TRI-PARTY AGREEMENT

Change Notice Number TPA-CN- 0943	**TPA CHANGE NOTICE FORM**	**Date:** June 26, 2023
Document Number, Title, and Revision: DOE/RL-2010-52, *Remedial Design and Remedial Action Work Plan for the K Basins Interim Remedial Action: 105K West Basin Deactivation*, Revision 1		**Date Document Last Issued:** 10-16-2020
Approved Change Notices Against this Document: None		
Originator: R. L. Cathel		**Phone:** 509-376-1513

Description of Change:
Clarification provided in sections 3.2.3 and 3.2.4 regarding grouting and water removal operations. Additionally, section 3.2.5.1 amended to clarify scope of removal of Category II nonfriable asbestos containing material.

M. S. French (**DOE**) and R. C. Armijo (**Lead Regulatory Agency**) agree that the proposed change modifies an approved workplan/document and will be processed in accordance with the Tri-Party Agreement Action Plan, Section 9.0, *Documentation and Records,* and not Chapter 12.0, *Changes to the Agreement*.

The following changes have been made:

- Section 3.2.3: added clarification to planned sequencing of grouting and water removal operations.
- Section 3.2.4: added clarification and reference to Section 3.2.3.
- Section 3.2.5.1: added reference to DOE/RL-2010-53, Remedial Design/Remedial Action Work Plan for the 100 Area Remaining Sites Interim Remedial Action: 105-K West Basin Demotion and Removal.

Additions are shown using <u>double underline</u>. Deletions are shown using ~~strikeout~~.

Note: Include affected page numbers: 11, 12, and 13

Justification and Impacts of Change:

Changes to sections 3.2.3 and 3.2.4 modifies the work plan to align with the dewatering the 105KW Basin. Clarity is provided regarding use of grout and controlled density fill as well as describing how residual water level will be determined to ensure potential radiological exposure remains as low as reasonably achievable.

Changes to section 3.2.5.1 modifies the work plan to align with agreed upon language in DOE/RL-2010-53, *Remedial Design/Remedial Action Work Plan for the 100 Area Remaining Sites Interim Action: 105-K West Basin Demolition and Removal*, Rev.1. This includes modifying the statement "All Cat II nonfriable ACM…" with exception as noted in DOE/RL-2010-53.

Approvals:

Anders J. Wiborg Digitally signed by Anders J. Wiborg Date: 2023.06.28 15:15:12 -07'00' DOE Project Manager	Date	[X] Approved [ ] Disapproved
Armijo, Roberto Digitally signed by Armijo, Roberto Date: 2023.07.10 10:05:11 -07'00' EPA Project Manager	Date	[ ] Approved [ ] Disapproved
N/A Ecology Project Manager	Date	[ ] Approved [ ] Disapproved

The above-water debris includes the three IWTS garnet filter vessels, one SKW sand filter vessel, and one ECRTS decant water sand filter vessel located in the 105KW Annex. Prior to removal as above-water debris, the deactivation effort evacuates water filtration media from each vessel to an extent practicable. Fixatives, grout, and CDF stabilization applications follow, as necessary, to control airborne radionuclide emissions, shield filtration media residuals, and eliminate void space for waste disposal purposes.

Based on debris characterization results, deactivation of below-water debris items includes washing, retrieval, and packaging prior to ERDF disposal. Lower activity debris items may remain in the basin for removal with basin structural rubble during demolition.

3.2.2 Waste Staging

Other higher dose debris items or materials that cannot meet the ERDF waste acceptance criteria (ERDF-00011, *Environmental Restoration Disposal Facility Waste Acceptance Criteria*) are staged for removal during demolition. Such staging consists of physical segregation from other items remaining in the basin and stabilization with CDF. The disposition of staging area waste generated through removal of sequestered material during demolition follows one of three alternatives:

- Incorporation with the demolition rubble and shipment to ERDF
- Encapsulation with grout for shielding purposes for subsequent placement of monoliths at ERDF
- Packaging as transuranic (TRU) debris/waste for subsequent transfer to the Central Waste Complex interim storage prior to eventual shipment to the Waste Isolation Pilot Plant

A waste management plan derived from SAP results and in-process characterization surveys will determine the appropriate disposition (Section 5.3). Characterization of waste packaged for the Waste Isolation Pilot Plant will meet Central Waste Complex waste acceptance criteria in HNF-EP-0063, *Hanford Site Solid Waste Acceptance Criteria*. Prior to dewatering, the debris removal effort documents locations of staging areas and debris items remaining in the basin.

3.2.3 Grouting

Grout will be added to the 105KW Basin floor as necessary to provide shielding of components and floor residuals after basin dewatering and prior to stabilization with Controlled Density Fill (CDF). ~~Prior to dewatering, the NLOP and/or other staged materials will be fully stabilized with CDF to better facilitate future characterization sampling. For~~ Prior to dewatering, large debris items remaining in the basin (e.g., ECs)~~,~~ and void spaces will be filled with grout, as necessary to meet waste acceptance, and provide radiation shielding to support subsequent demolition of the basin substructure. To maintain personnel exposure ALARA, dewatering and grouting evolutions are performed remotely. Also, the amount of allowable residual water ~~will be left~~ in the basin prior to the grout addition will be maximized to retain shielding provided by water to fullest extent. The maximum allowable residual water level will be determined by testing of the absorbent capacity of grout and CDF formulations ~~and pits during initial floor grouting. Water will be removed from the basin as necessary to accommodate the addition of grout~~. Water removed prior to the grout addition ~~from the basin~~ will be transferred to the ETF, which is considered an onsite Hanford treatment, storage, and/or disposal unit. Grout will be added using redundant grout ~~lances~~ lines that will extend ~~underwater~~ into the basin near the floor level in a manner that ensures uninterrupted transition from basin dewatering to application of the grout cap and subsequent stabilization with CDF. The grout will be a high-slump, flowable concrete that will ~~to ensure encapsulation~~ encapsulate ~~of the~~ residual sludge and ~~to~~ fill void spaces in debris to the extent practical. Grout specifications and application methods for underwater grout placement have been previously demonstrated during grouting the 105KE and 105KW Basin discharge chutes and 105KE Basin floor.

In recognition of lessons learned from the 105-KE dewatering experience, 105-KW Basin dewatering occurs prior to placement of the floor grout cap. The 105-KW Basin dewatering and filtration

recirculation system includes ion exchange module (IXM) filtration throughout the entire dewatering evolution. It is designed to filter dissolved and suspended solids helping to keep basin water clear while dewatering and ensure that 105-KW Basin water will meet ETF acceptance criteria and enable subsequent treatment in a timely manner.

~~Basin water may become cloudy during grouting and will be recirculated through a filtration system to filter the particulates and remove dissolved radionuclides. Basin water pH is anticipated to rise during grouting and will be adjusted as necessary by adding chemicals or using filters.~~

The internal volumes of above-water filter vessels ~~and their shielded enclosure~~ will be grouted ~~if necessary~~ to affix contamination, fill void spaces, and provide radiation shielding in support of basin superstructure demolition. Timing for removal of these grouted components will be based on the selected removal technique (e.g., in-place size reduction and packaging into DOT Type A containers ~~or monolithic removal~~) and deferred for removal during the basin substructure demolition phase.

3.2.4 Water Removal and Transfer

Removal of water from the 105KW Basin will be performed using techniques similar to removal of water from the 105KE Basin. Water will be batch removed from the 105KW Basin and transported to ETF by Hanford Site-owned tanker trucks.[2] Basin water will be sampled in accordance with KBC-27149, *Sampling and Analysis Plan for 105-K East and West Basins Wastewater*, to ensure it meets ETF acceptance criteria and transportation requirements. Water in the basin currently provides shielding from sludge, ~~fuel specimens~~ irradiated uranium fragments, radioactively contaminated basin concrete surfaces, and debris. The water also controls the spread of contamination by keeping the basin surfaces and residual sludge wet. The dewatering operation will be performed from a remote location outside of the basin and will be based on the radiation levels anticipated during removal of the basin water. As discussed in Section 3.2.3 testing of the water absorbing capacity of grout and CDF formulations will determine the extent of allowable residual water.

During ~~Upon completion of~~ basin dewatering, a fixative will be applied to the exposed below-water basin surfaces and debris as necessary to minimize the ~~generation~~ suspension of airborne contamination. If an issue was encountered during dewatering and further shielding was needed to fix the issue in the basin, water could be added back and then dewatering can continue once the issue was resolved.

~~Several inches of water may remain above the grouted floor in some areas of the basin due to floor irregularities and pumping capabilities. This residual water amount will be minimized using sumps and self-leveling grout that will be placed on the basin floor prior to water removal.~~ After water removal, the ~~remaining~~ basin ~~depth~~ will be void filled with grout and CDF. This will provide additional radiation shielding and establish a prepared surface ~~for~~ supporting demolition of the abovegrade superstructure.

3.2.5 Remaining Deactivation Activities

Deactivation activities include removing hazardous substances from equipment and decontamination. Equipment would be decontaminated to the extent necessary to support removal and disposal, or future demolition with the basin. Hazardous substances, including oils and glycol, will be removed from equipment and systems either during deactivation or demolition of the 105KW Basin. This includes removing and disposing filter media used for water treatment during final deactivation; performing asbestos inspections; grouting basin floor and pits; and applying fixatives to contaminated surfaces as necessary for basin demolition. In addition, the ECs that were used to store sludge will be stabilized for future removal.

3.2.5.1 Asbestos-Containing Material

Asbestos-containing material (ACM) is found in and around the 105KW Basin and the attached reactor building. ACM typically consists of insulation for piping, floor tiles, and cement asbestos board. Insulation on piping and vessels will be removed as Class I asbestos work, and nearly all other ACM will be removed as Class II (e.g., floor tiles and cement asbestos board). Removal and disposal of ACM will be performed in accordance with the substantive provisions of the *Clean Air Act of 1977* and Amendments (40 CFR 61, "National Emission Standards for Hazardous Air Pollutants" [NESHAP], Subpart M, "National Emission Standard for Asbestos") as identified in the K Basins Interim Action ROD (EPA/ROD/R10-99/059), which requires special precautions to control airborne emissions of asbestos fibers during asbestos removal activities.

[2] A future engineering evaluation may determine that use of the 105KW Annex and existing piping systems is a viable alternative for filling of the tanker trucks.

Asbestos abatement activities will be performed in full compliance with all substantive NESHAP standards (40 CFR 61) that are ARARs for the work. Before demolition begins, a thorough inspection of the affected facility will be performed for the presence of asbestos, including Category I (Cat I) and Category II (Cat II) nonfriable ACM. All Cat II nonfriable ACM will generally be presumed potentially friable and will be removed before actual demolition activities begin with exceptions noted in sections 3.2.1.2 and 3.2.3.1 of DOE/RL2010-53, *Remedial Design/Remedial Action Work Plan for the 100 Area Remaining Sites Interim Remedial Action: 105-K West Basin Demolition and Removal*. If DOE identifies any other Cat II ACM that should be allowed to remain in place during demolition based on knowledge that the demolition will not render it friable, information identifying the planned demolition approach and describing how the
Cat II ACM will not become crumbled, pulverized, or reduced to powder by the forces expected to act on it during the demolition or otherwise become friable, will be provided in advance to EPA for approval. Cat I nonfriable ACM will also be removed prior to the start of actual demolition activities, except in situations where demolition practices will be used that can be or have been demonstrated to the satisfaction of EPA not to render the Cat I ACM friable, consistent with NESHAP standards (40 CFR 61). Demonstration can be performed using existing EPA or Washington State guidance regarding asbestos abatement under NESHAP. Such Cat I nonfriable ACM must not be in poor condition, and planned demolition activities must not subject the ACM to sanding, grinding, cutting, or abrading. In all cases, ACM that is either friable or cannot be demonstrated to remain nonfriable during demolition will be removed prior to such demolition, as required by NESHAP.

During deactivation, an accredited asbestos building inspector will perform a comprehensive inspection of the 105KW Basin and 105KW Annex and the type and quantity of ACM will be estimated. Regulated ACM identified in the building interior or on equipment that will be disturbed by this work scope will be removed, packaged, and disposed at ERDF. For remaining regulated ACM, including inaccessible or locations where the removal would cause a greater safety issue for current workers (e.g., removal of ceiling transite panels), the ACM would remain in place for removal during structural demolition activities under DOE/RL-2010-53.

3.2.5.2 Filter Media Disposition

Water in the 105KW Basin is normally circulated through closed loop treatment systems with the water returned to the basin following treatment. The 105KW Basin water treatment systems include the Primary Recirculating Water System (out of service), the SKW, and the IWTS. The IWTS draws water from 2.4 m (8 ft) deep in the basin and treats the basin water through a four-stage system consisting of strainers, settler tanks, garnet filter vessels, and ion exchange modules. The garnet filters are backwashed to the settler tanks. The SKW uses a sand filter to remove particulates from the water, followed by treatment through ion exchange modules. The sand filter is backwashed to the NLOP when a predetermined differential pressure is measured across the sand filter. Upon system shutdown, the IWTS garnet filter media will be loaded into STSCs using the existing ECRTS.

ECRTS contains a combination sand and garnet filter to remove particulates from the water stream being returned to the basin from decanting the water in the STSC after the sludge has settled out. Upon the last shipment of sludge and the IWTS garnet filter media, the ECRTS sand filter will be backwashed into an STSC for disposition.

The SKW sand filter will continue to be operated based on conditions encountered in the basin until the system is reconfigured to support basin water removal. The sand filter will be taken out of commission prior to grouting the basin and pits. Upon final system shutdown, the skimmer sand filter media will be transferred to the NLOP or collected and staged for further disposition.

The volumes of the various filter media are shown in Table 1. The IWTS and ECRTS filter media will likely be TRU waste based on process knowledge and will be retrieved to the extent practicable, packaged

in STSCs, and transported to T Plant for temporary storage.