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STATE OF WASHINGTON

DEPARTMENT OF ECOLOGY

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April 25, 2003

Mr. James E. Rasmussen
Office of River Protection
United States Department of Energy
P.O. Box 560, MSIN: H6-60
Richland, Washington 99352

Dear Mr. Rasmussen:

A number of cover blocks were generated as waste by project W-314. The Washington State Department of Ecology (Ecology) has been working with the United States Department of Energy (USDOE) Office of River Protection (ORP) and CH2M-Hill Hanford (CHG) on a cost-effective disposal strategy for this waste for more than a year. Ecology agreed with ORP/CHG's proposal for disposition of the waste as outlined in the cover block disposition strategy, the last provided to us on October 8, 2002 (a copy of this proposal is attached for reference).

ORP/CHG proposed several tests and observations used to decide if the cover blocks are subject to Land Disposal Restrictions after treatment with water spray. In accordance with Washington Administrative Code (WAC) 173-303-070(2)(c), if the cover blocks do not exhibit a characteristic identified in WAC 173-303-090, the cover blocks are not subject to regulation under WAC 173-303, as long as the cover blocks have been treated as we have agreed, using the high pressure water spray extraction technology specified in Table 1 of 40 CFR 268.45 and detailed in your proposed procedure. If the cover blocks are not subject to regulation under WAC 173-303, they may be disposed in accordance with other applicable regulations.

In the event of enforcement action, USDOE/CHG will have the burden of proving by "clear and convincing evidence" that the cover blocks meet these exclusion requirements. This letter documents the agreement with ORP/CHG that the methods worked out through the meetings we held, and as outlined in the proposals we discussed, provide such evidence.

If you have further questions or comments, please call Steve Lijek at 736-3095 or me at 736-3098.

Sincerely,

Jeffery Lyon
Tank Waste Storage Project Manager
Nuclear Waste Program

JL:SL:nc
Attachment

cc: Tom Gardner-Clayson, ORP
Yousef Shehadeh, CHG
Grady Wellingham, CHG
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Todd Martin, HAB
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Administrative Record

TANK FARM COVER BLOCK DISPOSITION PROPOSAL

1.0 SCOPE

The scope of this proposal is the treatment of contaminated cover blocks removed from tank farms using the alternative treatment standards described in 40 CFR 268.45 and the disposal of the blocks as low-level waste at Hanford Site Burial Grounds.

2.0 BACKGROUND INFORMATION ON COVER BLOCKS

2.1 DESCRIPTION

The typical cover block for an underground pit is made of reinforced concrete. It is equipped with metal lifting bails, a metal rim on top and bottom that protects the edges of the concrete block. Historically, the majority of these cover blocks are 18 inches thick, and weigh 18,000 pounds or less. There are, however, more recent cases where the cover blocks are larger, with weights up to 30,000 pounds. The exterior of the cover block is painted with several coats of paint to both protect and seal the cover block.

A typical cover block will have penetrations allowing access to the inside of the pit. The first of these are valve handle penetrations, typically 3-4 inches in diameter with a steel flange that extends above the cover block, into which a valve operating handle is inserted. The second kind of these penetrations is for shield plugs. These have a smaller diameter for the lower half (typically 4") which steps up to a larger diameter (typically 6"-8") for the upper half. Removal of the shield plug allows limited access to the inside of the pit to perform radiological surveys, video exams, or similar activities.

2.2 COVER BLOCKS CONTAMINATION SOURCE

The cover blocks are installed year round on the pit and form a barrier to the outer environment in order to confine contaminants and hazardous wastes in the event of a leak during transfer operations. The temperature of the cover blocks will slowly change with the weather, as compared to the relatively stable temperature of the waste tank internals and surrounding soil and concrete. During the 5-6 cooler months of the year, when the outside temperature is below approx. 50 degrees Fahrenheit, the cover blocks will accumulate significant moisture on their undersides in the form of droplets of condensate from the high humidity tank vapors. These droplets fall off the cover blocks and re-form in a continual process. This has the effect of diluting/dissolving the fixants that were applied during the previous cover block removal process. They will also result in the migration of radioactive contaminants onto the cover block underside from the tank vapor space or pit interior.

3.0 REMOVAL AND TREATMENT OF COVER BLOCKS

The process for the removal of a cover block and washing it to meet the chemical extraction treatment as descried in 40 CFR 268.45 involves several key steps. These are contained in operating procedures and work packages and are driven by regulatory requirements in the Radiological Controls Manual, in the air emission permit (ALARACT demonstration) documents, and land disposal requirements.

Prior to cover block removal the underside of the cover block, is washed down with water. This washing is done in order to remove contaminants from the cover block underside, and from the walls and floor of the pit. This water is applied using a pressurized rotating spray head (referred to as a "whirly"), which forms a 360-degree spray in all directions. This spray head is inserted into the pit via a valve badge or shield plug penetration, and the block and walls are washed with several hundred gallons of water that drains into the affected tank.

Although not normally performed for routine removal and reinstallation, when a cover block is to be removed for disposal, additional washing of the block will take place to clean areas not normally washed during the normal removal process. This includes washing the inside of all valve handle penetrations, all shield plug penetrations and any other access points in an effort to remove any traces of tank waste found in these locations.

The entire washing process to include valve handle penetrations, shield plug penetrations and other access points will be described in a procedure and placed into the work documents that control the removal and disposal of these cover blocks. A copy of this procedure will be available at a later date upon procedure issuance.

After the washing is complete, samples will be taken and analyzed for confirmation and verification only. The description of the sampling process and a list of analytes are provided in section 4.0.

After the initial washing is complete, a liquid fixant is applied to the pit interior to entrain any loose contaminants. This is required to ensure that the loose radioactive contamination levels inside the pit environment are less than the allowable limitations of the regulatory requirements. These fixants vary in composition depending on the intended work in the pit, but the vast majority of them are water-soluble. Examples of MSDS are attached.

After the fixant application, the cover block is lifted from its position. Additional fixant application occurs as the block is lifted, to clean and fix the previously inaccessible areas of the block around the lower supporting ledge and sides. Cover blocks that do not have penetrations to allow for pre-removal washing are more rigorously washed and fixed during this point in the removal process. Visual verification of the cover blocks post-washing will be made at that point. If additional washing is required, the blocks will be returned to the pit and additional washing will be performed.

Once the cover block is removed, it is surveyed for radioactive contamination and placed in a lay down area. The cover block is required to be less than 50,000 dpm per 100 cm2 or it must be wrapped prior to being removed from the pit enclosure. Generally, this level of cleanliness is attained using the above process, but the cover blocks are still wrapped for storage during the performance of the pit work. The blocks will be stored until the new blocks are built and tested. The old blocks are stage at the tank farm incase an emergency waste transfer needs to happen and the blocks will be used to cover the Pit during waste transfer.

4.0 CONFIRMATION TECHNIQUES TO ENSURE COVER BLOCK ATTAINS CLEAN SURFACE

Confirmation that the cover block surfaces are clean after the washing procedures have been performed to meet the alternative treatment standards for a clean debris surface may be demonstrated on approximately 10% of the cover blocks by the following techniques:

(1) Visual inspection of cover block surfaces.

(2) Vapor sampling for volatile compounds and analysis by GC/MS – Confirmation that the cover block surfaces are clean and that tank farm listed volatile compounds are not present could be indicated by acquiring vapor/air samples from designated locations under the wrapped and near the surfaces of the cover blocks. Volatile compounds are substances that evaporate and if present should be detected in the air space between the surfaces of the cover block and the wrap. Samples will be acquired using SUMMA/Minicans or Thermal Desorption units from designated locations near the surfaces of the wrapped cover blocks. A known volume of air will be drawn into the sampling unit for a specified time period. The SUMMA canister or Thermal Desorption unit samples shall be analyzed using GC/MS techniques. The sample analysis will cover a range of selected volatile organic compounds to include the listed organic constituents of tank waste (1,1,1-Trichloroethane, Methylene chloride, Acetone, Methyl isobutyl ketone, and Methyl ethyl ketone).

Wipe sampling for semi-volatile compounds and analysis by GC/MS – Surface wipe samples of either the wrapped or unwrapped cover block surfaces shall be acquired using a wiping medium of a known size saturated with Hexane or a Sodium acetate solution. The wiping medium will be analyzed using GC/MS techniques for the analysis of a range of selected semi-volatile organic compounds to include the listed organic constituents of tank waste (Cresols and cresylic acid).

Field blanks, equipment blanks, and replicates will be collected at the time sampling is performed. The entire sampling process (exact sample locations, number of samples and replicates, types of blanks, amount and recorded timing of

vapor samples) could be outlined in the work documents for the removal of cover blocks.

5.0 REGULATORY PATHWAY FOR COVER BLOCK DISPOSITION

5.1 REGULATORY BACKGROUND FOR WASTE COVER BLOCKS

Because tank waste contains listed dangerous waste (F001 – F005), any contact with it (i.e., operational spills) would regulate the cover blocks as F-listed mixed waste[1] when disposed. Organic solvents for which the tank waste was listed are not expected to be found in significant concentrations on cover blocks. Most probably organic concentrations would be nondetectable. Contamination of the cover blocks through spills would be expected to deposit even lower concentrations of these listed constituents on the cover blocks. Waste contact must be assumed for cover blocks that have been radiologically contaminated. However, if through process knowledge no spills of tank waste onto cover blocks was identified and the cover blocks are not radiologically contaminated, then they could be designated as low-level waste (or non-solid waste if future reuse was a possibility) rather than mixed waste. However, it is not expected that many cover blocks would be found to be non-radiologically contaminated.

Mixed waste cover blocks are defined in the regulations as hazardous debris (40 CFR 268.2[h] as incorporated by reference in WAC 173-303-140). Hazardous debris was the subject of a codification of the "contained-in" policy in 40 CFR 261.3(f)(1) and (2). In Section (f)(1), listed hazardous debris can be excluded from designation as a hazardous waste if it is treated to meet the alternative treatment standards for debris by using an extraction or destruction technology listed in 40 CFR 268.45, Table 1 and if the treated debris does not exhibit a hazardous characteristic (see footnote 1). Use of an immobilization technology (e.g., macroencapsulation or microencapsulation) does not qualify for receipt of a contained-in determination.

Extraction technologies that can be used to redesignate cover blocks to low-level waste can include various biological, physical, or chemical extraction techniques. Physical extractions utilizing water spraying that may have utility for management of cover blocks are contained in 40 CFR 268.45, Table 1(A)(e):

> ***High pressure steam and water sprays:*** Application of water or steam sprays of sufficient temperature, pressure, residence time, agitation, surfactants, and detergents to remove hazardous contaminants from debris surfaces or to remove contaminated debris surface layers.

[1] Tank waste also contains characteristically regulated dangerous waste. It is assumed that concentrations of dangerous waste constituents associated with these characteristics that could be contained on cover blocks would not regulate them as characteristic dangerous waste.

This extraction technology requires treatment to a clean debris surface.[2] However, for concrete, removal of at least 0.6 cm of the surface layer is also required due to its porosity.

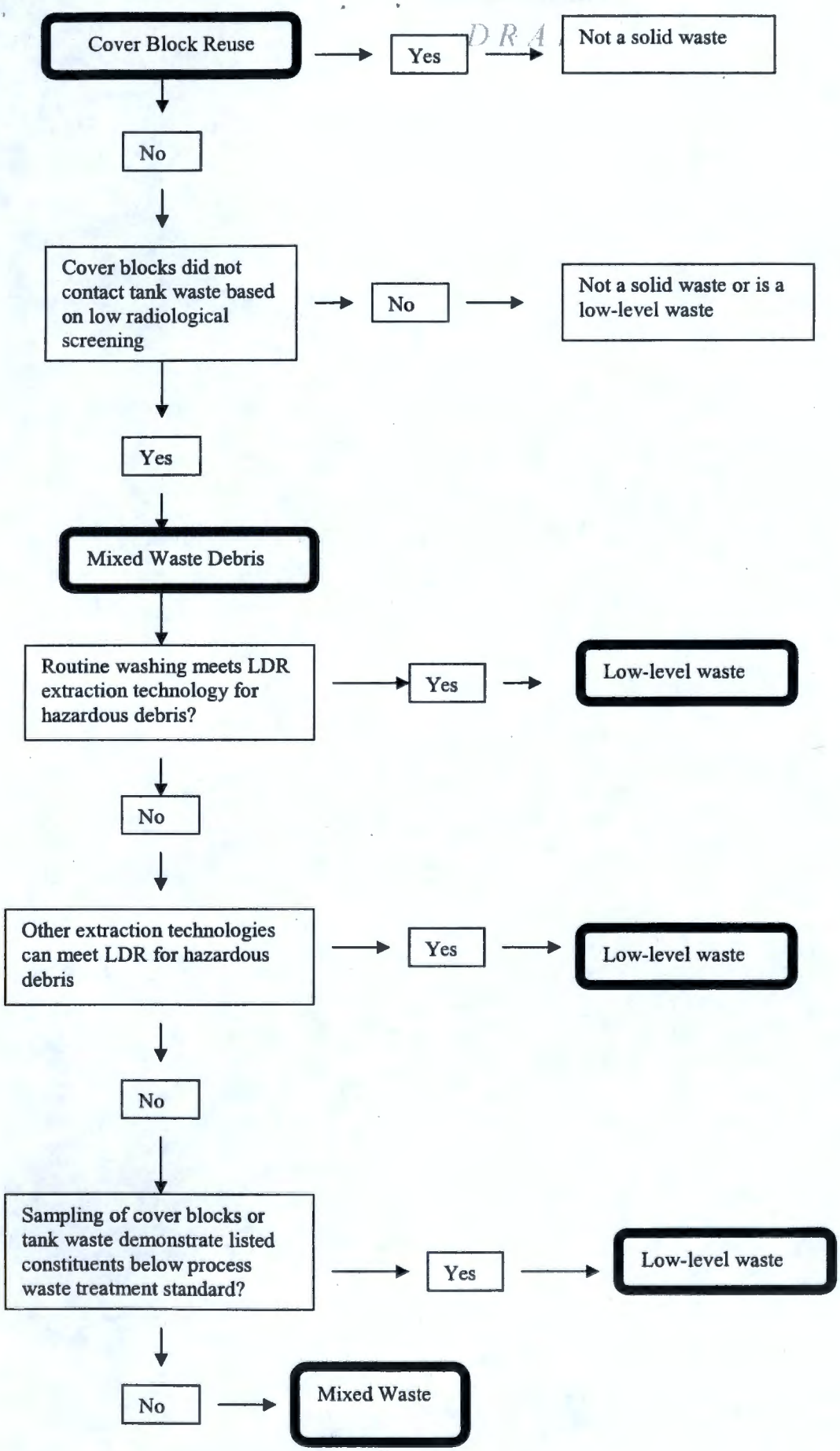
5.2 PROPOSED APPROACH FOR DISPOSITION OF COVER BLOCKS AS LOW-LEVEL WASTE

It is not expected that listed hazardous constituents are present in significant concentrations on waste cover blocks even where extensively contaminated with radioactive materials. The rigor of the washing procedures implemented in the field (i.e., sufficient temperature, pressure, residence time, and agitation) is considered adequate to remove these low concentrations of hazardous constituents on the blocks. The only staining that remains on cover blocks after washing are stains associated with the metal facings in the block construction. Staining from tank waste itself has not been observed. Thus, meeting a visually verifiable clean debris surface is considered achievable in the field.

It is proposed that the water washing process, including the washing of access points as described above, that is currently performed in the field for waste cover blocks be used to meet the specified extraction technology, "*high pressure steam and water sprays*," for listed hazardous debris. Although cover blocks are concrete based, they are painted with several coats of paint for the purposes of minimizing radiological contamination. As such, the porosity issues associated with concrete, and the attendant requirement to remove 0.6 cm in order to meet the high pressure steam and water spray treatment standard would not be necessary. Instead, the performance standard of a clean debris surface would meet the debris treatment standard and remove the listed waste constituents from the cover block waste designation. Additional verification sampling post-water washing as described in Section 4.0 would serve to provide greater assurance that the cover blocks were adequately washed.

Land disposal restriction requirements do require that paperwork specifying that the debris has been excluded from the definition of dangerous waste under 40 CFR 261.3(f) through treatment be sent on a one-time only basis to Ecology (40 CFR 268.7[d][1 - 2]). This requirement will be fulfilled prior to disposal of the cover blocks as low-level waste. The treater is also required to maintain a file specifying that the exclusion has occurred along with a certification of compliance with the treatment standard. Generators treating hazardous debris are not required to prepare a waste analysis plan pursuant to 40 CFR 286.7(a)(5).

[2] "Clean debris surface" means the surface, when viewed without magnification, shall be free of all visible contaminated soil and hazardous waste, except that residual staining from soil and waste consisting of light shadows, slight streaks, or minor discolorations, and soil and waste in cracks, crevices, and pits, may be present provided that such staining and waste and soil in cracks, crevices, and pits shall be limited to no more than 5% of each square inch of surface area.


Cover Block Reuse
Yes
Not a solid waste
No
Cover blocks did not contact tank waste based on low radiological screening
No
Not a solid waste or is a low-level waste
Yes
Mixed Waste Debris
Routine washing meets LDR extraction technology for hazardous debris?
Yes
Low-level waste
No
Other extraction technologies can meet LDR for hazardous debris
Yes
Low-level waste
No
Sampling of cover blocks or tank waste demonstrate listed constituents below process waste treatment standard?
Yes
Low-level waste
No
Mixed Waste