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Author: Everett, Mark 667 5931 meverett@lanl.gov
Organization: LANL Water Stewardship Project (EP-WSP), Pkg1729
Document Team: Garde, Victor 661-6621 urgarde@duratekinc.com

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Project Leader			

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Waste Characterization Strategy Form

Project Title	**R-36 Monitoring Well Installation**
Solid Waste Management Unit Or Area of Concern	**Middle Portion (Reach) of Sandia Canyon (C-00-007)**
Activity Type	**Regional Groundwater Well Installation**
Field Team Leader	**Mark Everett**
Waste Management Coordinator	**Victor Garde**
Completed by	**Victor Garde**
Date	**October 18, 2007**

Description of activities:

The waste-generating activities addressed in this Waste Characterization Strategy Form (WCSF) consist of the installation (i.e., drilling, collecting chip and core samples, well development, and initial aquifer testing) of the regional aquifer monitoring well describe below. The monitoring well will be installed at Los Alamos National Laboratory (LANL or the Laboratory) within TA-72.

Well R-36, located between wells R-12 and R-35, will be installed to satisfy requirements stated in two letters from the New Mexico Environment Department (NMED). The first letter, dated April 27, 2007, "Direction to Rehabilitate Wells, Pilot Well Rehabilitation Study Summary report", directed Los Alamos National Lab to plug, abandon, and replace well R-12 Screen #3. Well R-36 will serve as the replacement well for R-12, Screen 3. The second letter, dated June 8, 2007, "Denial of Extension Request for Replacement of Monitoring Well R-12, screen #3", specified a deadline of July 1, 2007 for a drilling work plan for a new regional aquifer well. R-36 will be installed in accordance with the NMED-approved Drilling Work Plan for Regional Aquifer Well R-36 (LA-UR-07-4342, June 2007).

R-35 monitoring well installation will be conducted in accordance with the following documents.

1. Drilling Work Plan for Regional Aquifer Well R-36 (LA-UR-07-4342)
2. SOP-06.09, Spade and Scoop Method for the Collection of Soil Samples
3. SOP-05.01, Well Construction
4. SOP-05.02, Well Development
5. SOP-06.26, Core-Barrel Sampling for Subsurface Earth Materials
6. SOP-01.06, Management of ER Project Waste

7. SOP-01.10, Waste Characterization
8. Request for Approval of Characterization and Disposal Methods for Investigation-Derived Waste from Groundwater Wells and Boreholes constructed at Los Alamos National laboratory (EP2006-0868)

Site History and Description:

The Sandia Canyon watershed (located in the central part of the Laboratory) is approximately 5.5 sq mi in area. Perennial stream flow and saturated alluvial aquifer conditions occur in the upper and middle portions of the canyon system. The primary sources of contamination in the middle portion of the Sandia Canyon watershed are attributed to TAs-53, -60, -61, and -72, and Los Alamos and Mortandad Canyons. The following contaminants were detected in surface soils: tritium, nitrate, perchlorate, lead, and isotopes of uranium and plutonium.

Well R-36 will be single-screened and installed in the lower portion of the Sandia Canyon Watershed between R-12 and R-35 (Figure 1) in the upper 100 feet of the regional aquifer. The well will act as a LANL boundary well providing monitoring of the uppermost regional aquifer within sediments above the Miocene age basalt. The well may also increase understanding of chromium, molybdenum, and other contaminant distribution within the regional aquifer.

Hexavalent chromium contamination is present in the upper part of the regional groundwater system at R-11 and R-28. Molybdenum concentrations were observed above background levels in groundwater screening samples collected from wells R-35a and R-35b. Natural hydraulic gradients in the area are expected to cause the contamination to move eastward with possible local northeast gradients due to pumping of municipal water at PM-3 and PM-1. (See Figure 1 for well locations.) Thick Miocene basalt may provide a lower confining bed for the vertical movement of contamination, restricting the movement of potential contaminants to the portion of the aquifer above the basalt. Thus, the R-36 well location is moved west of well R-12 so that R-36 can target the sedimentary deposits on top of the Miocene basalts for groundwater monitoring. These sedimentary deposits are more likely to be hydraulically connected with contaminant pathways from western contaminant sources. Well R-36 is situated to intercept potential contaminants within the regional aquifer before they reach the LANL boundary.

Characterization Strategy:

The following waste streams are anticipated:

- 1-Investigation-Derived Waste (IDW) Solids (Core and Drill cuttings)
- 2-Drilling Fluids
- 3-Development Water
- 4-Contact Waste
- 5-Decontamination Water

- 6-Absorbent Padding Material (potential)
- 7- Petroleum-Contaminated Soil (PCS)(potential)
- 8- Municipal Solid Waste (MSW)
- 9- Drilled-out Concrete Chips

Waste # 1: IDW Solids (Core and Drill Cuttings)

Waste type: Core and drill cuttings generated during drilling through geologic media from surface to total depth in the regional aquifer. The drill cuttings are not expected to be contaminated by radionuclides or chemicals other than those present in drilling additives. Drill cuttings may contain mud additives if mud drilling is employed (an option) (See Attachment A).

Anticipated Regulatory Status:

The possible classifications of this solid waste stream and the anticipated regulatory status include:

- non-hazardous, non-radioactive waste and meets criteria for land application
- non-hazardous, non-radioactive waste but does not meet criteria for land application
- low-level radioactive waste, hazardous waste (for which a "contained in" determination from NMED may be requested)
- low-level waste
- mixed low-level waste (MLLW).

***Characterization Approach*:**

The IDW solids will be characterized through a combination of direct waste sampling and acceptable knowledge (AK) from known mud additives (if the mud drilling option is exercised). The specific procedures for characterization of the cuttings are provided in NOI Decision Tree for Management of Investigation-Derived Waste Solids from Drilling Operations. LANL RCTs will perform radiological screening on all chip and core samples collected.

***Storage and Disposal Method*:**

IDW solids (Waste Stream #1) and the drilling fluids (Waste Stream #2) will initially be contained in a lined cuttings pit staging area within the project controlled area, pending review of analytical results to determine final waste characterization. Specifications for the cuttings pit will be in accordance with the approved Storm-water Pollution Prevention Plan. IDW solids will be managed in accordance with the letter sent to the NMED from the Laboratory titled Request for Approval of Characterization and Disposal Methods for Investigation-Derived Waste from Groundwater Wells and Boreholes constructed at Los Alamos National laboratory (EP2006-0868) dated 9/29/06, and conditions in the NMED

email approval dated 3/16/07. Drill cuttings and drilling fluids will be segregated by borehole. It is expected that these cuttings will be left in place in the drill pit or used as fill in site restoration or road maintenance. If the drill cuttings and drilling fluids meet criteria for land application, the pit liner will be removed and managed as contact waste. If the cuttings do not meet the criteria for land application, they will be removed from the pit and managed in an appropriate storage area and disposed of at an authorized facility, based on the disposal facility's WAC.

Waste # 2: Drilling Fluids

Waste type: Drilling Fluids generated during drilling through geologic media from surface to total depth in the regional aquifer. The drilling fluids are not expected to be contaminated by radionuclides or chemicals other than those present in drilling additives. (See Attachment A).

Anticipated Regulatory Status:

The possible classifications of this liquid waste stream and their anticipated regulatory status include:

- non-hazardous, non-radioactive water that is suitable for land application under the NOI Decision Tree
- non-hazardous, non-radioactive water that is not suitable for land application based on other NOI Decision Tree criteria
- low-level radioactive waste hazardous waste (for which a "contained in" determination from NMED may be requested)
- low-level waste
- mixed low-level waste (MLLW).

Characterization Approach:

All drilling fluids from the R-36 Well will be managed in accordance with the NOI Decision Tree (Revision 7/26/06). Data from direct waste sampling will be evaluated in accordance with the NOI Decision Tree. In addition to the data review required for the NOI Decision Tree, radionuclide data will be reviewed and compared to groundwater background levels (LANL 2005, 90580) to complete a radioactive waste determination. For roles and responsibilities see Table 3.

Sampling Pits and Tanks
Ground water produced during well drilling and development must be containerized on-site in a lined pit or tank. It is necessary to collect a representative sample from each container in order to accurately characterize the water quality to determine compliance with the NOI Decision Tree. Representative samples shall be collected in accordance with the following requirements:

- A grab sample from the surface of the pit or tank may be collected if the entire contents are first fully mixed. Mixing by mechanical means or compressed air is acceptable.

- A composite sample will be collected from each pit and tank at intervals across the entire water column--surface, middle, and bottom. Stratified, vertical sampling is necessary to address NMED's concerns about stratification of contaminants in the pit or tank.
- The methods available to sample a pit or tank at varying depths include the following :(1) Geotech pump with tubing on weight or pole, (2) bomb sampler, (3) Coliwasa, (4) thief sampler, or (5) bailer, depending upon depth of container. Because there are no existing water data (Decision Point: 01 of the NOI Decision Tree), the direct waste sampling data will first be subjected to an evaluation by ENV-RCRA for a hazardous waste determination (Decision Point: 02). If the data show the water to be non-hazardous then the water can be evaluated against the land application criteria.
- If the direct waste sampling data from the wells meet the land application criteria (Decision Point: 06) in the NOI Decision Tree, then the Laboratory can proceed with the land application of purge water from this well without coordination with the NMED; land application must be conducted in accordance with the terms and conditions of the following:
  - The land application site shall not be located within a watercourse.
  - The land application site shall not exceed the following slope restrictions:
  - If the land application site is poorly vegetated (<50% ground cover) then the maximum allowable slope is 2%.
  - If the land application site is well vegetated (>50% ground cover) and/or the site has been seeded and mulched for revegetation then the maximum allowable slope is 5%.
  - DO NOT land apply on an Area of Concern (AOC), Solid Waste Management Unit (SWMU), or PRS.
  - Land apply only during daylight and for a maximum of 10 hours per day. Routinely supervise the land application
  - Install BMPs to mitigate site vulnerabilities (e.g.:., existing erosional features may require runoff controls).
  - Conduct land application in a manner that will not result in runoff from the site.
  - Do not allow ponding or runoff to occur. Inspect BMPs routinely to ensure integrity.
  - Inspect for leaks in application system. Repair all leaks immediately upon detection.
  - Stop land application if ponding or runoff occurs, if BMPs fail, or if leaks in the application system occur.
- If it is determined that the drilling fluids are non-hazardous, but cannot meet the criteria for land application then the water will be evaluated for treatment and disposal at one of the Laboratory's six wastewater treatment facilities (Decision Point D7).
- If analytical data indicate that the drilling fluids are hazardous/non-radioactive or mixed low-level waste, the waste will be containerized and managed in a <90 Day Hazardous Waste accumulation area and disposed

of at an authorized facility, based on the disposal facility's WAC.

- The particular analyses that will be used to characterize drilling fluids from the R36 wells are listed in the characterization table (Table 1). The analytical suite is based on Appendix C of the Interim Facility-Wide Groundwater Monitoring Plan, Revision 1 (IFWGMP), in order to satisfy analytical requirements for the NOI Decision Tree. If the drilling fluids do not meet the criteria for land application in the NOI Decision Tree, then any additional analyses that are needed to determine if a purge water meets the waste acceptance criteria (WAC) of an appropriate disposal facility will be performed (see Table 2). For roles and responsibilities please see table 3.

Storage and Disposal Method:

Drilling Fluids (Waste Stream #2) and IDW solids (Waste Stream #1) will initially be contained together in a lined cuttings pit staging area within the project controlled area, pending review of analytical results to determine final waste characterization. This waste will remain in the lined pits until complete characterization is achieved with the NOI Decision Tree and/or supporting analytical results. At the time of containerization a field team member or an on-site waste handler who has completed the appropriate training, will complete an accumulation log entry. The accumulation log will include, at a minimum: well site, date, volume of waste stream, field pH, container ID #, name and initials of the field team member or waste handler. The disposal path or land application determination of drilling fluids will be based on the NOI Decision Tree. If drilling fluids fail to meet Decision Point: D6 and cannot be land applied, they will be managed in an appropriate storage area and disposed of at an authorized on-site or off-site facility, based on the drilling fluids meeting the facility's WAC.

Waste # 3: Development Water and Purge Water

Waste Type: Groundwater from development activities

Anticipated Regulatory Status:

The possible classifications of this liquid waste stream and their anticipated regulatory status include:

- non-hazardous, non-radioactive water that is suitable for land application under the NOI Decision Tree
- non-hazardous, non-radioactive water that is not suitable for land application based on other NOI Decision Tree criteria
- low-level radioactive waste, hazardous waste (for which a "contained in" determination from NMED may be requested)
- low-level waste
- mixed low-level waste (MLLW)

Characterization Approach:

All water that is purged during the development of wells and aquifer testing will be containerized, sampled, and evaluated for compliance with the approved NOI criteria (See Attachment D). Development and purge water will be characterized by direct sampling of the containerized fluids. To collect a representative waste characterization sample two methods may be employed:

1. Composite sampling methods described previously, or
2. Aliquots will be periodically (depending on modeling from ENV-RCRA) drawn throughout well development and stored in a clean, new 55-gallon steel drum.

Representative waste characterization samples will be collected with as short of a turn around time as is possible to minimize storage time. For roles and responsibilities see table 3. Because no existing historical data exists for this waste stream, the analytical suite will be the same as Waste Stream #2.

Storage and Disposal Method:

The anticipated staging of the groundwater is in 21,000-gallon frac tanks or poly tanks and metal drums as needed. The disposition (i.e., land *application* or disposal as waste water) of this waste stream will be based on the same process as Waste Stream #2 and based on the NOI criteria.

Waste # 4: Contact Waste

Waste type: Includes but not limited to spent PPE (gloves, coveralls, etc.), sampling supplies (plastic baggies, and sampling jars), decontamination trash (paper towels, plastic sheeting, brushes, etc.), plastic sheeting from secondary containment that contacts potentially contaminated environmental media or equipment and the plastic pit liners.

Anticipated Regulatory Status:

The possible classifications of this solid waste stream and the anticipated regulatory status include:

- non-hazardous, non-radioactive waste
- low-level radioactive waste
- hazardous waste
- mixed low-level waste (MLLW).

Characterization Approach:

Characterization of this waste will be based on AK from analytical results from waste steams #1, #2, and # 3.

Storage and Disposal Method:

Contact waste which has only come in contact with Waste Streams #1, #2, and #3 will be managed as non-hazardous/non-radioactive pending data review. The storage method for this waste stream will be 30 or 55-gallon drums. If AK from analytical results for waste streams #1, #2 and #3 determine the environmental media to be acceptable for onsite reuse or NOI discharge, then this waste stream will be disposed as non-hazardous, non-radioactive solid waste. If any of the environmental media is determined to be low-level radioactive, hazardous, or mixed low-level waste, then the contact waste will be managed accordingly and disposed of at an authorized facility. Contact Waste which has come in contact with Waste Stream # 5 (decontamination water) will be managed as Hazardous waste pending analysis. This waste will be stored in either a Satellite Accumulation Area (SM) or a <90 Day Hazardous Waste Accumulation Area depending on waste volume. Once a waste determination has been made, the waste will be managed accordingly and disposed of at an authorized facility.

Waste # 5: Decontamination water

Waste Type: Decontamination water from cleaning drilling equipment and materials.

Anticipated Regulatory Status:

The possible classifications of this liquid waste stream and the anticipated regulatory status include:

- non-hazardous
- non-radioactive waste
- low-level radioactive waste
- hazardous waste
- mixed low-level waste (MLLW)

Characterization Approach:

All water that is used during decontamination of drilling equipment and materials used down hole will be containerized, sampled, and evaluated for compliance with the appropriate standards. The decontamination water will be characterized by direct sampling of the containerized fluids. Representative waste characterization samples will be collected with as short of a turn around time as is possible to minimize storage time.

Storage and Disposal Method:

Decontamination water will be managed as hazardous waste pending analysis (in a <90 Hazardous Waste Storage Area or SAA) until a non-hazardous

determination can be made from review of the analytical data. These liquids will be stored in 55-gallon drums or poly tanks if needed. If the waste is characterized as hazardous/non-radioactive, mixed/low-level, or low-level radioactive, the decontamination fluids will be treated as such and disposed of at an authorized facility. The discharge of decontamination water into pits or tanks containing drilling or development water is strictly prohibited.

Waste # 6: Absorbent Padding Material (Potential) and PPE

Waste Type: Absorbent padding material includes pads, paper towels, or other material used to contain released commercial products considered to be New Mexico Special Waste (NMSW). This waste stream would only be generated in the event of an accidental release, such as the rupture of a hydraulic hose or spill of drilling additives. A spill kit with absorbent materials will be on site at all times.

Anticipated Regulatory Status:

New Mexico Special Waste (NMSW) based on the MSDS for the released product. Waste stream #6 listed in the original WCSF (Absorbent Padding Material) will be managed as New Mexico Special Waste, non-hazardous/non-radioactive industrial waste, or used oil depending on whether or not spilled material came in contact with environmental media (i.e. soil) and if the absorbent material is saturated enough to meet the criteria of used oil.

Characterization Approach:

The absorbent material will be characterized based on the MSDS for the released product and direct waste characterization sampling. LANL RCTs will conduct radiological surveys on all absorbent material.

Storage and Disposal Method:

The original WCSF called for this waste stream to be stored in a New Mexico Special Waste (NMSW) Area. However, based on clarification from ENV-RCRA, this waste stream could be stored as non-hazardous/non-radioactive waste (not NMSW), or used oil if the absorbent material is used to clean up a spill that did not contact environmental media (i.e. soil).

Waste # 7: Petroleum-Contaminated Soil (PCS) (Potential)

Waste Type: PCS from the release of commercial products such as hydraulic fluid, motor oil, unleaded gasoline, or diesel fuel. This waste stream would only be generated in the event of an accidental release, such as the rupture of a hydraulic or fuel hose.

Anticipated Regulatory Status:

New Mexico Special Waste (NMSW) based on the Material Safety Data Sheet (MSDS) for the released product.

Characterization Approach:

The PCS will be characterized based on the MSDS for the product and direct waste characterization sampling. LANL RCTs will conduct radiological surveys on all PCS.

Storage and Disposal Method:

This waste stream will be stored in 55-gallon drums, staged in a designated NMSW storage area, and disposed of offsite at an NMSW-permitted facility.

Waste # 8: Municipal Solid Waste (MSW)

Waste type: MSW will consist of non-contact trash and debris.

Anticipated Regulatory Status:

Municipal solid waste

Characterization Approach:

MSW will be characterized based on acceptable knowledge. MSW will be segregated from all other waste streams.

Storage and Disposal Method:

This waste stream will be stored in a plastic-lined trash container, and then disposed of at a New Mexico solid waste landfill.

Waste # 9: Drilled-out Concrete Chips

Waste Type: Consists of concrete chips from drilling out plug used to seal off perched groundwater.

Anticipated Regulatory Status:

The possible classifications of this solid waste stream and the anticipated regulatory status include:

- non-hazardous, non-radioactive waste
- non-hazardous, low-level radioactive waste

- low-level radioactive waste, hazardous waste (for which a "contained in" determination from NMED may be requested)
- mixed low-level waste (MLLW)

Characterization Approach:

This waste stream will be characterized based on AK from the direct waste sampling of waste #1 (Investigative derived waste solids).

Storage and Disposal Method:

Concrete waste will be stored separately from IDW Solids, in 55-gallon steel drums. This waste will be managed as non-hazardous waste pending analytical review. Disposal of this concrete will take place at a LANL approved disposal facility.

Table 1. Waste Characterization Table

Waste Description	Waste # 1 Investigation-derived Waste Solids	Waste # 2 Drilling Fluids	Waste # 3 Development and Purged Groundwater	Waste # 4 Contact waste
Volume	60 cubic yards (absorbed vol)	5,000 gallons	30,000 gallons	5 cubic yards
Packaging	Lined pit, Roll-off bins, or Drums	Lined pit, Poly Tanks, or drums	Frac and/or Poly Tanks	Drums or Roll-off bins
Regulatory Classification				
Radioactive	X	X	X	X
Solid	X	X	X	X
Hazardous	X	X	X	X
Mixed (hazardous and radioactive)	X	X	X	X
Toxic Substances Control Act (TSCA)				
New Mexico Special Waste				
Industrial	X	X	X	
Characterization Method				
AK: existing data/documentation	X			X[1]
AK: from site characterization (S)				
Direct sampling of containerized waste (W)	X	X[10]	X[10]	
Analytical Testing				
Volatile organic constituents (EPA 8260-B)	X[3,7]	X[3]	X[3]	
Semivolatile Organic Compounds (EPA 8270-C)	X[3,7]	X[3]	X[3]	
Organic Pesticides (EPA 8081-A)	X	X	X	
Organic Herbicides (EPA 8151-A)	X[4]	X[4]	X[4]	
PCBs (EPA 8082)	X[3]	X[3]	X[3]	
Total metals (EPA 6010-B/7471-A)	X[3]	X[3]	X[3]	
Total cyanide (EPA 9012-A)	X	X	X	
High explosives constituents (EPA 8330/8321-A)	X[3]	X[3]	X[3]	
Asbestos				
Total petroleum hydrocarbon (TPH) –GRO (EPA 8015-m)	X			
TPH-DRO (EPA 8015-M)	X			
TCLP metals (EPA 1311/6010-B)				
TCLP organics (EPA 1311/8260 & 1311/8270)				
TCLP pest. & herb. (EPA 1311/8081/1311/8151-A)				
Gross alpha (alphacounting) (EPA 900)	X	X	X	
Gross beta (beta counting) (EPA 900)	X	X	X	
Gamma spectroscopy (EPA 901.1)	X	X	X	
Tritium (liquid scintillation) (EPA 906.0)	X	X	X	
Total uranium (6020 inductively coupled plasma mass spectroscopy [ICPMS])				
Isotopic plutonium (chem. separation/alpha spec.) (HASL-300)	X	X	X	
Isotopic uranium (chem. separation/alpha spec.) (HASL-300)	X	X	X	

Strontium-90 (beta proportional counting)	X	X	X	
Americium-241 (chem. separation/alpha spec.) (HASL-300)	X	X	X	
Waste Profile Form #	TBD	TBD	TBD	TBD
Waste Description	Waste # 5 Decon water	Waste # 6 Absorbent Padding	Waste # 7 PCS	Waste # 8 MSW
Volume	250 gallons	< 1 cubic yard	<1 cubic yard	<1 cubic yard
Packaging	Drums or Tanks	Steel Drums	Steel Drums	Plastic-lined Garbage Can
Regulatory Classification				
Radioactive	X			
Solid	X	X	X	X[2]
Hazardous	X			
Mixed (hazardous and radioactive)	X			
Toxic Substances Control Act (TSCA)				
New Mexico Special Waste		X	X	
Industrial	X	X		X[2]
Characterization Method				
AK: existing data/documentation		X[8]	X[8]	X
AK: from site characterization (S)				
Direct sampling of containerized waste (W)	X		X	
Analytical Testing				
Volatile organic constituents (EPA 8260-B)	X[3]			
Semivolatile Organic Compounds (EPA 8270-C)	X[3]			
Organic Pesticides (EPA 8081-A)	X[3]			
Organic Herbicides (EPA 8151-A)	X[3,4]			
PCBs (EPA 8082)				
Total metals (EPA 6010-B/7471-A)	X[3]		X	
Total cyanide (EPA 9012-A)	X[3]			
High explosives constituents (EPA 8330/8321-A)	X[3]			
Asbestos				
Total petroleum hydrocarbon (TPH) –GRO (EPA 8015-m)	X		X	
TPH-DRO (EPA 8015-M)	X		X[9]	
TCLP metals (EPA 1311/6010-B)				
TCLP organics (EPA 1311/8260 & 1311/8270)				
TCLP pest. & herb. (EPA 1311/8081/1311/8151-A)				
Gross alpha (alphacounting) (EPA 900)	X			
Gross beta (beta counting) (EPA 900)	X			
Gamma spectroscopy (EPA 901.1)	X			
Tritium (liquid scintillation) (EPA 906.0)	X			
Total uranium (6020 inductively coupled plasma mass spectroscopy [ICPMS])				
Isotopic plutonium (chem. separation/alpha spec.) (HASL-300)	X			
Isotopic uranium (chem. separation/alpha spec.) (HASL-	X			

300)				
Strontium-90 (beta proportional counting)	X			
Americium-241 (chem. separation/alpha spec.) (HASL-300)	X			
Waste Profile Form #	TBD	TBD	TBD	TBD

Waste Description	Waste # 9 **Drilled out Concrete chips**
Volume	**60 gallons**
Packaging	**Drums**
Regulatory Classification	
Radioactive	X
Solid	X
Hazardous	X
Mixed (hazardous and radioactive)	X
Toxic Substances Control Act (TSCA)	
New Mexico Special Waste	
Industrial	X
Characterization Method	
AK: existing data/documentation	X
AK: from site characterization (S)	
Direct sampling of containerized waste (W)	
Analytical Testing	
Volatile organic constituents (EPA 8260-B)	
Semivolatile Organic Compounds (EPA 8270-C)	
Organic Pesticides (EPA 8081-A)	
Organic Herbicides (EPA 8151-A)	
PCBs (EPA 8082)	
Total metals (EPA 6010-B/7471-A)	
Total cyanide (EPA 9012-A)	
High explosives constituents (EPA 8330/8321-A)	
Asbestos	
Total petroleum hydrocarbon (TPH) –GRO (EPA 8015-m)	
TPH-DRO (EPA 8015-M)	
TCLP metals (EPA 1311/6010-B)	
TCLP organics (EPA 1311/8260 & 1311/8270)	
TCLP pest. & herb. (EPA 1311/8081/1311/8151-A)	
Gross alpha (alphacounting) (EPA 900)	
Gross beta (beta counting) (EPA 900)	
Gamma spectroscopy (EPA 901.1)	
Tritium (liquid scintillation) (EPA 906.0)	
Total uranium (6020 inductively coupled plasma mass	

spectroscopy [ICPMS])	
Isotopic plutonium (chem. separation/alpha spec.) (HASL-300)	
Isotopic uranium (chem. separation/alpha spec.) (HASL-300)	
Strontium-90 (beta proportional counting)	
Americium-241 (chem. separation/alpha spec.) (HASL-300)	
Waste Profile Form #	TBD

[1]Based off of data from direct waste sampling from waste streams #1, #2, and #3.
[2]Municipal Solid Waste for disposal at a Municipal Land Fill.
[3]MLLW WAC analyses from Table 2.
[4]Herbicide analysis for 2,4-D and 2,4,5-TP (Silvex) will be analyzed to complete section 4 of the LANL WPF.
[5]Gross radionuclide or isotopic analysis can be used to determine waste characterization. Isotopic analysis are recommended to verify detected gross radioactivity, and to identify and quantify radionuclides present in waste stream.
[6]Low-level tritium method will be performed to characterize the tritium concentration
[7]Organics (EPA 8260-B and 8270-C), total inorganics (EPA 6010-B), high explosives (EPA 8330), and PCBs (EPA 8082) are called out in the LANL letter to the NMED (EP2006-0868).
[8]AK from MSDS of spilled product.
[9]Must include BTEX (EPA 8260-BTEX only)
[10]Analytical suite must include all anilities listed in Table 1.0 and 2.0 of NOI Decision Tree
[11]WPFs will be submitted for any waste resulting from the use of products listed in Attachment A.

Attachment A

List of Commercial Products

The following commercial products may be used during the regional and intermediate well drilling. Based on a review of the MSDSs, each product is recommended to be managed per appropriate EP-ERSS SOPs as either a Municipal Solid Waste (not environmentally threatening) or as a New Mexico Special Waste (potentially environmentally threatening), if released on-site or disposed of.

Municipal Solid Waste	New Mexico Special Waste
Aqua-Clear PFD (anionic polyacrylamide)	Diesel Fuel
Aquagel Gold Seal (bentonite & silica)	Hydraulic Oil
Attack Foam (surfactant, hexylene glycol)	Quik Foam (only as pure product, flammable
Barolift	liquid, n.o.s.)
EZ Mud (Polyacrylamide/copolymer emulsion diluted with water)	Radiator Fluid/Antifreeze (ethylene glycol)
Liqui-Trol (cellulose polymer)	Gasoline
N-Seal	
PAC-L (cellulose)	
Quik Foam (diluted with water)	
Quick-Gel (bentonite & silica)	
RV Antifreeze (propylene glycol)	
SDI Defoamer (silicone)	
Soda Ash (sodium carbonate)	

Additional Analytical Information:

Standard analytical turn around time is anticipated to be 30 calendar days. In the event a waste is suspected to be hazardous, the total waste volume exceeds 55 gallons (e.g., purge water, decontamination fluids and contact waste), and a <90-day Accumulation Area is required, then an expedited analytical turn around time will be needed to meet the 90-day time limit. Water Stewardship sample support will be notified, if an expedited analysis is necessary. Utah-certified analytical laboratory data is recommended to meet the MLLW WAC for waste streams that are suspected to be hazardous and low-level radioactive.

Table 2. Liquid Waste WAC Tests

Analytical Tests	TA-16 HEWTF	TA-46 SWWS	TA-50 RLWTF	TA-53 RLWTF	TA-54 SERF	DSSI MLLW
Total Metals	X	X	X	X		X
Boron	X	X	X			
Chloride	X					X
Cyanide		X	X			
Fluoride		X	X			X
Molybdenum		X				
Perchlorate	X		X			
Phosphorus		X				
PCB		X	X	X		X
Ammonia-Nitrogen		X	X			
Nitrate-Nitrogen		X	X			
VOCs	X[1]	X	X	X		X
Semi-VOCs	X	X	X	X		X
Total Toxic Organics (Methods 624, 625A, 625B)		X	X			
pH	X	X	X			X
COD	X	X	X			
TDS		X	X	X		
TSS		X	X	X		X
Microtox (KSL must perform)		X				
HE	X					
Radioassay						
Gross Alpha	X	X	X	X		X[2]
Gross Beta	X	X	X	X		X[2]
Gamma Spec	X	X	X	X		X[2]
Isotopic as determined by Gamma Spec			X	X		X[2]
Isotopic Pu (α spec)						X[2]
Isotopic U (α spec)						X[2]
American-241 (α spec)						X[2]
H-3 (liquid scintillation)				X		X[2]
Strontium -90						X[2]
Total Sulfur						X
Ignitability						X
BTU value						X
Water content						X
Ash content						X

[1] Must ask for n-butanol and diethyl ether.

[2] Radionuclides are to be identified and quantified.

The following is a brief summary of waste acceptance criteria. Refer to the appropriate LANL WAC chapter for complete disclosure of WAC limitations (with the exception of HEWTF).

HEWTF – TA-16 High Explosives Wastewater Treatment Facility. Only naturally occurring radionuclides are acceptable – No added radioactivity. No hazardous waste.

SWWS – TA-46 Sanitary Waste Water System. Radionuclides must not exceed drinking water limits or background concentrations. No PCBs, DDT, dioxins, pesticides, radioactive or hazardous waste.

RLWTF – TA-50 Radioactive Liquid Waste Treatment Facility. No PCBs, DDT, dioxins, or pesticides. Need WAC Exception Form (WEF) for non-radioactive waste. Must identify and quantify three most predominant alpha, beta, & gamma emitting radionuclides. All radionuclides known must be listed on WPF.

SERF – TA-3 Sanitary Effluent Reclamation Facility WAC is pending. In the interim the SWWS WAC applies.

MLLW - Utah-certified analytical laboratory data is recommended for non-radioactive analyses to meet the MLLW WAC for Permafix (DSSI). No explosives, oxidizers, flammable liquids or TSCA waste. Radionuclides must be identified and quantified. Consult LANL WAC the MLLW Chapter and contact Environmental Programs Waste Services (ENV-WS) to ensure waste meets requirements of the off-site facility.

Table 3. Roles and Responsibilities Table

Roles	TPMC	Generator	ENV-RCRA	Field WMC	WMC	Waste Services	Comments
Review & Approve Analytical Suite for Completeness	X	X	X		X	X	
Prepares WCSF					X		
Approves WCSF		X	X		X	X	
Collects Characterization Samples	X						
Requests Data	X						Data will be received and tracked by the Sample Management Office
Reviews Data for Waste Determination	X	X	X		X	X	
Prepares Summary Tables	X				X		
Approves Disposal Path		X	X		X	X	
Provides Materials for Waste Storage Areas	X						

Sets up Waste Storage Areas	X						
Registers and Decommissions Waste Storage Areas with ENV-RCRA					X		
Performs <90 Day Hazardous Waste Storage Area Inspections				X	X		<90 Inspections need to be performed by personnel with appropriate training

SIGNATURES (Print name and then sign.)	**DATE:**
Project Leader: **Mark Everett** Mark Everett	10-18-07
ERSS Waste Management Coordinator: ~~**Victor Garde**~~ MICHAEL LE SCOUARNEC	10-18-07
ENVP-RCRA Representative: **John Tymkowych** John M. Tymkowych	10/18/07
NWIS-SWO Representative: **Andy U. Elicio**	10/18/07
Completed by: **Victor Garde** Victor Garde	10/18/07

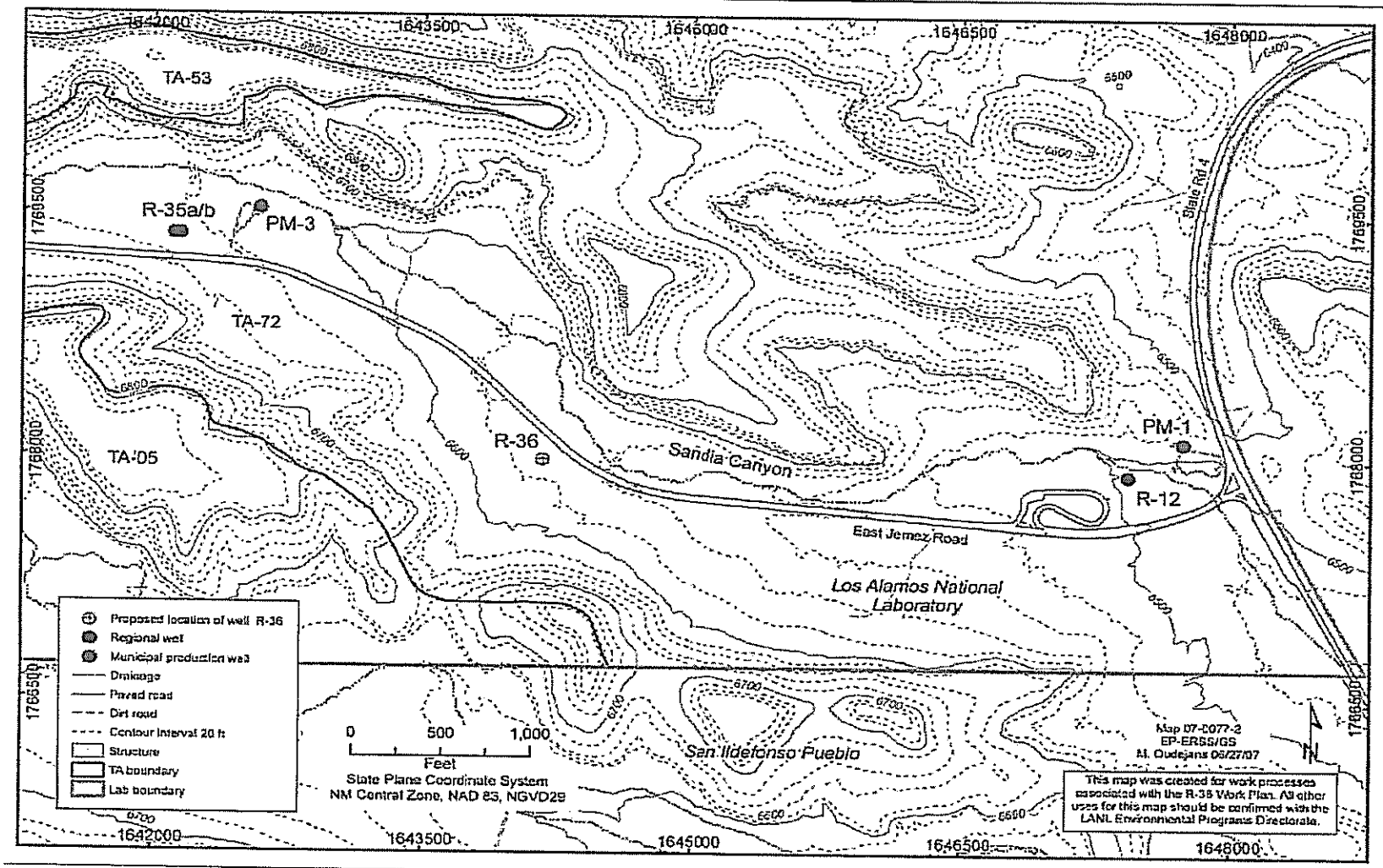

Figure 1. Location of Well R-36 and other Sandia Canyon Wells