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(e) The operator/lessee must conduct operations to:

(1) Prevent waste and conserve the recoverable oil shale reserves and other resources;

(2) Prevent damage to or degradation of oil shale formations;

(3) Ensure that other resources are protected upon abandonment of operations; and

(f) The operator must save topsoil for use in final reclamation after the reshaping of disturbed areas has been completed.

§ 3930.11 Performance standards for exploration and in situ operations.

The operator/lessee must adhere to the following standards for all exploration and in situ drilling operations:

(a) At the end of exploration operations, all drill holes must be capped with at least 5 feet of cement and plugged with a permanent plugging material that is unaffected by water and hydrocarbon gases and will prevent the migration of gases and water in the drill hole under normal hole pressures. For holes drilled deeper than stripping limits, the operator/lessee, using cement or other suitable plugging material the BLM approves in advance, must plug the hole through the thickness of the oil shale bed(s) or mineral deposit(s) and through aquifers for a distance of at least 50 feet above and below the oil shale bed(s) or mineral deposit(s) and aquifers, or to the bottom of the drill hole. The BLM may approve a lesser cap or plug. Capping and plugging must be managed to prevent water pollution and the mixing of ground and surface waters and to ensure the safety of people, livestock, and wildlife;

(b) The operator/lessee must retain for 1 year all drill and geophysical logs. The operator must also make such logs available for inspection or analysis by the BLM. The BLM may require the operator/lessee to retain representative samples of drill cores for 1 year;

(c) The operator/lessee may, after the BLM's written approval, use drill holes as surveillance wells for the purpose of monitoring the effects of subsequent operations on the quantity, quality, or pressure of ground water or mine gases; and

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(d) The operator/lessee may, after written approval from the BLM and the surface owner, convert drill holes to water wells. When granting such approvals, the BLM will include a transfer to the surface owner of responsibility for any liability, including eventual plugging, reclamation, and abandonment.

§ 3930.12 Performance standards for underground mining.

(a) Underground mining operations must be conducted in a manner to prevent the waste of oil shale, to conserve recoverable oil shale reserves, and to protect other resources. The BLM must approve in writing permanent abandonment and operations that render oil shale inaccessible.

(b) The operator/lessee must adopt mining methods that ensure the proper recovery of recoverable oil shale reserves.

(c) Operators/lessees must adopt measures consistent with known technology to prevent or, where the mining method used requires subsidence, control subsidence, maximize mine stability, and maintain the value and use of surface lands. If the POD indicates that pillars will not be removed and controlled subsidence is not part of the POD, the POD must show that pillars of adequate dimensions will be left for surface stability, considering the thickness and strength of the oil shale beds and the strata above and immediately below the mined interval.

(d) The lessee/operator must have the BLM's approval to temporarily abandon a mine or portions thereof.

(e) The operator/lessee must have the BLM's prior approval to mine any recoverable oil shale reserves or drive any underground workings within 50 feet of any of the outer boundary lines of the federally-leased or federally-licensed land. The BLM may approve operations closer to the boundary after taking into consideration state and Federal environmental laws and regulations.

(f) The lessee/operator must have the BLM's prior approval before drilling any lateral holes within 50 feet of any outside boundary.

(g) Either the operator/lessee or the BLM may initiate the proposal to mine

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oil shale in a barrier pillar if the oil shale in adjoining lands has been mined out. The lessee/operator of the Federal oil shale must enter into an agreement with the owner of the oil shale in those adjacent lands prior to mining the oil shale remaining in the Federal barrier pillars (which otherwise may be lost).

(h) The BLM must approve final abandonment of a mining area.

§ 3930.13 Performance standards for surface mines.

(a) Pit widths for each oil shale seam must be engineered and designed to eliminate or minimize the amount of oil shale fender to be left as a permanent pillar on the spoil side of the pit.

(b) Considering mine economics and oil shale quality, the amount of oil shale wasted in each pit must be minimal.

(c) The BLM must approve the final abandonment of a mining area.

(d) The BLM must approve the conditions under which surface mines, or portions thereof, will be temporarily abandoned, under the regulations in this part.

(e) The operator/lessee may, in the interest of conservation, mine oil shale up to the Federal lease or license boundary line, provided that the mining:

(1) Complies with existing state and Federal mining, environmental, reclamation, and safety laws and rules; and

(2) Does not conflict with the rights of adjacent surface owners.

(f) The operator must save topsoil for final application after the reshaping of disturbed areas has been completed.

§ 3930.20 Operations.

(a) *Maximum Economic Recovery (MER)*. All mining and in situ development and production operations must be conducted in a manner to yield the MER of the oil shale deposits, consistent with the protection and use of other natural resources, the protection and preservation of the environment, including, land, water, and air, and with due regard for the safety of miners and the public. All shafts, main exits, and passageways, and overlying beds or mineral deposits that at a future date may be of economic impor-

tance must be protected by adequate pillars in the deposit being worked or by such other means as the BLM approves.

(b) *New geologic information*. The operator must record any new geologic information obtained during mining or in situ development operations regarding any mineral deposits on the lease. The operator must report this new information in a BLM-approved format to the proper BLM office within 90 calendar days after obtaining the information.

(c) *Statutory compliance*. Operators must comply with applicable Federal and state law, including, but not limited to the following:

(1) Clean Air Act (42 U.S.C. 1857 *et seq.*);

(2) Federal Water Pollution Control Act, as amended (30 U.S.C. 1151 *et seq.*);

(3) Solid Waste Disposal Act as amended by the Resource Conservation and Recovery Act (42 U.S.C. 6901 *et seq.*);

(4) National Historic Preservation Act, as amended (16 U.S.C. 470 *et seq.*);

(5) Archaeological and Historical Preservation Act, as amended (16 U.S.C. 469 *et seq.*);

(6) Archaeological Resources Protection Act, as amended (16 U.S.C. 470aa *et seq.*); and

(7) Native American Graves Protection and Repatriation Act, as amended (25 U.S.C. 3001 *et seq.*).

(d) Resource protection. The following additional resource protection provisions apply to oil shale operations:

(1) Operators must comply with applicable Federal and state standards for the disposal and treatment of solid wastes. All garbage, refuse, or waste must either be removed from the affected lands' or disposed of or treated to minimize, so far as is practicable, their impact on the lands, water, air, and biological resources;

(2) Operators must conduct operations in a manner to prevent adverse impacts to threatened or endangered species and any of their habitat that may be affected by operations.

(3) If the operator encounters any scientifically important paleontological