

AIR CONTROLS AND MONITORING EVALUATION (ACME) FOR THE 216-T-13 TRENCH

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INTRODUCTION

Intrusive characterization activities that have the potential to emit radioactive particulates are planned for one waste site in the 200-MW-1 Miscellaneous Waste Group Operable Unit. The characterization is being conducted under the *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (CERCLA) at the 216-T-13 Trench. Because test-pit excavation activities are not covered under the As Low As Reasonably Achievable Control Technology (ALARACT) agreement (WDOH, 2001) that is commonly used for drilling activities on the Hanford Site, air emission controls/monitoring for field activities at the 216-T-13 Trench are being addressed in this air control and monitoring evaluation (ACME) to complement DOE/RL-2001-65, *200-MW-1 Miscellaneous Waste Group Operable Unit RI/FS Work Plan*, which was approved by the U.S. Environmental Protection Agency in 2002. The ACME will be placed in the project files, and the administrative record, for this activity.

The 216-T-13 Trench site was used during vehicle decontamination activities before the vehicles were repaired at the 269-W Regulated Garage; the site operated from June 1954 to June 1964. The site received wastes from vehicle decontamination activities or heavy equipment steam cleaning. The site was deactivated in June 1964, when all vehicle decontamination operations were transferred to the 2706-T Building (also known as 2706-W Decontamination Facility), and the pit was backfilled with soil. In April 1972, approximately 3.06 m³ (4 yd³) of contaminated soil was removed and taken to a 200 West Area dry waste burial ground. The maximum contamination level found was 1,500 c/min. The site then was removed from radiological control.

PLANNED ACTIVITIES

Samples of contaminated soils will be collected from the test pit to be excavated at the 216-T-13 Trench. The sample location within the waste site was selected based on operational history and the site's conceptual model. The approximate location of the test pit is shown in Figure 1.

The test pit will be excavated to a maximum depth of 7.6 m (25 ft) below ground surface (bgs). A trackhoe bucket will be used to collect discrete soil samples from the test pit at specific depths. The soil removed during the excavation will be placed back in the test pit after the sampling is complete. Samples will be collected from the specific depths as identified in DOE/RL-2001-65, Appendix A.

The test pit will be excavated using a trackhoe excavator and is targeted to be approximately 3 m (10 ft) wide and 4.5 m (20 ft) long at the surface to a depth of 4.5 m (20 ft) bgs. From 4.5 m (20 ft) bgs to 7.5 m (25 ft) bgs, the test pit is targeted to be approximately 1.5 m (5 ft) wide and 1.5 m (5 ft) long. The total duration of the test-pit activities, including site mobilization and demobilization, is expected to be no more than 1 week. The duration for the actual excavation activities (i.e., when the test pit is open and potentially contaminated soils are exposed) is expected to be 1 to 2 days.

AIR REGULATIONS OVERVIEW

The Federal *Clean Air Act of 1990*, as amended, and the Washington Clean Air Act (RCW 70.94, "Public Health and Safety," "Washington Clean Air Act,") require the regulation of air pollutants. Under Federal implementing regulations, 40 CFR 61, Subpart H, "National Emission Standards for Emissions of Radionuclides Other than Radon from Department of Energy Facilities," requires that radionuclide airborne emissions be controlled so as not to exceed amounts that would cause any member of the public to be exposed to a greater than 10 mR/yr effective dose equivalent. The state implementing regulations parallel the Federal regulations by adoption, but also require added control of radioactive airborne

emissions where economically and technologically feasible. The substantive aspect of the requirements for monitoring fugitive or non-point sources emitting radioactive airborne emissions [WAC 246-247-075(8), "Department of Health," "Radiation Protection - Air Emissions," "Monitoring, Testing and Quality Assurance"] will be addressed by sampling the effluent streams and/or ambient air as appropriate using reasonable and effective methods.

AIRBORNE SOURCE INFORMATION

Handling radiologically contaminated materials during 200-MW-1 Operable Unit test-pit soil-sampling activities has the potential to generate particulate radioactive air emissions. Conservative estimates of potential emissions were calculated based on the unit dose factors in HNF-3602, *Calculating Potential-to-Emit Releases and Doses for FEMPs and NOCs*, Rev. 1. The maximum calculated annual unabated offsite dose consequences from the planned soil-sampling activities at the 216-T-13 Trench are 7.5 E-05 mrem/yr to the maximum public receptor (Table 1, calculations attached).

The potential for release of nonradioactive contaminants is considered to be minimal. Potential volatile organics would have dissipated over time, and other heavy metals/petroleum products associated with vehicle operations would not be readily dispersible.

EMISSION CONTROLS

Based on analysis of the potential emissions and evaluation of available control technologies, the following controls will be implemented during test-pit excavation at the 216-T-13 Trench.

Water will be applied during excavation and backfilling processes to the extent necessary to minimize airborne release.

Fixative and/or covers will be applied to contaminated soils that will be inactive less than 24 hours at the end of work operations. If a fixative already has been applied and the soil will remain undisturbed, further uses of fixative agents will not be needed. The fixatives or other controls will not be applied when the contaminated soils are frozen, or when it is raining or snowing or other freezing precipitation is falling at the end of work operations.

Best management practices will be followed, to the extent practicable, to further minimize the release of airborne radioactive emissions during the characterization activities. Such practices include limitation of excavation activities during periods of elevated wind speeds.

MONITORING DURING TEST-PIT OPERATIONS

Routine radiological control surveys will be performed during test-pit excavation. As appropriate, low-volume air samplers mounted on the excavator, and selected personnel, will be used to monitor the excavation activities. However, these surveys will not be subject to the administrative air emissions quality assurance/quality control and record-keeping requirements.

Three existing ambient air monitoring stations (N987, N975, and N433) are located reasonably near and generally downwind of the 216-T-13 Trench (Figure 2). Existing Hanford Site protocols for these near-facility monitors will be followed for data collection, sampling frequency, sample analysis, and data reporting (DOE/RL-91-50, *Environmental Monitoring Plan United States Department of Energy Richland Operations Office*, Rev. 3, or latest revision). Potential emissions from the test-pit excavation will be captured, along with other area emissions, and reported as part of the Hanford Site annual reporting process.

REFERENCES

40 CFR 61, Subpart H, "National Emission Standards for Emissions of Radionuclides Other than Radon from Department of Energy Facilities," Title 40, *Code of Federal Regulations*, Part 61, as amended.

CCN 087338, 2001, "Environmental Restoration Program ALARACT Demonstration for Drilling – Drilling Activities Outside the Tank Farms Fence Line on the Hanford Site," (*Hanford Facility ALARACT Agreement Form, Environmental Restoration Program ALARACT Demonstration for Drilling*, reviewed by L. R. Curry, Bechtel Hanford, Inc.; reviewed by M. J. Furman, U.S. Department of Energy, Richland Operations Office; and approved by A. W. Conklin, Washington State Department of Health), Bechtel Hanford, Inc., Richland, Washington, March 7.

Clean Air Act of 1990, 42 USC 7401, et seq., Pub. L. 101-549.

Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 USC 9601, et seq.

DOE/RL-91-50, 2000, *Environmental Monitoring Plan United States Department of Energy Richland Operations Office*, Rev. 3, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-2001-65, 2002, *200-MW-1 Miscellaneous Waste Group Operable Unit RI/FS Work Plan*, Rev. 0, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

HNF-3602, 2002, *Calculating Potential-to-Emit Releases and Doses for FEMPs and NOCs*, Rev. 1, Fluor Hanford, Inc., Richland, Washington.

RCW 70.94, "Public Health and Safety," "Washington Clean Air Act," Title 70, Chapter 94, *Revised Code of Washington*, as amended, Washington State, Olympia, Washington.

WDOH, 2001, *Environmental Program ALARACT Demonstration for Drilling*, Washington State Department of Health, Olympia, Washington.

Table 1. PTE Calculation and Offsite Dose Per Radionuclide for Soil in 216-T-13 Trench
 (data taken from 01/25/05 e-mail from Greg Berlin; draft RAMP, with consideration for HNF-3602,
 Revision 1).

Constituent	Annual Possession Quantity, Ci/yr (12 month duration)	Release Fraction (from WAC 246-247-030)	Potential to Emit, Ci/yr	Unit Dose Factor (HNF-3602, Revision 1)	Unabated Dose Per Radionuclide mrem/yr
Am-241	3.30E-05	1.00E-03	3.30E-08	9.8 E+00	3.2 E-07
Ba-137m	2.08E-04	1.00E-03	2.08E-07	8.6 E-14	1.8 E-08
Co-60	2.90E-04	1.00E-03	2.90E-07	1.9 E-01	5.5 E-08
Cs-137	2.20E-04	1.00E-03	2.20E-07	1.9 E-01	4.2 E-08
Eu-152	4.10E-04	1.00E-03	4.10E-07	1.9 E-01	7.8 E-08
Eu-154	9.11E-04	1.00E-03	9.11E-07	1.5 E-01	1.4 E-07
Eu-155	3.00E-04	1.00E-03	3.00E-07	6.3 E-03	1.9 E-09
H-3	6.41E-05	1.00E+00	6.41E-05	2.5 E-05	1.6 E-09
K-40	1.39E-02	1.00E-03	1.39E-05	9.6 E-02	1.3 E-06
Ni-63	2.46E-03	1.00E-03	2.46E-06	2.0 E-04	5.0 E-10
Np-237	3.00E-05	1.00E-03	3.00E-08	8.9 E+00	2.7 E-07
Pu-238	3.60E-05	1.00E-03	3.60E-08	5.9 E+00	2.1 E-07
Pu-239/240	1.17E-04	1.00E-03	1.17E-07	6.4 E+00	7.7 E-07
Sr-90	1.57E-03	1.00E-03	1.57E-06	8.8 E-02	1.4 E-07
Tc-99	1.44E-04	1.00E-03	1.44E-07	1.8 E-02	2.6 E-09
Ra-226	5.90E-04	1.00E-03	5.90E-07	3.6 E-01	2.1 E-07
Ra-228	1.20E-03	1.00E-03	1.20E-06	1.5 E-01	1.8 E-07
Th-228	8.71E-04	1.00E-03	8.71E-07	4.3 E+00	3.8 E-06
Th-230	1.06E-03	1.00E-03	1.06E-06	4.3 E+00	4.7 E-06
Th-232	8.30E-04	1.00E-03	8.30E-07	6.2 E+00	3.6 E-06
U-233	4.52E-04	1.00E-03	4.52E-07	2.4 E+00	1.1 E-06
U-234	4.52E-04	1.00E-03	4.52E-07	2.4 E+00	1.1 E-06
U-235	4.90E-04	1.00E-03	4.90E-07	2.3 E+00	1.1 E-06
U-238	2.70E-02	1.00E-03	2.70E-05	2.1 E+00	5.7 E-05
Y-90	1.57E-03	1.00E-03	1.57E-06	2.6 E-04	4.2 E-10
Total					7.5 E-05

Figure 1. Location of Planned Test Pit at the 216-T-13 Trench.

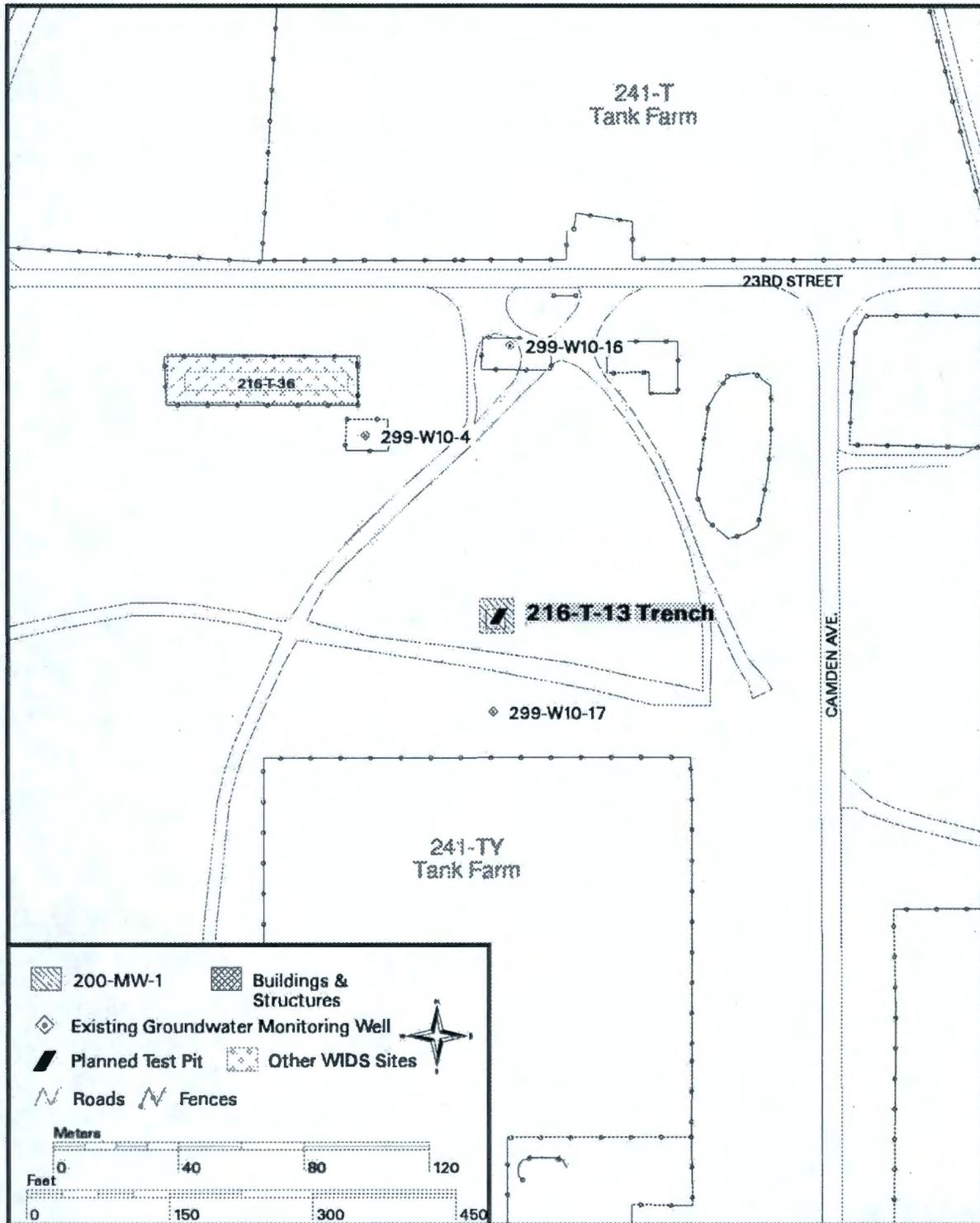
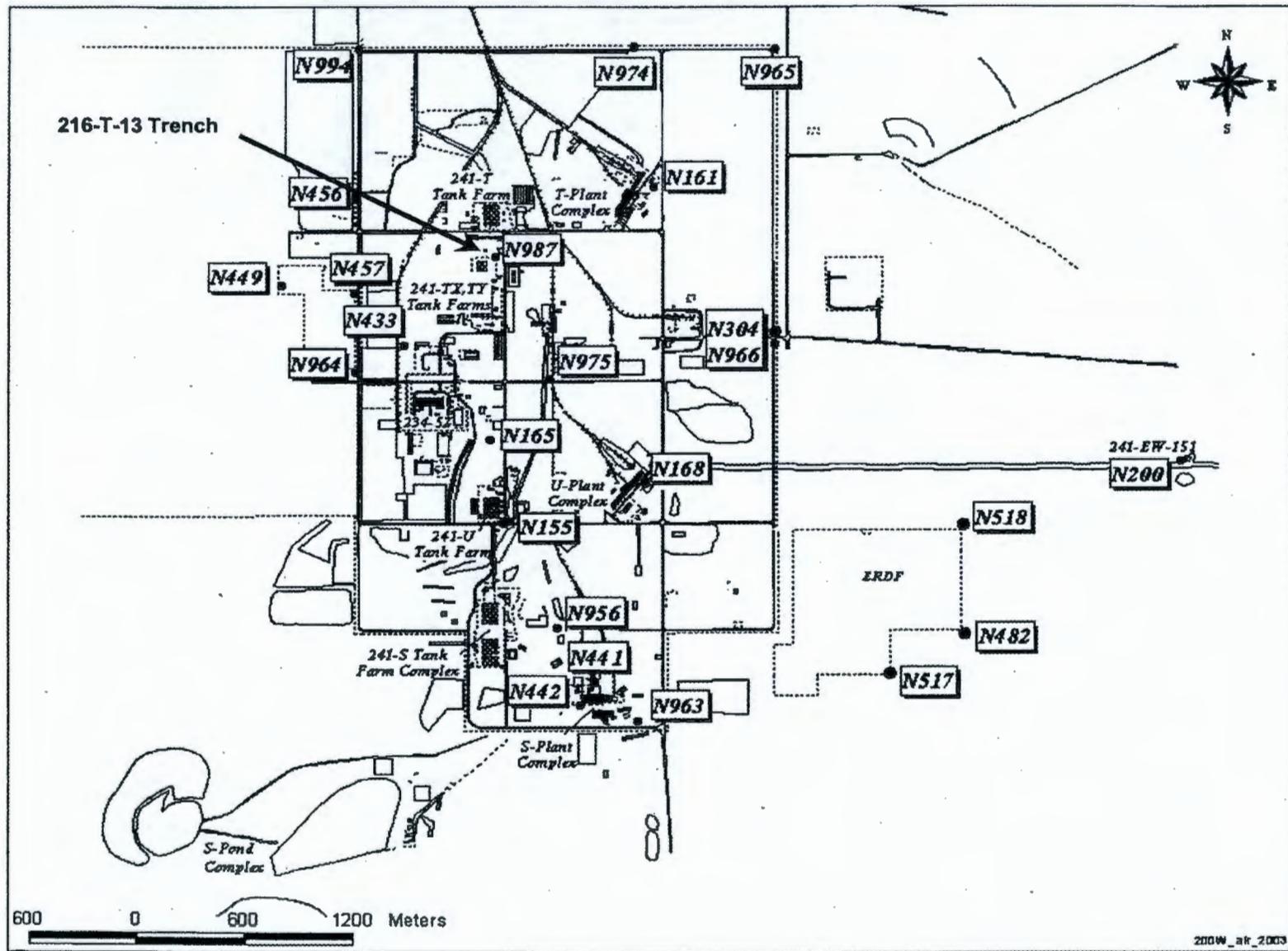


Figure 2. 200 West Area Near-Field Monitoring Stations (showing 216-T-13 Trench).



Fluor Hanford
Post Office Box 1000
Richland, Washington 99352

FLUOR

Memorandum

F9600-PS-05-003

Date: May 04, 2005

To: M. E. Todd-Robertson E6-35

From: M. T. Jansky H8-40 Telephone: 376-3854

CC: J. A. Bates H8-12 K. A. Peterson H8-12
R. C. Brunke H8-40 F. A. Ruck, III H8-40
R. H. Engelmann H8-12 G. T. Berlin E6-35
J. K. Perry H8-40 W. E. Toebe H8-12

Subject: Air Controls and Monitoring Evaluation (ACME) for the 216-T-13 Trench

This memorandum is being provided as project documentation that appropriate controls and monitoring for radioactive/nonradioactive air emissions have been considered for intrusive characterization activities at the 216-T-13 Trench.

The attached ACME should be placed into the administrative record for the 200-MW-1 Miscellaneous Waste Group Operable Unit. The ACME also should be placed into the project field files.

Please call if you have any questions regarding the ACME or other air-related issues.

Isom, Debra A (Debbi)

From: Berlin, Gregory T
Sent: Wednesday, May 04, 2005 2:40 PM
To: Isom, Debra A (Debbi)
Cc: Berlin, Gregory T
Subject: FW: Admin Record entry for 200-MW-1

Attachments: Internal ltr 050405.doc; ACME042905.doc

Debbie -- With the note from Frank Roddy (below) and the attached files, can you get this document entered in to the Administrative Record for the 200-MW-1 Operable Unit, or do you need the original that includes Mike Jansky's signature on the cover letter? Please call me if you should have any questions.

Greg
376-2389



Internal ltr ACME042905
405.doc (137 .doc (555 KB)

From: Roddy, Francis M
Sent: Wednesday, May 04, 2005 10:07 AM
To: Berlin, Gregory T
Cc: Jansky, Michael T; Todd, Mary E; Hulstrom, Larry C
Subject: RE: Admin Record entry for 200-MW-1

I have reviewed the Air Controls and Monitoring Evaluation for the 216-T-13 trench and I have found it to be satisfactory. I concur that it and your internal memo should be entered into the Administrative Record for the 200-MW-1 waste sites. Thanks.

Frank Roddy

From: Berlin, Gregory T
Sent: Wednesday, May 04, 2005 9:07 AM
To: Roddy, Francis M
Cc: Jansky, Michael T; Todd, Mary E; Hulstrom, Larry C; Berlin, Gregory T
Subject: FW: Admin Record entry for 200-MW-1

Frank -- Thanks for the call. Please see the attached file for the ACME noted in Mike Jansky's letter. Thanks,
Greg

<< File: ACME042905.doc >>

From: Berlin, Gregory T
Sent: Wednesday, May 04, 2005 8:58 AM
To: Roddy, Francis M
Cc: Berlin, Gregory T; Jansky, Michael T; Todd, Mary E; Hulstrom, Larry C
Subject: Admin Record entry for 200-MW-1

Frank -- As the RL Project Manager for the 200-MW-1 OU, I request your concurrence for entry of the attached file into the Administrative Record (AR) for 200-MW-1. The attached file documents the evaluation of air emission controls and monitoring associated with the test pit characterization activities at the 216-T-13 Trench.

Given your concurrence, I can use your e-mail reply to processes the AR entry. Please contact me or Mary Todd-Robertson (373-3920) if you should have any questions.

Thanks,

Greg
376-2389

<< File: Internal ltr 050405.doc >>