

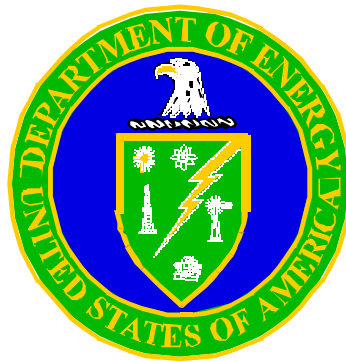
U. S. Department of Energy

Miamisburg Closure Project

RISK MANAGEMENT PLAN

Volume II

DOE PROJECT RISKS



April 30, 2005

Revision 0

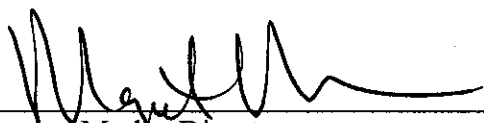
Signature Approvals

For

RISK MANAGEMENT PLAN, Volume II

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I. INTRODUCTION

This document further discusses DOE risks as defined in Volume I and assesses their potential impacts on the completion of the CH2M Hill Mound Inc. (CHM) contract. The goals of risk assessment are to:

- Increase the understanding of the project in general;
- Identify the alternatives available;
- Ensure that uncertainties and risks are adequately considered in a structured and systematic way; and
- Establish the implications of these on all other aspects of the project through direct examination of these uncertainties and risks.

Each risk element is inherently uncertain and dynamic in nature and may prove to be under or over estimated as work progresses. A simple assessment methodology¹ is used to analyze risks identified, which is largely based on qualitative analysis derived from best understanding of conditions affecting individual risk items as well as good experience and thoughtful opinions of the Miamisburg Closure Project (MCP) office's technical staff . Both probability and consequence of the risk events are considered in the determination process. Details of risk description and assessment are provided in Section II of this volume.

Note that amount at stake and criticality (consequences) may vary with time depending upon the stage in the project life cycle. As our knowledge of project improves, the magnitude of impacts can also change. The MCP takes a conservative approach to document risk impacts when uncertainty is considered high.

Once the consequences and their significance are identified, the MCP plans to mitigate the likelihood of the risk events in list, and/or develop suitable responses and contingency plans. A set of "Conclusions and Recommendations" is accumulated as results of the assessment in order to provide tools for appropriate management decisions with full knowledge of the apparent risks involved.

¹ Project and Program RISK MANAGEMENT, The PMBOK Handbook Series, published by the Project Management Institute (PMI)

II. RISK DESCRIPTION AND ASSESSMENT

A. Delays and Cost Impacts Associated With Building 57 Demolition

Description

The success of project completion involves an ongoing transfer of buildings, land, services and utilities between DOE/CHM and Miamisburg Mound Community Improvement Corp., (MMCIC). So the MMCIC can develop the site for the industrial reuse (industrial park), while DOE continues to clean it up in parcels. There is a risk inherent from the interdependency among parties involved. If any of the parties are not ready for a transition while others are, whether it is a transfer of building, land or utility service, it can cause significant schedule and/or cost impact on the site closure contract. Furthermore, some of these transfers involve the fourth party, the City of Miamisburg, since the City is responsible for maintaining the infrastructure for which the MMCIC's industrial park will rely on in the future. Rules and requirements inherent to the municipality may inhibit a successful transfer from DOE to MMCIC. For example, the City must ensure that its Fire Department can provide adequate personnel and equipment to support any fire response service on site before a termination of the site fire department and demolition of its building. Another example is to transfer the existing sanitary sewer system to the MMCIC. The on-site system will need to connect to the City's Public Owned Treatment Work (POTW), which is regulated by the state regulations under the Clean Water Act (CWA).

Risks related to transfer of the property and utility services include contaminated soil in proximity of pipes/infrastructure, contamination within the storm water and sewage pipes, indemnification, risk reduction to facilitate utility transfer and the MMCIC's ability to receive facilities as they are made available from CHM.

Current data indicates that some soil contamination remains near existing sanitary sewer pipes in the Parcel 7 area and will probably require removal.

Contamination in the sanitary sewer pipes is determined to be minor, but, the MMCIC's ability to accept the sewer network becomes a more concerned risk than the contamination alone. Its impact becomes critical as it starts to impact CHM's ability to demolish Building 57, which houses the on-site sanitary treatment plant, and to remediate PRS-41 underneath Building 57.

Risk associated with some utility service transfer, which was determined earlier in the project life cycle, has been eliminated as events occurred. Transfer of both Fire Service and potable water system to the City has occurred and is no longer risk. Indemnification which was determined to be a risk for transfer of water and sewer systems was also approved by the Congress. They are contributing to mitigation of risk associated with the site reuse.

Another concern is MMCIC's ability to receive buildings, as they are made available by CHM. For example, MMCIC would not accept lease of Building OSW until proper access and parking are available. All costs related to building maintenance, after CHM completes their requirements and the building is approved for transfer, are DOE's risk.

Assessment

MMCIC's ability to accept buildings at the time CHM makes them available is a potential cost risk. Contract Clause B.5 (c) identifies items excluded from target cost to include facilities and utilities costs after they have been declared prepared for transfer. Although this risk is difficult to quantify it is possible transfers will be delayed, at least on occasion. Given a preventive maintenance rate of \$1/ft²/year, it is estimated that DOE could incur as much as \$500K in cost. This estimate amounts to a "place holder" cost to recognize a potential problem, not necessarily a likely problem.

Contamination around and inside the sanitary sewer lines as cited above will impact cost. The question is the extent of the impact. Currently, it is only expected to have minor impact on cost. This assumes that no additional contamination is discovered beyond that in soil near the sanitary sewer lines in Parcel 7 and sampling results for sludge and effluent collected at POTW and Mound is acceptable for sewer connection to the POTW. If new contamination is discovered costs could exceed \$1M.

Indemnification approved by the Congress earlier reduces uncertainties associated with connecting drinking water system and sanitary sewer system to the City infrastructure. But, the MMCIC's inability of accepting the lease for the sanitary sewer tie-ins becomes a much more critical problem, which will affect the critical path. CHM expected that MMCIC would sign a lease with DOE to transfer the sanitary sewer collection system by October 30, 2004. On November 30, 2004, the DOE formally offered the MMCIC a lease for the Mound sanitary sewer collection system. At this time, it is unknown when the MMCIC will be prepared to sign and execute the lease, as the City of Miamisburg is awaiting an approval from the Ohio Department of Health before making the final connection. DOE provided a formal notice to MMCIC that the site treatment plant will be shutdown in mid July 2005 and DOE will install a package sewage treatment system. This will allow CHM to execute the demolition plan for Building 57, which houses the site sewage treatment system, and other ancillary buildings, and to excavate PRS-41 (underneath Building 57) once the new system is operational in the July 2005 time frame. The sewage plant demolition became critical path activities for the site closure in October 2004. Consequently, the impact on schedule is 6 months with cost impact of 13 millions dollars.

B. TRU Waste Past the Expiration of OHOX Railcar and Exceeding 300 M³ in Volume

Description

The project is permitted to ship up to ~300 M³ of TRU waste to the DOE Savannah River Site (SRS), which is comprised of legacy Transuranic (TRU) waste that had been shipped and TRU waste that remains in previously uncharacterized process lines underneath in SW/R buildings. As part of its risk reduction efforts CHM is pursuing characterization and removal of all potential TRU remaining at the Project. However, it has been determined that the removal of the process lines cannot be practically accomplished until the demolition of R/SW buildings has been completed. The process lines run beneath the buildings at varying depths from four feet to thirteen feet. The most recent schedule estimate for the removal carries to middle of 2005. The DOE has received an extension of exemption for expiration date from November 30, 2003 to September 30, 2005.

To date 9 shipments (268 M³) have been completed. A 10th shipment will be made after waste is recovered from SW/R building in 2005. Any TRU waste shipment via the ATMX railcar post November 2005 will require regulatory extension of the ATMX US DOT exemption. As the project progressed, additional volume of TRU waste was found from PRS-438 which will exceed the 300 M³ agreement for acceptance at SRS. The volume of TRU soil waste is currently being determined. Preliminary estimates range up to 90 M³ but there is a high degree of uncertainty. DOE has negotiated a new agreement with the SRS and has obtained a DOT regulatory extension for an additional 4 shipments, for a total of up to 14 shipments.

Assessment

Although the contractor is implementing aggressive characterization and removal actions to identify and eliminate potential TRU waste streams, the projection is that TRU waste will not be removed from the site until CY 2005. Furthermore, it is highly probable that more TRU waste will be discovered during remediation, which is demonstrated with newly found TRU waste from PRS-438. Impacts would more likely be schedule related due to the extensive amount of planning and coordination needed to certify packages, making arrangements with SRS and the State of South Carolina to receive the added shipments. Early conservative estimates showed that the potential quantity of TRU will exceed the ceiling of 300M³ under the contract and under an agreement with SRS. With only one shipment remaining in the contract (about 32M³ left), and potentially more than 90 M³ of additional TRU waste found, it is certain that the site will exceed 300M³, which means that additional funds of at least \$1.8M (estimated by $\$6M/300M^3=20K/M^3$) may be required to send TRU waste to SRS in excess of

the \$6M previously arranged. In addition, handling and packaging costs could also be incurred.

Per the Risk Allocation Plan included in the closure contract, CHM has accepted the total risk associated with identifying, handling, packaging and transporting any new generation TRU for disposal. DOE would be responsible for providing a DOE receiver site for this material.

C. OU-1 ROD and PRS-11

Description

Operational Unit (OU)-1 (also known as Area B) is four acres and is located in the southwest portion of the Mound Plant. The area was a historic landfill for solid and liquid waste, and general office trash disposal from 1948-1974. OU-1 contains the primary suspected sources of groundwater contamination by volatile organic chemicals (VOCs). Thorium-232 has also been detected in soil above cleanup levels. It is suspected that the contamination is originated from the disposal area of buried crushed thorium drums (PRS-11), which is scheduled for a removal action.

A Record of Decision for OU-1 was issued in 1995. It states that pending successful completion of a VOC removal action, the landfill can be closed in place. At this time the active remedy for OU-1 (Pump & Treat for containment and Air Sparge/Soil Vapor extraction for source term removal) to remove VOCs is considered effective. In the site sales contract signed in 1997, MMCIC agreed to take possession of 100% of the site following CERCLA required remedies to include the OU1 landfill. Consequently, the project baseline includes removing the pump and treat system (if treatment is complete prior to site closure) and leaving the landfill as it currently exists. This baseline premise is currently being challenged by the community on the basis that OU-1 remedy does not adequately address the uncertainty of remaining risk. They have strongly recommended that the entire OU-1 landfill area be removed. The Core Team, consisting of DOE, USEPA and OEPA composed a report on OU-1 that found the ROD remedy “was operating properly and successfully and was fully protective under the industrial land use scenario.” Local city officials, the MMCIC and members of the community have stated that the landfill must be exhumed. Miamisburg city officials have stated that the parcel will not be accepted, if the landfill remains. The Ohio Environmental Protection Agency (OEPA) has voiced concerns about the protectiveness of leaving the landfill in place.

DOE’s position is that there is no new information that suggests that the current ROD/remedy is insufficient. The technical data to date has not identified any specific problems that had not been previously identified or considered in the OU-1 remedy, except for PRS-11 as discussed below. In the interim the DOE has

conducted a value analysis to compare alternatives ranging from capping (native soil cover, single barrier or multilayer) to complete excavation of OU-1 (with disposal as: 1) sanitary waste, 2) LLW, 3) mixed waste). The cost estimate ranges from \$1M (native soil cover) to \$30M (excavation of OU-1 with disposal as mixed waste). The multiple layer capping is a more likely scenario (~\$5.5M).

The OU-1 issue is complicated by the CHM plan to remove buried crushed thorium contaminated drums from PRS-11, which lies within the OU-1 boundary. These drums were identified when the OU-1 remedy was being installed and subsequently the regulatory core team agreed that a Response Action would be required. CHM has recognized that a significant technical risk exists with potentially breaching the landfill containment while removing the thorium drums.

Another issue related to OU-1 is the political pressure to landscape the OU-1 area. This work is not defined in the project baseline and is outside the current contract target cost.

Assessment

DOE is confident that its technical position with regard to the OU-1 remedy is solid and therefore expects no further remediation will be required. However given the political pressure to remove the landfill (or portions of it) it is probable that a final decision will be made at DOE HQ. As indicated above the costs to remediate are highly variable and could exceed \$30M depending on clean-up assumptions. As noted above, DOE believes that a multiple layer capping (~\$5.5M) is a more likely scenario. Any decision to re-address OU-1 and expand clean-up operation would entail either a new contract or a modification to the CHM contract. If MMCIC refuses to accept the OU-1 area, the land would remain in Government ownership and LM would presumably maintain oversight.

With regard to PRS-11, cost risks could become excessive if the landfill barrier were breached. Cost to repair any damage is difficult to estimate, however given the complexity conditions in this area an optimistic estimate of risk may be \$1M.

Finally DOE's implied commitment to landscape the OU-1 is estimated to cost as much as \$1M. This is not within the current contract target cost.

D. Government Furnished Services/Items (GFS/I)

Description

Table H.5 of the closure contract identifies the overarching items of GFS/I required for delivery by the government to achieve target closure. The CHM has further populated and defined these dependencies in the project baseline. Approximately 90% of the GFS/I require DOE to deal with CERCLA related

reviews and documentation approvals under Mound 2000. The contract has specified turnaround times that the contractor has planned for under the baseline and, accordingly, any delays will cause an impact. Expedition of GFS/I turnaround will also allow work in the field to be accelerated. It is estimated that several hundred CERCLA related transactions are needed over the life cycle in order to close the site. At least 50% of them are to be dealt with in FY 2005 and 2006. The transactions have a distinct profile with a peak and a ramp down period that the government and regulators need to understand in order to apply the proper level of resources. In addition, due to the involvement of the U.S. EPA and OEPA in the Mound 2000 Process, there exists a moderate level of uncertainty as to the commitment and ability of the regulators to support the delivery of the CERCLA documents per the baseline loading. MCP and OH are instituting significant management tracking and performance metrics in this area to ensure that the GFS/I are delivered as expected.

Assessment

The delivery of the GFS/I poses a moderate qualitative uncertainty to the project's ability for achieving the target closure date. Although DOE is clearly committed to deliver per the target plan and the accelerated working plan, there exists an intangible factor of regulators' ability to turn around the documents as needed. As for the OEPA, DOE currently funds support through an annual grant process. OEPA possesses a significant cadre of staff dedicated to support the Mound closure effort. U.S. EPA, on the other hand, possesses limited support with only one federal employee involved. The EPA's ability to support the turnaround of the GFS/I poses the greatest risk of delivering site closure GFS/I documents to meet the baseline requirements. This reality imposes a burden on MCP to try to assist and support EPA as much as possible in order to be successful.

E. Final Site-wide Record of Decision (ROD) Definition and Canal ROD

Description

Section C.2.3.6 of the contract requires CHM to obtain DOE's and the regulator's formal acceptance of a draft final site-wide ROD as part of the contract closure requirements. Much dialogue has occurred relative to the Contracting Officer's and regulator's intent of this document as contrasted with the contractor's understanding. A difference in interpretation and intent exists that needs to be clarified and resolved. This will involve discussions between DOE and the regulator on the intent of the final site wide ROD to include its nature and extent of coverage. The greatest point of uncertainty deals with the expectations with regards to Aoffsite areas@. Following agreement with the regulators, the Contracting Officer needs to provide a formal contract interpretation in response to CHM's letter dated May 15, 2003.

The other CERCLA-related document deals with the ROD for the Canal area. This area was remediated by DOE in the mid-1990's to remove plutonium contamination caused by a production-era spill that occurred on site. The canal area is offsite on City property on the western border of the project. Neither DOE nor previous site contractor followed through on finalization of a ROD for the canal area at that time. DOE has performed a residual risk evaluation. DOE/MCP completed the OU-4 ROD in May 2004; conducted a public meeting in June 2004; responded to public and regulator comments and the ROD was signed on September 30, 2004.

Assessment

According to Contracting Officer's interpretation of the contract and knowledge and intent of the Source Evaluation Board (SEB), the terminology A draft final site-wide record of decision @ in the closure contract should include both on-site and off-site components of CERCLA closure documentation. As such, this scope is likely to remain within the closure contract. CHM has stated that their interpretation of the contract does not include the offsite component. It is thus up to the Contracting Officer who may either choose to stand firm to include closure documentation of the offsite component in the contract or be willing to negotiate a compromise deal under the contract. DOE could also pursue this work through other means such as subcontracting. The range of costs across these alternatives are anywhere from zero incremental cost to up to \$250K for procuring a subcontractor to evaluate all off-site data, to generate a residual risk evaluation and a ROD. In addition, although the probability is low, there is a potential that during the analysis of off-site data a removal action may be necessary. If so, for planning purposes, it is estimated this may cost up to \$1M. Also because this issue is being addressed late in the closure process and related regulatory/stakeholder uncertainty exists, this risk, although unlikely, could delay site closure.

F. Groundwater Contamination and Mitigation

Description

One seep has TCE levels above MCLs, the source thought to be the main hill area, in particular under B building slab. Eight wells exceed MCLs for chromium and nickel - all are assumed to be a result of corrosion of stainless steel well casings as was proven to be the case for two on-site wells, #319 and #400. One off site well exceeds the MCL for radium 226/228 (well #0335). Well #0335 has been abandoned and grouted. The elevated levels of radium are thought to be analogous to high radium levels at an on-site well (#0445) (i.e. high levels of radium in association with high levels of chloride and therefore resulting in a

release of naturally occurring radium in the bedrock). The CH2MHill hydrogeologist worked with SRS to demonstrate that the radium is naturally occurring. Finally one off-site seep has levels of tritium exceeding the MCL for tritium (22,000pCi/L). Summer 2003 concentrations were ~30,000 pCi/L, the source assumed to be under SW/R.

Assessment

The source for VOCs in the off-site seep is addressed in item 13 below. The removal action for VOCs under B slab is estimated by the contractor to be ~\$2M.

For the tritium in seeps, the DOE believes that following removal of SW and R buildings and removal of the soil below the buildings consistent with contract requirements, that the source will be removed and monitored natural attenuation of the remaining tritium will be performed by DOE post closure until levels go below regulatory concern level. Due to the geological terrain in the area, it is possible that the contamination is entering fissures in the bedrock, which would make removal very difficult. The regulators have recognized this potential problem as well. There is a low probability that more soil may need to be exhumed than required by the contract.

G. Legacy Medical and Pension Costs

Description

CHM is currently required by contract to assume management and administration of these plans from the previous contractor within 6 months of contract award. Following actuarial and legal evaluation, CHM informed DOE that an additional 19.9M would be required life cycle above what is currently included in the contract due to poor performance of the stock market prior to CH2M Hill assuming the contract. These costs already amount to approximately \$56M (20%) of the total target costs under the contract.

Assessment

Following assumption of plan management and DOE funding the \$14.8M (adjusted due to market conditions), CHM has assumed the risk associated with market volatility for the remainder of the contract. Should CHM complete the contract by March 31, 2006, DOE will fund the legacy medical and pension account (estimated at \$8.9M) outside target cost for the third and fourth quarter of FY06. Should the work extend beyond March 31, 2006, all cost including the cost associated with legacy medical and pension will be shared as outlined in Section B, B.4 of the contract.

H. Estimated Low Level Waste(LLW) Soil Volumes

Description

The CHM contract includes 4.3 million ft³ (Mft³) of below grade LLW (BGLLW) soils and debris volume that are estimated for removal and disposition. In their baseline, CHM assumed that this volume would be closer to 3.7 Mft³. CHM now estimates that waste sources identified in the baseline will total 5.9 Mft³. An analysis of current excavation of waste volume estimates upwards of 6.4 Mft³, potentially. This results largely from unexpected growth in PRS 66 LLW (baseline estimate 1,275 Mft³, current estimate 2,479 Mft³). Attachment 3 shows the individual PRS by PRS baseline estimate vs. the current estimate.

Assessment

Based on the contractors estimated volume of 5.9 Mft³ BGLLW, the project will exceed the contractor target volume of 4.3 Mft³ by 1.6 Mft³. At an estimated cost of \$10.67/ft³ for off-site disposal, DOE would be required to fund additional \$17M. There is high probability that the estimated quantity of below-grade LLW will exceed 4.3 million ft³ with significant cost and schedule impact. Current projections will exceed contract ceiling of 4.3M ft³. New sources of LLW not previously identified in baseline will further increase LLW disposition liability. Upon implementation of an REA, the BGLLW will be capped at 5.9 Mft³. Assuming a 10% growth of the 1.63M ft³, growth would minimally impact the overall cost and schedule of the project.

I. MMCIC Acceptance of T building As Is

Description

The Technical (T) Building is a heavily reinforced subterranean concrete structure located under the Development and Standards (DS) Building. The building was constructed in 1948 by excavating the side of a hill, assembling the basic reinforced concrete building shell, and then backfilling the excavated areas to essentially the original slope and height. The building has two main floors. The first and second floors are compartmentalized into three general areas by two 30-inch-thick, reinforced concrete firewalls. The interior dimensions of the basic building shell are 345 feet long, 150 feet wide and 34 feet high. The reinforced concrete exterior shell has a 15-foot thick roof; 16-foot, 7-inch walls; and an 8-foot, 3-inch floor slab. The T Building will be transferred to the MMCIC once the deactivation activities inside the building are completed and final verification and reporting demonstrate meeting the free release for industrial reuse. 1998 Site Sales Agreement Section XIV, Condition or Premises: Requires DOE to clean the property to an industrial us standard (see Section XVI, Warrantees and

Representations), and further states that “...effects of sellers plans for remediation activities, deferral of any transfer of any property ... and reasonable wear and tear, all buildings, utilities, and other property conveyed will be transferred in “as is” and “where is” condition” as of the date the sales contract was signed. This section further states that DOE is “...not obligated to repair, replace or rebuild any structures required to be totally or partially removed as a result of remediation activities.”

Assessment

Unless the MMCIC can find a tenant soon enough before or after the transfer of the building, it may not be attractive for them to accept the building. The MMCIC may decline to accept the building when the building is ready for transfer. The MCP may need to consider other alternatives, if that happens, such as “mothball” or “entomb” the building with long term maintenance and monitoring. Consequently, the radiological residual evaluation (RRE) for Parcel 8 may be reconsidered to exclude the building as it is part of Parcel 8 transfer. Long-term maintenance/monitoring of the building structure is also required to ensure that the building does not become a safety and health concern to the community and maintain it as a federal asset. The DOE may need to take a different approach for RRE of Parcel 8. The uncertainty has a medium-to-high probability of occurrence, with high potential cost impact and medium-to-high potential schedule impact.

J. Added Scope Items

All of them are outside of the contract scope as defined in the Contract (DE-AC24-03OH20152). They are lumped together as they share the same probability of risk and risk mitigation with medium-to-high probability of occurrence and high potential cost and schedule impact. The contractor submitted a request for equitable adjustment (REA) to DOE in January 2005 to resolve issues associated with added scope items. Risk will be considered mitigated once the REA and a subsequent Baseline Change Control (BCP) is approved by proper authorities.

1. Building 22 Contaminated Soil

Description

An area of previously-unknown contaminated soils, north of Building 22, was discovered during excavation of a new sanitary sewer line. Several contaminants were discovered including plutonium and thorium. The contaminated soils are being remediated as PRS 66 “west”.

Assessment

The BGLLW from Building 22 contaminated soil is estimated to be 250,000 to 400,000 ft³. Both excavation activity and disposal of BGLLW are outside of the contract scope as defined in the Contract (DE-AC24-03OH20152). The scope has high potential cost (~\$7.0M) based on \$17.45/ ft³ of excavation and disposal costs and low-to-medium potential schedule impact.

2. Building 30 Contaminated Soil

Description

An area of previously-unknown contaminated soils, down-gradient of Building 30, was discovered when CHM was removing stanchions for above-ground utility lines. The contaminated soils are not associated with an existing PRS, nor are they located near existing PRSs that have the potential to “chase” into the area down-gradient of Building 30. Therefore, the area will likely be designated a new PRS that must be evaluated by the Core Team. Excavation and removal of the thorium-contaminated soils will result in BGLLW.

Assessment

This work is completed and will be reported with Building 38 soils.

3. Potential VOC Contamination Under B Building Slab

Description

Removal of the B-Building slab is in the CHM baseline. However, the DOE’s Request for Proposal did not envision soils beneath the slab being contaminated with either radioactive or hazardous chemicals. The potential for contaminated soils containing volatile organic compounds (VOC) existed. Since the Core Team is interested in removing all known sources of VOC contamination, the soils beneath the B-Building slab may be designated a new PRS and will require Core Team evaluation.

Assessment

A removal action performed in the early 90s indicated that VOC contamination may exist under B Building slab that may be contributing to the contamination found in the Main Hill seeps. The risk is to be dealt with in the groundwater exit strategy and has a low-to-medium probability of occurrence, with high potential cost impact and medium potential schedule impact. Since it is more costly to dispose of “pure” VOC-contaminated soils (versus a mixed waste stream of VOC- and radioactively-contaminated soils), this additional scope item is a big cost driver. Based on an estimate, it could be as high as 45,000 ft³ of contaminated

soil underneath the B Building slab. Assuming that no mixed waste will be generated, the potential cost impact will still be as high as \$2.12M. However, early indications are that VOCs above limits do not exist. This will be determined by verification sampling in the near future (spring '05).

4. Closure of PRS 286

Description

PRS-286 (SM Building Leach field), located down-gradient of "Group 5", was cleaned up in (1991-1995) under the then D&D Program. The cleanup goal for plutonium-238 (Pu-238) was 100 pCi/g with hotspot criteria of 300 pCi/g (versus 55 pCi/g and 165 pCi/g under the current CERCLA Program). Typically, both in-house team and an independent verification contractor (IVC) would have conducted verification per the D&D criteria upon completion of the D&D projects. The cleanup activities at PRS-286 were being conducted during the time that remaining D&D projects were being "grand fathered" into the CERCLA Program. As a result, the in-house verification was completed, but not the independent verification. Another factor in delaying the independent verification was that some of the plutonium facilities yet to be remediated were up gradient of PRS-286 which could have led to cross contamination after verification was completed. Given final verification was never been done, the regulators have requested DOE to perform verification and some limited excavation. This work was not addressed in the CHM baseline and not included in the contract target cost.

Specifically, regulators were concerned about the original boundaries of the old D&D area, and DOE's ability to accurately pinpoint two locations mentioned in a Argonne National Laboratory (ANL) report that exceed 100 pCi/g.

Assessment

All field work is completed. No additional soil excavation is expected. Administrative closeout of this PRS will be handled under the Group 5 OSC report which is in process.

5. Off-site Removal of Sewer Lines

Description

The sanitary sewer outfall piping from the Mound sewage treatment plant runs along a flood control levee on property owned by the Miami Conservancy District (MCD). The outfall (i.e., NPDES-permitted effluent) from DOE's sanitary sewage treatment plant exits the MCP site via a hard pipe to the Miami-Erie Canal, a property owned by MCD. Surface water in the Miami-Erie Canal subsequently drains to the Great Miami River. Since the DOE plans to cease

current sanitary sewage treatment operations per the baseline and install a package sanitary sewage treatment plant, the DOE will continue to require using the hard pipe to discharge the effluent from the treatment facility. DOE may also have some other need for the pipe. DOE directed CHM to renew the permit with MCD and to keep track of any costs (to be borne by DOE) associated with permit renewal and/or compliance. In the event that DOE decides on a later date (e.g., post-CHM contract completion and before DOE Legacy Management assumes custodianship of the MCP site) that the hard pipe is no longer required to support DOE operations, then DOE must comply with permit requirements to remove all DOE utilities, groundwater wells and manholes located on MCD property. It may also include a CERCLA remedy to restore the MCP property. This work is not in the CHM. baseline, and would be additional scope.

Assessment

On May 11 2004, the Miami Conservancy District (MCD) renewed the Land Use Permit for the off site sewer line and related manholes. The permit requires that within six months of termination the system be removed and property restored. DOE has agreed to reimburse CHM for related costs. The permit provides access to DOE groundwater monitoring wells and a closed-pipe, NPDES-monitored effluent line from the Sanitary Disposal (SD) facility and associated manholes located on MCD-owned land. It's not clear if the six-month window for removal of system starts when CHM shuts down the sanitary sewer system (October 2004), or at some later date (e.g., when DOE determines that the groundwater wells on MCD property can be removed). CHM estimates **\$280K** (zero cubic feet of LLW, zero volume of soil requiring disposal) to remove and dispose of the closed-pipe & manholes, abandon the wells and restore the MCD property. Removal of the out-fall pipes is not included in the scope as defined in the Contract (DE-AC24-03OH20152). The uncertainty has a low-to-medium probability of occurrence, with low-to-medium potential cost and low potential schedule impact.

6. Closure of PRS 272

Description

The original contaminants of concern (COC) for PRS 272 were thorium, plutonium and cesium. PRS 272 was binned "No Further Action" in July 1996. Consequently, the DOE's Request for Proposal did not envision further work in PRS 272. However, in July 2004, the Core Team re-binned PRS 272 "Further Assessment" as a result of newly-identified COCs associated with debris from DOE's "Old Dayton Units" placed in PRS 272 (which was, essentially, a dump site). The Old Dayton Unit COCs are Po-210, Pb-210, and Bi-210m (metastable). PRS 272 is adjacent to PRS 273 (a PRS that is within the CHM baseline), and the COCs in PRS 273 (Thorium and Plutonium) were "chasing" into the footprint of PRS 272. Therefore (and coincidentally), soil excavation activities associated with PRS 273 essentially addressed the newly-identified COCs associated with PRS 272. CHM is in the

process of conducting verification sampling in PRS 273, including those areas where the PRS 273 dig "chased" into the PRS 272 footprint. That verification sampling will ensure that COCs associated with **both** PRS 273 and 272 have been remediated to acceptable levels.

Assessment

All field work is completed. No additional soil excavation is expected. Administrative closeout of this PRS will be handled under the Group 5 OSC report which is in process.

7. Group 5 PRS D&D Areas

Description

The SM/PP Buildings footprint was cleaned under the old DOE (Defense Programs) "D&D" Program (i.e., prior to enactment of the CERCLA statute and MCP's placement on the National Priority List [NPL]). The footprint includes three areas, only one of which was verified/closed out under the D&D Program. The remaining two areas were not verified because it made more sense to conduct the verification after Building 38 was demolished. Demolition of Bldg 38 was subsequently delayed and the building was, in fact, demolished in accordance with "Mound 2000" cleanup standards. The historic D&D areas are in "Group 5" (i.e., SM/PP Hill Soils) of the CH2M Hill Mound, Inc. Baseline. DOE's Request for Proposal recognized that two of the three historic D&D areas required verification and closure. CH2M Hill assumed that verification would be to the old D&D Program standards (5 pCi/g for Thorium). However, as a result of CH2M Hill "chasing" contaminants (from nearby PRSs) into the historic D&D areas, the Mound 2000 Core Team had to reach agreement on the scope of verification activities within the historic D&D areas themselves. The Core Team agreed that, in cases where "chasing" from nearby PRSs led into the historic D&D areas, the historic D&D areas had to meet 3.5 pCi/g for Thorium (i.e., the Mound 2000 Hot Spot criteria for Thorium). DOE directed CH2M Hill to complete verification in the historic D&D areas to the Core Team-approved 3.5 pCi/g standard, and DOE would cover the incremental cost borne by CH2M Hill as a result of remediating the historic D&D areas to 3.5 pCi/g Thorium (since CH2M Hill was otherwise planning on cleaning those areas to the old D&D Program standard of 5 pCi/g for Thorium).

Assessment

The areas were cleaned up to former D&D standards in the early 1990's under the authority of the Atomic Energy Act, which is less stringent than standards under the CERCLA for the site cleanup. Additional cleanup work required to meet the CERCLA standards was not included in the contract scope as defined in the Contract (DE-AC24-03OH20152). Under the direction of DOE, the contractor proceeded to assess and remediate this PRS. All field works were completed in the 4th quarter of

2004. The cost associated with the added scope will be part of the contractor's submittal for the request of equitable adjustment (REA) to DOE. The estimated contaminated soil generated from the remediation of PRS 272 is 96,525 ft³ with about \$1.6M of excavation and disposal costs.

8. Closure of Rail Staging Area

Description

The rail spur was not designated as a PRS (or a building, or a utility) at the time of DOE's Request for Proposal. Given the nature of DOE operations at the rail spur, the Core Team designated this area as a new PRS 441. DOE's current plans call for pressure-washing the rail spur and verifying (with field instrumentation) that the area is free-releasable. This work will be additional scope.

CHM made a management decision, in early CY04, to expand the footprint of the rail spur/waste staging area located in the Test Fire Valley. During that expansion, CHM identified a previously-unknown area of thorium-contaminated soils. Since construction of the expanded rail spur area was a CHM management decision, all costs associated with that construction (including future costs to decontaminate that area/render it suitable for parcel transfer) will be borne by CHM, not DOE.

Assessment

The area is currently identified as PRS 441 nor is listed as a facility requiring demolition or transfer by the contract. Due to the financial constraint incurred in Legacy Medical and Pension Costs (item J), it became necessary to expand the footprint of the rail staging area to allow for additional staging capacity. Furthermore, during the construction of the staging area expansion, contamination was found in one area that has not been previously identified as a PRS. The risk has a high probability of occurrence, with high potential cost impact and medium to high potential schedule impact. The estimated contaminated soil generated from the remediation of rail staging area is 170,416 ft³ with about \$3M of excavation and disposal costs.

9. Off-site Evaluation

Description

The CERCLA definition of "site" includes any geographic area that has been impacted by DOE operations. DOE uses the term "off-site" to describe properties that lie beyond the original footprint of the 306-acre DOE Mound Plant. The Core Team has agreed upon an approach to determine the impact (if any) to "off-site" areas, and that approach has been communicated to CH2M Hill Mound, Inc. The first step in the process involves analysis of all existing environmental data. The majority of that data resides in the MEIMS database (i.e., the database that all CERCLA

decisions are based on). However, some additional environmental data exists that is not loaded into the MEIMS database. This data must be imported, by CH2M Hill, into the MEIMS database before the offsite evaluation of impacts can commence. CH2M Hill must then prepare a Residual Risk Evaluation (RRE). If the RRE shows that off-site areas have been impacted, any CERCLA remedy (i.e., other than a “no action” decision) could likely be incorporated in the Record of Decision (ROD) for the final land parcel. The Core Team used a similar approach with the Phase I Parcel ROD, for example, where the CERCLA remedy calls for monitoring of groundwater both within and beyond the physical boundaries of the Phase I parcel.

Assessment

Areas outside the MCP property boundaries were not included in the current contract. However, these areas have potentially been impacted by the DOE operations and the regulators have indicated that a risk evaluation should be performed and resulted included in the final CERCLA closure documents for the site. The risk has a low-to-medium probability of occurrence, with low potential cost impact and medium potential schedule impact.

10. Excavation of Ponds Associated With Site-wide Drainage System

Description

PRSs 67-70 are four discrete PRSs associated with the site-wide drainage system. The Core Team has binned all four PRSs “Response Action,” and CH2M Hill is in the process of developing Work Plans to accomplish the response actions. The City of Miamisburg has expressed concern that the planned scope for some of the response actions may be insufficient. For example, PRS 68 is an asphalt-lined pond that is up-gradient of the other three PRSs. The City of Miamisburg has expressed concern that contamination may be present beneath the asphalt lining, therefore, DOE should consider removing the asphalt pond altogether (current scope calls for sampling the sediments in the pond, and any areas in the asphalt lining [e.g., cracks] where contamination may have migrated out of the pond). The City of Miamisburg has also expressed concern about PRS 69, which is an overflow pond located adjacent to the sanitary landfill in OU-1. DOE plans to sample the sediments in PRS 69, however, the City would prefer the entire pond be excavated. Excavating these two ponds (unless otherwise required in order to demonstrate compliance with Mound 2000 cleanup objectives, including any actions required to effect transfer of Parcels 6, 7 and 8 to the MMCIC) would be additional scope.

Assessment

PRS 68 is an asphalt-lined pond that is up gradient of other three PRSs. The investigation of PRS 68 is complete. However, the area beneath the pond (now designated as PRS 442) has been identified by the regulators as an area of concern. The potential exists for additional waste volume to be associated with PRS 442. PRS

69 is an overflow pond located adjacent to the sanitary landfill in OU-1. The Core Team has agreed to containment consistent with the 1995 ROD for the area below the pond. As a result, no additional volume of waste is expected.

K. Acceptance of groundwater exit strategies by regulators

Description

An approved “Groundwater Exit Strategy” is required for final closure of the site. Approval of the exit strategy by regulators and endorsement by the stakeholders are expected to be long and contentious processes since several areas of groundwater contamination (i.e., exceeding Maximum Contaminant Levels [MCLs]) will likely remain upon site closure and transition of long-term response action (LTRA) to the Office of Legacy Management (LM). Development of a rigorous groundwater exit strategy will require consideration and evaluation of the following within the context of the site groundwater system:

- Existing groundwater collection and treatment (“pump and treat”) system required by the 1995 OU-1 ROD,
- Existing soil vapor extraction (SVE) enhancement to the OU-1 remedy,
- Isolated exceeding MCLs in on-and off-site wells,
- The flow of contamination to the groundwater “seeps” on-and off-site,
- The extensive on-and off-site groundwater monitoring well network that currently exists.

Three hazard areas have been identified in the Risk Based End State (RBES) Vision document for the MCP, specifically Volatile Organic Compound (VOC) contamination in soil and groundwater, residual radionuclide contamination in soil, and tritium in the bedrock aquifer.

The current end state proposed for VOC’s in the OU-1 area includes collection, treatment and disposal of contaminated groundwater leading to monitored natural attenuation (MNA). A groundwater monitoring “ramp-down” strategy, and an associated well abandonment program should be one component of the exit strategy, with a goal of collecting only that set of groundwater information that is required by the various RODs.

Assessment

A groundwater exit strategy must be developed prior to the development of the final site closure documents. The groundwater exit strategy will be incorporated into the final closure documents and will identify DOE’s data needs during post-closure monitoring. The current plan assumes that wells not required for post-closure monitoring will be abandoned and the operation of the pump and treat system at OU-

1 and monitoring of the groundwater seeps will continued post-EM completion and transition of long-term response actions to the LM. It is also assumed that any other required long-term response actions will be developed as a part of the final parcel ROD. There are two-fold risks associated with the groundwater exit strategy:

- The regulators and/or stakeholders do not accept the groundwater exit strategy and require more groundwater remediation to be done on-site. For example, tritium contamination in the fractured bedrock may be too high to leave in place for the natural decay. Remediation may be required.
- Development and evaluation of the groundwater exit strategy may be more complicated than originally planned, which will require more time to negotiate the strategy.

Either case will impact the schedule for transition of the site to MMCIC and the post-closure responsibility to LM. If the first case becomes imminent, it may cost millions of dollars to remediate. Nonetheless, the uncertainty has a low-to-medium probability of occurrence, with low potential cost impact and medium potential schedule impact.

L. Adequate funding to carry out the scheduled activities

Description

Four major site changes contribute to the request of increasing the life cycle cost:

- Scope: soil volume growth in excess of 4.3M ft³, and identification of additional release sites
- Pension: CH2M Hill pension contribution increase
- Additional scopes identified after the contract was awarded
- Closeout of old contracts: EG&G litigation, Monsanto litigation and BWXT termination/litigation

The Miamisburg Closure Project (MCP) requests an additional funding in FY05 and FY06 to cover these site changes. If the request is declined, the project will not be completed in FY06 as specified in the CHM's validated baseline. Therefore additional FY07 funding will be requested to complete the project.

Assessment

The uncertainty has medium-to-high probability of occurrence with high potential cost and schedule impact. The project requires adequate funding to execute baseline activities for FY05 and 06. Any curtailment of funding will potentially result in delaying the project activities and push the project completion date beyond the target

completion date. Consequently, it will require additional cost (“hotel” load) above the target cost to cover the period of extension.

M. Additional Storm Sewer System Work

Description

The four PRSs (67-70) mentioned above (10. Excavation of Ponds Associated with the Site-wide Drainage System), which are associated with the site-wide drainage (storm sewer) system are in the CHM’s baseline. The original scope was to close those four PRSs, but did not include cleaning interiors of sewer pipes, or re-engineering any portions of the sewer system. In 2004, DOE decided to lease portions of the storm sewer to the MMCIC. When MCP is completed with PRSs 67-70, the OEPA may ask for more to be done before declaring the areas protective of the environment. When parcel 6/7/8 is transferred to MMCIC the storm sewers within them will be transferred also.

Assessment

The assessment and remediation of the closed piping of the storm sewer system are not included in the current contract. Without proper characterization and/or remediation of the storm sewer system could delay its turnover to the MMCIC, which may cause significant schedule and cost impact.

III. RISK LEVEL SUMMARY

Using the methodology provided in the Risk Overview Volume I and the assessments provided in Section 2 of this Volume, each risk is summarized below. Risk Level considers the severity of a risk versus the likelihood of risk materializing. Severity of impact is based on Table I-3 in the Methodology section of Volume I, where cost increments were assigned a severity levels (Negligible, Marginal, Significant, Critical and Crisis). When assessing risk severity, worst case cost estimates and critical path impacts were considered. As discussed in Volume I, under Methodology, DOE Closure Risks are not expected to directly impact critical path activities. However, with any risk, when creating additional unplanned work, project life will be extended unless the new work is 1) absorbed through project efficiencies or 2) new funding is provided. At this point, these questions cannot be answered. Therefore for this document cost is considered the most meaningful impact and to some extent is a surrogate for schedule impact--- as greater costs potentially represent more work and time.

Likelihood of risk materializing categories (Very Unlikely, Unlikely, Likely and Very Likely) is shown in Table I-4 of Volume I and represents subjective estimates of relative probability based on site knowledge. In general, the Risk Level Summary Table below provides a qualitative perspective of each DOE Closure risk. Obviously those risks with high cost impacts and a high likelihood of materializing need aggressive attention. However each risk item merits serious consideration as even relatively low cost and low likelihood risks can have a serious impact, particularly if identified/addressed at the later stages of closure.

Table II-1. RISK LEVEL SUMMARY

No.	Description	Cost	Severity of Impact	Likelihood of Risk Materializing	Risk Level
A	Delays and cost impacts associated with Building 57 demolition	>\$5M	Crisis	Very likely	High
B	TRU past expiration of OHOX railcar and exceeding 300 M ³ in volume	\$1.8M	Critical	Very likely	High
C	OU-1 ROD and PRS 11	>\$5M	Crisis	Very likely	High
D	GFS/I	0	Negligible	Likely	Low
E	Final site-wide ROD definition	\$250K-\$1M	Significant	Unlikely	Moderate
F	Groundwater	<\$250K	Marginal	Likely	Moderate

No.	Description	Cost	Severity of Impact	Likelihood of Risk Materializing	Risk Level
	contamination and mitigation				
G	Legacy Medical and Pension costs	+\$14.8M due to market conditions	Crisis	Very Likely	High
H	Estimated LLW soil volumes	>\$17M	Crisis	Very Likely	High
I	MMCIC acceptance of T Building as is	>\$1M	Critical	Likely	High
J	Added scope items	\$12.5M*	Significant	Likely	High
K	Acceptance of groundwater exit strategy	>\$1M	Critical	Likely	High
L	Adequate funding to carry out the scheduled activities	>\$1M	Critical	Likely	High
M	Additional storm sewer system work	\$500K	Significant	Likely	High

*Does not include \$3M for rail spur because it is contractor responsibility.

IV. RISK REDUCTION IMPLEMENTATION PLAN

This plan is intended to document the reduction or elimination of DOE risks to ensure that they are mitigated and do not affect the ability of the contractor to meet the contract requirements. Under the plan, the DOE tracks status of the major DOE risk items. Tracking is intended to be dynamic and interactive in nature to ensure that project managers in both MCP and CHM take active roles in executing risk reduction. For each risk item, mitigating actions are developed and properly tracked with the action owner. “Interim completion dates” and “not to exceed dates” are driven by baseline requirements as a minimum. The interim completion dates may either be driven by the baseline or the accelerated working schedule as provided by the contractor. This status will be aggressively worked by DOE project managers to ensure completion on time and will be updated each quarter to the Project Director. Negative variances to this plan should be the exception to the rule. Aggressive action will be taken to recover any negative variances quickly. The plan is under change control and can only be modified by the Director.

The status will be evaluated at least quarterly to update as necessary. Changes that occur during the quarter will be under change control by the Director.

V. RISK REDUCTION PERFORMANCE METRICS

DOE-MCP has established a series of performance metrics to measure and communicate the effectiveness of risk reduction efforts. Significant and measurable reductions to the initial risk profile are necessary over the life of the project to ensure that delivery can be made by the target completion date of 3/31/06. Acceleration of risk reduction will support early completion of the project.

These metrics will be stated by DOE-MCP, as appropriate, monthly/annually and communicated within DOE and to external organizations frequently.

The following metrics will be stated by DOE-MCP:

- LLW Soil volumes – Plan versus Actual
- Cost of Legacy Medical and Pension – Planned versus Actual.
- GFS/I – Planned versus Actual
- DOE Cost Risk Reduction – projected worst-case cost of DOE risk versus actual reduction over time.

LIST OF ACRYNOMS

Calendar Year	CY
Comprehensive Environmental Response, Compensation, and Liability Act	CERCLA
CH2M Hill Mound, Inc.	CHM
City of Miamisburg	City
Contracting Officer	CO
Cost Plus Incentive Fee Contract	CPIF
Critical Path	CP
Decontamination & Decommissioning	D&D
Further Assessment	FA
Fiscal Year	FY
Government Furnished Services/Items	GFS/I
Independent Verification Contractor	IVC
Legacy Management	LM
Low Level Waste	LLW
Multi-Agency Radiation Survey and Site Investigation Manual	MARSSIM
Miamisburg Closure Project	MCP
Miamisburg Mound Community Improvement Corporation	MMIC
National Emissions Standard of Hazardous Air Pollutants	NESHAP
No Further Action	NFA
Oak Ridge Institute for Science and Education	ORISE
Office of Environmental Management	EM
Ohio Environmental Protection Agency	OEPA
Ohio Field Office	OH
Operable Unit	OU
Pico curies	pCi
Point of contact	POC
Potential Release Site	PRS
Record of Decision	ROD
Request of Equitable Adjustment	REA
Site Transition Plan	STP
Source Evaluation Board	SEB
Transuranic Waste	TRU
U.S. Department of Energy	DOE
Volatile Organic Compounds	VOC