

Planning Basis Option) would be disposed of in the Tank Farm and bin sets. Under this alternative, small amounts of residual waste could leach into groundwater; however, concentrations of these wastes in groundwater would be below levels known to cause adverse health effects (see Section 5.3.8). The closed facility would be monitored for the long term, as would groundwater in the vicinity.

Under Performance-Based Closure with Class C Grout Disposal, facilities would be closed as described under the Performance-Based Closure Alternative, but following completion of these activities low-level waste Class C type Grout (produced under the Transuranic Separations Option) would be disposed of in the Tank Farm and bin sets. Under this alternative, small amounts of residual waste could leach into groundwater; however, concentrations of these wastes in groundwater would be below levels known to cause adverse health effects (see Section 5.3.8). The closed facility would be monitored for the long term, as would groundwater in the vicinity.

5.3.5.2 Long-Term Impacts

In addition to the short-term impacts evaluated in Section 5.3.5.1, DOE has also calculated the potential long-term impacts that may occur as a result of closure activities. Because the residual contamination that could be released to the environment is underground, the primary means by which contamination could reach receptors is through leaching into the soil surrounding the facilities and eventually into *the Snake River Plain Aquifer* near the facilities.

No additional long-term impacts would be expected from implementing any of the waste processing alternatives because all newly constructed facilities would be designed and constructed consistent with measures that facilitate clean closure.

DOE performed modeling of the movement of contaminants using the computer codes MEPAS and TETRAD. Contaminants were postulated to leach from the facilities following an assumed instantaneous structural failure at 500 years post-closure. After this structural failure occurs, rain-

water is assumed to infiltrate and leach some of the contaminants and transport them downward to the aquifer.

DOE calculated the maximum concentration of the individual contaminants in the aquifer for comparison to the EPA drinking water standards in 40 CFR 141. Concentrations of nonradiological constituents may be directly compared to the standards while beta-gamma emitting contaminants must be compared to the drinking water standards in terms of radiation dose based on a *hypothetical* individual who drinks the water.

Table 5.3-8 presents a comparison of the concentrations (for nonradiological constituents), radiation dose (for radiological contaminants), and drinking water standards for the various facility disposition alternatives. As the table shows, there are a few instances where the peak groundwater concentration could exceed the respective maximum contaminant level. With the exception of technetium-99 in the bin sets - No Action scenario, all radionuclide concentrations are well below their MCLs. *With the exception of cadmium, all nonradionuclide concentrations are within currently specified limits. Cadmium concentrations could exceed the maximum contaminant level under the bin sets - No Action scenario and the scenarios involving disposal of Class A or C-type grout in a Low-Activity Waste Disposal Facility. Additional details regarding methodology and results of the long-term facility disposition modeling are presented in Appendix C.9.*

5.3.6 ECOLOGICAL RESOURCES

Facility disposition includes a number of activities that would occur after HLW *management* facilities are no longer operational. After waste management operations are completed, HLW treatment and storage facilities at INTEC would be deactivated. *The INEEL Comprehensive Land Use Plan* (DOE 1997) discusses the changing mission of INTEC and the planned disposition of surplus facilities. It notes that DOE's goal is to place surplus INEEL facilities in a safe, stable shutdown condition and monitor them while awaiting decommissioning. HLW *management* facilities would be decontaminated to the extent practicable, then, depending on the

Table 5.3-8. Projected long-term peak groundwater concentrations for contaminants associated with the facility disposition scenarios.

Contaminant	Contaminant concentration (picocuries per liter or milligrams per liter)		Concentration as a percent of MCL	Time (years after closure) of peak concentration
	Calculated peak groundwater concentration	Reference maximum contaminant level (MCL) ^a		
Tank Farm - No Action				
Technetium-99	440	900	49	600
Iodine-129	0.19	1.0	19	700
Cadmium	5.2×10^{-4}	5.0×10^{-3}	10	3,200
Fluoride	1.2×10^{-4}	4.0	< 1	2,800
Nitrate	0.62	44 ^b	1.4	600
Bin Sets - No Action				
Technetium-99	2.6×10^3	900	290	600
Iodine-129	0.51	1.0	51	800
Cadmium	0.011	5.0×10^{-3}	210	6,500
Fluoride	5.1×10^{-3}	4.0	< 1	10,000
Nitrate	0.048	44	< 1	600
Tank Farm - Performance-Based Closure or Closure to Landfill Standards				
Technetium-99	15	900	1.7	700
Iodine-129	0.13	1.0	13	600
Cadmium	6.8×10^{-5}	5.0×10^{-3}	1.4	3,000
Fluoride	8.1×10^{-7}	4.0	< 1	3,000
Nitrate	2.6×10^{-3}	44	< 1	600
Bin Sets - Performance-Based Closure or Closure to Landfill Standards				
Technetium-99	7.1	900	0.79	900
Iodine-129	2.8×10^{-3}	1.0	0.28	700
Cadmium	7.9×10^{-5}	5.0×10^{-3}	1.6	4,700
Fluoride	4.3×10^{-5}	4.0	< 1	5,000
Nitrate	7.4×10^{-4}	44	< 1	600
New Waste Calcining Facility - Performance-Based Closure or Closure to Landfill Standards				
Technetium-99	0.18	900	< 1	900
Iodine-129	- ^c	1.0	-	-
Cadmium	-	5.0×10^{-3}	-	-
Fluoride	2.8×10^{-6}	4.0	< 1	5,400
Nitrate	1.2×10^{-5}	44	< 1	700
Process Equipment Waste Evaporator - Performance-Based Closure or Closure to Landfill Standards				
Technetium-99	0.19	900	< 1	900
Iodine-129	-	1.0	-	-
Cadmium	-	5.0×10^{-3}	-	-
Fluoride	8.1×10^{-6}	4.0	< 1	1,400
Nitrate	1.2×10^{-5}	44	< 1	700

Table 5.3-8. Projected long-term peak groundwater concentrations for contaminants associated with the facility disposition scenarios (continued).

Contaminant	Contaminant concentration (picocuries per liter or milligrams per liter)		Concentration as a percent of MCL	Time (years after closure) of peak concentration
	Calculated peak groundwater concentration	Reference maximum contaminant level (MCL) ^a		
Tank Farm - Performance-Based Closure with Class A Grout Disposal				
Technetium-99	15	900	< 1	700
Iodine-129	0.18	1.0	24	700
Cadmium	1.1×10 ⁻³	5.0×10 ⁻³	22	6,300
Fluoride	5.2×10 ⁻⁴	4.0	< 1	10,000
Nitrate	0.092	44	< 1	600
Bin Sets - Performance-Based Closure with Class A Grout Disposal				
Technetium-99	7.2	900	< 1	800
Iodine-129	0.071	1.0	7.1	1,200
Cadmium	1.5×10 ⁻³	5.0×10 ⁻³	30	10,000
Fluoride	7.4×10 ⁻⁴	4.0	< 1	10,000
Nitrate	0.47	44	1.1	600
Tank Farm - Performance-Based Closure with Class C Grout Disposal				
Technetium-99	15	900	< 1	700
Iodine-129	0.14	1.0	14	700
Cadmium	5.2×10 ⁻⁴	5.0×10 ⁻³	90	3,200
Fluoride	2.8×10 ⁻⁴	4.0	< 1	3,500
Nitrate	0.013	44	< 1	600
Bin Sets - Performance-Based Closure with Class C Grout Disposal				
Technetium-99	7.7	900	< 1	800
Iodine-129	0.053	1.0	5.3	1,200
Cadmium	1.8×10 ⁻³	5.0×10 ⁻³	36	10,000
Fluoride	9.0×10 ⁻⁴	4.0	< 1	10,000
Nitrate	0.37	44	< 1	600
Disposal of Class A Grout in a New Low-Activity Waste Disposal Facility^d				
Technetium-99	0.90	900	< 1	1,000
Iodine-129	0.55	1.0	55	900
Cadmium	0.012	5.0×10 ⁻³	250	6,500
Fluoride	6.5×10 ⁻³	4.0	< 1	9,300
Nitrate	0.13	44	< 1	700
Disposal of Class C Grout in a New Low-Activity Waste Disposal Facility^d				
Technetium-99	5.7	900	< 1	1,000
Iodine-129	0.39	1.0	39	900
Cadmium	0.014	5.0×10 ⁻³	280	6,000
Fluoride	7.9×10 ⁻³	4.0	< 1	8,000
Nitrate	0.037	44	< 1	700

a. Maximum contaminant levels are drinking water standards specified in 40 CFR 141.

b. The MCL for nitrate in 40 CFR 141 is 10 milligrams per liter for the nitrogen component, which equates to approximately 44 milligrams per liter of nitrate.

c. A dashed line indicates that there is no significant release.

d. The onsite Low-Activity Waste Disposal Facility is described in Section 3.1.3.1.

Environmental Consequences

facility disposition option selected and the facility in question, they would be entombed and left standing, partially removed, completely removed, or returned to (restricted) industrial use. Potential impacts to ecological resources from facility disposition activities were evaluated by reviewing closure plans and project data sheets for disposition of HLW *management* facilities.

After closure, and during the institutional control period, *until* 2095, most areas within the INTEC boundaries will likely be designated restricted-use industrial areas. This use would be consistent with the long-term planning strategy outlined in DOE (1997), which encourages development in established facility areas such as INTEC and discourages the development of undisturbed areas. Following the period of institutional control, legal and administrative use restrictions may be placed on the land. However, for purposes of the analysis in this EIS, the loss of institutional control also means the loss of legal and administrative restrictions, such as deed restrictions. This being the case, any use may be made of the land, including residential or farming, though this is unlikely.

The methods used in this section are the same as those described in Section 5.2.8.

5.3.6.1 Short-Term Impacts

The facility disposition options being considered would primarily affect previously disturbed areas within the existing perimeter of INTEC. None of the closure options being considered would require construction of new facilities outside the existing secure INTEC perimeter. Therefore, no loss or alteration of habitat would occur.

Based on the number of employees required to disposition new facilities (see Section 5.3.2), the largest impacts to ecological resources would be for the Full Separations Option. Facility disposition activities under these options would expose wildlife to movement of personnel and vehicles, noise (from construction equipment, trucks, buses, and automobiles), and night lighting for as long as 4 years. Because the INTEC area provides poor-quality wildlife habitat,



impacts would be limited to disturbance of wildlife in areas adjacent to INTEC. Representative impacts would include disruption of normal feeding, foraging, and nesting activities and, if the intensity of the disturbance is sufficient, displacement of less disturbance tolerant individuals. Other alternatives and options would require fewer employees and would produce generally lower levels of disturbance.

For disposition of existing facilities, the largest impacts would be expected under Clean Closure of the Tank Farm and under Performance-Based Closure of the bin sets. Impacts would be similar to those described in the previous paragraph but would be smaller because fewer employees would be required to disposition these existing facilities.

5.3.6.2 Long-Term Impacts

All newly constructed facilities necessary to implement the waste processing alternatives would be designed and constructed consistent with measures that facilitate clean closure. DOE has evaluated the potential for long-term impacts on the ecology surrounding the facilities after disposition decisions are enacted. Residual contamination at INTEC would occur in the soil or on buried facility surfaces either below grade or within above-grade engineered soil covers. Contaminants could be transported and spread by leaching into the aquifer or by erosion or penetration of contaminated soil by plant roots and vertebrate and invertebrate burrowing animals. This would result in a contaminant pathway to biological receptors. Contaminants brought to the surface may also be carried offsite by animals as plant material or prey or washed into the Big Lost River by erosion. DOE does not foresee that contaminants would concentrate in individuals of a certain species. There is no reason to anticipate long-term impacts to ecological resources within or near the INTEC boundaries.

5.3.7 TRAFFIC AND TRANSPORTATION

No waste or other materials would be shipped offsite from facility disposition activities, so DOE would not expect transportation impacts. This section analyzes impacts to traffic on Highway 20 (from Idaho Falls to the INEEL) from workers involved with facility disposition activities.

5.3.7.1 Methodology for Traffic Impact Analysis

DOE assessed potential traffic impacts based on the number of employees associated with the

disposition of each facility or group of facilities (Section 5.3.2). The impacts associated with facility disposition activities were evaluated relative to baseline or historic traffic volumes on Highway 20. Changes in traffic were used to assess potential changes in level-of-service on the road.

Section 5.2.9 describes the methodology used in the determination of level of service on Highway 20. The level of service is a qualitative measure of operational conditions within a traffic stream as perceived by motorists and passengers. A level-of-service is defined for each roadway or section of roadway in terms of speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience, and safety (TRB 1985).

5.3.7.2 Traffic Impacts

As noted previously in Section 5.2.9, Highway 20 between Idaho Falls and the INEEL is designated Level-of-Service A, which represents free flow.

INEEL employment levels are expected to decrease during the period prior to initiation of facility dispositioning activities due to completion of INEEL missions and most waste processing activities. DOE would retrain and reassign its existing workforce to conduct disposition activities for both new and existing facilities.

Employment levels for facility disposition activities are presented in Table 5.3-1 (new facilities), Table 5.3-2 (Tank Farm and bin sets), and Table 5.3-3 (existing HLW *management* facility groups). Employment levels for disposition of new facilities would be similar to the levels estimated for construction associated with these facilities. With the exception of the Tank Farm facility, employment levels for dispositioning of existing facilities would be lower than for the waste processing alternatives discussed in Chapter 3.

Based on predicted levels of INEEL employment for facility disposition, DOE expects that traffic flows for Highway 20 would be virtually unaffected and the level of service would remain the same.