SECTION A. Project Title: INTEC – Macroencapsulation/Overpack Operations in CPP-659 and CPP-1617, Rev. 1

SECTION B. Project Description

The proposed action will treat mixed low-level waste (MLLW) at the Idaho Nuclear Technology and Engineering Center (INTEC). The treatment process, macroencapsulation, will result in the waste stream meeting the treatment standards for debris and radioactive lead solids (RLS) for disposition at the Nevada National Security Site (NNSS). The macroencapsulation process is a Hazardous Waste Management Act (HWMA)/Resource Conservation and Recovery Act (RCRA) permitted process and will be performed at CPP-1617 or CPP-659.

The macroencapsulation process, although technically considered "treatment" under the HWMA/RCRA program is essentially an overpack or repackaging (outer shell) system that acts as the DOT IP-1 or IP-2 packaging for shipment. The macrobag system does nothing to change the nature or concentration of the waste. This process does not require opening waste containers and therefore, does not contribute to air emissions.

Currently MLLW requiring treatment via macroencapsulation must be sent to an offsite treatment, storage and disposal facility. These facilities include Energy Solutions and Perma-Fix Environmental Services. The treatment facility selected is dependent on the radionuclide content of the waste container to be treated. Treated waste that is NRC Class A is treated and disposed of at Energy Solutions. Treated waste that is NRC Class B/C is disposed of at NNSS. The current process is costly.

The commercially available macroencapsulation (Macro Bag) system involves securing hazardous debris in soft sided bags of various sizes. The macrobag/liner system is made from a polymeric organic line/jacket formulated to resist contaminants and leachate. It consists of a zippered inner liner with cardboard integrated into it for structural shape, a middle liner with an air tight seal and a zippered outer shell.

A container(s) of hazardous debris and/or RLS is placed inside the macrobag/liner system and void space filler (e.g. vermiculite, foam pellets, etc.) is added to fill the package to 90% full or greater, if needed. The container(s) and inner liner are used to protect the middle liner from potential damage from the debris and RLS within the container(s). The inner bag is closed by pulling two opposing zippers together.

The middle liner with an air tight seal is designed and manufactured to resist contaminants and leachate. The commercially available macrobag/liner system creates a permanent, impermeable barrier between the waste debris and RLS, and materials into which it may come into contact after disposal; thus encapsulating the debris and RLS. The middle liner with an air tight seal is closed by squeezing the seal, while pushing air out of the liner. The outer shell is then closed using a patented closure method that incorporates two zipper pulls for added security. Once the containers are sealed inside the macro bag system, the entire assembly is banded to two pallets (one on top and one on bottom) for handling purposes.

SECTION C. Environmental Aspects / Potential Sources of Impact

9. Hazardous/Mixed Waste Generation and Management- The proposed action will treat MLLW streams generated from existing processes such as the filter change-out in the CPP-666 FDP cell and the Sludge Repackaging Project at WMF-1617. Additional waste stream description is provided in #14 below. All waste will be managed and disposed of through Waste Generator Services.

The macroencapsulation process is a Hazardous Waste Management Act (HWMA)/Resource Conservation and Recovery Act (RCRA) permitted process and will be performed at CPP-1617 or CPP-659 in the crane maintenance area located in Room 428. The HWMA/ RCRA Part B Permit for the Idaho National Laboratory, Volume 18 – Idaho Nuclear Technology and Engineering Center, (PER-109) will be modified and approved prior to performing macroencapsulation activities.

10. Hazardous/Rad. Material or Waste Handling and Trans- The commercially available macroencapsulation unit to is a macrobag with air tight closure system that uses a High Modulus Polymeric Packaging System (HMPPS) for secure macroencapsulation in soft sided bags of various sizes. The HMPPS is made from high-strength high-density polyethylene (HDPE) which is specially formulated to resist contaminants and leachate. It consists of a zippered inner liner with cardboard integrated into it for structural shape, a middle liner with an air tight seal, and a zippered outer shell.

A hazardous waste determination will be performed for all waste streams to develop the appropriate management practices.

All waste shipped to NNSS must be approved through the Waste Profile system. The process includes NNSS witnessing 5% of the waste packaging process. The approval must be in place prior to performing macroencapsulation.

14. PCB Contamination - The MLLW stream will include non-liquid PCB-contaminated mixed (HWMA/RCRA hazardous and low level radioactive) debris. This waste is generated as a secondary waste from processing of AMWTP sludge (under an existing RBDA) at the ARP V sludge repack facility at the RWMC. This PCB remediation waste consists of original crushed drums with residual sludge, tools, PPE, absorbent pads, and equipment parts. The PCB concentration is presumed to be greater than 500 ppm.

Project personnel will ensure all TSCA approvals and notifications have been completed prior to macroencapsulation of PCB waste. NOTE: It was determined (with concurrence from EPA Region 10) that use of the Macro Bag system only does not require a TSCA Approval, as documented in CCN 318541.

16. Radioactive Waste Generation and Management- Project personnel do not anticipate generating radioactive waste. Should newly radioactive waste be generated, it will be managed and disposed of through Waste Generator Services.

19. Work within areas subject to Flooding. The macroencapsulation activities discussed will be performed at CPP-1617 or CPP-659. Building CPP-659 is not within the Big Lost River 100-year floodplain as discussed and mapped in the report entitled "Big Lost River Flood Hazard Study," (D. A. Ostenaa and D. H. O'Connell, 2005, Report 2005-2), and is not within the overland flow 100-year floodplain at INTEC as discussed and mapped in the report "100-year Floodplain and 25-Year Runoff Analyses for the Idaho Nuclear Technology and Engineering Center at the INEEL" INEEL-EXT-03-01174, by Clear Creek Hydrology and Hutten (2003).

The western and northern edges of CPP-1617 (along Birch St.) are within the 100-year Big Lost River floodplain; therefore, activities that occur in those locations may experience some 100-year flood related impacts. If the hypothetical 100-year flood were to occur during the work described in this EC, the potential exists for 100-year flood waters to come into contact with the wastes being stored and processed in these locations at CPP-1617. If the wastes being stored at CPP-1617 at the time of the hypothetical flood include RCRA hazardous wastes, then the potential exists for flood waters to contact and "wash out" the hazardous wastes. As discussed in 40 CFR 264.18(b), procedures need to be in effect which will cause the wastes to be removed safely, before flood waters can reach the facility, to a location where the wastes will not be vulnerable to flood waters. Such procedures may include but are not limited to moving the waste containers to a location that is above the 100-year floodplain or to a building that is outside of the 100-year floodplain before the hypothetical 100-year flood waters reach CPP-1617.

The work described in this EC is not expected to have a significant impact on the 100-year floodplains discussed above and the work is not expected to disrupt floodplain dimensions, elevations, flow volumes, or velocities of the Big Lost River or the INTEC watersheds. If the hypothetical flood(s) occurs, access to the work areas may be temporarily interrupted. Work can resume after floodwaters subside as access allows.

An evaluation was needed in 2006 to determine whether or not the CPP-666 building (not part of this scope) and the CPP-1617 facility are in the 100-year floodplain. The 100-year floodplain map provided with the BOR Big Lost River Flood Hazard Study was consulted. On this map, portions of the 100-year floodplain appear to contact portions of the western wall of CPP-666 and the entrance gate and western fence of CPP-1617. This map is a geo-referenced tiff file in which the pixels that represent the 100-year floodplain are about 20-foot by 20-foot squares. Therefore, the ground level elevations of the CPP-666 building and the CPP-1617 facility were determined at building corners, doorways and fence corners. A survey grade total station was used to determine building elevations. Horizontal and Vertical datum are in the NAD 1927 State Plane System and NGVD 1929, respectively.

Flood stage hazard curve elevations for fifteen specific sites at TRA (ATR) and INTEC are listed in Table SO-4 (page xxii) of the BOR report. From Table SO-4, the 95% probabilistic flood stage estimate of the 100-year flood at the INTEC-near west gate site is 4916.60 ft msl. Thus, any building near the INTEC-west gate site whose ground elevation is above 4916.60 ft can be considered to be outside of the 100-year floodplain.

The surveyed results of the building elevations are posted on the attached jpg figure which also illustrates the 100-year floodplain near CPP-1617. This figure indicates that all the CPP-1617 facility elevations that are in contact with the mapped 100-year floodplain are greater than (above) 4916.60 ft. Thus, for the purposes of RCRA permitting, CPP-1617 is outside of the 100-year floodplain.

SECTION D. Determine the Level of Environmental Review (or Documentation) and Reference(s): Identify the applicable categorical exclusion from 10 CFR 1021, Appendix B, give the appropriate justification, and the approval date.

Note: For Categorical Exclusions (CXs) the proposed action must not: 1) threaten a violation of applicable statutory, regulatory, or permit requirements for environmental, safety, and health, including requirements of DOE orders; 2) require siting and construction or major expansion of waste storage, disposal, recovery, or treatment facilities; 3) disturb hazardous substances, pollutants, contaminants, or CERCLA-excluded petroleum and natural gas products that pre-exist in the environment such that there would be uncontrolled or unpermitted releases; 4) adversely affect environmentally sensitive resources. In addition, no extraordinary circumstances related to the proposal exist which would affect the significance of the action, and the action is not "connected" nor "related" (40 CFR 1508.25(a)(1) and (2), respectively) to other actions with potentially or cumulatively significant impacts.

References: Categorical Exclusion B6.5, Siting/construction/operation/decommissioning of facility for characterizing/sorting packaged waste, overpacking waste

Justification: Treating MLLW using the macroencapsulation process at existing INTEC facilities as described in Section B is categorically excluded and meets the criteria described above (see Note).

Is the project funded by the American Recovery and Reinvestment Act of 2009 (Recovery Act) ☐ Yes ☒ No

Approved by Jack Depperschmidt, DOE-ID NEPA Compliance Officer on February 19, 2016.