U.S. Department of Energy
Finding of No Significant Impact
for the Explosive Waste Treatment Facility
at Lawrence Livermore National Laboratory

AGENCY: U.S. Department of Energy

ACTION: Finding of No Significant Impact

SUMMARY: The U.S. Department of Energy (DOE) has prepared an Environmental Assessment (EA), DOE/EA-1106, to assess the environmental impacts associated with the construction, operation, and eventual closure of the Explosive Waste Treatment Facility (EWTF) at Lawrence Livermore National Laboratory's (LLNL's) Site 300, located in Alameda and San Joaquin Counties, State of California. The impacts of this facility have been previously addressed in the Record of Decision (ROD), issued on January 27, 1993, for the August 1992 *Final Environmental Impact Statement and Environmental Impact Report for Continued Operation of Lawrence Livermore National Laboratory and Sandia National Laboratories, Livermore*, DOE/EIS-0157 (1992 Sitewide EIS). The EA was tiered from the 1992 Sitewide EIS and provides additional detail on the potential impacts of the construction and operation of the proposed EWTF and of the postulated accident.

The proposed facility would consist of two open burning (OB) units and an open detonation (OD) unit. These units would be located near the Building 845 (B845) bunker. Alternatives considered in the review process include: (1) the no-action alternative, which is to continue only open burning at Building 829 (B829); (2) the continuation of only open burning at a new facility at Site 300; (3) termination of open burning of explosive waste; and (4) the application of alternative technologies for the treatment of explosive waste.

Based on the analyses in the EA, the DOE has determined that the proposed action does not constitute a major federal action significantly affecting the quality of the human environment within the meaning of the National Environmental Policy Act of 1969, 42 U.S.C. 4321 et seq. Therefore, an Environmental Impact Statement is not required.

PURPOSE AND NEED: The DOE needs to take action to manage its current and projected inventory of explosive waste. Currently, treatment of explosive waste by burning occurs at B829; however, that facility has been operating under a State of California Enforcement Order since its Resource Conservation and Recovery Act (RCRA) "Interim Status" permit expired on November 8, 1992. The purpose of this action is to provide for the treatment of the explosive waste by construction of a facility which can be permitted. Open detonation as a treatment method is needed to allow for treatment of explosive waste that cannot be treated by burning due to the size limitations of the OB units, the chemical makeup of the explosive waste (which may be prone to unplanned detonation if treated at the OB units), or the classified nature of the waste.

PROPOSED ACTION: It is proposed to site, operate, and close a facility that would utilize open burning and open detonation to treat explosive waste at the LLNL Site 300. The design of the EWTF is consistent with the description of this facility as described in the 1992 Sitewide EIS.

The two OB units would consist of a metal burn pan and a burn cage. The burn pan, which would be utilized to treat explosive waste in the form of small pieces, powders, and parts, would consist of an approximately 4-ft x 8-ft x 1/2-ft-deep steel pan with a remotely controlled, movable cover. The burn cage, which would treat process waste fines, explosives-contaminated packaging materials, and laboratory equipment contaminated with explosives, would consist of an approximately 5-ft x 9-ft x 4-ft metal enclosure with a sloped roof, metal screened ends, and an elevated metal base.

The OD unit would consist of a roughly 900-ft^2, open-air gravel pad located on an existing firing pad southwest of B845. This unit would treat explosive waste that is in such a configuration that LLNL requires it be treated by open detonation.

The EWTF would also provide a suitable location for the periodic decontamination of explosives-contaminated equipment and materials. The contaminated items would be placed in the open burn cage, the burn pad or on a concrete pad where the explosives would be burned off. A metal plate may be installed on one of the concrete pads to provide a stable platform for the large items. This type of decontamination is currently being conducted at B829 and would merely be relocated along with the open burning. It is expected that this type of decontamination would be performed less than ten times per year.

Minor improvements are needed to the area to site and operate the EWTF. The existing road to B845 would be upgraded and improved to allow safe vehicle access to the OB and OD units, and two controlled access gates would be installed to limit access. The OB area would be graded and leveled. Concrete pads would be installed as necessary to support the OB equipment and miscellaneous structures, and an earthen berm would be installed to protect equipment and facilities around the treatment units. Graded-earth ditches would be installed to route surface runoff around the OB and OD units. All vegetation within a 200-ft buffer zone around the OB and OD units would be removed to prevent the chance of initiating a wildfire through the operation of the EWTF. In addition, the construction of the EWTF would involve the modification and extension of utilities.

Also, as part of this action, an existing wood-frame building located near the OB units would be demolished, and metal pipe risers on any monitoring well in the vicinity of B845 within direct line-of-sight of the OD firing pad would be removed and replaced with small, lockable concrete boxes placed below grade.

Prior to any excavation, soils around the EWTF would be sampled to establish a baseline of existing contamination generated by past operations of B845. This baseline would be used for determining cleanup levels in the closure process.

Waste which would be treated at the EWTF would be transported from the Site 300 Explosive Waste Storage Facility (EWSF) or directly from generator waste accumulation areas on the day of treatment. The amount of waste to be either burned or detonated would be limited for each explosive waste type by the *Site 300 EWTF Operation Plan*. After the initial placement of the waste to be treated, all further activities, such as ignition or detonation, would be conducted remotely from B845. Surveillance cameras at the OB and OD units would allow operators to visually monitor treatment operations.

Ash in the OB units would be allowed to cool for a minimum of 24 hours before visual inspection to ensure complete treatment. Ash would be collected in a container in the OB area which, when full, would be sent to either the EWSF or the Building 883 Container Storage Area. The ash would be sampled and tested for hazardous constituents, then shipped offsite, as necessary, for disposal at a permitted hazardous waste landfill. None of the EWTF facilities would be used for the accumulation or storage of waste.

The proposed action would also include the closure of the EWTF at the end of the facility's useful life. Closure activities include the decontamination of the units and related equipment, disposal of all contaminated materials, and verification sampling that would support certification of completion of the closure process. Closure levels would be determined by preconstruction sampling and would be approved by the Department of Toxic Substances Control.

ALTERNATIVES: Alternatives considered are the no-action alternative, the continuation of only open burning at a new facility, the termination of open burning operations (which would include shipment of waste offsite), and the application of alternative treatment technologies.

The no-action alternative would be to continue open burn operations at B829. No open detonation operations would be conducted under this alternative. Because the current facility's RCRA "Interim Status" permit has expired, the continuation of activities at B829 would require a new permit from the State of California Environmental Protection Agency (Cal EPA). In addition, B829 does not provide the degree of isolation from workers and the public that the B845 Area location does. Improvements to the open burning process by the proposed action would not be incorporated, thereby not reducing risk to the public from air emissions. Finally, the new location of the EWTF is less susceptible to seasonal winds which could cause the cancellation of treatment activities at B829.

The second alternative, open burning only at a new facility, would construct and operate a new facility in the B845 area. Although all transportation of explosive waste would comply with Department of Transportation shipping requirements, there would still be a minor increase in risk to the public from the additional vehicle trips. Open detonation, which would represent both a more efficient method of treating explosive waste and a safer way of treating large pieces of bulk explosive waste, would not occur. Without this open detonation capability, LLNL would have to send certain types of explosive waste to an offsite facility for treatment across public roads.

Termination of open burning operations at LLNL Site 300 would necessitate the shipment of all explosive waste offsite across public roads. This waste would be sent to either a RCRA-permitted commercial storage and treatment facility or to another DOE site. While some limited forms of explosive waste are currently being sent offsite, no offsite commercial facilities were found that were capable of accepting or treating all of the specific explosive waste types generated at LLNL. Other DOE facilities were restricted by their permits or other operational constraints from accepting explosive waste from offsite locations, such as from LLNL.

The final alternative examined was to apply alternative treatment technologies to treat the explosive waste generated at LLNL. Although research into alternative technologies is ongoing, there have been no recent advances to indicate that an alternative to thermal treatment would be available within the next 5 to 10 years.

FINDINGS: The EA analyzes the construction-, operation-, and closure-related impacts of the proposed action, including impacts to onsite and offsite personnel and the external environment.

Construction of the EWTF would entail the clearing of less than 1 acre of grassland. The extension of utilities would involve some trenching along the roadway to B845. This roadway would be resurfaced and possibly widened. Air emissions from the construction phase would be limited to the release of particulates (dust). Dust would be controlled by spraying the construction site with water as necessary. Noise levels would increase temporarily, but would not lead to an increase in offsite levels; nearby workers would wear appropriate hearing protection when required. No sensitive species of either plant or animal would be adversely impacted by activities related to construction. There would be no impact to cultural resources in the B845 area, however, an archaeologist would be contacted if excavation activities uncover any artifacts. Normal construction hazards would exist, but workers would receive proper safety training, and all activities would be in accordance with all relevant requirements of the Occupational Safety and Health Act.

Operation of the EWTF would not result in any adverse impact to vegetation, ground water, or surface water. Because the OB units would incorporate improvements over the current treatment method at B829 (i.e., using a cleaner fuel, including the removable cover on the burn pan, and

imposing operational limits on how much waste can be treated and during what meteorological conditions) air emissions are expected to be the same as, or lower than, current open burning operations at B829.

Noise levels to offsite populations (including residents at the proposed Tracy Hill development on Site 300's eastern boundary) would be controlled by limiting open detonation events during certain periods and by limiting amounts to be detonated. The ETWF's procedures would limit detonations to 350 lb (159 kg) of explosive waste, which together with weather monitoring should limit impulse sound levels at the fence line to less than 126 dB, which would not present a significant impact.

No adverse impact is expected to any cultural or sensitive ecological resource. Warning sirens would be used prior to detonation events to warn personnel in the area as well as to scare away any sensitive bird species. Prior to operation of the EWTF, and every spring, a survey would be conducted to identify the nesting presence of sensitive species (i.e., burrowing owls or tri-colored blackbirds). If a nesting presence is found, appropriate measures would be taken to minimize the effects of open detonation.

The treatment of explosive waste in the EWTF would result in airborne products of combustion. Acute exposure from emissions during treatment activities would be below state-accepted exposure levels. The worst-case cancer risk to the maximally exposed individual (MEI) from operation of the open burn pan ranges from 6.0×10^{-8} to 7.0×10^{-7}, with dioxin being the pollutant of concern. Operation of the burn cage results in a cancer risk of 4.0×10^{-8} to 1.0×10^{-6} to the MEI, with dioxin again being the pollutant of concern. These values assume a worst-case situation of 100 burn days per year, an excessive temperature-variation range during the burning process (which produces a higher amount of dioxins), and the continued use of diesel fuel in the burn cage (which may increase levels of dioxins). However, the proposed EWTF would incorporate design features and include restrictions on when burn activities could occur and how much waste could be treated which would maintain these numbers at levels below regulatory concern.

No adverse impact is expected from proposed closure activities. In fact, a beneficial impact may occur due to reduced human presence in the area. The halting of operations would reduce air emissions, thereby decreasing offsite and cumulative impacts from LLNL Site 300 operations.

The postulated worst-case accident scenario would be the accidental detonation of 350 lb of explosive waste on the detonation table. It is assumed that two immediately involved workers (the maximum number allowed at the OD unit during operations) would be seriously injured or killed by the blast. Air emissions levels and noise impact levels from this accident would be essentially the same as those involved in normal detonation events. An accidental detonation of explosives has never occurred at LLNL Site 300 and could only occur through human error. The probability of this accident occurring is remote, and the impacts of such an accident are within the bounds of impacts from accidents assessed in the 1992 Sitewide EIS (which assumed a detonation of 1,320 lb of explosives).

The proposed action is not expected to contribute substantially to the overall cumulative impacts from LLNL Site 300 operations. Normal operations of the EWTF would result in virtually no substantial increase in air emissions, noise levels to offsite populations, or waste generation. There would be no adverse socioeconomic impact, as construction and operation of the EWTF would not require an increase in the work force at LLNL Site 300.

No minority or low-income populations are present in the neighboring communities. Because the analysis in the EA indicates that EWTF would not present any adverse environmental pollution or impacts to the general public/ surrounding population during normal operations, or even as a result of accident-generated scenarios, no disproportionate impacts on minority populations is expected.

Copies of this EA (DOE/EA-1106) are available from:

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