

1 The principal DOE directive covering radioactive waste management is DOE Order 435.1,
2 *Radioactive Waste Management* (DOE 2001d). This Order states that DOE radioactive waste shall be
3 managed to accomplish the following:
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- 5 1. Protect the public from exposure to radiation from radioactive materials. Requirements for public
6 radiation protection are in DOE Order 5400.5, *Radiation Protection of the Public and the*
7 *Environment* (DOE 1993b).
8
- 9 2. Protect the environment. Requirements for environmental protection are in DOE Order 450.1,
10 *Environmental Protection Program* (DOE 2003a), and DOE Order 5400.5, *Radiation Protection of*
11 *the Public and the Environment* (DOE 1993b).
12
- 13 3. Protect workers. Requirements for radiation protection of workers are in 10 CFR 835, “Occupational
14 Radiation Protection.” Requirements for industrial safety are in DOE Order 440.1A, *Worker*
15 *Protection Management for DOE Federal and Contractor Employees* (DOE 1998).
16
- 17 4. Comply with applicable federal, state, and local laws and regulations; applicable Executive Orders;
18 and other DOE directives.
19
- 20 5. Meet the requirements in DOE Manual 435.1-1, *Radioactive Waste Management Manual* (DOE
21 2001e). DOE Manual 435.1-1 has specific requirements applicable to management of high-level
22 waste in Chapter II, management of TRU waste in Chapter III, and management of low-level waste
23 (LLW) and mixed LLW (MLLW) in Chapter IV.
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25 DOE recently issued DOE Order 450.1, “Environmental Management Program” (DOE 2003a). The
26 objective of the order is to implement sound stewardship practices that are protective of the air, water,
27 land, and other natural and cultural resources impacted by DOE operations and by which DOE meets or
28 exceeds compliance with applicable environmental, public health, and resource protection laws,
29 regulations, and DOE requirements. This objective will be accomplished by implementing
30 Environmental Management Systems (EMSs) at DOE sites. An EMS is a continuing cycle of planning,
31 implementing, evaluating, and improving processes and actions undertaken to achieve environmental
32 goals. These EMSs will be part of Integrated Safety Management Systems established pursuant to DOE’s
33 Safety Management System Policy (DOE 1996c).
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35 **6.6 Radiological Safety Oversight**

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37 Specific requirements in 10 CFR 830 apply to DOE contractors, DOE personnel, and other persons
38 conducting activities (including providing items and services) that affect, or may affect, the safety of
39 DOE nuclear facilities. The regulations in 10 CFR 830 include requirements for quality assurance
40 (10 CFR 830, Subpart A) and safety-basis requirements (10 CFR 830, Subpart B). The safety-basis
41 requirements require the contractor responsible for a DOE nuclear facility to analyze the facility, the work
42 to be performed, and the associated hazards; and to identify the conditions, the safe boundaries, and the
43 hazard controls necessary to protect workers, the public, and the environment from adverse consequences.

1 DOE relies on these analyses and hazard controls to operate facilities safely. The requirements for
2 nuclear safety management in 10 CFR 830 apply to the activities being considered in this draft HSW EIS.
3

4 DOE has requirements for occupational radiation protection in 10 CFR 835 that establish radiation-
5 protection standards, limits, and program requirements for protecting individuals from ionizing radiation
6 resulting from the conduct of DOE activities. The requirements are applicable to general employees
7 involved in activities being considered in the HSW EIS that have the potential to result in the
8 occupational exposure of an individual to radiation or radioactive material. The 10 CFR 835
9 requirements are further discussed in Section 6.8.
10

11 The Price-Anderson Act, Section 170 of the AEA, provides a system of indemnification for legal
12 liability resulting from a nuclear incident in connection with contractual activity for DOE. An extensive
13 discussion of the Price-Anderson Act is included in the Yucca Mountain Final EIS (DOE 2002d)
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15 Many DOE directives that affect radiological safety apply to constructing and operating the facilities
16 addressed in the HSW EIS. Among the more significant directives are the following:
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- 18 • DOE Order 420.1A, *Facility Safety* (DOE 2002c), establishes facility safety requirements related to
19 nuclear safety design, criticality safety, fire protection, and the mitigation of phenomena related to
20 natural hazards.
21
- 22 • DOE Order 425.1C, *Startup and Restart of Nuclear Facilities* (DOE 2003b), establishes DOE
23 requirements for startup of new nuclear facilities and for the restart of existing nuclear facilities that
24 have been shut down. The requirements specify a readiness review process that must demonstrate
25 that it is safe to start (or restart) the applicable facility. The facility must be started (or restarted) only
26 after documented independent reviews of readiness have been conducted and the approvals specified
27 in the Order have been received.
28
- 29 • DOE Policy 441.1, *DOE Radiological Health and Safety Policy* (DOE 1996a), states that it is DOE
30 policy to conduct its radiological operations in a manner that ensures the health and safety of all its
31 employees, contractors, and the general public. The Policy states that in achieving this objective,
32 DOE will ensure that radiation exposures to its workers and the public and releases of radioactivity to
33 the environment are maintained below regulatory limits, and deliberate efforts are taken to further
34 reduce exposures and releases to as low as reasonably achievable (ALARA). DOE is committed to
35 implementing a radiological control program of the highest quality that consistently reflects this
36 Policy.
37
- 38 • DOE Order 5400.5, *Radiation Protection of the Public and the Environment* (DOE 1993b),
39 establishes standards and requirements for DOE operations for protection of members of the public
40 and the environment against undue risk from radiation. It is DOE policy to implement legally
41 applicable radiation-protection standards and to consider and adopt, as appropriate, recommendations
42 by authoritative organizations, for example, the National Council on Radiation Protection and
43 Measurements and the International Commission on Radiological Protection. It is also DOE policy to

1 adopt and implement standards generally consistent with those of the U.S. Nuclear Regulatory
2 Commission (NRC) for DOE facilities and activities not subject to NRC licensing authority.

- 3
- 4 • DOE Order 5480.20A, *Personnel Selection, Qualification, and Training Requirements for DOE*
5 *Nuclear Facilities* (DOE 2001c), establishes the selection, qualification, and training requirements for
6 DOE contractor personnel involved in the operation, maintenance, and technical support of DOE
7 nuclear reactors and non-reactor nuclear facilities. DOE objectives under this Order are to ensure the
8 development and implementation of contractor-administered training programs that provide
9 consistent and effective training for personnel at DOE nuclear facilities. The Order contains
10 minimum requirements that must be included in training and qualification programs.

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12 **6.7 Radiation Protection of the Public and the Environment**

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14 DOE standards for radiation protection of the public and the environment are set out in DOE
15 Order 5400.5 (DOE 1993b). In addition to establishing a general limit for public dose from DOE
16 activities, the Order requires DOE activities to be conducted in a manner that complies with regulations
17 issued by other government agencies, as applicable. The Order also specifies standards for radiological
18 exposures to native aquatic animals. Requirements of the DOE Order and other applicable standards are
19 discussed in this section.

20
21 Activities associated with any alternative under consideration in this HSW EIS would be managed in
22 accordance with Chapter II of DOE Order 5400.5, which provides that DOE activities shall be conducted
23 so that the exposure of members of the public to radiation sources, as a consequence of all routine DOE
24 activities, shall not cause an effective dose equivalent exceeding 1 mSv/yr (100 mrem/yr).

25
26 In addition, radioactive emissions from DOE facilities are subject to the EPA National Emission
27 Standards for Hazardous Air Pollutants requirements at 40 CFR 61. In particular, Subpart A (General
28 Provisions), Subpart H (National Emission Standards for Emissions of Radionuclides Other than Radon
29 from Department of Energy Facilities), and Subpart Q (National Emission Standards for Radon Emissions
30 from Department of Energy Facilities) are applicable to all alternatives. Air emissions resulting from the
31 implementation of any alternative would comply with the EPA 0.1 mSv/yr (10 mrem/yr) standard at
32 40 CFR 61.92. For all new construction or modifications to existing facilities where the estimated
33 effective dose equivalent could exceed 1 percent of the 0.1 mSv/yr (10 mrem/yr) standard, an application
34 for approval of construction or modification would be submitted to the appropriate regional EPA office
35 under the procedures at 40 CFR 61.07 (40 CFR 61.96[b]).

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37 New sources of radioactive emissions at Hanford are also subject to the licensing requirements of the
38 Washington State Department of Health (WDOH) (WAC 246-247). DOE holds a license (No. FF-01)
39 issued by the WDOH covering airborne radioactive effluents from Hanford operations. The license is
40 incorporated as Attachment 2 in the Hanford Air Operating Permit (Ecology 2001b). DOE would submit
41 a Notice of Construction to the WDOH, as required by WAC 246-247-060, before constructing or
42 modifying any facility associated with any alternative under consideration in this HSW EIS that has
43 projected radioactive emissions or changes in radioactive emissions. All new construction and significant
44 modifications of emission units would use best available radionuclide control technology (WAC 246-247-