

### ON-SITE CONSTRUCTION REVIEWS OF REMEDIAL ACTION AT INACTIVE URANIUM MILL TAILING SITES (TITLE I, URANIUM MILL TAILINGS RADIATION CONTROL ACT)

#### 2620-01 PURPOSE

The purpose of this instruction is to provide guidance for planning and conducting on-site construction reviews of the remedial action to stabilize inactive uranium mill tailings sites. The work is under the direction of the Department of Energy (DOE) under the authority of the Title I, Uranium Mill Tailings Radiation Control Act of 1978. The Act requires the Nuclear Regulatory Commission to concur with DOE selection and performance of actions to stabilize the sites and, following those actions, to license DOE or such other Federal agency that the President may designate for the long-term care of the completed sites.

#### 2620-02 OBJECTIVE

This Chapter establishes the program to be used by NRC reviewers monitoring the remedial action work carried out at inactive uranium mill tailings sites by DOE and DOE contractors.

#### 2620-03 DEFINITIONS

03.01 Remedial action. Those work activities carried out to stabilize mill tailings, clean up the processing site, and otherwise perform work to assure the site and tailings pile will conform to the Environmental Protection Agency (EPA) standards for inactive sites.

03.02 On-Site Construction Review. Includes all the efforts necessary to monitor the remedial action at inactive tailings sites, including, but not limited to, examination or evaluation of a program or activity. The majority of the remedial action subject to an on-site construction review is "earth moving" work. The review will determine compliance with the Remedial Action Plan (RAP), but will not include enforcement action, as NRC does not have the enforcement authority for this program under the Act.

#### 2620-04 RESPONSIBILITIES AND AUTHORITIES

04.01 Program Management, Policy Development, and Analysis, Office of Nuclear Reactor Regulation. Develops and issues requirements, guidance, and procedures for the NRC inspection program, and modifies the program as necessary based on experience, performance, and other factors.

04.02 Division of Fuel Cycle Safety and Safeguards, Office of Nuclear Material Safety and Safeguards. The Division develops and issues policy, guidance, and procedures for the Uranium Recovery Program; directs and carries out the NRC program for evaluation and concurrence with DOE remedial action plans for cleanup of inactive uranium mill tailings sites and contaminated vicinity properties under Uranium Mill Tailings Remedial Action (UMTRCA); and performs on-site construction reviews of remedial actions covered by this procedure.

## 2620-05 BASIC REQUIREMENTS

05.01 The foundation for planning and scheduling reviews during remedial action at inactive tailings sites is the RAP, prepared by DOE and its contractors and issued with NRC concurrence. This plan includes criteria for all phases of the proposed remedial action.

The RAP contains the construction specifications and the basic elements of the remedial action but does not always contain specific criteria or procedures for carrying out the testing and quality control inspection during construction. The specific criteria and procedures not included in the RAP are developed by the DOE contractor performing the remedial action at the site. Those procedures are designed to control, verify, and document all remedial action at the site and are referred to collectively as the Remedial Action Inspection Plan (RAIP). The RAP and RAIP are the primary commitments and standards used as a basis for the NRC reviews of the remedial action work.

05.02 The basis and criteria for reviews for a particular site will be the RAP, the construction specifications provided in the RAP, and the associated RAIP. Guidance for conducting the reviews shall be incorporated into the procedures appended to this Chapter (Appendix A).

05.03 The lead reviewer shall develop and prepare an On-Site Construction Review Plan (OCRCP). See Appendix B for an example. The OCRCP will be approved by the other review team members and the lead reviewer's immediate supervisor before the review. The extent and detail of the OCRCP will vary with the type, length, and complexity of the review. Most review requirements are covered by the procedures stated in this Inspection Manual Chapter.

05.04 The foundation for planning and scheduling reviews will be the DOE schedule for the site and the DOE contractor's construction schedule for the remedial action work.

05.05 Because of the need for close coordination with the construction activities, routine reviews will normally be performed on an announced basis rather than unannounced, as is the present NRC policy for inspection of its licensees. The NRC shall provide notification to the DOE UMTRA Project Office at least five days in advance for any routine review to enable a DOE representative to be present.

05.06 As appropriate, the review effort will be weighted toward direct observation of work activities. Written and photographic records will be reviewed as necessary. The review process shall include photographic recording of critical work phases, processes, or milestones, as necessary for the record.

05.07 To the extent practicable, review of remedial action at a site should be performed by individuals who have not been directly involved in the review. It is recognized, however, due to staffing levels, that some of the review team members will be cognizant of the site-specific aspects of the RAP.

05.08 Results of each review shall be conveyed to the DOE management representative(s) at a closeout meeting (exit interview) immediately following the review. Attendance at the closeout meeting by DOE contractors should be at the discretion of DOE.

05.09 The closeout meeting (exit interview) participants will include the most senior DOE participant present. During the closeout meeting, the DOE representative should be made aware of the preliminary findings, including any apparent items of noncompliance with the RAP. In accordance with Manual Chapter 1007, the reviewers also will address safety concerns in the area of Occupational Safety and Health Administration (OSHA) responsibility. The reviewers will inform DOE representatives and notify the NRC Regional Office OSHA Liaison Officer, of non-radiological hazards brought to their attention by site personnel or observed during the review. OSHA decisions will not be made by NRC personnel.

05.10 Resolution or schedules for commitments to resolve NRC concerns should be requested from DOE within 30 days of the review report date.

05.11 The basic procedures for the review program are appended to this Chapter.

05.12 In general, the review program at each site should be scheduled, such that the following construction milestones are observed, as appropriate:

- a. During the early stages of remedial action, depending on site-specific design aspects, review of foundation preparation, placement of capillary break, liner, or tailings/contaminated material should be performed;
- b. During construction of the radon barrier and frost protection soil cover;
- c. During placement of erosion protection (rock cover); and
- d. At or near the completion of remedial action (closeout review).

Multiple construction activities should be reviewed simultaneously when the schedule permits; however, at least one review during the construction year should be conducted, if construction activities are occurring. Additional reviews should be performed when warranted, if project-specific design/construction phases include critical work phases or features not identified above. Examples of project-specific design/construction activities may include, but not be limited to, aggregate production, bentonite amendments for radon covers, slurry wall construction, ground modification, and monitoring well activities. The

NRC closeout review will be conducted independently of DOE's final inspection. However, the final NRC review and DOE inspection may be conducted concurrently. In accordance with procedures in the UMTRA Project Operations Manual, Section 9.2.10, DOE will notify the NRC staff of the schedule for closeout reviews.

END

Appendices:

- A. Uranium Mill Tailings Remedial Action Project  
On-Site Construction Review Procedures
- B. On-Site Construction Review Plan (Example)
- C. On-Site Construction Review Report (Example)

## APPENDIX A

### URANIUM MILL TAILINGS REMEDIAL ACTION PROJECT ON-SITE CONSTRUCTION REVIEW PROCEDURES

#### A. OBJECTIVES

The objectives of the on-site review of remedial action construction are as follows:

1. To determine by direct observation if remedial actions are being accomplished in accordance with specifications and procedures.
2. To determine whether the system for preparing and maintaining records is functioning properly.
3. To determine whether records reflect work accomplishment consistent with specifications and procedures.
4. To determine if the records and/or work activities indicate any generic problems, inadequacies, or other weaknesses that could impact the acceptability of remedial action.

#### B. PREPARATION

Applicable portions of the Remedial Action Plan, the final design, and the Nuclear Regulatory Commission/the Department of Energy comments and responses should be reviewed to determine construction requirements and DOE's Inspection Plan before performing the on-site review. The reviewer should then utilize these documents in a detailed review of the construction specifications, drawings, and Remedial Action Inspection Plan.

#### C. WORK OBSERVATION

By direct observation of earthwork and other activities in progress, the reviewer should ascertain whether applicable activities are being controlled and accomplished in accordance with the requirements of the documents reviewed. Reviews will generally be conducted by a geotechnical engineer, surface water hydrologist, hydrogeologist, or health physicist as appropriate, depending on the nature of the review item. Key construction milestones (listed in Table 1) should be observed as directed in Section 05.12 of this Chapter. During construction reviews, the reviewer should also determine the locations of ground-water monitoring wells and observe their condition. If ground-water sampling is in progress, the procedures should also be observed. Specific procedures applicable to particular construction and monitoring activities that may be viewed on a site-specific basis are as follows:

1. Test Fill Construction

- a. Observe placement and compaction operations to ensure that procedural and equipment requirements are being followed.
  - b. Visually check the barrier test zone to ensure proper thickness and material type.
  - c. Observe gradation, bentonite amendment operations (if applicable), plasticity index, and moisture/density testing, and compare results of tests with specifications.
  - d. Observe installation of instrumentation/testing/monitoring equipment, including infiltrometers where applicable.
  - e. Review quality control plan and infiltration test results.
2. Foundation and Subgrade Preparation
- a. Check to ensure that the subgrade is cleared of all vegetation and topsoil, shows no deterioration due to frost action or erosion, and exhibits no rutting from construction vehicles.
  - b. Check to ensure that the subgrade exhibits no areas of subsidence, extreme surface drying, or localized ponding (overly wet areas).
  - c. Observe proof rolling operations or density testing; if density testing is performed, compare results of tests observed in the field with specifications.
3. Placement of Capillary Break
- a. Observe placement and compaction operations to ensure that procedural and equipment requirements are being followed.
  - b. Observe the capillary break zone to verify proper thickness and material type, and to ensure that segregation of materials has not occurred.
  - c. Observe gradation and/or moisture/density testing and compare results of tests observed with specifications.
4. Placement of Seepage Barrier/Liner
- a. Observe placement and compaction operations to ensure that procedural and equipment requirements are being followed.
  - b. Visually check the liner zone to ensure proper thickness and material type.
  - c. Observe gradation, plasticity index, and/or moisture/density testing and compare results of tests observed with specifications.
5. Placement of Contaminated Materials

- a. Observe placement and compaction operations to ensure that procedural and equipment requirements are being followed. This includes checking the loose-lift thickness (during placement) against the specifications.
  - b. Visually check the quantity, maximum size, and distribution of foreign material, and the distribution of organics against the allowable criteria of the specifications. Also, note if large areas of slimes and/or non-homogeneous areas exist.
  - c. Observe moisture/density testing and compare results of tests observed with specifications. Note any ponding, runoff, or dust conditions.
  - d. Observe radiological monitoring (health and safety, as well as radionuclide concentration measurement).
6. Placement of Soil Cover (Radon Cover)
- a. Observe placement and compaction operations to ensure that procedural and equipment requirements are being followed. This includes checking required loose-lift thickness and proper blending of any additives, and if method specifications for density have been established by test fill, verification of number of equipment passes.
  - b. Visually check cover layer(s) to ensure proper material type and final thickness for each layer.
  - c. Observe gradation, plasticity index, and/or moisture/density testing and compare results of tests observed with specifications.
7. Placement of Frost Protection Layer
- a. Observe placement and compaction operations to ensure that procedural and equipment requirements are being followed. Check required loose-lift thickness, and if method specifications for density have been established, verify number of equipment passes.
  - b. Visually check the frost protection cover layer to ensure proper thickness and material type.
  - c. Observe gradation, plasticity index, and moisture/density testing and compare results of tests with specifications.
8. Placement of Bedding Layer(s) and Rock Cover (Riprap)
- a. Observe placement and compaction operations to ensure that procedural and equipment requirements are being followed. For the rock cover and other riprap layers, this includes checking that placement techniques are conducted in a manner that prevents material degradation, assures uniform distribution and minimizes voids.

- b. Visually check the bedding zones and riprap layers to ensure proper thickness and material type for each zone, measuring as necessary. If possible, excavate by hand to a sufficient depth to verify thickness by measurement.
- c. Visually check riprap for approximate size (maximum, average). If possible, excavate by hand to verify size of underlying rocks, measuring as necessary.
- d. Observe gradation testing to assure that representative samples are being tested.
- e. Observe gradation testing of filter and rock layers and compare results of gradation and durability tests observed with specifications and RAP requirements.

9. Other Potential Construction Observations

- a. Check operations at borrow areas and quarries; verify that any procedures for moisture control are properly conducted; and visually check that material type(s) are consistent with specifications and are representative of materials actually being placed.
- b. Check layout of diversion ditches. Check for conformance to design configuration and riprap requirements.
- c. Check overlap and integrity of geotextile separators, if they are used.
- d. If an approved vegetative cover is used in place of rock cover, check to ensure uniform seeding, use of specified seed type, seed density, etc.
- e. Check overall site grading to assure that cut and fill procedures will not result in grading which would be susceptible to future surface erosion.
- f. Observe verification soil sampling and Opposed Crystal System (OCS) analysis.
- g. Observe gamma surveying at processing site and, if possible, alpha surveying of any structures to remain.

10. Monitoring Well Observations

- a. Check locations of existing wells. Verify that the field locations correspond to the location depicted on site drawings. Verify that the well is properly and permanently labeled.
- b. Verify that existing well locations are adequately marked with flagging or some other identification placard to avoid inadvertent destruction by heavy equipment.



- c. Verify that the outer protective casing, padlock, concrete pad, and other surface expressions are in good repair. Verify that well caps are secure to minimize inadvertent dust invasion inside the well casing. Note any irregularities, such as bent or damaged casing, animal burrows or erosion around the well, and proximity of equipment tracks.
- d. Check the locations of previously abandoned monitoring wells. Verify the field locations with respect to the site drawings. Verify that the surface expression has been completed in accordance with the Monitoring Well Abandonment Specification. Note any irregularities, such as concrete shrinkage, surface depressions, or exposed well pipe.

#### 11. Ground-Water Sampling Observations

- a. Observe any monitoring well sampling or well measurements that may be occurring. Verify that the equipment is handled in accordance with the project specifications. Verify that equipment use and decontamination procedures have been followed in accordance with appropriate standard operating procedures of the Albuquerque Operations Manual for the Uranium Mill Tailings Radiation Action (UMTRA) Project.
- b. Verify that calibrations have been performed and documented on equipment used to make field measurements.
- c. Verify that accurate and legible records are maintained during the field sampling, including chain-of-custody documentation. Sampling information should be recorded on the DOE or contractor forms identified in the Quality Control (QC) project documents and in sufficient detail to support later quality assurance reviews. Verify that samples are collected, handled, and stored in accordance with procedures identified in the QC plan.
- d. Verify that potentially contaminated ground water removed during well purging and sampling is handled in accordance with procedures identified in the Albuquerque Operations Manual for the UMTRA Project.

The reviewer may not be able to directly observe all facets of the activities identified above. However, direct observation of activities should be made in accordance with the particular On-Site Construction Review Plan (OCRSP) prepared prior to the review. Activities which should be observed include the Key Construction Milestones identified in the attached Table I, as well as major construction activities which are unique to the site. Such unique activities may include slurry wall construction, bentonite amendments to radon barriers, ground modification, monitoring well activities, or other phases of work identified in the OCRSP. Observation of some field testing should be made at all site reviews. In some cases, it will be necessary to observe a completed activity rather than work in progress. The intent of the review is to determine whether the activities and/or the end product meet the requirements of the RAP.

Additionally, during work observation, informal interviews with DOE and contractor inspection personnel should be randomly conducted to determine how well employees know their work activity. The reviewer should ascertain whether a sufficient number of

adequately qualified inspection personnel are at the site, commensurate with the work in progress, and whether they are adequately performing their assigned duties through the established organizational structure. A determination of contractor personnel qualifications should be based on the contractor's published position description/job standards which is available at the project office.

#### D. RECORDS REVIEW

The reviewer should examine selected documentation maintained on site to ascertain the following:

1. Records confirm that required material characteristics and other specification requirements were met.
2. Records confirm that specified materials were installed in accordance with specifications.
3. Records indicate that adequate corrective action is being taken following non-conformance/deviation occurrences.
4. Records confirm that the required inspections and testing were performed adequately and at required frequencies.
5. Records establish that DOE inspection personnel are adequately qualified for their assigned duties and responsibilities.
6. Records confirm that any field measurements of parameters for radon barrier analysis that deviate from those presented in the RAP are incorporated into a new analysis before the radon barrier is completed.

#### E. DOCUMENTATION

All aspects of the construction observed in accordance with the above-recommended review activities should be documented in the On-Site Construction Review Report (OCR), an example of which is attached as Appendix C. The report should address each identified aspect as being satisfactory, being unresolved and requiring resolution, or being in conflict with the RAP, construction specification, or RAIP requirements and needing correction. The Review Team Leader identified in the OCR will have the responsibility of following up the corrective action and shall prepare written documentation to that effect. The Review Team Leader's supervisor shall concur with the report and follow-up documentation.

KEY CONSTRUCTION MILESTONES

- a. Early Stages of Remedial Action:
  - 1. Test Fill Construction \*
  - 2. Foundation and Subgrade Preparation \*
  - 3. Placement of Capillary Break \*
  - 4. Placement of Seepage Barrier/Liner \*
  - 5. Placement of Contaminated Materials \*\*
- b. Soil Cover:
  - 1. Placement of Radon Barrier \*\*
  - 2. Placement of Frost Protection Layer \*
- c. Placement of Bedding Layer(s) and Rock Cover \*\*\*
- d. Completion of Remedial Action (Closeout) \*\*\*

\* May or may not apply to a particular site depending on site-specific design.

\*\* Will apply to all remedial action sites.

\*\*\* Will apply to nearly all sites (vegetative cover may be proposed for 1 or 2 sites).

END

## APPENDIX B

### ON-SITE CONSTRUCTION REVIEW PLAN

#### FALLS CITY UMTRA PROJECT INSPECTION, 12-9-92

CONTACT: Woody Woodworth, DOE Site Manager  
FTS 8-505-845-5725

DATE: December 9, 1992

TEAM MEMBERS & Daniel Rom, Geotechnical Engineer  
ASSIGNMENTS: Michael Layton, Groundwater Hydrogeology

PURPOSE: Routine Construction Review

#### SCOPE:

1. Introductions
2. Brief safety indoctrination, if required
3. Observe material placement and testing
4. Observe area of wet slimes exposed on the face of the disposal cell
5. Observe area of naturally-occurring radioactive "red material"
6. Observe dust control procedures
7. Review settlement behavior of the embankment
8. Observe construction activities at Pile #3
9. Review written records
10. Conduct exit meeting

NOTE: There are no formal open issues to be resolved; however, the material placement procedures in the area of exposed slimes will be addressed.

#### REVIEW SCHEDULE AND ROUTINE:

Pre-Site Meeting: December 9, 1992 - 7:30 a.m.  
M. Layton & D. Rom

Entrance Meeting: December 9, 1992 - 9:30 a.m.

Exit Meeting: December 9, 1992 - 4:00 p.m.

Normal Site Hours: Assumed 7:00 a.m. to 4:30 p.m.

Motel: Holiday Inn, Airport - M. Layton  
Marriott Courtyard - D. Rom

Reservation # N/A  
Government Rate \$61.00

Signature: \_\_\_\_\_ Date: \_\_\_\_\_  
Team Leader/Inspector

Approval: \_\_\_\_\_ Date: \_\_\_\_\_  
Section Leader

## APPENDIX C

### On-Site Construction Review Report

Facility Name: Falls City  
UMTRA Project Site  
Falls City, Texas

Review Conducted: December 9, 1992

NRC Personnel: Daniel Rom (Geotechnical Engineer)  
Michael Layton (Hydrogeologist)

Review Summary:

Area Reviewed: In the morning, the tailings embankment, including piles 1, 2, and 7 (Parcel A) were reviewed. Next, pile 5 and the naturally-occurring radioactive soils were seen, and the waste water retention basin was viewed. The road crossing and right-of-way to Parcel B, and Pile number 3 were observed in the afternoon.

Details:

1. Persons Contacted:

Paul Mann (DOE)  
Woody Woodworth (DOE)  
Wei Lin (MK-ES)  
Leroy Fields (MK-F)  
Terry Stanford (MK-F)  
Rick Sima (MK-F)  
David Franco (MK-F)  
Steve McQuarry (MK-F)  
Bob Staub (MK-F)  
Bob Tews (MK-F)  
Larry Parker (Chem-Nuclear)  
Peter Waggitt (visitor)

2. Equipment Operating:

2-245 Trackhoes  
1-D7 Dozer  
1-D7 Widetrack  
3-D9 Dozers  
1-16g Grader  
1-14 grader

3-Case Tractors w/disc  
1-825 Roller  
1-Cat smooth roller  
1-8000 Water Truck  
2-657 Scrapers

### 3. Site Review:

The following discussion correlates to the scope of the review, as presented in the attached On-site Construction Review Plan (OCRCP):

#### Pre-Meeting (OCRCP Items 1 and 2)

The NRC representatives arrived at the site office at 9:15 am. Introductions were made shortly afterwards when the DOE staff arrived. Mr. Peter Waggitt of the Office of the Supervising Scientist for the Alligator Rivers Region, Northern Territories, Australia, also attended as a visitor. Mr. Waggitt was traveling with Mr. Woodworth, and we were advised that he would join us on the review as an observer.

A safety presentation was given to Messrs. D. Rom, M. Layton, and P. Waggitt by S. McQuarry, R. Sima, D. Franco, and R. Staub. The safety introduction included verbal, written, and video presentations. Following the safety presentation, MK-F provided yellow fabric coveralls, hard hats, and heavy-duty rubber overboots to all review team members for their use while on site. We were further advised to stay with our escort at all times.

Since the group was to take a walking tour of the site, a formal status report was not given at the office. Instead, the group was advised of job progress as we walked to the disposal cell from the office.

#### Material Placement and Testing (OCRCP Item 3)

Routine placement of tailings was not underway at the time of the review. However, the reviewers were able to observe unique fill placement operations on the northeast side slopes of the cell. This area consisted of unstable wet slimes which were exposed upon cutting the pile back from the road. The non-routine stabilization methods were being prescribed by MK-ES to handle the difficult fill placement conditions created by the wet materials. The wet slimes were being covered first with a geotextile. A one-foot lift of drier contaminated soil was placed above the geotextile. Four passes of heavy equipment were reportedly conducted prior to checking density. Additional discussion and conclusions on the operations in the wet slimes area are presented in the following section.

The reviewers observed in-place density testing on the northeast edge of the stabilized embankment. After clearing a test area with a loader, the technician used a sand-cone to check soil density. The sand-cone density test we observed was

generally performed with care; however, the base plate did not appear to be level as per ASTM requirements. Instead, the plate was more nearly parallel to the sideslope. NRC staff notes that performance of the sand-cone density test with the base plate on a sloping surface can result in the sand not properly filling the test hole. MK personnel were advised to review the appropriate paragraphs of ASTM D-1556 testing procedure for details on sand-cone density testing on a sloping surface.

#### Wet Slimes Area (OCR Item 4)

In conjunction with the material placement and testing described above, the reviewers observed shaping operations on the edge of the cell near pile number 2. Concurrently we viewed exposed seeping tailings on the edge of the cell. The seepage condition was recorded on video. The review team was informed that construction stabilization of the seepage zone was by geotextile and bridging as previously described. The stabilization operations were observed, and it appeared that the prescribed combination of geotextile application and bridging effectively stabilized the face of the slope such that equipment could operate thereon.

On the far (southwest) face of the embankment, additional tailings seepage zones were observed and recorded. No construction was occurring in this seepage zone; however, NRC staff indicated that stabilization might be more difficult on this face due to the severity of the observed seepage and sloughing.

NRC staff has two concerns regarding the seepage areas described above. First, DOE should examine the impacts on slope stability due to the placement of a geotextile and bridge lifts of tailings. If a potential shear plane is being incorporated, then slope stability factors of safety may be less than those presented in the RAP. Special construction methods being used in these areas are also not found in the RAP. Secondly, the long-term effects of seepage need to be addressed. If a seepage situation similar to that at Durango is expected to occur, then consideration of post-construction control should be provided. DOE needs to address these two concerns in a PID.

#### Naturally-Occurring Radioactive Materials (OCR Item 5)

The reviewers subsequently viewed pile number 5 and the naturally- occurring radioactive soils. Although these materials are not mill tailings, their measured activity exceeds the standards for land cleanup of residual radioactive materials. Mr. Larry Parker provided insight regarding the nature, occurrence, and disposition of the naturally-occurring in-situ radioactive soils. DOE initially excavated materials which were not mill tailings for cell placement. When it became apparent that the radioactive soils were not tailings, characterization was performed to better establish their nature and extent. Based on this characterization, DOE plans to leave in-place non-tailings radioactive soils provided that post-construction radon emissions can be maintained within accepted levels.

#### Dust Control (OCR Item 6)



Due to rainy weather the previous day, construction equipment was not operating on the morning of the review. Dust suppression was not in progress due to the wet subgrade conditions and lack of vehicular activity. DOE indicated that they had not received any complaints from local residents regarding dust control.

#### Settlement Behavior (OCR Item 7)

Following the fill placement and testing observations, the review team crossed the main embankment and viewed materials which were previously placed. A line of four settlement monitoring points was observed from the surface. It was reported that the monitors were all operable and that no construction disturbance incidents had occurred. Wei Lin provided the most recent settlement data to the NRC reviewers. To date, settlement has been less than projected amounts. The shapes of the measured settlement curves were generally parallel to those of the projected curves. We understand that DOE will continue to review the embankment settlement behavior and to refine the settlement model used in the RAP.

The NRC staff is concerned that recorded settlement may not be indicative of the worst case, contrary to what was assumed in selecting the test area presented in the RAP. The exposed slimes at the edges of the cell are saturated to the point that excess moisture is being squeezed from the pores. DOE needs to address the slimes consolidation issue to see if the measured settlement within the cell is representative of that which is likely to occur within the saturated slimes at the edges of the cell.

#### Additional Observations in Parcel A

While atop the northwestern corner of the tailings pile, the review team observed the topography and land use of the area between the disposal cell and property belonging to Mr. Jerry Dzuik, located north of the site. During the PEIS Scoping Meeting at Falls City on the previous day, Mr. Dzuik described a potential soil and groundwater contamination incident that allegedly occurred on his property in the 1970's when the mill was still operating. Additional information regarding this reported incident will be requested from DOE at a later date.

Before returning to the Project Office, the review team observed operations at the waste water retention basin. The basin was essentially empty, and crews were physically removing small amounts of water which apparently accumulated during yesterday's rain. Water removal was necessary since the crews were still completing inspection of seams and repairs in the synthetic liner.

At about 1:30 pm soil conditions were sufficiently dry that earthmoving equipment was able to operate. In conjunction with the startup, dust suppression activities were begun. The walking tour of Parcel A was completed, and the team adjourned for lunch. On exit from the controlled zone it was detected that the NRC video camera needed to be left on site for decontamination. For this reason, the reviewers were unable to take a video record of the Parcel B tour in the afternoon.

#### Parcel B/Pile 3 Observations (OCR Item 8)

In the afternoon the reviewers conducted a driving tour of Parcel B. At the controlled road crossing, a thick tarpaulin was placed across the pavement to collect contaminated soil from the vehicle. We were informed that the right-of-way to Parcel B was also the alignment for the slurry line from the days of mill operation. We were also informed that the slurry line had on occasion broken, and that the area was contaminated by wind-blown material. The right-of-way was fenced off, and the Contractor had provided a drinking water system for livestock on the adjacent parcels. No construction activity of consequence was occurring at Parcel B. Brush had been cleared and the haul road right-of-way was being surveyed. MK and DOE representatives discussed the proposed work for pile 3. Concerns expressed by adjacent landowners, regarding the crossing of a public road, livestock on adjoining parcels, and groundwater were being addressed through DOE's public relations efforts.

#### 4. Records Review:

After the tours of Parcels A and B, NRC staff reviewed field and laboratory records pertaining to soil placement. In addition to the test records, equipment calibrations and personnel records were well-maintained. The review of density test, gradations, and calibrations yielded no discrepancies with the RAP, and test frequency was in accordance with the requirements of the RAIP. It was noted that Mr. Fields appeared to maintain complete, legible, and up-to-date records as required.

It was determined that the earthwork specifications (Section 02200) being used on the site were Revision 4. The most recent set of specifications submitted to our office was Revision 2. DOE needs to verify that specification changes from revision 2 to revision 4 are not changes of significance which have yet to be reviewed and concurred in by NRC in accordance with the NRC/DOE Memorandum of Understanding.

#### 5. Exit Interview:

An exit interview was held and the review items were summarized. Concern was noted regarding the slime zones exposed on the slope. Current construction practice appears to be adequate with respect to short-term stabilization; however, additional zones may be encountered and these might require more attention to control.

Four items requiring DOE's response are noted:

- a. Slope stability behavior due to current geotextile and bridge lift placement operations needs to be addressed.
- b. Measured settlement versus potential settlement in saturated slime zones requires attention.
- c. A comparison of revisions 2 and 4 to the earthwork specifications needs to be made to see if any significant differences not previously brought to NRC's attention are applicable.

d. Sand cone testing procedures on sloped fill should be reviewed.

END