5.7 Short-term Use Versus Long-term Productivity of the Environment

This section compares ***the*** potential short-term ***effects*** of ***the alternatives analyzed in this EIS*** on the ***use of the*** environment ***with*** the ***potential*** effects on ***its*** long-term productivity. ***Appendix*** C.8 contains a discussion of the relationship between short-term uses of the environment and long-term productivity at Hanford under the Minimum INEEL Processing Alternative.

5.7.1 *NO ACTION ALTERNATIVE*

Short-term use of the existing environment would not change from that described in Chapter 4 of this EIS. Long-term productivity could be impaired through the risk associated with the indefinite storage of mixed transuranic waste/SBW and calcine in the tank farm and bin sets at INTEC. The radioactivity in the mixed transuranic waste/SBW and calcine would decay over thousands of years but the potential for release to the aquifer and surrounding environment would increase as the tank farm and bin sets aged and the level of uncertainty of maintaining institutional controls increased.

5.7.2 CONTINUED CURRENT OPERATIONS ALTERNATIVE

As with the No Action Alternative, short term use of the environment would not change from that described in Chapter 4 of this EIS. There would be some small short-term worker risk and small short term impairment of air quality associated with calcining the remaining mixed transuranic waste/SBW but this would contribute to reducing long term risk and preserving the long term productivity of the environment. The long-long term productivity of the environment could be impaired through the presence and risk associated with the indefinite storage of calcine but the risk associated with the indefinite storage of mixed transuranic waste/SBW would not exist. Thus, the risk to the long term productivity of the aquifer would be less than the No Action Alternative. Radioactivity in the calcine would decay over thousands of years but the potential for release to the surrounding environment would increase as the bin sets aged and the level of uncertainty of maintaining institutional controls increased.

5.7.3 ACTION ALTERNATIVES

In the context of their affects on short-term use versus long-term productivity of the environment the action alternatives are indistinguishable. Each of the action alternatives involves a period of treating mixed transuranic waste/SBW and treating or containerizing calcine during which there would be a small temporary increase in worker risk and impairment to air quality. The short-term use of the environment would not change from that described in Chapter 4 of this EIS. Each of the action alternatives would place the mixed transuranic waste/SBW and calcine in a form suitable for disposal and place the treated waste forms in a disposal facility or repository designed to preserve the long term productivity of the environment and reduce dependence on the effectiveness of institutional controls.

5.8 Irreversible and Irretrievable Commitments of Resources

The irreversible ***or*** irretrievable commitment ***of resources is*** the permanent loss ***of a resource for future uses or alternative purposes. These kinds of*** commitments occur as a result of destruction ***or use*** of a resource (e.g., fossil fuels) that cannot be replaced ***or recovered***. Irreversible and irretrievable commitments of resources ***could*** potentially include land, groundwater, construction materials, and energy resources. Some resources and materials that would be used under each alternative could be recycled and do not represent an irreversible ***or***

irretrievable commitment, ***for example,*** structural and stainless steel used in construction could be recovered and recycled after the completion of project related activities.

Activities at the INEEL ***and at INTEC*** have resulted in the ***chemical and radioactive contamination of*** the Snake River Plain Aquifer ***in localized areas***. ***This has resulted in an irreversible and irretrievable commitment of the groundwater that is actually contaminated.*** Services lost ***due to the contaminants*** include ***possible*** limits on the ***future*** location of wells, ***and use of water for drinking and agricultural production***. Risk of future contamination of groundwater underlying the INTEC, and hence commitment of the groundwater resource, ***would be*** highest under the No Action Alternative.

Borrow materials extracted on the INEEL would be ***used but not actually*** irreversibly and irretrievably committed ***to*** support activities associated with waste processing, facility disposition, ***and environmental restoration***. Materials ***required*** for facility construction, such as structural steel, could ultimately be recycled depending on market conditions. All of these materials are plentiful ***and their*** consumption ***under any alternative analyzed in this EIS*** would not lead to shortages in ***their*** availability. ***Chemicals and other materials, such as nitric acid and titanium or aluminum powder, would be used up or permanently converted to other forms under any of the alternatives involving waste treatment. These materials and chemicals could not be recycled in any volume but none are of strategic importance nor are any in short supply.***

Consumption of fossil fuel during the construction phase would be highest under the Vitrification with Calcine Separations Option, which would require an estimated 0.81 million gallons of fuel per year. The peak annual fossil fuel usage for operations is also highest under this option at 5.0 million gallons per year. Other options would consume substantially less fossil fuel during both construction and operations phases.

The Planning Basis Option has the highest requirement for electrical energy during the construction phase. This option would require up to 6,500 megawatt-hours per year during construction. All other alternatives have lower requirements for electrical energy. ***The Vitrification with Calcine Separations Option has the highest operations-phase energy requirement, 5.2×10^4 megawatt hours per year.*** All other alternatives would require ***less*** electrical energy. Annual energy requirements for facility disposition, including decontamination and decommissioning of new waste processing facilities and closure of existing facilities, would be much lower than peak energy demands identified for waste processing.