

CHAPTER 9: IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

A commitment of resources is irreversible when its primary or secondary impacts limit the future options for a resource. For example, as a landfill receives waste, the primary impact is a limit on waste capacity. The secondary impact is a limit on future land use options. An irretrievable commitment refers to the use of consumption of a resource that is neither renewable nor recoverable for use by future generations.

9.0 INTRODUCTION

Operations at Y-12 National Security Complex (Y-12) under all alternatives would require an irreversible and irretrievable commitment of resources. This section discusses four major resources: land, energy, material, and water that have the potential to be committed irreversibly or irretrievably under the Y-12 Site-Wide Environmental Impact Statement (SWEIS) alternatives.

9.1 LAND

Past activities at Y-12 have led to soil contamination. Soil contaminants include volatile organic compounds, metals, polychlorinated biphenyls, dioxins, and uranium. Although some areas of legacy contamination are in the process of investigation or remediation, testing activities could lead to discovering further contamination in these areas. Contaminated areas are essentially unavailable for other purposes due to a variety of factors. These include construction-related criteria involving soil compacting, regulatory restrictions, and compatibility issues related to U.S. Department of Energy/National Nuclear Security Administration (DOE/NNSA) missions. The total acreage removed from future or unrestricted use is yet-to-be-determined because some sites could require continued monitoring, limited access, limited use, and potentially require other future corrective actions for an extended period of time. Nonhazardous waste from Y-12 would occupy landfill space, thus limiting future land use options at those locations.

9.1.1 Alternative 1 – No Action Alternative

While specific land usage within Y-12 may change, the overall industrial use classification would remain the same through the period addressed in the SWEIS. Because Y-12 would continue to require security and emergency response buffers, real estate associated with eliminating excess facilities would not be released for public use and there would be no local land use changes.

Infrastructure reduction activities would continue to consolidate the industrialized footprint at Y-12, resulting in less runoff and potential for soil erosion.

9.1.2 Alternative 2 – Uranium Processing Facility Alternative

Construction of the Uranium Processing Facility (UPF) would require approximately 35 acres of land, which includes land for a construction laydown area (4 acres) and temporary parking. While specific usage of this land may change, the overall industrial use classification would remain the same. Once operational, the UPF would take up approximately eight acres. No added impact on land would occur during operation because of site design and engineered control measures.

9.1.3 Alternative 3 – Upgrade in-Place Alternative

Overall, there would be no appreciable land use impacts or changes beyond those described for the No Action Alternative. Operation of the upgraded facilities would have no impact on the current land use at Y-12 and would not change the current industrial use classification that exists at Y-12. Upgrading the existing facilities would not allow the Protected Area at Y-12 to be reduced from approximately 150 acres to 15 acres.

9.1.4 Alternative 4 – Capability-sized UPF Alternative

Under this alternative NNSA would construct a minimum UPF. The minimum UPF would likely be slightly smaller than the full UPF in Alternative 2 but for purposes of this SWEIS the land use impacts of the full and minimal UPFs are considered to be similar. Operations under the Capability-sized UPF Alternative would have no impact on the current land use and would not change the current industrial use classification that exists at Y-12. Consequently, the Capability-sized UPF Alternative would not entail any significant change to land use.

9.1.5 Alternative 5 – No Net Production/Capability-sized UPF Alternative

Similar to Alternative 4, however, under this alternative NNSA would not add new types or increased numbers of secondaries to the stockpile. Operations under the No Net Production/Capability-sized UPF Alternative would have no impact on the current land use and would not change the current industrial use classification that exists at Y-12. Consequently, the No Net Production/Capability-sized UPF Alternative would not entail any significant change to land use.

9.2 ENERGY

The irretrievable commitment of resources during construction and operation of Y-12 facilities would include nonrenewable fuels to generate heat and power, and fuels used to operate motor vehicles and heavy equipment. Energy resources consumed at Y-12 would include electricity, natural gas, diesel fuel, fuel oil, and unleaded gasoline. Estimates of usage requirements (i.e., materials and resources) are discussed in Chapter 3 of this SWEIS.

At Y-12, the average monthly power usage is less than approximately 40 megawatts (MW); the average peak monthly usage is less than approximately 50 MW. Compared to the available

capacity, which is approximately 430 MW, the available electrical capacity far exceeds current demands. Almost all of the electricity used would be generated using nonrenewable resources.

9.2.1 Alternative 1 – No Action Alternative

Activities under the No Action Alternative would cause minimal changes to the energy use and other infrastructure requirements at the site. As Y-12 continues to downsize and become more efficient, trends indicate that energy usage and most other infrastructure requirements have been reducing by approximately 2 to 5 percent per year. This is expected to continue for the foreseeable future.

9.2.2 Alternative 2 – Uranium Processing Facility Alternative

Construction of the UPF would require approximately 2.2 MW per month of electric power for the approximately 6-year construction period. During operations, the UPF would require less than 1.8 MW per month of electric power. Demand for electricity at Y-12 due to operation of the UPF would not increase because enriched uranium (EU) operations would be phased out in existing facilities once the UPF becomes operational.

9.2.3 Alternative 3 – Upgrade in-Place Alternative

There would be no change of infrastructure demands beyond the demands of the No Action alternative.

9.2.4 Alternative 4 – Capability-sized UPF Alternative

Construction of the minimum UPF would likely have the same demand for electricity as the full UPF (i.e., 2.2 MW per month) for the duration of the construction period. Because operations under the Capability-sized UPF Alternative would be a fraction of those under the other alternatives, operational energy demand under this alternative would be from about 40 to 45 percent lower than for the No Action Alternative.

9.2.5 Alternative 5 – No Net Production/Capability-sized UPF Alternative

The electricity demand under the No Net Production/Capability-sized UPF Alternative would be similar to those described above for Alternative 4.

9.3 MATERIAL

Resources irreversibly and irretrievably committed for the operation of Y-12 include construction, maintenance, and operational support materials. Consumption of these widely available materials would not be expected to result in critical shortages. The amount of materials required for construction maintenance, and operational support under all alternatives is small compared to the materials used in the local economy.

In addition to materials available in the local economy, Y-12 operations require materials that are not available on the open market, such as highly enriched uranium (HEU). NNSA maintains a stockpile of such materials that is adequate to support ongoing and reasonably foreseeable operations.

9.3.1 Alternative 1 – No Action Alternative

Consumption of materials under the No Action Alternative would be minimal and is expected to decrease as Y-12 continues to downsize and become more efficient.

9.3.2 Alternative 2 – Uranium Processing Facility Alternative

Construction, maintenance, and operational support materials would be consumed for the construction and operation of the new UPF, however, the amount of materials required would be small compared to the materials used in the local economy.

9.3.3 Alternative 3 – Upgrade in-Place Alternative

Maintenance and operational support materials would be consumed for the upgrade and operation of existing EU and other processing facilities; however, the amount of materials required would be small compared to the materials used in the local economy.

9.3.4 Alternative 4 – Capability-sized UPF Alternative

Construction, maintenance, and operational support materials would be consumed for the construction and operation of the minimum UPF, however, the amount of materials required would be small compared to the materials used in the local economy.

9.3.5 Alternative 5 – No Net Production/Capability-sized UPF Alternative

Construction, maintenance, and operational support materials would be consumed for the construction and operation of the minimum UPF, however, the amount of materials required would be small compared to the materials used in the local economy.

9.4 WATER

Raw water for Oak Ridge Reservation is obtained from the Clinch River south of the eastern end of Y-12 and pumped to the water treatment plant located on the ridge northeast of Y-12. Treated water usage at Y-12 averages 4.2 million gallons per day or 2,000 million gallons per year. Regional demand on the water supply is increasing, but well below supply capabilities. Because water from the Clinch River is naturally replenished at a rate equal to or greater than usage, Y-12's water use is not considered to be an irreversible and irretrievable commitment of resources.

9.4.1 Alternative 1 – No Action Alternative

Under the No Action Alternative there would be no change in current plans; therefore there would be no irreversible and irretrievable commitment of water resources.

9.4.2 Alternative 2 – Uranium Processing Facility Alternative

Some groundwater may be extracted during construction activities and used during operation of the UPF; however would be below supply capabilities.

9.4.3 Alternative 3 – Upgrade in-Place Alternative

Water requirements under this alternative would not raise the average annual water use for Y-12 (approximately 2,000 million gallons per year); any additional impacts would not be beyond impacts described for the No Action Alternative.

9.4.4 Alternative 4 – Capability-sized UPF Alternative

It is expected that usage requirements would decrease by 40 percent due to reduction in production in the minimum UPF relative to the No Action Alternative.

9.4.5 Alternative 5 – No Net Production/Capability-sized UPF Alternative

Water usage requirements under the No Net Production/Capability-sized UPF Alternative would be similar to those described above for Alternative 4.