.7 firefighters per 1,000 persons.

Hospital occupancy rates are based on current capacity. These rates and the estimated number of practicing physicians serving the ROI population between 1995 and 2040 are presented in Tables L–80 and L–81, respectively. Hospital occupancy rates are projected to increase from approximately 32 percent in 1995 to 51 percent in 2040. To maintain the current physician-to-population ratio of 1.9 per 1,000 persons, the total number of physicians in the ROI would need to increase from approximately 316 in 1995 to 506 in 2040.

Local Transportation. Any increases in traffic would be due to projected growth in the area unrelated to DOE activities. The only alternative considered at LANL is Phaseout which involves no change in employment. Since there would be no impacts, modeling was not performed.

Phaseout

Phasing out of Pu storage at LANL would result in no loss of jobs in the REA. Workers currently employed in this storage area would be relocated to other areas. Thus, the socioeconomic effects for Phaseout would be the same as discussed under No Action (Socio 1996a).

4.2.8.9 Public and Occupational Health and Safety

Assessments have been made of potential radiological and chemical impacts associated with the No Action Alternative at LANL. A discussion of reduced impacts associated with the phaseout of existing Pu storage is also presented. Summaries of radiological impacts from normal operations are presented in Tables 4.2.8.9–1 and 4.2.8.9–2 for the public and workers, respectively. Impacts from hazardous chemicals are presented in Table 4.2.8.9–3. Impacts associated with postulated accidents are addressed in this section.

Preferred Alternative: No Action Alternative

This section describes the radiological and hazardous chemical releases and their associated impacts resulting from either normal operation or accidents involved with the current sitewide mission including interim storage of Pu at LANL. The section describes the impacts from normal operation, then describes the potential risks of impacts from facility accidents.

The impacts on the public and on workers under the No Action Alternative during normal operation at LANL would be within applicable regulatory limits.

Normal Operation. The current mission at LANL, where Pu is in interim storage, is described in Section 3.9. The site has identified those facilities that will continue to operate under the No Action Alternative, including interim Pu storage facilities. Radiological and chemical impacts on the public and workers at LANL are described below.

Radiological Impacts. The calculated annual dose to the average and maximally exposed members of the public, the associated fatal cancer risks to these individuals from 50 years of total site operation, the dose to the population within 80 km (50 mi) from total site operation in the year 2030, and the projected number of fatal cancers in this population from 50 years of operation are presented in Table 4.2.8.9–1 under this alternative at LANL. The annual dose of 6.5 mrem to the MEI is within the radiological limits specified in NESHAPS (40 CFR 61, Subpart H) and DOE Order 5400.5. The annual dose of 2.7 person-rem to the population would be within the limit in proposed 10 CFR 834. To put operational dose impacts into perspective, comparisons with doses from natural background radiation are included in the table.

The Pu storage component of the No Action Alternative is not expected to contribute to public impacts since the radiological releases from storage are anticipated to be virtually zero.

The average annual dose to a site worker and the associated risk of fatal cancer from 50 years of total site operations, and the annual dose to the total site workforce and the projected number of fatal cancers from 50 years of total site operations, are presented in Table 4.2.8.9–2 for the No Action Alternative at LANL.

Hazardous Chemical Impacts. Hazardous chemical impacts on the public resulting from the normal operation under No Action at LANL are presented in Table 4.2.8.9–3. The noncancerous health effects expected and the risk of cancer due to the total chemical exposures, must be estimated for each site. Since the major releases due to normal operation at LANL would make up nearly all of the exposures to onsite workers and to the public in adjacent communities, contributions to the hazardous chemical concentrations from all other sources, for example, industrial operations, are considered negligible for purposes of risk calculations.

The HI for the MEI of the public at LANL resulting from normal operation under the No Action Alternative is 3.0×10^{-2}, and the cancer risk is 5.2×10^{-6}. The HI to the onsite worker is 4.7×10^{-2}, and the cancer risk is 1.5×10^{-4}.

Facility Accidents. Under the No Action Alternative, Pu would continue to be stored at the site in existing facilities. These facilities currently operate in accordance with DOE Orders which ensure that the risk to the public of prompt fatalities due to accidents or cancer fatalities due to operations will be in accordance with the

Table 4.2.8.9–1. Potential Radiological Impacts to the Public During Normal Operation at Los Alamos National Laboratory—No Action

Receptor	No Action
Annual Dose to the Maximally Exposed Individual Member of the Public[a]	
Atmospheric release pathway (mrem)	5.7
Drinking water pathway (mrem)	0
Total liquid release pathway (mrem)	0.80
Atmospheric and liquid release pathways combined (mrem)	6.5
Percent of natural background[b]	1.9
50-year fatal cancer risk	1.6×10^{-4}
Population Dose Within 80 Kilometers for Year 2030[c]	
Atmospheric release pathways (person-rem)	2.7
Total liquid release pathways (person-rem)	~0[d]
Atmospheric and liquid release pathway combined (person-rem)	2.7
Percent of natural background[b]	2.8×10^{-3}
50-year fatal cancers	0.068
Annual Dose to the Average Individual Within 80 Kilometers[e]	
Atmospheric and liquid release pathways combined (mrem)	9.7×10^{-3}
50-year fatal cancer risk	2.4×10^{-7}

[a] The applicable radiological limits for an individual member of the public from site operations are 10 mrem per year from the air pathways, as required by NESHAPS (40 CFR 61, Subpart H) under the CAA; 4 mrem per year from the drinking water pathway as required by the SDWA; and 100 mrem per year from all pathway combined. Refer to DOE Order 5400.5.

[b] The annual natural background radiation level at LANL is 342 mrem for the average individual; the population within 80 km in the year 2030 receives 95,000 person-rem.

[c] For DOE activities, proposed 10 CFR 834 (see 58 FR 16268) would generally limit the potential annual population dose to 100 person-rem from all pathways combined.

[d] Although the maximally exposed individual receives a dose, no population groups are exposed to any liquid pathways.

[Text deleted.]

[e] Obtained by dividing the population dose by the number of people projected to live within 80 km of the site in 2030 (278,000).

Note: It is assumed that these doses will not be exceeded in the future under the No Action Alternative. Further, impacts from the Pu storage component of the No Action Alternative are taken to be zero (refer to the text).

Source: LANL 1995s.

Table 4.2.8.9–2. Potential Radiological Impacts to Workers During Normal Operation at Los Alamos National Laboratory—No Action

Receptor	No Action
Involved Workforce[a]	
Average worker dose (mrem/yr)[b]	250
50-year risk of fatal cancer	5.0×10^{-3}
Total dose (person-rem/yr)	12.5
50-year fatal cancers	0.25
Noninvolved Workforce[c]	
Average worker dose (mrem/yr)[b]	32
50-year risk of fatal cancer	6.4×10^{-4}
Total dose (person-rem/yr)	183
50-year fatal cancers	3.7
Total Site Workforce[d]	
Dose (person-rem/yr)	196
50-year fatal cancers	3.9

[a] The involved worker is a worker associated with operations of interim Pu storage. It is assumed that there are 50 workers, badged with dosimeters to monitor radiation exposure, with a conservatively estimated average dose of 250 mrem/yr per worker. However, an effective ALARA program will ensure that the exposure will be reduced to that level which is as low as reasonably achievable.

[b] The radiological limit for an individual worker is 5,000 mrem/year (10 CFR 835). However, DOE has also established an administrative control level of 2,000 mrem/yr (DOE 1992t); the site must make reasonable attempts to maintain doses below this level.

[c] The noninvolved worker is a worker onsite but not associated with interim Pu storage operations. The projected number of noninvolved badged workers in 2005, and beyond, is 5,720.

[d] The impact to the total workforce is the summation of the involved worker impact and the noninvolved worker impact.

[Text deleted.]

Source: DOE 1993n:7.

Table 4.2.8.9–3. Potential Hazardous Chemical Impacts to the Public and Workers During Normal Operation at Los Alamos National Laboratory—No Action

Receptor	No Action
Maximally Exposed Individual (Public)	
Hazard Index[a]	3.0×10^{-2}
Cancer risk[b]	5.2×10^{-6}
Worker Onsite	
Hazard Index[c]	4.7×10^{-2}
Cancer risk[d]	1.5×10^{-4}

[a] Hazard Index for MEI: sum of individual Hazard Quotients (noncancerous health effects) for MEI.

[b] Cancer risk for MEI=(emissions for 8-hr) x (0.286 [converts concentrations to doses]) x (slope factor [SF]).

[c] Hazard Index for workers: sum of individual Hazard Quotients (noncancerous health effects) for workers.

[d] Cancer risk for workers= (emissions for 8-hr) x (0.286 [converts concentrations to doses]) x (0.237[fraction of year exposed]) x (0.571 [fraction of lifetime working]) x (SF).

Source: Section M.3, Table M.3.4–27.

DOE safety goals. The safety to workers and the public from accidents at existing facilities is also controlled by Technical Safety Requirements specified in detail in a SAR or Basis for Interim Operations document prepared and maintained specifically for a facility or process within a facility. Under these controls, any change in approved operations or to facilities would cause a halt in operations until it can be established that worker and public safety has not been compromised.

Phaseout

Normal Operation. There are virtually no radiological or hazardous chemical releases associated with the storage of Pu at LANL under the No Action Alternative. Therefore, the phaseout of the Pu storage would not result in any impact changes. All workers involved in the removal of Pu from LANL would be monitored to ensure that their doses remain within acceptable levels.

Facility Accidents. The phaseout operation will be conducted in accordance with DOE Orders to ensure that the risk to the public of prompt fatalities due to accidents or of cancer fatalities due to operations will be minimized. For current operations in the facility that would be phased out, the safety of workers and the public from accidents is controlled by Technical Safety Requirements that are specified in SARs or Basis for Interim Operations documents that have been prepared for the facility. Prior to initiating phaseout, the potential for accidents that could impact workers and the public will be assessed and, if necessary, applicable existing safety documentation will be modified to ensure safety for workers and the public.

4.2.8.10 Waste Management

This section summarizes the impacts on wastes management at LANL under No Action and the phaseout of Pu storage. There is no spent nuclear fuel or HLW associated with Pu storage. Table 4.2.8.10-1 lists the projected waste generation rates and treatment, storage, and disposal capacities under No Action for 2005. Projections for No Action were derived from the most recent available environmental data, with appropriate adjustments made for those changing operational requirements where the volume of wastes generated are identifiable. The projection does not include wastes from future, yet uncharacterized, environmental restoration activities. The projections for No Action could change depending on decisions resulting from the PEIS on waste management being prepared by the Department. Facilities that would support the storage of Pu would treat and package all waste generated into forms that would enable staging and/or disposal in accordance with RCRA and other relevant statutes. Depending in part on decisions in waste-type-specific RODs for the Waste Management PEIS, wastes could be treated and disposed of onsite or at regionalized or centralized DOE sites. For the purposes of analyses only, this PEIS assumes that TRU and mixed TRU waste would be treated onsite to the current planning-basis WIPP WAC, and shipped to WIPP for disposal. This PEIS also assumes that LLW, mixed LLW, hazardous, and nonhazardous waste would be treated and disposed of in accordance with current site practice.

Preferred Alternative: No Action Alternative

Under No Action, TRU, low-level, mixed, hazardous, and nonhazardous wastes would continue to be generated at LANL from the missions outlined in Section 3.9. LANL would continue to treat, store, and dispose of its legacy and newly generated wastes in current and planned facilities. Waste management activities at LANL are categorized as regulatory compliance and project administration, waste minimization, waste treatment, waste storage, and waste disposal. Within each category of waste management activity, various wastes are handled according to waste type as defined by various DOE Orders, as well as Federal and State regulations. Applicable permitting, treatment, storage, and disposal requirements are determined according to these waste types.

Liquid TRU waste would continue to be generated at the Plutonium Facility (TA-55). The residual TRU waste sludge that remains after treatment would continue to be loaded into 208-l (55-gal) steel drums, solidified, and transported to Area G for storage. Solid TRU waste would be characterized, certified to meet the current planning-basis criteria for acceptance at WIPP or an alternative treatment level, and placed in storage at Area G pending decisions made in the ROD associated with the supplemental EIS for the proposed continued phased development of WIPP for disposal of TRU waste and the approval of WIPP as a repository for these wastes pursuant to the requirements of 40 CFR 191 and 40 CFR 268. A new planned facility for characterizing and processing solid TRU waste is projected to be operational in 2006.

Liquid LLW would be neutralized and solidified in two onsite treatment facilities. Depending on decisions from the site-wide EIS, solid LLW would be compacted, packaged, and stored for disposal either in an onsite, expanded Area G LLW burial site or through other disposal options. Liquid mixed waste would undergo neutralization/pH adjustment, oxidation/reduction, precipitation, chelation/flocculation, and filtration. Both liquid and solid mixed waste would be treated and disposed of according to the LANL Site Treatment Plan that was developed pursuant to the *Federal Facility Compliance Act*. The resulting waste would then be stored in a RCRA-permitted facility in DOT-approved containers until it is shipped to an offsite DOE disposal facility. Some of this waste would be placed in interim storage until new technologies for treatment and disposal are identified and evaluated. Liquid sanitary wastes would be treated by a consolidation and collection system and discharged to NPDES permitted sanitary tile fields. Solid nonhazardous waste would be disposed of in a regional commercial disposal facility.

Table 4.2.8.10–1. Projected Waste Management Under No Action (2005) at Los Alamos National Laboratory

Category	Annual Generation (m^3)	Treatment Method	Treatment Capacity (m^3)	Storage Method	Storage Capacity (m^3)	Disposal Method	Disposal Capacity (m^3)
Transuranic							
Liquid	0.1	Pretreatment at TA-50: neutralization, clariflocculation, filtration, precipitation, cement mixing	132,659	NA	NA	NA	NA
Solid	54	Volume reduction	51,989	Storage pads at TA-54, modified LLW burial pits and shafts	24,355	None: Federal repository in the future	None
Mixed Transuranic							
Liquid	None	Included in TRU	Included in TRU	NA	NA	NA	NA
Solid	255	Included in TRU	Included in TRU	Included in TRU	Included in TRU	None: Federal repository in the future	None
Low-Level							
Liquid	21,400	Chemical treatment and ion-exchange, solidification; and volume reduction (vial crusher)	45 m^3/hr	Chemical and Ion-Exchange Plant at TA-50 and the Chemical Plant at TA-21	663	Treatment effluent is discharged to the environment. Residual sludge is solidified and disposed of at TA-54, Area G as solid LLW	None
Solid	2,690	Compaction	76	TA-54 in Area G	Variable	Currently solid LLW goes to TA-54, Area G for burial. Continued construction at Area G under evaluation in the site-wide EIS	24 to 28 ha
Mixed Low-Level							
Liquid	0	Neutralization, precipitation, oxidation, thermal treatment; solidification; volume reduction; liquid scintillation cocktail vials	Capabilities under development per site treatment plan	RCRA-permitted bldgs. (not built yet) and interim status container storage areas	583	NA	None

Table 4.2.8.10–1. Projected Waste Management Under No Action (2005) at Los Alamos National Laboratory—Continued

Category	Annual Generation (m^3)	Treatment Method	Treatment Capacity (m^3)	Storage Method	Storage Capacity (m^3)	Disposal Method	Disposal Capacity (m^3)
Solid	45	None	Capabilities under development per site treatment plan	TA-54, Area L, or G	1,864	Capabilities under development as per Site Treatment Plan for Mixed Wastes	None
Hazardous							
Liquid	273	Thermal treatment, treatment tanks, neutralization, precipitation, and evaporation	Varies depending on the waste stream	Thermal treatment TAs-14, -15, -16, - 36, and -39 and storage and treatment at TA-54, Area L	502	Offsite	NA
Solid	669	Thermal treatment and flashpad	Varies depending on the waste stream	Thermal treatment TAs-14, -15, -16, - 36, and -39 and storage and treatment at TA-54, Area L	502	Offsite	NA
Nonhazardous (Sanitary)							
Liquid	692,827	Filtration, settling, and stripping	1,060,063	NA	NA	Permitted discharge sanitary tile fields	2,271,240 liters/day
Solid	5,453	None	None	NA	NA	Offsite county landfill and onsite landfill Area J	NA
Nonhazardous (Other)							
Liquid	Included in sanitary	See sanitary	Included in sanitary	NA	NA	See sanitary	Included in sanitary
Solid	Included in sanitary	None	None	NA	NA	See sanitary	NA

Note: NA=not applicable.
Source: LANL 1990a; LANL 1994b.

Phaseout

Upgrades to facilities at the site may be required in order to ensure compliance with all applicable Federal and State laws, DOE Orders, and standing agreements during the transition. The small amount of waste associated with Pu storage would no longer be generated.