



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 10

1200 Sixth Avenue
Seattle, WA 98101

1 2 FEB 2007

Reply To

Attn Of: OCE-164

Keith A. Klein, Manager

United States Department of Energy, Richland Operations Office

P.O. Box 550, MSIN A7-50

Richland, WA 99352

Re: Request for Amendment of the North Loadout Pit Sludge Treatment System Risk-based Disposal Approval, 07-SED-0023, dated November 6, 2006

Dear Mr. Klein:

This letter constitutes approval under the authority of 40 Code of Federal Regulations (CFR) 761.61(c) of your request cited above for a modification of the existing approval, dated July 1, 2005, to treat certain polychlorinated biphenyl (PCB) remediation wastes from Hanford's K-Basins. For convenience and clarity, EPA is providing this approval in the form of a restatement of initial approval in its entirety with the approved modifications incorporated. The rationale of the United States Environmental Protection Agency (EPA) for establishing each of these conditions, including those modified by this action, is contained in the Statement of Basis appearing as Enclosure 2 to this letter. This written decision for a risk-based method for disposal of PCB remediation waste is based on the record cited in the initial approval, supplemented by your written request for modification. Energy is authorized to conduct treatment only of those PCB remediation wastes explicitly enumerated in conditions of this approval, and is precluded from treatment of other PCB remediation wastes absent a modification of this approval or issuance by EPA of a separate approval. Enclosure 1 to this approval documents the administrative record that supports this determination. In granting this approval, EPA continues to find that the proposed treatment of PCB remediation wastes, subject to the conditions below, will not pose an unreasonable risk of injury to health or the environment. Energy shall ensure that activities conducted pursuant to this authorization are in full compliance with conditions of this authorization. The conditions of this approval are enforceable under TSCA and the implementing regulation at 40 CFR Part 761.61(c). Any actions by Energy which violate the terms and conditions of this letter may result in administrative, civil, or criminal enforcement by EPA in accordance with Section 16 of TSCA, 15 USC § 2615.

Conditions

- 1) The spatial boundaries of this approval shall include all sludge treatment and management activities occurring on the T-plant canyon deck, exclusive of storage of sludge in large-diameter containers in T-plant canyon cells. This approval shall remain in effect as necessary to complete treatment of the estimated 6.3 cubic meters of north load-out pit (NLOP) sludges, filter sand, and grouting of LDCs, or a period not to exceed four years from

the date of issue of this approval, whichever is shorter. Energy may request an extension of the four year period by written request and supporting justification to EPA. This approval does not apply to management of any other wastes.

- 2) The sludge treatment system used for activities covered by this approval shall be designed and operated according to the technical standards of 40 CFR 265.192 through 196. This condition does not apply during periods of inactivity pending reuse authorized by this approval.
- 3) Energy shall maintain and operate air emissions controls on the NLOP Sludge Grouting System as described in Section 8.0 of the RBDA application, and shall maintain air emissions controls on the 221-T ventilation systems during activities subject to this approval according to the requirements of "Radioactive Air Emissions Notice of Construction Approval AIR-05-408" issued by the Washington State Department of Health. This condition does not apply during periods of inactivity pending reuse authorized by this approval.
- 4) Energy shall maintain an operating record documenting treatment activities authorized by this approval. This record shall, at a minimum, contain documentation of any inspections conducted during treatment, and of any spills or releases which may have occurred and results of any cleanup activities. This record shall be maintained until completion of all final decontamination/disposal requirements under this approval.
- 5) Within 60 days of completion of treatment activities under this authorization, Energy shall submit to EPA plans and schedules for either reuse of the treatment system, or for final decontamination and/or disposal of the treatment system. In anticipation of or during extended periods of inactivity with respect to activities subject to this approval, Energy may also submit to EPA plans and schedules for reuse as a means to accommodate modified management requirements during the period of inactivity. Plans and schedules for re-use shall demonstrate a reasonable certainty and time-frame for reuse, and shall provide for draining of free liquids and securing of valves and connections to prevent unintended spills or releases of PCB remediation waste during periods between active treatments as necessary to ensure that there is no unreasonable risk of injury to human health and the environment. EPA will incorporate any necessary requirements into this approval through appropriate modifications to approval conditions.
- 6) Nothing in this approval relieves Energy of any obligation to comply with all other rules and regulations applicable to the activities subject to this approval.
- 7) If anytime before during or after management of PCB remediation waste for NLOP Treatment activities, Energy possesses or is otherwise made aware of any data or information (including but not limited to site conditions that differ from those presented in this RBDA application) indicating that activities approved herein may pose an unreasonable risk of injury to health or the environment, Energy must report such data, via facsimile or e-mail to EPA within five working days, and in writing to the Regional Administrator within 30 calendar days, of first being made aware of that data. Energy shall also report new or

different information related to a condition at any element of the NLOP treatment activities associated with the approved retrieval activities if the information is relevant to this approval. Energy shall immediately cease all NLOP treatment activities approved herein that may pose an unreasonable risk of injury to health or the environment. Such activities shall not resume until EPA provides written notification that the activities in question no longer pose an unreasonable risk of injury to health or the environment.

- 8) EPA reserves the right to modify or revoke this approval based on information provided pursuant to Condition 7, or any other information available to EPA that provides a basis to conclude that activities covered by this approval pose an unreasonable risk of injury to health or the environment.
- 9) Submissions required by this approval shall be provided to EPA and Ecology as follows:

EPA: Michael A. Bussell
Office of Compliance and Enforcement
EPA Region 10
1200 6th Ave., MS OCE-164
Seattle, WA 98101
E-mail: Bussell.michael@epa.gov
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w/copies to Dave Bartus
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1200 6th Ave., MS AWT-122
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Larry Gadbois
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Ecology: Jane Hedges, Program Manager
Nuclear Waste Program
Washington State Department of Ecology
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Richland, WA 99354
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Hanford campus mail stop: HO-57
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10) Effective as of the date of this approval through July 1, 2009, Energy may maintain the sludge treatment system used for activities covered by this approval in an inactive state subject to modified management requirements in lieu of Conditions 2 and 3. During this period, the LDC over pack shall not contain an LDC, and the drum loading/mixing area enclosure shall not contain or handle PCB waste drums. Except for residual hold-up material in the transfer pump enclosure and the buffer tank, all free liquids shall be drained from the treatment system to the extent practicable, and valves and connections secured to prevent unintended spills or releases of PCB remediation waste. Leak detection probes may be deactivated provided visual inspections are performed every 30 days. Visual inspections shall include, but not be limited to, areas around the treatment system, such as the empty LDC overpack drum, the drum loading/mixing enclosure, and the buffer tank. Results of visual inspections shall be maintained according to Condition 4.

Should you have any questions or comments, please contact Dave Bartus at (206) 553-2804, or Bartus.dave@epa.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "Michael A. Bussell". The signature is fluid and cursive, with a large initial "M" and "A".

Michael A. Bussell, Director
Office of Compliance and Enforcement

Enclosures (2)

cc: Jane Hedges, Washington State Department of Ecology
Jeannette E. Hyatt, Fluor Hanford

Enclosure 1
Revision 1

Supporting Documentation

Approval of the TSCA RBDA Application for Processing of K East Basin North Load Out Pit at the 221-T Facility

- 1) Record of Decision, K-basins, United States Department of Energy Hanford 100 Area, Hanford Site, Benton County, Washington, March-April, 1999.
- 2) Amended Record of Decision, United States Department of Energy, 100 K Area K Basins, Hanford Site – 100 Area, Benton County, Washington, May, 2005.
- 3) “Toxic Substances Control Act Application for Risk-Based Disposal Approval for Treatment of Polychlorinated Biphenyls (PCB) from the Hanford K-basins North Loadout Pit in T Plant,” Keith A. Klein, Manager, United States Department of Energy, Richland Operations Office to Ron Kreizenbeck, Administrator, United States Environmental Protection Agency, Region 10, May 19, 2005. Includes enclosure of HNF-25697, Revision 0, April, 2005.
- 4) “K-East Basin North Load-Out Pit Sludge Grouting System, System Design Description,” HNF-22769, Rev. 1, April, 2005.
- 5) “Application for Risk-Based Disposal Approval for Polychlorinated Biphenyls, Hanford 200 Area Liquid Waste Processing Facilities,” DOE/RL-2002-02, Revision 0, February, 2002.
- 6) “Focused Feasibility Study for the K Basin Interim Remedial Action,” DOE/RL-98-66, Rev. 0, April 1999. Available at <http://www2.hanford.gov/arpir/common/findpage.cfm?AKey=D199091628>.
- 7) “Addendum to the Focused Feasibility Study for the K Basin Interim Remedial Action,” ROE/RL-98-66, January, 2005.
- 8) “Radioactive Air Emissions Notice of Construction Approval for Consolidated T Plant Operations,” AIR 05-408, Washington State Department of Health, April 26, 2005.
- 9) “KE Basin (KE) North Load-Out Pit (NLOP) Sludge Grouting system Prototype Testing Report,” Rev. 0, May 10, 2005.
- 10) “KE Basin (KE) North Load-Out Pit (NLOP) Sludge Grouting System Acceptance Test Procedure,” Rev. 0, March 30, 2005.

- 11) Engineering calculations, Calculation Number 221T-NLOPORT-CALC-C-001, May 17, 2005.
- 12) E-mail, "FW: Per our discussion yesterday," Andrea L. Prignano, Fluor Hanford to Dave Bartus, EPA, 6/8/2005.
- 13) Engineering drawings, H-2-831963 Rev. 1, "KE NLOP Sldg Grouting System P&ID," and H-2-832155 Rev. 1, "T-plant Grout System Process Flow Diagram," United States Department of Energy, Richland Operations Office.
- 14) E-mail, "NLOP RBDA Revised Criteria Table," Andrea Prignano, Fluor Hanford to Dave Bartus, EPA, June 24, 2005.
- 15) "Request for Amendment of the North Loadout Pit Sludge Treatment System Risk-Based Disposal Approval," Keith A. Klein, Manager, United States Department of Energy, Richland Operations Office, to Michael A. Bussell, Director, United States Environmental Protection Agency, Region 10, dated November 6, 2006.

Enclosure 2

Statement of Basis Revision 1

Approval of the TSCA RBDA Application for Management of K-Basin North Loadout Pit PCB Remediation Waste at the 200 Area T-Plant.

Background

In March-April 1999 the U.S. Department of Energy (DOE), the U.S. Environmental Protection Agency (EPA), and the Washington State Department of Ecology (Ecology) signed the K Basins Interim Action ROD (Reference 1). The ROD, among other actions, directed removal of the sludge from the two K Basins in Hanford's 100 K Area and placement of the sludge in interim storage. Subsequent to this ROD, safety analyses associated with the interim storage of sludge in an untreated state have shown engineering and administrative controls beyond that originally envisioned were necessary. Therefore, DOE, EPA and Ecology signed an amended ROD requiring sludge to be removed from the K-basins to be treated and packaged to meet the waste acceptance criteria (WAC) of disposal a national repository or other suitable disposal location prior to interim storage (Reference 2). The ROD amendment eliminates extended storage of untreated sludge, requires sludge be treated for disposal via stabilization to remove free liquids, and requires that the treated sludge be delivered to a national repository.

The ROD amendment did not identify a specific location for conducting the required sludge treatment, nor did it identify that the treatment location would be considered "on-site" as defined by CERCLA with respect to the K-basins. Therefore, required treatment of the sludge is not subject to the permit exclusion of Section 121(e) of CERCLA.

The ROD amendment requires sludge processing into a form suitable for final disposal prior to placement into interim storage. The first of the sludges to undergo such processing are those from the 105-K East Basin North Load-out Pit (NLOP). These sludges consist of approximately 6.3 cubic meters (m³). DOE has proposed that treatment of these sludges be conducted at 221-T within the T-Plant Complex, and has determined that K-basin sludges are multi-phasic polychlorinated biphenyl (PCB) remediation waste requiring disposal in a high efficiency boiler pursuant to 40 CFR 761.1(b)(4)(iv), 40 CFR 761.60(a)(2) and 40 CFR 761.50(a)(2). To obtain the necessary authorization for solidification of K-basin sludges at T-plant in lieu of this otherwise-required method of disposal, DOE has requested a risk-based disposal approval (RBDA) pursuant to 40 Code of Federal Register (CFR) 761.61(c) (Reference 3).

Relationship of EPA's TSCA and CERCLA decisions

As mentioned above, the regulatory driver for treatment of the NLOP sludges from K-basins is the amended record of decision. This "Addendum to the Focused Feasibility Study for the K-Basins Interim Remedial Action" (Reference 7) along with the original feasibility study (Reference 6) describes in very general terms various treatment processes that may be employed

to treat the sludge. While not explicitly noted in DOE's RBDA application, the general text description of the NLOP sludge treatment system presented in this application is based on work completed to date through the CERCLA process. This is consistent with EPA's expectations under both CERCLA and TSCA that overall project schedules and requirements be developed holistically through the CERCLA process, with TSCA providing a determination under authority of 40 CFR 761.61(c) based on CERCLA work products for those elements of the project requiring administrative authorization.

While EPA must establish an independent record and decision under TSCA authority for this determination in response to DOE's RBDA application (since the CERCLA permit exclusion does not extend to proposed treatment at the 221-T facility), EPA intends to ensure full integration of TSCA and CERCLA decisions consistent with its regulatory obligations and authorities. In particular, EPA is basing this approval on documentation developed through the CERCLA process to compliment information provided in the RBDA application itself to the extent possible consistent with the decision-making criteria of 40 CFR 761.61(c). This approach is fully consistent with EPA's authority under 40 CFR 761.61(c) to request other information it believes necessary to evaluate the RBDA application.

EPA's Evaluation of the Risk-Based Disposal Approval Application

EPA's review of Energy's RBDA application has focused on the sludge treatment system itself, the wastes proposed for treatment (NLOP sludge, sand filter sand, and LDCs after use), management of these wastes during treatment, in part management of treated wastes, and system disposition and/or decontamination.

Sludge Treatment System Description and Evaluation

The RBDA application provides a general text description of the sludge treatment system, which consists of a large-diameter container (LDC) used for transport of sludges and any interim storage of sludges, a buffer tank for mixing, homogenization, and radiological characterization¹ of sludge slurry, the drum mixing stations in which stabilization occurs, and associated transfer lines and instrumentation. Supplementing this very general system description, Energy has submitted a significantly more detailed system design description (Reference 4) that describes

¹ As noted in the referenced CERCLA documentation, a key goal of the sludge stabilization process is that processed waste drums are "contact handled," with a surface radiation dose of less than 200 mar/hr. The waste loading, or ratio of sludge to cement powder stabilization agent, is based on the radiological characterization occurring in the buffer tank. Infrequently, it may occur that certain sludge slurry batches may have a sufficiently high activity that the stabilization mix required to meet the contact handled dose rate sufficiently dilutes waste radionuclides below that corresponding to the regulatory definition of transuranic waste (100 nanocuries/gram of radionuclides with atomic numbers greater than 92). For this reason, a very limited number of stabilized waste drums may assay as other than transuranic. These stabilized drums would be ineligible for disposal at the Waste Isolation Pilot Plant, but would be eligible for disposal on-site at the Environmental Restoration Disposal Facility (ERDF). This point is further discussed in the section "Discussion of EPA's approach to risk evaluation."

the equipment, operating processes, and instrumentation requirements for the proposed sludge treatment. While not a final design, this reference provides an appropriate basis for EPA to establish conditions in this approval as necessary to satisfy the no unreasonable risk standard of 40 CFR 761.61(c). Energy has also submitted engineering drawings, specifically, a process flow diagram and a piping and instrumentation drawing (P&ID) representing the final engineering design (Reference 13). These engineering drawings provide objective confirmation that the final engineering design is consistent with the system design description used as the basis for establishing approval condition. For example, the engineering drawing documents secondary containment for process equipment such as the LDC and buffer tank, secondary containment of waste transfer lines and hoses between components of the treatment system, leak detection sensors, etc. Collectively, this information provides EPA with a sound basis to conclude that the design and operation of the NLOP sludge treatment system, together with conditions established in this approval, is likely to satisfy the stated treatment objectives and will satisfy the no unreasonable risk standard of 40 CFR 761.61(c).

Wastes Proposed for Treatment

The principal waste proposed for treatment is approximately 6.3 cubic meters of sludge from the K-basin North Load-out Pit (NLOP). Energy's application also proposes treatment of approximately 2.5 cubic meters of sand filter sand, as well as grouting of up to six LDCs used for transfer and storage of sludge and sand filter sand. Energy's RBDA application documents that the sand filter sand is from the water treatment system that generated the NLOP sludge in the first place. On this basis, the composition of PCBs in the sand filter sand is expected to be identical to those in the sludge. Section 4.3 of Energy's RBDA application notes that since the sand filters were backwashed, the concentration of PCBs in the sand filter sand is expected to be below that of the sludge. Of course, sludge remaining in the LDCs will be identical to the sludge transported in them.

Discussion of EPA's approach to risk evaluation

Given the rather straight-forward nature of this treatment system, EPA finds that risks from the proposed treatment system can be addressed by considering the following aspects of the treatment system:

- Spills or releases from the treatment system during operations;
- Emissions of PCBs via the air pathway;
- Treatment System Disposition and/or Decontamination

Energy's RBDA application states that the purpose of the proposed treatment of sludge and sand filter sand is to remove free water to meet waste acceptance criteria of candidate disposal facilities. For LDCs, treatment is to fill void space. For the vast majority of treated sludge containers, which is documented in the CERCLA ROD as likely to assay as transuranic waste, the candidate disposal facility is a national repository, specifically, the Waste Isolation Pilot Plant. Some small number of treated sludge drums may not assay as TRU, however, after the stabilization mixture is established to ensure treated waste container surface radiation dose waste

acceptance criteria are met. These drums, expected to be relatively few in number, are likely to be disposed of on-site at the Hanford Environmental Restoration Disposal Facility (ERDF).

Waste acceptance criteria for these two disposal units are documented in Table 1 of Energy's RBDA application. Neither of these candidate disposal facilities have restrictions on the PCB content of wastes, and EPA is not establishing any NLOP sludge treatment system performance criteria with respect to PCB content of the treated wastes. EPA does believe it appropriate for Energy to demonstrate that treated waste can be reasonably expected to fully meet waste acceptance criteria of one of the two disposal facilities, since a need to re-treat solidified wastes could easily be viewed as posing an unreasonable risk of injury to health or the environment. Therefore, as part of this RBDA decision, EPA has also considered the ability of the proposed treatment system to consistently produce a waste form suitable for disposal without additional treatment or re-treatment as part of its risk evaluation with respect to the no unreasonable risk standard of 40 CFR 761.61(c).

Spills or Releases from the Treatment System during Operations

The NLOP sludge treatment system is illustrated in Figure 1 of Reference 4 and in Reference 13, consisting of the LDC containers in which sludge is transported to the 221-T facility from K-basins, an agitated buffer tank, a 55-gallon treatment drum and mixing equipment, admixture feed equipment, and associated piping, instrumentation and utility supplies (air, water, electrical power, etc.). With respect to spills or releases from the treatment system during operations, EPA finds that basic engineering design features and operating procedures that prevent spills or releases during treatment are an appropriate means of ensuring the proposed treatment does not pose an unreasonable risk of injury to health or the environment. Therefore, EPA is requiring that the NLOP sludge treatment system be designed and operated according to the technical standards of 40 CFR 265.192 through 196, which are the technical standards for tanks/tank systems under the federal Resource Conservation and Recovery Act (RCRA)².

In establishing this requirement, EPA clearly notes two key points. First, Energy's RBDA application provides no documentation or assertion that any of the wastes proposed for treatment designate as hazardous or dangerous wastes under Ecology's authorized dangerous waste management program or the federal RCRA program. Therefore, EPA is establishing these technical standards under TSCA authority independent of any authority under RCRA that may or may not exist. Second, Energy's RBDA application provides no documentation or assertion that either the LDCs or the treatment drum would be classified as a tank or tank system under RCRA. EPA is, nevertheless, applying the cited technical standards, applicable to tanks under RCRA authority, since doing so is a defensible means of ensuring EPA's goal of preventing spills or releases from the NLOP sludge treatment system as part of satisfying the 40 CFR 761.61(c) no unreasonable risk standard. Stated another way, EPA finds that the cited technical standards are an effective means of preventing spills and releases under TSCA authority independent of whether or not the standards might apply under RCRA to any particular component of the NLOP sludge treatment system.

² EPA considered, but did not apply, TSCA standards at 40 CFR 761.65(c)(7), since they are based on waste characteristics not relevant to the waste streams considered by this approval

Energy has informally noted two concerns with application of these technical standards. First, the standards appearing in 40 CFR 265.192(a), (b), (f), and (g) require certification by an independent, qualified, registered professional engineer. Given the close nexus of the NLOP sludge treatment system to the CERCLA process, and the application of these standards under TSCA, EPA believes that professional engineering certification under TSCA authority is not warranted. Energy has provided EPA with two documents describing testing and acceptance testing of the NLOP sludge treatment system, as well selected engineering calculations (References 9, 10 and 11, respectively). While these data are clearly not identical in form or function to an independent professional engineer certification, they do provide sufficient assurance to EPA that elements of the TSCA no unreasonable risk standard supported by application of the cited 40 CFR Part 265 standards are met. Therefore, EPA will accept the referenced documentation as an acceptable basis for demonstrating compliance with the engineering certification requirements of 40 CFR 265.192(a), (b), (f), and (g).

Second, the construction of secondary containment for certain NLOP sludge treatment equipment is dictated by radiation shielding issues. As a result, both leak detection and verification must be conducted remotely. As a result, Section 5.0 of Energy's RBDA application discusses use of conductivity probes for leak detection. While this approach is not precluded by the standards in 40 CFR 265.195, EPA specifically notes that the technical approach described in the RBDA application is an appropriate means of demonstrating compliance with 40 CFR 265.195.

Emissions of PCBs via the air pathway

Energy's RBDA application provides a bounding estimate of air pathway PCB emissions during operation of the NLOP sludge treatment system. Although the application does not directly calculate risks from these emissions, it does compare calculated air pathway emission rates to similar emissions rates for the Hanford 200-Area Liquid Waste Processing Facilities RBDA (Reference 6) which EPA found did not pose an unreasonable risk under 40 CFR 761.61(c) authority. The NLOP sludge treatment facility emissions estimates, which are derived from work completed through the CERCLA remedial investigation/feasibility study process, are based on simplified modeling of PCB vapor/liquid equilibrium. Key assumptions in this simplified emissions model is that all PCBs in the waste are emitted within a 1-hour period at the start of stabilization cement curing, when the stabilization drum lid is open, and that the curing stabilization cement reaches a maximum 20 °C temperature rise. These assumptions result in a maximum calculated emissions rate of 1.7×10^{-8} g/s PCBs. The application compares this rate to an emissions rate of 2×10^{-3} g/s for the 200-area Liquid Waste Processing Facility, on the basis that the 221-T plant and the 200-Area LWPF are both located in the Hanford Central Plateau Area and have similar human and environmental receptors. Given at least a five order of magnitude difference in calculated emissions rates, EPA concludes that air emissions from NLOP sludge treatment at the 221-T facility clearly do not pose an unreasonable risk of injury to health or the environment, regardless of what minor differences in receptors or receptor locations might exist between the 221-T plant and the 200-Area Liquid Waste Processing Facilities.

The estimates of air emissions above cover only volatilization of PCBs from the treatment drum itself. While volatilization may also occur in the blending tank, all PCBs in the waste are already

accounted for in the treatment drum analysis. Therefore, it is not necessary to separately consider volatilization of PCBs from the blending tank. Energy's RBDA air analysis does not, however, specifically account for release of PCBs via a particulate or aerosol mechanism, which could legitimately occur from either the blending tank or the treatment drum, since mixing or agitation occur in each. Exposure to particulate PCBs can be addressed for workers via appropriate respiratory protection, normally used in T-plant for radiological exposure considerations, and for human and environmental receptors external to the 221-T facility through ventilation system filtration. EPA is requiring filtration of the 221-T facility ventilation system to ensure potential particulate emissions from the treatment system are appropriately controlled. This requirement is based on existing approval for radioactive air emissions issued by the Washington State Department of Health (Reference 8).

Treatment System Disposition and/or Decontamination

Section 7.0 of Energy's RBDA application states that components of the NLOP sludge treatment system may be reused for processing of additional PCB waste. EPA believes this is appropriate, particularly considering this RBDA covers only a portion of the total K-basin inventory of sludge. Rather than specify explicit requirements and a fixed schedule for decontamination or disposal of the treatment system, EPA is electing to address potential risks from residual PCB remediation waste remaining in the treatment system through a conditional approach. Within a specified period of time following completion of NLOP sludge treatment activities, Energy may either:

- 1) Provide EPA with plans and schedules for reasonably-anticipated further use of the treatment system; or
- 2) Provide EPA with specific plans and schedules for decontamination and/or disposal of the treatment system.

Should Energy demonstrate a reasonable expectation for continued use of the treatment system, EPA will require that free liquids be drained and/or pumped from the system to the maximum extent practicable between periods of active use to minimize the potential for unintentional spills or releases, and to secure open pipes, hoses and valves. In this instance, EPA will not require further decontamination pending expected re-use. EPA strongly encourages Energy proposals that will make maximum legitimate use of the NLOP sludge treatment system, but will expect Energy to demonstrate that extended periods of inactivity do not constitute long-term storage in lieu of effective final decontamination and/or disposal. To address this concern, EPA intends to require bi-annual reaffirmation of re-use plans and schedules. This approach will help achieve a reasonable balance between the noted regulatory issue and flexibility necessary to accommodate efficient site cleanup.

At such time as Energy determines it has no further legitimate use for the treatment system, or Energy is not able to establish a reasonable certainty of legitimate further use within a reasonable time frame, Energy must submit plans and schedules for final decontamination and/or disposal. EPA will incorporate approved plans and schedules into this approval, since these activities are considered an integral component of EPA's demonstration of no unreasonable risk under 40 CFR 761.61(c). EPA notes that Energy's RBDA application states that "For the TSCA-regulated

waste, any decontamination will meet the requirements of 40 CFR 761.79 and disposal will be according to the requirements of 40 CFR 761.50 using self-implementing methods or performance-based [e.g. 761.61(a)³ or (b)] whenever possible. Given that decontamination and/or disposal of the NLOP treatment system is integral to EPA's finding of no unreasonable risk under this approval, completion of these activities on a self-implementing basis outside of this approval is not appropriate. Energy may make reference to technical aspects of 761.61(a) in required decontamination/disposal plans, but EPA will still require that the activities become enforceable conditions of this approval.

EPA concurs with Energy's statement in the RBDA application that spills or releases of PCBs or PCB remediation waste are not expected on the 221-T facility canyon deck. Should such spills or releases occur nevertheless, EPA expects that they will be cleaned up or decontaminated in a timely manner, and if necessary, addressed as part of final decontamination/disposal of the treatment system. EPA is including an operational recordkeeping condition for purposes of establishing documentation of inspections and/or spill cleanups that occur during treatment activities. These data are expected to be useful for establishing whether or not canyon deck decontamination activities may be necessary.

EPA is not establishing particular requirements or authorization for management of secondary wastes from operation of the NLOP sludge treatment system. EPA expects that such wastes will be managed on a self-implementing basis according to applicable requirements of 40 CFR Part 761, or pursuant to the applicable requirements of the approved remedial design/remedial action work plan.

While Energy's RBDA application did not include a schedule for completion of all solidification activities, EPA believes it appropriate to establish a reasonable time frame for the proposed activities. Energy has provided a brief analysis of factors affecting solidification schedules, and has requested a four-year duration for this approval (Reference 12). Based on Energy's analysis, EPA finds a four-year period reasonable. To accommodate unforeseen circumstances, EPA is providing an option for written approval of an extension of this period for reasonable cause.

Disposal Unit Waste Acceptance Criteria Compliance

Table 1 in Energy's RBDA application documents relevant waste acceptance criteria for the WIPP national repository, and the on-site ERDF disposal facility. Energy has submitted supplemental information that documents the projected characteristics of treated sludge (Reference 14) with respect to the criteria established in Table 1. EPA expects that the treated sludge projected characteristics provide a bounding characterization of treated sand filter sludge – conclusions reached with respect to compliance with disposal unit waste acceptance criteria for treated sludge are expected to apply to treated sand filter sand as well. Comparison of these projected characteristics in the supplemental information with disposal unit waste acceptance

³ This RBDA approval has not considered whether or not it is appropriate to apply the self-implementing requirements of 40 CFR 761.61(a) as proposed in Energy's application for purposes of final decontamination and/or disposal of the NLOP sludge treatment system, specifically with regard to the stated expectation that the authority of 40 CFR 761.61(a) apply to general, moderately-sized sites where there should be low residual environmental impact from remedial activities.

criteria in Table 1 indicate that all wastes to be treated pursuant to this approval can be reasonably expected to comply with disposal requirements of either the Waste Isolation Pilot Plant (WIPP) or the on-site Environmental Restoration Disposal Facility (ERDF)⁴ without additional treatment or re-treatment. Therefore, EPA concludes that the proposed treatment does not pose an unreasonable risk with respect to the potential need for further treatment or retreatment.

In conclusion, EPA finds that with respect to the elements of risk discussed above which characterize the NLOP sludge treatment system, the proposed treatment process and activities do not pose an unreasonable risk of injury to health or the environment.

Discussion of Conditions

This section contains a discussion of EPA's rationale for establishing each of the conditions established in granting this risk-based disposal approval pursuant to 40 CFR 761.61(c) for TSCA-regulated PCB remediation waste that will be solidified at T-plant.

- 1) The spatial boundaries of this approval shall include all sludge treatment and management activities occurring on the T-plant canyon deck, exclusive of storage of sludge in large-diameter containers in T-plant canyon cells. This approval shall remain in effect as necessary to complete treatment of the estimated 6.3 cubic meters of north load-out pit (NLOP) sludges, filter sand, and grouting of LDCs, or a period not to exceed four years from the date of issue of this approval, whichever is shorter. Energy may request an extension of the four year period by written request and supporting justification to EPA. This approval does not apply to management of any other wastes.

The purpose of this condition is to clearly define what activities are subject to conditions of the approval. Activities such as storage of NLOP sludge in canyon cells do not require an explicit approval, as they are conducted pursuant to self-implementing authorities under 40 CFR 761.61. Activities not authorized by this approval, or that are not authorized under self-implementing provisions of 40 CFR 761.61, are prohibited. EPA notes that this prohibition is not intended to discourage future application of the NLOP sludge treatment system to future cleanup wastes - as noted in the section above discussion decontamination and/or disposal of the treatment system, EPA encourages maximum legitimate reuse of the treatment system. This prohibition is simply intended to indicate that a modification of this approval, or a separate approval, will be necessary before additional wastes can be processed in the NLOP sludge treatment system.

⁴ This approval is neither establishing unit-specific disposal requirements for treated wastes, nor establishing approval conditions relating to characteristics of treated wastes. These requirements are established on a unit-specific basis (in the case of WIPP and ERDF), or by the K-basin amended ROD (in the case of characteristics of treated waste. EPA also notes that although Energy's RBDA application includes waste acceptance criteria for the Hanford mixed waste trenches and the Central Waste Complex storage facility, EPA has examined only criteria for WIPP and ERDF in establishing for purposes of this approval that all treated wastes have at least one approvable disposal location.

- 2) The sludge treatment system used for activities covered by this approval shall be designed and operated according to the technical standards of 40 CFR 265.192 through 196. This condition does not apply during periods of inactivity pending reuse authorized by this approval.

The purpose of this condition is to ensure that equipment used for sludge treatment is designed, constructed and operated in a manner that prevents or appropriately mitigates leaks, spills or releases. As noted in the EPA's evaluation of Energy's RBDA application, documentation provided as References 9, 10 and 11 provide an acceptable basis for demonstrating compliance with the engineering certification requirements of 40 CFR 265.192(a), (b), (f), and (g). Also, the leak detection approach described in Section 5.0 of the RBDA application provides an acceptable approach for demonstrating compliance with the leak detection requirements of 40 CFR 265.195.

- 3) Energy shall maintain and operate air emissions controls on the NLOP Sludge Grouting System as described in Section 8.0 of the RBDA application, and shall maintain air emissions controls on the 221-T ventilation systems during activities subject to this approval according to the requirements of "Radioactive Air Emissions Notice of Construction Approval AIR-05-408" issued by the Washington State Department of Health. This condition does not apply during periods of inactivity pending reuse authorized by this approval.

The purpose of this condition is to ensure potential PCB exposures via the air emissions pathway do not pose an unreasonable risk of injury to health or the environment, as discussed in the section "Air Emissions Evaluation." In establishing this condition, EPA notes that these Notice of Construction approvals require ventilation stacks to be equipped with high efficiency particulate air (HEPA) filters capable of reducing particular air emissions by a minimum of 99.95 percent. EPA understands that this NOC approval may be revised by the Washington State Department of Health. Such revisions are acceptable with respect to compliance with this condition provided that the abatement technology and attendant minimum air emission reduction standard required by any revised NOC approval remain no less stringent than required by the cited Approvals.

Based on Energy's request for approval of alternate management standards during periods of inactivity pending reuse or resumption of management activities, EPA has modified this condition to provide relief from air emission controls requirements during such periods. EPA's rationale is that the potential for release of PCBs via the air pathway during such periods is minimal to non-existent, given that during any such periods the system must be drained of free liquids, and valves and connections secured to prevent unintended spills (See Condition 5). EPA notes that this modification relieves Energy of the requirement to maintain air emissions controls under this RBDA approval – it does not relieve Energy of any other requirement to maintain air emissions controls under other authorities.

- 4) Energy shall maintain an operating record documenting treatment activities authorized by this approval. This record shall, at a minimum, contain documentation of any inspections conducted during treatment, and of any spills or releases which may have occurred and results of any cleanup activities. This record shall be

maintained until completion of all final decontamination/disposal requirements under this approval.

The purpose of this condition is to ensure that information that may be useful for evaluating the effectiveness of requirements established under this approval is available, and to record information that may be useful to develop and approve final decontamination/disposal requirements.

- 5) Within 60 days of completion of treatment activities under this authorization, Energy shall submit to EPA plans and schedules for either reuse of the treatment system, or for final decontamination and/or disposal of the treatment system. In anticipation of or during extended periods of inactivity with respect to activities subject to this approval, Energy may also submit to EPA plans and schedules for reuse as a means to accommodate modified management requirements during the period of inactivity. Plans and schedules for re-use shall demonstrate a reasonable certainty and time-frame for reuse, and shall provide for draining of free liquids and securing of valves and connections to prevent unintended spills or releases of PCB remediation waste during periods between active treatments as necessary to ensure that there is no unreasonable risk of injury to human health and the environment. EPA will incorporate any necessary requirements into this approval through appropriate modifications to approval conditions.

The purpose of this condition is to establish an enforceable requirement and schedule for development and submission of plans and schedules relating to final decontamination and/or disposal of the treatment system. At such time as EPA reviews these plans and makes appropriate modification to this approval, EPA will also establish a requirement that Energy shall provide written documentation reaffirming or appropriately revising plans and schedules for reuse of the treatment system. The purpose for this reaffirmation mechanism that EPA intends to include at a future date is to ensure that extended periods of inactivity are not inappropriately applied in lieu of final decontamination and/or disposal. EPA does intend, however, to allow considerable flexibility to allow future use of this system in light of the significant investment in the system and the complexity of Hanford cleanups.

EPA notes, as stated in Condition 1, that this approval applies only to management of NLOP sludge, sand filter sand, and LDCs, since Energy's RBDA application has not provided any data on other waste streams. As a result, no record has been established under TSCA authority to support a finding that management of additional waste types under this approval would satisfy the TSCA no-unreasonable-risk standard. Management of additional waste types can only occur after such a record is established and this approval modified accordingly.

Based on Energy's letter of November 6, 2006, EPA has modified this condition to allow for periods of inactivity during the period of operations authorized by this approval. In preparing the initial RBDA approval, neither Energy nor EPA anticipated that processing of the 6.3 cubic meters of material subject to the approval would be interrupted, but did anticipate that the sludge treatment system might be re-used for additional waste streams in the future. As Energy notes in their November 6, 2006 letter, however, processing of the authorized 6.3 cubic meters of material has been interrupted, and Energy has requested authorization for alternate management

practices during this period similar to what would be expected during periods awaiting re-use for additional waste streams. Since the fact patterns of Energy's request are fully congruent with EPA's rational anticipating periods pending re-use in the original RBDA approval, EPA is including the requested modification.

- 6) Nothing in this approval relieves Energy of any obligation to comply with all other rules and regulations applicable to the activities subject to this approval.

As noted in the Statement of Basis, the proposed activities are subject to numerous considerations, not all of which are subject to EPA control under the authority of 40 Code of Federal Register (CFR) 761.61(c). This condition reflects EPA's acknowledgement that success and environmental performance must reflect compliance with all applicable requirements.

- 7) If anytime before, during or after management of PCB remediation waste for NLOP Treatment activities, Energy possesses or is otherwise made aware of any data or information (including but not limited to site conditions that differ from those presented in this RBDA application) indicating that activities approved herein may pose an unreasonable risk of injury to health or the environment, Energy must report such data, via facsimile or e-mail to EPA within five working days, and in writing to the Regional Administrator within 30 calendar days, of first being made aware of that data. Energy shall also report new or different information related to a condition at any element of the NLOP treatment activities associated with the approved retrieval activities if the information is relevant to this approval. Energy shall immediately cease all NLOP treatment activities approved herein that may pose an unreasonable risk of injury to health or the environment. Such activities shall not resume until EPA provides written notification that the activities in question no longer pose an unreasonable risk of injury to health or the environment.

The purpose of this condition is to ensure that information relevant to EPA's finding of no unreasonable risk of injury to health and the environment remains up-to-date throughout the duration of this approval, and that activities conducted pursuant to the approval demonstrate compliance with this standard.

- 8) EPA reserves the right to modify or revoke this approval based on information provided pursuant to Condition 7, or any other information available to EPA that provides a basis to conclude that activities covered by this approval pose an unreasonable risk of injury to health or the environment.

The purpose of these conditions is to ensure that all activities for the duration of retrieval activities (including any post-retrieval management of PCB remediation waste residuals) continue to pose no unreasonable risk of injury to health or the environment, and that EPA is assured of receiving the necessary supporting information. While this approval reflects EPA's findings that the proposed activities satisfy the requirements of 40 CFR 761.61(c) based on the information cited in the Statement of Basis, EPA also recognizes that the unique nature of activities covered by this authorization make it very possible that new information will be available that warrant explicit EPA evaluation and/or response. This condition ensures EPA's ability to respond appropriately.

9) Submissions required by this approval shall be provided to EPA and Ecology as follows:

EPA: Michael A. Bussell
Office of Compliance and Enforcement
EPA Region 10
1200 6th Ave., MS OCE-164
Seattle, WA 98101
E-mail: Bussell.michael@epa.gov
Facsimile: (206) 553-7176

w/copies to Dave Bartus
Office of Air, Waste and Toxics
EPA Region 10
1200 6th Ave., MS AWT-122
Seattle, WA 98101
E-mail: Bartus.dave@epa.gov
Facsimile: (206) 553-8509

Larry Gadbois
Office of Environmental Cleanup, Hanford Project Office
309 Bradley Blvd., Suite 115
Richland, WA 99352
E-mail: Gadbois.larry@epa.gov
Facsimile: (509) 376-2396
Hanford campus mail stop: B1-46

Ecology: Jane Hedges, Program Manager
Washington State Department of Ecology
Nuclear Waste Program
3100 Port of Benton Blvd.
Richland, WA 99354
E-mail: jhed461@ecy.wa.gov
Facsimile: (509) 372-7971
Hanford campus mail stop: H0-57

The purpose of this condition is to ensure communications required by this approval are directed to the appropriate organizational representatives.

10) Effective as of the date of this approval through July 1, 2009, Energy may maintain the sludge treatment system used for activities covered by this approval in an inactive state subject to modified management requirements in lieu of Conditions 2 and 3. During this period, the LDR over pack shall not contain an LDC, and the drum loading/mixing are enclosure shall not contain or handle PCB waste drums. Except for residual hold-up material in the transfer pump enclosure and the buffer tank, all

free liquids shall be drained from the treatment system to the extent practicable, and valves and connections secured to prevent unintended spills or releases of PCB remediation waste. Leak detection probes may be deactivated provided visual inspections are performed every 30 days. Visual inspections shall include, but not be limited to, areas around the treatment system, such as the empty over-pack drum, the drum loading/mixing enclosure, and the buffer tank. Results of visual inspections shall be maintained according to Condition 4.

EPA's rationale for this condition is that given in Condition 5 for requirements applicable to periods of inactivity pending re-use, including information provided to EPA in Energy's letter of November 6, 2006.