

**Office of Enterprise Assessments
Follow-up Review of the
Hanford Site Chronic Beryllium Disease
Prevention Program**



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**Office of Worker Safety and Health Assessments
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Table of Contents

Acronyms ii

Executive Summary iii

1.0 Purpose 1

2.0 Scope 1

3.0 Background 1

4.0 Methodology 2

5.0 Results 2

 5.1 Transitioning the CBDPP to a Sitewide Standards Program 2

 5.2 Mission Support Alliance Implementation 4

 5.3 Washington River Protection Solutions Implementation..... 6

 5.4 CH2M-Hill Plateau Remediation Company Implementation 7

 5.5 Washington Closure Hanford Implementation 9

 5.6 Occupational Medical Progress in Implementing the Hanford Beryllium Program..... 10

6.0 Conclusions 11

7.0 Findings..... 12

8.0 Opportunities for Improvement..... 12

Appendix A: Supplemental Information..... A-1

Appendix B: Key Documents Reviewed, Interviews, and Observations..... B-1

Acronyms

AJHA	Automated Job Hazard Analysis
BAW	Beryllium Affected Workers
BCA	Beryllium Controlled Area
BeCAP	Beryllium Corrective Action Program
BHA	Beryllium Hazard Assessment
BWP	Beryllium Work Permit
CBDPP	Chronic Beryllium Disease Prevention Program
CFR	Code of Federal Regulations
CHPRC	CH2M-Hill Plateau Remediation Company
DOE	U.S. Department of Energy
EA	Office of Enterprise Assessments
EDE	Electrical Distribution Equipment
EJTA	Employee Job Task Analysis
ERDF	Environmental Restoration Disposal Facility
HPMC	HPM Corporation
MSA	Mission Support Alliance
OFI	Opportunity for Improvement
ORP	Office of River Protection
PFP	Plutonium Finishing Plant
RL	Richland Operations Office
SWIHD	Site Wide Industrial Hygiene Database
WCH	Washington Closure Hanford
WRPS	Washington River Protection Solutions

Office of Enterprise Assessments Follow-up Review of the Hanford Site Chronic Beryllium Disease Prevention Program

EXECUTIVE SUMMARY

The U.S. Department of Energy's Office of Enterprise Assessments (EA) conducted a follow-up review of the Hanford Site chronic beryllium disease prevention program (CBDPP). The purpose of the review was to provide the Richland Operations Office (RL), the Office of River Protection (ORP), site contractor management, and stakeholders with an assessment of the effectiveness of the implementation of key corrective actions taken in response to the inspection of the Hanford Site CBDPP by EA's predecessor organization in 2010. This 2015 EA review is the fourth follow-up assessment of corrective actions.

The 2010 inspection identified a number of deficiencies in the content and implementation of the CBDPP, resulting in 4 findings and 14 cross-cutting opportunities for improvement. Hanford Site management established corrective actions to develop and implement 74 products to address the identified deficiencies. Hanford Site management also established the Beryllium Corrective Action Program (BeCAP) Team, with representation from Federal, contractor, and union employees and the Beryllium Awareness Group, to work in collaboration to develop the products. Because of concerns about timeliness in completing actions, site leadership made changes in the process to engage senior leadership in resolving impasse situations.

EA found that progress in development of BeCAP products has accelerated since the previous review in November 2013. At the time of the review all but 7 of 74 products were closed (three additional products were closed after the review but prior to issue of this report), but a few vulnerabilities remain (e.g., establishing a process for characterizing outdoor areas). EA identified one concern about overall BeCAP management: there is no detailed plan with actions, deliverables, responsibilities, and completion dates for the remaining BeCAP products to support the planned transition of the CBDPP to the Hanford Sitewide Standards process. The transition is needed so that the CBDPP can be managed as one of several sitewide programs where sitewide standards and standardized training across Hanford Site contractors provide controls for similar hazards, requirements, and worker expectations. Although not yet transitioned to the Hanford Sitewide Standards process, the establishment of a sitewide program is considered a best practice.

Work with beryllium and beryllium-containing items of concern at the Hanford Site ceased over a decade ago. Currently, the potential for worker exposure to beryllium results primarily from legacy contamination from past work or past use of beryllium alloys in equipment and tools. Thus, characterization of buildings and structures to identify potential beryllium hazards is an essential step in establishing exposure controls. Hanford Site organizations have made significant progress in assessing and characterizing buildings, structures, and components for legacy beryllium contamination, and most characterizations to date have found beryllium to be below actionable limits. In addition, ongoing efforts to characterize and develop a database of electrical components and the beryllium work history process may help identify exposure risks and prevent future exposures. These are considered best practices.

Overall, the BeCAP Team's efforts have produced quality products, and with one exception, the contractors have adequately implemented the products to date. The exception is the lack of triggers within the contractors' activity-level work planning and control processes to prompt work planners to involve industrial hygiene specialists in planning for some work activities where beryllium might be present.

With the Hanford Site's primary focus on developing and implementing new processes as the CBDPP evolves, contractor self-assessments and Federal oversight of implementation have been limited. A CBDPP self-assessment process has been developed, but RL and ORP will need to review cost impacts and issue letters of direction for implementation. The implementation of many of the program elements has stabilized to a point where additional formalization of contractor and Federal line assessments is needed, both to confirm performance and to continue maturing the program.

Overall, the Hanford Site has made considerable progress in establishing its CBDPP as a sitewide program, identifying areas of potential beryllium exposure, and implementing processes to ensure that controls are in place when necessary. A detailed plan for managing the completion and implementation of the final products will be essential as the individual contractor programs shift to the Hanford Sitewide Standards process.

Office of Enterprise Assessments Follow-up Review of the Hanford Site Chronic Beryllium Disease Prevention Program

1.0 PURPOSE

The U.S. Department of Energy (DOE) Office of Environment, Safety and Health Assessments, within the Office of Enterprise Assessments (EA), conducted a follow-up review of the Hanford Site chronic beryllium disease prevention program (CBDPP). The purpose of the review was to provide the Richland Operations Office (RL), the Office of River Protection (ORP), and site contractor management with an assessment of the effectiveness of the implementation of key corrective actions taken in response to the inspection of the Hanford Site CBDPP conducted by EA's predecessor organization in 2010.

2.0 SCOPE

EA conducted this review of the Hanford Site CBDPP in accordance with the *Plan for the Office of Enterprise Assessments Follow-up Review of the Hanford Site Chronic Beryllium Disease Prevention Program (CBDPP)*. The scope included review of documented processes, such as beryllium procedures, hazard analyses and controls, technical procedures, and work packages, as well as implementation of those processes.

The onsite portion of the review was performed March 9-12, 2015. To gather data, the EA team met with managers, technical staff, and workers; reviewed records and documents, including completed draft characterization and sampling plans; and observed beryllium team meetings (including a CBDPP Committee meeting) and work activities to assess the effectiveness of the beryllium processes and products implemented to date. The EA team also met with selected Hanford Site stakeholders to gather their perspectives.

The EA team focused on assessing the CBDPP procedures and programs developed since the last EA follow-up review in November 2013 and the implementation of those procedures and programs by the four primary Hanford Site contractors: Mission Support Alliance (MSA), CH2M-Hill Plateau Remediation Company (CHPRC), Washington Closure Hanford (WCH), and Washington River Protection Solutions (WRPS). EA also assessed the site occupational medical provider, HPM Corporation (HPMC), on its revisions and improvements to the CBDPP document, Rev. 2A and its Attachment 4, Medical Support Plan.

3.0 BACKGROUND

The EA independent assessment program is designed to enhance DOE safety and security programs by providing DOE and contractor managers, Congress, and other stakeholders with an independent assessment of the adequacy of DOE policy and requirements and the effectiveness of DOE and contractor line management performance in safety and security and other critical functions as directed by the Secretary of Energy. The EA independent assessment program is described in and governed by DOE Order 227.1, *Independent Oversight Program*, and a comprehensive set of internal protocols, operating practices, inspectors guides, and process guides.

Initially, EA's predecessor organization conducted an inspection of the Hanford Site CBDPP in April and May 2010 at the request of the Assistant Secretary for Environmental Management. The 2010 inspection identified a number of deficiencies in the content and implementation of the CBDPP, resulting in

4 findings, 14 cross-cutting opportunities for improvement (OFIs), and numerous specific OFIs. In response to the 2010 inspection report, Hanford Site management developed a detailed beryllium corrective action program (BeCAP) and schedules to address these identified deficiencies through the development and implementation of 74 BeCAP products.

In April 2011 (report dated June 2011); EA's predecessor organization performed a follow-up review of the status of the contractors' corrective actions in response to the 2010 inspection report. The 2011 review determined that interim actions had been taken and that organizations demonstrated commitment to improving the program. However, various aspects of the corrective action plan warranted improvement, and the timeliness of corrective action implementation was a concern.

As of October 2012, the Hanford Site had reported several BeCAP products as completed, but the only ones reported as being implemented in the field were various "interim actions" as defined by RL, ORP, and the beryllium work permit (BWP) process. In November 2012, EA's predecessor organization performed a second follow-up review of the contractor's corrective action status, focusing on the effectiveness of the BWP process. That review found that the BWP procedures were well-written and consistent with the requirements of the Hanford Site CBDPP document (Rev. 1) and 10 CFR 850, and that the BWP process was being implemented in accordance with the BWP procedures and BWP training. However, the review team also identified several opportunities to enhance program design and implementation, and continued to express concerns about the rate of progress in completing long-term actions (recognizing that interim measures were in place to mitigate risks).

During the week of November 4-7, 2013, EA's predecessor organization performed a third follow-up review of the status of the contractors' corrective actions in response to the 2010 inspection report. That review focused on the status of the next series of BeCAP products, namely beryllium postings and the process for conducting beryllium facility assessments, characterization, and building verifications.

In March 2015, EA performed a fourth follow-up review of the status of corrective actions, focusing on the completion and implementation of the previously developed beryllium products, as well as the majority of the remaining beryllium products addressing the initial 2010 corrective actions. The results of this review are the subject of this report.

4.0 METHODOLOGY

EA's plan for this follow-up review of the Hanford Site CBDPP identifies the criteria for evaluating the CBDPP, focusing on its performance and implementation.

5.0 RESULTS

The results of this EA review include an overall assessment of the RL and ORP plan to transition the current CBDPP to a sitewide standards program, followed by the results of EA's assessment of each of the four primary Hanford Site contractors' implementation of the CBDPP and an assessment of the Hanford Site medical contractor's implementation of the medical aspects of the CBDPP.

5.1 Transitioning the CBDPP to a Sitewide Standards Program

Since the follow-up review in November 2013, the Hanford Site has made significant progress in closing the remaining BeCAP products addressing the concerns identified during the 2010 review of the Hanford Site beryllium program. As of the date of this EA review, of the 239 total BeCAP items, 191 have been

completed, 29 are closed, and 19 are actively being worked. Of the 74 beryllium work products, 67 have been closed and 7 remain open. As the completion of the remaining beryllium products and corrective actions draws near, RL and ORP have championed an effort to begin transitioning the CBDPP into the Hanford Sitewide Standards process as defined in the *Hanford Integrated Standards Management Plan* (MSC-MP-41080), referred to as the Integrated Plan. The Integrated Plan defines the process used to “identify, develop, implement, and maintain site wide standards and standardized training when consistent requirements and processes across Hanford Site contractors are necessary to provide controls for similar hazards, requirements and worker expectations.” At present, ten sitewide programs have been implemented and are in the maintenance phase, such as the *Hanford Site Confined Space Procedure* (DOE-0360) and the *Hanford Site Lockout/Tagout Procedure* (DOE-0336). Examples of sitewide standards in the implementation phase include the *Hanford Site Respiratory Protection Program* (DOE-0352) and the *Hanford Site Electrical Safety Program* (DOE-0359). EA considers that the use of sitewide programs, such as the CBDPP, is a best practice for a site with multiple contractors. The sitewide CBDPP provides for uniform processes (BWP, postings, training, etc.) for workers, thereby reducing the potential for errors as they work in different facilities or for different contractors during their time at the Hanford Site. Sitewide programs also provide for enhanced organizational learning and improvement and potential gains in efficiency by eliminating multiple redundant processes and training.

To date, the BeCAP process has followed an independent, rigidly-defined process for development, review, implementation, and maintenance of the CBDPP document, DOE-0342, *Hanford Site Chronic Beryllium Disease Prevention Program (CBDPP)*, and its implementing procedures. The BeCAP process operates largely outside of the Integrated Plan but has, over the past five years, been very effective in designing and implementing a robust beryllium program that has enjoyed the active participation of workers, labor representatives, contractor safety and health staff, and representation from RL and ORP, as well as significant Hanford Site committee involvement, such as the Beryllium Awareness Group.

As RL and ORP transition the BeCAP process to the Hanford Sitewide Standards process, the CBDPP process will begin to mirror other Hanford Site standards. RL and ORP have set a tentative date of April 30, 2015, to complete this transition, but at the time of the review neither had provided explicit written direction to its site contractors. Once transitioned to the Hanford Sitewide Standards process, the BeCAP Team and the numerous beryllium product teams will no longer exist (most beryllium product teams have already disbanded). Although RL and ORP have taken an acceptable approach in transitioning the CBDPP, much remains to be completed, and at present neither RL nor ORP has developed a transition schedule that identifies the remaining beryllium activities, deliverables, implementation schedules, responsibilities, and priorities, or the impact of undefined resources. (See **RL/ORP-OFI-1**)

To date, the Hanford Site CBDPP Committee has issued five implementing procedures for the CBDPP document (DOE-0342):

- BWP/Beryllium Hazard Assessment (BHA) implementing procedure: *Hanford Site Beryllium Work Permit (BWP) and Hazard Assessment Procedure* (DOE-0342-001, Rev. 1A)
- Building Assessment/Characterization implementing procedure: *Hanford Site Assessment & Characterization/Verification of Buildings Procedure* (DOE-0342-002, Rev. 1A)
- Beryllium Posting/Labeling implementing procedure: *Hanford Site Beryllium Posting and Labeling Requirements Procedure* (DOE-0342-003, Rev. 1)
- Structure and Conex Assessment/Characterization implementing procedure: *Hanford Site Assessment & Characterization/Verification of Structures & Conex Boxes Procedure* (DOE-0342-004, Rev. 0)¹

¹ Conex box refers to an intermodal container for shipping and storage. Historically, Hanford contractors have frequently used Conex boxes for temporary and long-term storage, and, on occasion, as temporary workspaces.

- Electrical Equipment implementing procedure: *Hanford Site Evaluation of Electrical Equipment for Beryllium Procedure* (DOE-0342-005, Rev. 0).

Of the remaining beryllium products to be completed and/or implemented, at least three may impact costs for the four site contractors – namely, implementation of the draft beryllium self-assessment program, implementation of the Outdoor Areas implementing procedure, and the draft beryllium issues management program. At present, the costs to the site contractors to implement these programs have yet to be estimated, and the contractors' implementation of efforts in these areas varies widely due to lack of formal requirements and contract direction. (See **RL/ORP-OFI-2**.)

At present, numerous changes to the current CBDPP document (DOE-0342, Rev. 2A) are pending, many of which could be implemented with minimal cost impact. However, the delay in implementing these revisions has limited workers' understanding of the CBDPP requirements. During this EA review, the site CBDPP Committee decided to proceed with issuance of Revision 3, which would include these changes.

5.2 Mission Support Alliance Implementation

EA assessed MSA's implementation of CBDPP requirements, including progress since the prior review with regard to implementation of the CBDPP document (DOE-0342, Rev. 2A) requirements and the associated implementation procedures. EA's evaluation of MSA consisted of document reviews, interviews with the MSA beryllium program lead and support staff, and observation of a field walkdown and beryllium assessment of an MSA Conex box.

Since 2010, MSA has had a dual role in the design and implementation of the Hanford Site CBDPP. At the Hanford Site level, MSA has been assigned the role of supporting the CBDPP Committee and BeCAP teams and is responsible for implementing beryllium program improvements as identified via the BeCAP revision processes. In this capacity, MSA provides administrative support to the sitewide CBDPP with respect to CBDPP procedure issuance and revisions, support for the CBDPP and BeCAP committees and beryllium product team meetings, and maintenance of sitewide CBDPP-related websites and databases.

MSA also maintains the Safety and Health Reference Information database to track its facility assessment data and data provided by other site contractors. MSA has also worked with the BeCAP and CBDPP Committees to utilize the Site Wide Industrial Hygiene Database (SWIHD) for collection of and common access to contractor beryllium assessment results, characterization/verification sampling data, and personnel monitoring data. Since 2010, MSA has also been receiving the results of beryllium samples from electrical distribution equipment (EDE), and compiling this data into a spreadsheet database, which can be analyzed for trends. To date, the four Hanford Site contractors have entered data into this database for multiple beryllium samples on several hundred electrical equipment items. Fewer than ten of the several thousand electrical equipment samples have indicated beryllium contamination above target levels. The collection, analysis, and establishment of a database of sampling results for monitoring electrical equipment for the presence of beryllium contamination is considered a best practice.

With respect to implementing the CBDPP program in MSA facilities and MSA work activities, MSA has implemented the CBDPP document (DOE-0342, Rev. 2A) and the associated approved implementing procedures for BWPs and Hazard Assessments, Assessment and Characterization/ Verification of Buildings, Beryllium Posting and Labeling, Characterization/Verification of Structures and Conex Boxes and Evaluation of Electrical Equipment for Beryllium. As a result, MSA has revised ten internal procedures for hazard analysis, work control, pre-job briefings, and other associated activities in order to implement these CBDPP procedures. Since the last EA review, MSA has also issued a management directive to control beryllium work activities during the implementation period.

To date, MSA has conducted extensive beryllium sampling and assessments in conjunction with assessment and characterization activities, and this field work is now over 80% complete. Of the 210 buildings assigned to MSA, beryllium sampling has been completed in 190 buildings, and the facility assessment forms have been completed for 185 buildings. Of the 48 mobile offices assigned to MSA, initial sampling and facility assessment forms have been completed for 38. Of the 133 structures assigned to MSA, initial sampling and facility assessment forms have been completed for 85. Of the 314 Conex boxes assigned to MSA, nearly 251 have been sampled and the facility assessment forms completed. MSA currently has two facilities (622A and MO315) that are posted as Beryllium Controlled Facilities; one is a meteorology tower, and the other is a trailer that had been used for storage of radiological survey instruments. To achieve this level of characterization, MSA has designated a dedicated team of five to seven industrial hygienists to perform beryllium assessment and characterization activities, and this team has collected and analyzed more than 10,000 beryllium samples to date. MSA has also initiated sampling of electrical equipment and has collected and analyzed over 500 beryllium samples.

As indicated previously, although the sitewide beryllium self-assessment process for Hanford Site contractors has been drafted, the process has yet to be implemented. In the interim, MSA has conducted targeted beryllium self-assessments as part of the MSA Integrated Evaluation Plan. MSA has been performing topical beryllium assessments since 2010, averaging four such assessments per calendar year. For example, MSA has recently performed management assessments on its implementation of the BWP process and the facility and assessment characterization process. However, in the absence of a sitewide procedure, contractors lack common guidance and consensus on how the self-assessment requirements of 10 CFR 850.40 should be met, and the CBDPP Committee does not receive the results and feedback from management self-assessments. Although MSA has not shared all of its beryllium program assessments with the CBDPP Committee, MSA has shared some elements in which MSA identified deficiencies in its implementation of the CBDPP. Similarly, the CBDPP implementing procedure(s) for outdoor areas and technical bases for sampling beryllium in soils have not yet been signed and implemented, resulting in a lack of sitewide guidance for assessing and sampling outdoor areas. MSA's management directive on beryllium interim controls provides guidance in a number of beryllium program areas but does not adequately address outdoor areas. To address this concern, MSA instituted an Interim Control Evaluation requirement for all excavations to be reviewed by and industrial hygienist. (See **RL/ORP-OFI-2** and **Site Contractors-OFI-1**.)

The EA team noted several contractor implementing procedures that did not adequately identify or integrate "triggers" in work control and operating procedures to ensure timely notification of industrial hygienists when beryllium contamination may be present. An example with respect to the MSA work control process is the lack of sufficient "triggers" for identification of beryllium in soils during trenching and excavation. To address the hazards associated with trenching and excavations, as well as numerous other potential hazards, MSA has developed a robust automated job hazard analysis (AJHA) process that includes a topical hazard area for beryllium. The application of beryllium controls in the AJHA are initiated based on the work package preparer's response to the question: "Potential disturbance of beryllium containing dust or particulate emission activities (cutting, bolting, welding or dislodging)?" This AJHA question for beryllium does not specifically mention trenching and excavation activities, although work package preparers would most likely expect to encounter a "trigger" for beryllium analysis in trenching and excavation when responding to the AJHA trenching and excavation questions. Additionally, according to the AJHA process, the industrial hygienist is only engaged in trenching and excavation activities if the depth of the excavation or trench is more than four feet (not all subsurface penetrations), and for the sole purpose of evaluating the excavation or trench for potential confined space hazards, not for beryllium. (See **Site Contractors-OFI-2**.)

5.3 Washington River Protection Solutions Implementation

EA assessed WRPS's implementation of CBDPP requirements, including progress in implementing the requirements of the new CBDPP document (DOE-0342, Rev. 2A) since the 2013 review. EA's evaluation consisted of document reviews, interviews with the WRPS beryllium program lead and field staff, field walkdowns, and observation of postings and a verification sampling evolution that was being performed at the time of the review.

WRPS facilities that are within the scope of the CBDPP include approximately 261 buildings, 167 structures (e.g., valve pits, risers, exhaust systems), and 200 Conex boxes. Since the 2013 review, WRPS has been implementing the new requirements of the CBDPP document (DOE-0342, Rev. 2/2A), including ongoing facility assessments, characterization sampling, re-posting beryllium areas in accordance with the new posting specifications, and sampling of EDE. WRPS industrial hygiene resources dedicated to beryllium work have increased to meet demand and now consist of three dedicated industrial hygienists and six dedicated industrial hygiene technicians. As of February 2015, WRPS has completed facility assessments for 60 buildings, 3 structures, and 6 Conex boxes. Initial characterization sampling has been completed for 11 buildings, 6 structures, and 3 Conex boxes. EDE sampling has also been performed at 6 Tank Farms and 6 buildings. Data from these and continuing efforts are entered into the SWIHD.

Revision 2 of the CBDPP document brought about a number of new implementing procedures. During this review, WRPS used the approved procedures appropriately during beryllium related work, beryllium assessments, and beryllium sampling and posting activities.

Both revision 2A of the CBDPP document and 10 CFR 850 require periodic self-assessments and effectiveness reviews associated with implementation of CBDPP elements. WRPS has performed two beryllium self-assessments since 2011: a beryllium program assessment in May 2011, and a special assessment of WRPS's BHA and BWPs in February 2013. The 2011 review had a relatively narrow scope and was designed primarily to evaluate WRPS's compliance with those elements of the initial CBDPP document (DOE-0342, Rev. 0) that fell outside the scope of the original BeCAP commitments, including monitoring activities, hazard evaluation, medical surveillance, exposure reduction and minimization, and occurrence reporting data. Results were based on document reviews, interviews, and relevant field observations and were organized according to the applicable CBDPP section for these subjects. The self-assessment report identified no findings or areas of noncompliance, and concluded that WRPS complied with the CBDPP in the areas reviewed. WRPS conducted the 2013 review at the request of the BeCAP Team to evaluate WRPS's effectiveness in meeting the requirements of the BWP/BHA implementing procedure (DOE-0342-001, Rev. 0). That review focused on qualifications of developers and users, planning and document development, communications/briefings of documents, field usage of BWPs, and revisions to BHAs/BWPs. Results were primarily based on interviews and document reviews, since no beryllium work activities were ongoing during the period of the assessment. The report documented one finding (failure to use the required beryllium acknowledgement form) and several positive attributes. Both of these assessments were generally adequate in scope and performance.

Since those two assessments, WRPS has not conducted or scheduled any self-assessments to evaluate the adequacy of its implementation of new beryllium activities associated with revision 2A of the CBDPP document, such as ongoing facility assessments, characterization/verification sampling, or postings. As indicated previously, the BeCAP Team has developed a draft beryllium self-assessment program document, which is intended to address the regulatory requirements for periodic self-assessments, including the contractor lines of inquiry and the required assessment frequencies. This document is still in draft form and has not yet been incorporated into the CBDPP document, and WRPS has not used it in scheduling or performing beryllium program self-assessments. (See **RL/ORP-OFI-1**.)

ORP also performs routine operational awareness and schedules formal assessments of Tank Farm contractors' implementation of CBDPP requirements. ORP demonstrated evidence of operational awareness during this review; the ORP beryllium program lead was present and engaged in observing contractor work when EA arrived to observe contractor verification sampling at a mobile office building. ORP has performed three formal assessments associated with WRPS CBDPP implementation. First, in May 2013, ORP reviewed WRPS's implementation of sampling protocols for beryllium affected workers (BAW) as required by Appendix C of revision 1 of the CBDPP document (DOE-0342, Rev. 1), and found that WRPS could not provide evidence of compliance with the required sampling protocols for its BAW workers during calendar year 2012 (e.g., offering them the opportunity for personal air sampling at least annually). An ORP follow-up review in January 2014 on the same topic reviewed WRPS's BAW status and sample collection during 2013 and concluded that WRPS was in compliance with the Appendix C requirements, indicating that WRPS corrective actions had been effective. A third ORP assessment, completed in January 2015, evaluated WRPS activities related to the Electrical Equipment implementing procedure (DOE-0432-005) during calendar year 2014 and concluded that WRPS did not adequately implement several sample collection and follow-on action requirements during EDE sampling. This finding was entered into a WRPS problem evaluation request, and corrective actions are under development. These three ORP assessments effectively identified and communicated areas of weakness in WRPS's implementation of CBDPP requirements.

EA's field observation of verification sampling at the MO-439 mobile office building identified a concern in work planning. Specifically, Section 4.11 of the Building Assessment/Verification implementing procedure (DOE-0342-002) requires verification sampling in order to support the decision to declare a building as beryllium cleared prior to demolition. However, as discussed above, nothing in the WRPS work control process triggers the involvement of industrial hygiene in these projects so as to ensure that this required sampling is actually performed. Interviews with involved Tank Farms personnel indicated that the MO-439 verification sampling under way at the time of this EA review was implemented by chance as a result of an email to industrial hygiene from a project manager, who had received incorrect information from a construction manager that the Waste Management checklist required this sampling. The Type 1 work package developed for transfer of the mobile office building contained no information on beryllium sampling requirements or beryllium characterization of the building. Thus, even though sampling was performed in this particular case, the lack of a systematic approach within the WRPS work control process to ensure implementation of all safety and health requirements of the CBDPP represents a vulnerability. This concern may also pertain to the need for EDE sampling of electrical panels integral to these mobile office buildings under the Electrical Equipment implementing procedure (DOE-0342-005). (See **Site Contractors-OFI-2.**)

5.4 CH2M-Hill Plateau Remediation Company Implementation

EA assessed CHPRC's implementation of CBDPP requirements, including progress in implementing the requirements of the new CBDPP document (DOE-0342, Rev. 2A) since the 2013 review. EA's evaluation consisted of document reviews, interviews with the CHPRC beryllium program lead and field staff, field walkdowns and observation of postings (at active facilities and at those designated as inactive under the surveillance and maintenance program), and a review of ongoing work and proposed work at the Plutonium Finishing Plant (PFP) under the control of either open BWPs or proposed draft BWPs.

CHPRC facilities that are within the scope of the CBDPP include approximately 572 buildings (355 active and 217 inactive), 154 structures (e.g., utility, ventilation, and support systems), and 462 Conex boxes. Since the EA review in 2013, CHPRC has been implementing the new CBDPP document (DOE-0342, Rev. 2/2A), including ongoing facility assessments, characterization sampling, re-posting of beryllium areas in accordance with the new posting specifications, and sampling of EDE. CHPRC industrial hygiene resources dedicated to beryllium work have increased to meet demand, including the

hiring of a Beryllium Program Manager and Scheduler and assignment of dedicated industrial hygiene resources for assessment and sampling activities. As of February 2015, CHPRC had completed facility assessments for 333 active buildings, 34 inactive buildings, 23 structures, and 286 Conex boxes. Initial characterization sampling had been completed for 190 active buildings, 15 inactive buildings, and 99 Conex boxes, but no structures. CHPRC had collected beryllium samples from EDE, including 111 wipe and 14 bulk samples collected since 2014, none of which were at or in excess of the trigger level. Between 2010 and 2013, CHPRC collected 630 wipe and 76 bulk samples from EDE; results for these samples and/or follow-up samples were also below the trigger level. Data from these and continuing efforts are entered into the SWIHD.

Revision 2 of the CBDPP document brought about a number of new implementing procedures. EA found that CHPRC used the approved implementing procedures appropriately during beryllium-related work, beryllium assessments, and beryllium sampling and posting activities.

Both revision 2A of the CBDPP document and 10 CFR 850 require periodic self-assessments and effectiveness reviews associated with implementation of CBDPP elements. CHPRC performed a beryllium programmatic assessment as required by 10 CFR 850 in 2012, one specialty assessment of CHPRC's BHAs and BWPs in January 2013, and an implementation review of the CBDPP document, Rev. 2A at the PFP closure project in October 2014. The 2012 review had a relatively narrow scope and was designed primarily to evaluate CHPRC's response to major changes to the CBDPP as part of the Hanford BeCAP, including revision 1 of the CBDDBPP document, focusing on the new procedure at that time, the BWP/BHA implementing procedure (DOE-0342-001, Rev.1). While the report documented no findings, OFIs, or noteworthy practices, it concluded that all BWPs and BHAs had been completed using the new forms in accordance with the new implementing procedure, BWPs were job specific and provided adequate work scope, and all BWPs were specific to a single Beryllium Controlled Area (BCA). Additionally, during the assessment, a stop-work order was initiated related to control of several buildings and required postings. The self-assessment team deemed this action to be outside the scope of the self-assessment, but the report does state that a formal CHPRC work site assessment of building postings will be conducted once RL approves and CHPRC implements the Building Assessment/Characterization implementing procedure (DOE-0342-002). In 2013, CHPRC conducted a review at the request of the BeCAP Team to evaluate CHPRC's effectiveness in meeting the requirements of revision 0 of the BWP/BHA implementing procedure (DOE-0342-001, Rev. 0). This review focused on integration of the BWP process into the CHPRC work control process, understanding of the roles and responsibilities of the personnel executing activities under the BWP process, and verification that the required documentation was in place to define hazards and necessary controls to minimize employee exposure to beryllium. Results were principally based on interviews, document reviews, and walkdowns of BCAs at PFP to verify posting and control of the areas; however, the report noted no actual field observations of beryllium work activities. The report documented no findings, OFIs, or noteworthy practices but states that the surveillance team concluded that the BWP/BHA procedure was adequately implemented. The scope of the 2014 implementation review at PFP included exposure monitoring, periodic personal air monitoring, preparation for air monitoring, air monitoring at step-off pads, periodic surface sampling, the pilot implementation program, and implementation of posting and labeling procedure requirements. The report gives a general description of the status of each of these areas of inquiry at PFP and is largely positive in its evaluation. It identifies one OFI (the need to validate radiological equipment use, storage, and maintenance locations to ensure that beryllium periodic survey locations are consistent with CBDPP expectations) and one noteworthy practice related to PFP's process for managing posting changes in the field. These three CHPRC self-assessments were generally adequate in scope and performance.

CHPRC has scheduled a review for May-June 2015 focusing on implementation of the pilot assessment/characterization activities. It may also cover selected elements of exposure monitoring, periodic surface sampling, and CBDPP document (DOE-0342, Rev. 2A) Appendix F, "Requirements for

Conducting Beryllium Work.” However, as indicated above, the BeCAP Team has drafted the beryllium self-assessment lines of inquiry document, but the document has not yet been incorporated into the CBDPP, and CHPRC has not used it for either past or planned beryllium program self-assessments. (See **RL/ORP-OFI-1.**)

EA’s review of previously conducted maintenance work within PFP identified a concern in work planning. Specifically, the Electrical Equipment implementing procedure (DOE-0342-005) requires the evaluation of electrical equipment, and PRC-MD-SH-52752, *CHPRC Interim Controls During Implementation of DOE-0342 Revision 2A*, includes direction for industrial hygiene involvement in the work planning process to ensure appropriate evaluation. However, the CHPRC work control process pertaining to electrical work (not conducted in a BCA) provides no triggers for involving industrial hygiene in these projects to ensure that the required sampling of EDE is actually performed. (See **Site Contractors-OFI-2.**)

5.5 Washington Closure Hanford Implementation

The current WCH contract with RL is scheduled to end in September 2015. WCH management and staff continue to work on transition activities necessary to maintain ongoing mission activities, such as the Environmental Restoration Disposal Facility (ERDF) and the 618-10 Burial Ground. The WCH ESH&QA staff recognizes that disposition of equipment, structures, and spaces interface closely with CBDPP requirements.

WCH revised the CBDPP implementation procedure to address the requirements of revision 2A of the site CBDPP. The WCH Employee Job Task Analysis (EJTA) procedure was similarly revised to reflect RL’s March 11, 2014, memos on expectations for EJTA’s, and WCH also revised a desk instruction for tracking and counseling affected workers to better align with BeCAP product 1.5.12.1 (Affected Worker Tracking and Counseling).

Assessments and characterizations of buildings, Conex boxes, and structures are progressing and are scheduled to be completed by September 2015. WCH has completed characterization of all buildings at the 618-010 Burial Ground, and two Conex boxes need to be scheduled for characterization. WCH has characterized all but two buildings, four mobile offices, and two Conex boxes in Area 100. WCH has characterized 35 of 40 mobile offices in the 300 Area, the 324 Building, and six above ground structures. ERDF has a sampling campaign underway and will complete their assessments and characterizations by early summer. The total number of Conex boxes and other structures to remain at the WCH controlled sites will depend on the final transition decisions between RL and WCH scheduled for September 2015.

WCH performs periodic self-assessments and surveillances of CBDPP programmatic elements such as BWPs and BHAs of specific facilities. The recent assessment of building 324 demonstrated that CBDPP requirements were in place and working effectively. WCH conducted a formal self-assessment of the CBDPP document (DOE-0342), Section 6.27.2, “Counseling of affected workers within 14 days of medical notification,” in January 2015. The affected worker spreadsheet and employee records confirmed that all counseling was provided as required. The WCH Field IH team performs weekly non-record assessments using the “IH Field Visit Checklist” which ensures that the field visits includes beryllium elements on a regular basis.

Facility postings in accordance with the requirements of the Beryllium Posting/Labeling implementing procedure (DOE-0342-003) are complete and constantly monitored by field staff because high winds and other outdoor conditions may impact the postings.. The EDE campaign is ongoing, and to date, WCH has analyzed 900 samples from 200 electrical units. All samples were below the beryllium trigger limits, with

most being below the detection limit. WCH reported the results to MSA and they were incorporated into the EDE spreadsheet.

The WCH issues management program (Corrective Action Management System - CAMS) is used effectively to identify, track and resolve beryllium related issues and concerns, with the philosophy that identification and resolution of issues at the lower level prevent larger problems and promote a positive safety culture. WCH provided numerous examples of issues addressing beryllium postings, questions about interim beryllium controls, beryllium labels, and beryllium sample results that were documented, resolved and tracked to completion through the WCH issues management program.

WCH has maintained its lower tier CBDPP committee, which holds monthly meetings attended by WCH ESH&QA staff, bargaining and non-bargaining workers, and BeCAP and Site Wide CBDPP Committee representatives. The meetings convey beryllium information about site wide beryllium related issues and encourage workers to raise concerns, ask questions, and help resolve issues related to the CBDPP. The committee has a formal agenda and minutes to track all action items. The CBDPP committee is effective in coordinating and communicating beryllium-related issues and information.

Postings, boundaries, and monitoring activities concerning potential beryllium hazards at ERDF and area 618-010 were in place and under frequent surveillance by ESH&QA and supervisory personnel. CBDPP information, including work permits, sample plans, and monitoring data results, was clearly posted at ERDF and the 618-10 Burial Ground.

5.6 Occupational Medical Progress in Implementing the Hanford Beryllium Program

HPMC continues to work closely with its beryllium product teams and continues to refine the 11 products already closed by the BeCAP Team. Two of three remaining products are projected to be closed in the March-April 2015 timeframe. Their last remaining product is scheduled to be completed in July 2015 after an external assessment of the HPMC Medical Support Plan. The Federal Occupational Health assessment is scheduled for June 8-11, 2015. The three remaining BeCAP products are summarized below:

1. Communication of Workplace Monitoring (product 1.7.1): Support from the HPMC staff industrial hygienist and easy access to the Hanford Site Wide Industrial Hygiene Database will allow medical providers to view and use exposure monitoring reports as required in 10 CFR 850. This product was closed on April 1, 2015.
2. Responsible Employer Tracking System (product 1.5.12.1): This process for tracking and ensuring that affected workers are counseled in accordance with 10 CFR 850 and CBDPP requirements interfaces with the health advocate program (CBDPP document, Section 6.27.2) and includes both prime contractors and subcontractors if applicable. This product was closed on April 15, 2015.
3. Revision of the HPMC Medical Support Plan (product 1.10.2.1): The final HPMC occupational medical support plan will address any inconsistencies with the newly developed BeCAP products, correct any inconsistencies with the current medical support plan, and establish an annual self-assessment plan to ensure that this plan remains current, reflects all current requirements, and remains consistent with the CBDPP. This product was closed on April 8, 2015.

EA reviewed documents and observed demonstrations of ongoing beryllium product activities, including samples of revised forms, revised questionnaires, client checklists, website enhancements, and data software. Examples of revised products include:

- The development and refinement of outreach opportunities that promote beryllium education programs for Hanford Site workers, community stakeholders, and affected workers
- Further development of a beryllium work history questionnaire and database for affected workers to identify locations, job categories, and other significant factors associated with beryllium sensitization, including a site map function to identify work locations
- Expansion of the medical referral database
- Enhancements in the HPMC website section on the beryllium program
- Enhancements to the OMP counseling and medical clearance and restriction products, including affected worker counseling checklist, informational brochure/contact information, and a verification process for tracking all beryllium record-of-visit documents
- Revised job descriptions for key beryllium program staff.

The Beryllium Work History process is considered a best practice. The process uses a comprehensive series of questionnaires (current workers, new hires, and affected workers) to collect work history data. The Certified Industrial Hygienist, if needed, assists the worker on completing the new hires or current worker questionnaires. The Certified Industrial Hygienist interviews the worker and completes the affected worker questionnaire. The collected data goes beyond identifying workplaces to include workplace hazard exposures. As the database is populated, it will provide important information for identifying workers who may have been or could be at risk, thereby helping prevent further exposure.

HPMC continues to request funding for an EJTA software replacement in order to meet sitewide EJTA policy and procedures. Discussions are ongoing with RL and ORP to select the appropriate data systems necessary to support a sitewide EJTA process.

EA's review of the closure briefing for product 1.7.2, *Beryllium Registry*, which included the results of a root cause analysis performed by World Interplay LLC, and discussions with DOE Headquarters Beryllium Registry managers indicated that Hanford Site contractors are meeting the reporting requirements of 10 CFR 850.39 and the CBDPP. HPMC's role as the site Beryllium Registry data coordinator and procedure OMC-CS-133C have improved the quality and timeliness of submitting registry data. HPMC also provides a forum for resolving any issues related to data submissions, provides training for Beryllium Registry stakeholders and contractor points of contact, and supports any webinars or updates issued by DOE or the Oak Ridge Institute for Science and Education.

6.0 CONCLUSIONS

Since the EA beryllium follow-up review in November 2013, there has been significant progress in closing and implementing numerous beryllium products, such that only 4 of the original 74 beryllium products remain to be closed. The site has also begun to transition the CBDPP into the Hanford Site Standards process and expects to complete this transition by March 31, 2015. Hanford Site contractor progress is also evident in implementing revision 2A of the CBDPP document (DOE-0342, Rev. 2A) and associated procedures. Each of the four Hanford Site contractors has implemented, to some degree, the new CBDPP implementing procedures addressing BWPs and BHAs; building assessment and characterization/verification; beryllium posting/labeling; assessment, characterization and verification of structures and Conex boxes; and evaluation of electrical equipment for beryllium. EA's review of products and sampling of implementation determined that the products were of high quality and that implementation was consistent with procedures. However, considerable effort remains in completing and implementing the remaining products, and in fully implementing each of the procedures across the Hanford Site.

7.0 FINDINGS

None.

8.0 OPPORTUNITIES FOR IMPROVEMENT

EA identified several OFIs. These potential enhancements are not intended to be prescriptive or mandatory. Rather, they are suggestions that may assist site management in implementing best practices or provide potential solutions to minor issues identified during the conduct of the assessment. In some cases, OFIs address areas where program or process improvements can be achieved with minimal effort. It is expected that the responsible line management organizations will evaluate these OFIs and accept, reject, or modify them as appropriate, in accordance with site-specific program objectives and priorities.

Richland Operations Office and Office of River Protection

RL/ORP-OFI-1: Identify the remaining CBDPP program activities needed to complete the implementation of all the DOE CAP items from 2010, and work with the CBDPP Committee, Beryllium Awareness Group, site contractors, HAMTEC and Building Trades and medical provider to develop an integrated schedule for implementing the remaining CBDPP items. The integrated schedule should contain a detailed description of each remaining item, along with assignment of responsibility, schedule for completion, and any additional resource requirements.

RL/ORP-OFI-2: For the few remaining beryllium products that have not been implemented due to cost impact (i.e., beryllium self-assessments, outdoor areas, and issues management), expedite the request and evaluation of cost impact proposals for the four primary Hanford Site contractors and the medical provider and provide letters of direction to the site contractors to expedite implementation of these programs.

RL/ORP- OFI-3: Provide direction to revise the *Hanford Integrated Standards Management Plan* to ensure that the CBDPP processes are consistent with other site wide standards with the exception of hoisting and rigging.

Hanford Site Contractors (including Medical)

Site Contractors-OFI-1: Expedite actions to implement the CBDPP Outdoor Areas procedure, including the development of a technical basis for evaluating beryllium in soils based on metal ratios. Industrial hygienists need the metal ratio formulation to aid in identifying beryllium contamination levels above the natural background level of beryllium in soils. In the interim, each site contractor should provide interim guidance on assessing, characterizing, and sampling soil that may be contaminated with beryllium.

Site Contractors-OFI-2: For each of the CBDPP implementing procedures that have been issued, ensure that site contractors' procedures provide sufficient triggers to involve industrial hygienists in identifying and evaluating potential beryllium hazards.

Appendix A Supplemental Information

Dates of Review

Onsite Review: March 9-12, 2015

Office of Enterprise Assessments

Glenn S. Podonsky, Director, Office of Enterprise Assessments
William A. Eckroade, Deputy Director, Office of Enterprise Assessments
Thomas R. Staker, Director, Office of Environment, Safety and Health Assessments
William E. Miller, Director, Office of Nuclear Safety and Environmental Assessments
Patricia Williams, Director, Office of Worker Safety and Health Assessments

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Office of Enterprise Assessments Reviewers

Thomas R. Staker, Team Lead
Joseph Lischinsky
James R. Lockridge
Marvin J. Mielke
Mario A. Vigliani

Appendix B

Key Documents Reviewed, Interviews, and Observations

Documents Reviewed:

Sitewide Standards

- DOE-0336, Hanford Site Lockout/Tagout Program
- DOE-0360, Hanford Site Confined Space Procedure (HSCSP)
- DOE-0344, Hanford Site Excavating, Trenching and Shoring Procedure (HSETSP)
- DOE-0342, Revision 2A, Hanford Site Chronic Beryllium Disease Prevention Program (CBDPP)
- DOE-0342-001, Revision 1A, Hanford Site Beryllium Work Permit (BWP) and Hazard Assessment Procedure
- DOE-0342-002, Revision 1A, Hanford Site Assessment & Characterization/Verification of Buildings Procedure
- DOE-0342-003, Revision 1, Hanford Site Beryllium Posting and Labeling Requirements Procedure
- DOE-0342-004, Revision 0, Hanford Site Assessment & Characterization/Verification of Structures & Conex Boxes Procedure
- DOE-0342-005, Revision 0, Hanford Site Evaluation of Electrical Equipment for Beryllium Procedure
- DOE-0342-006, Draft Hanford Site Assessment & Characterization/Verification of Outdoor Areas Procedure

MSA

- MSA Beryllium Corrective Action Process (BeCAP) Products (as of March 10, 2015)
- MSA Integrated Evaluation Plan; Updated 18-Feb-2014
- MSA Field Group Observations and Questions; Facility Pilot Beryllium Characterization Project.
- Hanford Integrated Standards Management Plan, MSC-MP-41080; Rev. 5; November 13, 2014
- MSA letter to DOE dated January 14, 2014; Consistent Strategy and Content for Communicating with Site Workers Regarding Hanford Chronic Beryllium Disease Prevention Program, Rev. 2A and Associated Implementing Procedures
- Various DOE Letters of Direction to Hanford Site Contractors for Implementation of Revision 2 to DOE-0342
- BeCAP Status Report; March 2015
- Beryllium CAP Work Breakdown Structure (WBS) Dictionary; Updated December 31, 2014
- Management Assessment MA 13-8135
- Management Assessment MA 15-0069
- Management Assessment MA SHQ-12-0118
- MSA Beryllium Requirement GAP to existing procedures Rev 0
- MSA Integrated Evaluation Plan FY15
- Hanford Mission Support Contract Memorandum of Agreements (Various)
- MSC-GD-11124, Rev. 0, Maintenance Resource Allocation Guide
- MSC-GD-17132, Rev 2, Automated Job Hazards Analysis Process Guide
- MSC-MD-56878, Beryllium Interim Controls
- MSC-MP-41930, Rev. 0, Nuclear Safety Protocol
- MSC-MP-47124, Rev. 1, Inter-Contractor Work Control
- MSC-PRO-079, Rev. 8, Job Hazard Analysis
- MSC-PRO-11058, Rev. 1, EJTA Expectations and Clarifications

- MSC-PRO-12115, Rev. 9, Work Management
- MSC-PRO-14047, Rev. 9, Conducting Pre-Job Briefings and Post-Job Reviews

WRPS

- TFC-OPS-MAINT-C-01, TOC Work Control
- TFC-OPS-MAINT-C-02, Prejob Briefings and Post job Reviews
- TFC-ESHQ-S_SAF-C-02, Job Hazard Analysis
- TFC-ESHQ-S_IH-C-17, Rev B-7, Employee Job Task Analysis
- TFC-MD-098, Rev B, Interim Controls during Implementation of DOE-0342 Rev 2A
- TFP-OPS-IHT-010, Field Wipe and Bulk Sampling Methods
- TFC-ESHQ-S-STD-33, Implementation of DOE-0342 CBDPP
- TOC-IH-0000X, Industrial Hygiene Evaluation of Beryllium in Tank Farms Condensate
- RPP-RPT-57016, Rev. 0, Bounding Beryllium to Total Alpha Ratios
- WRPS Recent Problem Evaluation Request Listings
- FY2011-ESHQ-S-0302, WRPS Specialty Assessment Industrial Hygiene Program Chronic Beryllium Disease Prevention Program
- FY2013-ESHQ-S-0342, Beryllium Hazard Assessment & Beryllium Work Permit, Specialty Assessment
- S-13-SHD-TANKFARM-007, Review of WVRPS BAW Periodic Sampling Performed in Accordance with Hanford Site CBDPP DOE-0342, Revision 1, Appendix C, "Sample Protocols for Beryllium Affected Workers" or as Requested by a BAW During Calendar Year 2012
- S-14-SHD-TANKFARM-002, Review of WRPS Actions to meeting DOE-0342 Hanford Site Chronic Beryllium Disease Prevention Program (CBDPP), Rev. 1, Appendix C, Sampling Protocols for Beryllium Affected Workers
- S-14-SHD-TANKFARM-015, Review of WRPS Activities Related to DOE-0342-005 Hanford Site Evaluation of Electrical Equipment for Beryllium Procedure Revision 0

CHPRC

- PRC-MP-SH-52768, Beryllium Management Plan
- PRC-MD-SH-52754, Interim Controls During Implementation of DOE-0342 Revision 2A
- PRC-PRO-WKM-079, Job Hazard Analysis
- PRC-PRO-WKM-14047, Pre-Job Briefings and Post-Job Reviews
- PRC-PRO-FM-40509, Traveling on Official Business
- PRC-PRP-QA-052, Issues Management
- PRC-PRO-PMT-52772, Property Management
- PFP-PRO-RP-50652, Control of Potential Beryllium Exposure Area Posting
- PFP-2014-WSA-13174, Hanford Site CBDPP Revision 2A Implementation at PFP Closure Project
- SHS&Q-2014-WSA-11813, Assessment of CHPRC Beryllium Program
- SHS&Q-2013-SURV-12858, Implementation of DOE-RL-0343-001, Hanford BWP and Hazard Assessment Procedure
- Active PFP Job Specific Beryllium Work Permits and related Hazard Assessment Forms
- CRRS Search documentation related to CHPRC and PFP 2014, Beryllium related events and associated corrective actions

WCH

- WCH CD/Recordable disc, 2014 set of Issue Forms

- SA-ESHQ-2015-SA0003,WCH Self-Assessment
- WCH Agenda, CBDPP Lower Tier Committee
- SH-1-4.9, CBDPP Implementation
- DI-OM-012, Be Notification and Counseling
- WCH BWP for ERDF and site 618-010
- WCH Exposure Data Log sheets for ERDF and 618-010

HPMC

- HPMC Beryllium Information Packet – Multiple enclosures
- HPMC BeCAP Product Documents 1.7.2, Beryllium Registry
- HPMC BeCAP Product Documents 1.7.3.2, Medical Referrals
- HPMC BeCAP Product Documents 1.11.1.6, OMP Outreach Plan and schedule
- HPMC BeCAP Product Documents 1.7.4, Beryllium Work History questionnaires (Affected, Initial and Update), Work location maps, Data set samples
- HPMC Policy OMC-ADM-065B, Counseling for OM Services for BE affected employees
- HPMC Policy OMC-CS-135B, Be Medical Surveillance Program, 9/18/14
- HPMC OMC-CS-018C, Be Multiple Physician Review, 2/26/15
- OMS-QIS-15-001, HPMC Assessment/Quality Study Documentation Form
- HPMC Checklist, Be Affected worker counseling
- HPMC Position Descriptions (Case Manager, Physician, Physician Assistant, IH, Be-Coordinator Be, Assistant)
- HPMC Product 1.5.12.3 Be Process Flow Chart
- HPMC Product 1.10.2.1, Be Medical Support Plan OMC-CS-135A1
- HPMC External Assessments PHS Assessment Report 8/28/2014 – Tank Farm Medical Monitoring Program
- HPMC PHS Virtual Review of HPMC Services, 12/31/13

Interviews:

- MSA Industrial Hygienists
- MSA Work Control Managers
- MSA AJHA Subject Matter Expert
- MSA EJTA Point of Contact
- WRPS Site Beryllium Lead
- WRPS Project Manager
- WRPS Construction Manager
- WRPS Hazardous Materials Specialist
- CHPRC Site Beryllium Lead
- CHPRC PFP Industrial Hygiene and Support Staff
- CHPRC Craft
- CHPRC Surveillance and Maintenance Staff
- CHPRC Nuclear Chemical Operator
- HPMC Medical Director and Beryllium Product Team Members
- WCH Beryllium Program Lead
- WCH ESH&QA staff (618-010) and Stoller Industrial Hygienist (ERDF)

Observations:

- MSA Beryllium Facility Assessment Walkdown of Conex Box (Cargo Container MCKU-410159)
- PFP review of active BWPs
- Walkdown of CHPRC BCA postings within PUREX
- Tour of CHPRC BCA postings at exterior of facilities managed within the surveillance and maintenance program
- WRPS MO-439, Field Verification Sampling
- Tank Farms Field Walkdown Postings Review
- WHC 618-610 Burial Ground removal and crushing of legacy waste drums; new drilling equipment
- ERDF postings and barriers at multiple locations at ERDF and the 618-10 Burial Ground
- Dust suppression at ERDF and the 618-19 Burial Ground
- HPMC Beryllium Work History Database
- BeCAP Core Committee Meeting (March 11, 2015)
- BeCAP Product Team Meeting (March 10, 2015)
- CBDPP Committee Meeting (March 12, 2015)