

TA 16



Solid Waste Regulatory Compliance
P.O. Box 1663, Mail Stop K490
Los Alamos, New Mexico 87545
(505) 667-0666/Fax (505) 667-5224

Date: March 13, 2006
Refer To: ENV-SWRC:06-0015

John Young
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505-6303

Dear Mr. Young:

Subject: Sigma Mesa Stabilization Plan for Rubble Generated from the Demolition of TA-16-340

In response to your letter of February 23, 2006 the Los Alamos National Laboratory (LANL) is submitting the attached stabilization plan that will provide engineering controls to prevent dust dispersion and run off and/or run on occurrences at the rubble pile on Sigma Mesa once implemented. That rubble pile consists of the debris resulting from the demolition of the TA-16-340 facility. It has been the topic of numerous meetings, phone conversations and a request from LANL for a "no longer contained in determination".

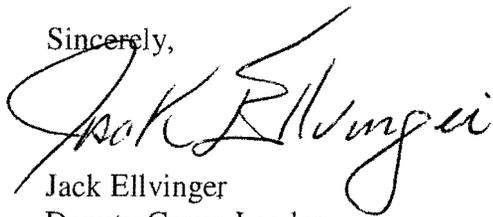
Your letter asked that such a plan be developed and submitted within 15 days of its receipt. Also within the letter was a request for additional information (five separate questions) that did not have a time frame attached to it. LANL focused on the plan and is now submitting it for your consideration and approval. The responses to your five informational questions will be addressed shortly under a separate cover.

You will see that LANL looked at two different alternatives in addressing your concerns over the stabilization of the rubble pile. LANL had a number of constraints to consider in selecting the appropriate path. The location of nesting locations of Mexican Spotted Owls and the noise levels that could be generated in their proximity, the safety of those employees implementing the chosen alternative, further disruption and possible dispersal of the rubble material, as well as how quickly and efficiently a methodology could be deployed were some of factors that were of concern and were considered in the final decision.



Once you have reviewed the LANL plan and determined its adequacy, LANL will implement it within the schedule provided in the plan. If you have questions or concerns over this letter or its attachments please contact me at 667-0633.

Sincerely,



Jack Ellvinger
Deputy Group Leader
ENV-SWRC

Attachments: (1)

Cc w/o attachments:

James Bearzi, Chief
Hazardous Waste Bureau
New Mexico Environment Department
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Santa Fe, New Mexico 87505-6303

Cc G. Turner, LASO, MS A316
K. Rendell, PM-IP, MS J590
J. Jones, PM-DO, MS J590
D. Stafford, PM-IP, MS J590
D. Chastain, PM-DO, MS M984
E. Louderbough, LC-ESH, MS A187
E. English, ENV-SWRC, MS J590
H. Wheeler Benson, ENV-SWRC, MS K490
D. McInroy, ENV-ERS, MS M992
J. Little, ENV-ECO, MS M887
T. Lemke, ENV-WQH, MS K497
SWRC File
Author File
IM-9 A150

Los Alamos National Laboratory
Engineering Controls Plan for Sigma Mesa Concrete Rubble Generated from the
Demolition of TA-16-340

This plan responds to the letter received from NMED on February 28, 2006 requesting a plan describing engineering controls to minimize storm water contact with the concrete rubble at Sigma Mesa. This waste was generated during demolition of the TA-16-340 complex. NMED requested a description of engineering controls that LANL will use to minimize infiltration of precipitation and generation of fugitive dust, and to control stormwater run-on and runoff by diverting surface water flow away from the rubble.

Background

The concrete rubble is located within the TA-60 Sigma Mesa area on a flat grade west of the Asphalt Batch Plant between Eniwetok Road and Mortandad Canyon. Approximate dimensions of the rubble are 150 x 200 ft. The height of the rubble ranges from less than 1 ft on the east side to approximately 15 ft at the west terminus. Total square footage of the concrete rubble is approximately 60,000 sq ft.

To control stormwater run-on and runoff by diverting surface water flow away from the rubble, a continuous compacted soil berm 2 ft high and 3 ft wide was installed around its perimeter on September 7, 2005. This berm effectively diverts run-on to and runoff from the rubble. In accordance with the Stormwater Pollution Prevention Plan under which the rubble is managed, the berm is inspected monthly and following each precipitation event of greater than 0.5 in.

Engineering Controls Considerations

LANL evaluated two options to minimize precipitation infiltration and fugitive dust generation from the rubble. Considerations affecting both options include environmental impacts, threatened species protection, personnel safety, efficiency and efficacy of application, and schedule. Environmental impacts include fugitive dust creation, product introduction, and waste generation. Threatened species protection applies in this location due to habitat for Mexican Spotted Owl (MSO). Surveys are conducted annually during the breeding season beginning March 1 and continuing until approximately May 15. The 2005 MSO survey confirmed Mortandad Canyon to be occupied by Mexican spotted owl. Noise restrictions begin in MSO habitat on 1 March of each year and generally if the habitat survey confirms the presence of the MSO, noise restrictions continue through August 31 (noise restrictions require any noise to be not more than 6 decibels above background levels); however, in the case of the location on Sigma Mesa, LANL conducted an informal consultation with the U.S. Fish and Wildlife Service (USFWS) to determine the practicability of operating a concrete crusher in that location. As a result of this consultation, USFWS concurred that noise-generating equipment use could be approved beginning July 15. Personnel safety applies with respect to the installation and inspection of the engineering controls. Efficiency and efficacy of installation refer to the expediency of installation, and the effectiveness of the control. Schedule describes the timeliness of installation.

Option 1 – Copolymer Emulsion Sealant

Under this option, the rubble and berm would be sprayed with a commercially-available copolymer emulsion sealant/stabilizer/dust control agent that is widely used in commercial, construction, and military applications. The material comes in concentrated form and is mixed with water for a spray-on application. This product physically binds and adheres soil particles and aggregate together. When applied topically it forms a hardened crust, which is effective for both dust control and stabilization. The sealant dries to a clear coat within 24 hours, has a longevity of 12-24 months, and can be reapplied whenever necessary. Once cured, it will not break down or wash away when exposed to precipitation or storm water runoff. Binding loose particles together will significantly minimize fugitive dust generation. Formation of a hardened surface on the rubble and surrounding soil will minimize infiltration of precipitation and facilitate the collection and evaporation of any precipitation falling within the bermed area.

Environmental Impacts: Use of the product will require a Notice of Intent to Discharge. No additional waste would be generated as a result of using this product. The product takes 24 hours to cure. Once cured, the sealant is insoluble and would not be present in precipitation contacting the rubble. Application of the sealant would not affect the waste characterization of the rubble. MSDSs for the material are attached to this plan.

Threatened Species Protection: Application of the sealant would be performed using a water truck or a hydroseeder. It is anticipated that noise generated from both types of equipment would fall under levels permitted under MSO restrictions.

Personnel Safety: Because no personnel would be in contact with the rubble during sealant application, safety issues would be minimized. The equipment required to apply the sealant would present hazards similar to standard construction or dust suppression activities. While inspection of the engineering control may require personnel access to the rubble, contours would remain visible to inspectors.

Efficiency and Efficacy of Installation: The rubble is fairly well compacted, with a minimum of void spaces. Void spaces between the concrete pieces are relatively small, and no large voids were identified that would potentially prevent penetration of the sealant. The sealant would be applied to ensure penetration into the interstitial spaces, which should facilitate establishment of a hardened crust on and around the pieces of rubble. The product must be applied during a dry period. It could be applied within 1 day, and would cure within 24 hours.

Schedule: Weather permitting, the sealant could be applied within 15 working days from receipt of concurrence among LANL, DOE, and NMED.

Option 2 – Liner Covering

The rubble would be covered with one or more 12 mil UV resistant (to 3 years) woven coated polyethylene panels. The panel(s) would be placed over the rubble and anchored to the ground in accordance with manufacturer recommendations, at ten-foot intervals. To expedite placement of the panels, minimize the potential for panel damage, and to ensure the best possible fit for minimizing infiltration of precipitation, the rubble would be reconfigured using heavy equipment. The reconfiguration goal would be to level out the particularly high spots in the rubble to achieve a more uniform distribution of the rubble inside the berm.

Environmental Impacts: Reconfiguring the rubble would generate dust. Use of panels as the engineering controls option would generate an estimated additional 200 cu yds of waste material once the rubble can be disposed of.

Threatened Species Protection: Use of heavy equipment to reconfigure the rubble to a more panel-friendly configuration would exceed noise levels under the MSO restrictions. Panel installation may require use of heavy equipment (loaders and a crane) to lift and place the panels over the area. Use of this type of heavy equipment would exceed MSO noise level restrictions.

Personnel Safety: The weight of the rolls and contours of the rubble present a considerable personnel safety hazard (crush, suffocation, and slip/trip/fall). To some extent, use of heavy equipment to aid in installing the panels would mitigate those hazards; however, the hazards would remain because personnel would be required to manually guide placement of the panels. Additionally, if hot welding of seams were required but could not be done due to fire danger, then carrying and placing 40-lb. sand bags over panel interfaces would present a lifting/strain hazard to personnel. Inspections would be done without accessing the rubble; however, maintenance, if necessary, would require access. The panel surface would be slippery and the inability of the inspector to see exact contours for foot placement would present a safety hazard.

Efficiency and Efficacy of Installation: Panels are prone to considerable influence from wind. Due to the size of the panel(s) that would be installed under this option, installation would need to be performed in conditions of calm winds. Once MSO restrictions are lifted, reconfiguring the rubble would take 3 to 5 days. Panel installation would take 1 to 3 days.

Schedule: Work on liner installation, including rubble reconfiguration, could begin after July 15, within 30 working days from receipt of concurrence among LANL, DOE, and NMED.

Engineering Control Selection

After considering environmental impacts, threatened species restrictions, personnel safety, efficiency and efficacy of installation, and schedule, LANL has selected the sealant option to minimize infiltration of precipitation and generation of fugitive dust at the Sigma Mesa rubble area.



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SOILTAC®
 Soil Stabilizer &
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MATERIAL SAFETY DATA SHEET

SECTION 1 - MATERIAL IDENTIFICATION

PRODUCT NAME SOILTAC*
MANUFACTURER *SOILTAC is a registered trademark of Soilworks, LLC.
 Soilworks, LLC.
 681 North Monterey Street, Suite 101
 Gilbert, Arizona 85233-8318 USA
www.soilworks.com
TELEPHONE NUMBER 800-545-5420
ONLINE INFORMATION www.Soiltac.com
EMERGENCY TELEPHONE NUMBERS 800-545-5420 (National & International)
REVISION DATE September 2005

EMERGENCY OVERVIEW

PHYSICAL FORM Mobile liquid
COLOR White (transparent once cured)
ODOR Mild
HAZARDS There are no known health hazards.
EXTINGUISHING MEDIA The product will only burn after the water it contains is driven off.
C.A.S. CHEMICAL NAME Mixture
SYNONYMS Soil stabilizer, soil stabilization agent, soil solidifier, soil amendment, soil additive, soil crusting agent, dust control agent, dust inhibitor, dust palliative, dust suppressant, dust retardant
CHEMICAL FAMILY Vinyl Acetate Copolymer Emulsion
EMPIRICAL FORMULA Mixture
INTENDED USE Soil stabilization, soil solidification, fugitive dust control, dust suppression, dust abatement, tackifier, dust abatement, PM₁₀ and PM_{2.5} air quality control and erosion control
REVISION NOTES None

SECTION 2 - INGREDIENTS

	%	CAS Number and Chemical Name
1.	50-65	Vinyl Acetate Copolymer
2.	50-35	7732-18-5 Water
3.	< 0.5	108-05-04 Vinyl Acetate Monomer

The composition is a trade secret. Contains no other components or impurities which will influence the classification of the product.

SECTION 3 - HEALTH HAZARDS

ROUTES OF EXPOSURE

Eye Contact
 Skin Contact
 Ingestion
 Inhalation

EXPOSURE STANDARDS

See Section 2 for exposure standards on ingredients. Maintain air contaminant concentrations in the workplace at the lowest feasible levels. Minor components will migrate into the container headspace. Levels in excess of the TLV's or PEL's can accumulate in non-vented container headspaces. Open drums in a well ventilated space. The principal volatile component is water. Minor volatile components are identified in Section 2 "Ingredients".

HEALTH HAZARDS

There are no known health hazards.

TARGET ORGANS

None known

SIGNS AND SYMPTOMS OF EXPOSURE (Acute effects)

There are no known signs or symptoms of exposure.

SIGNS AND SYMPTOMS OF EXPOSURE (Possible Longer Term Effects)

No known effects

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE

None known



SECTION 4 - FIRST AID

EYE CONTACT

Rinse immediately with plenty of water.

SKIN CONTACT

Remove contaminated clothing and shoes. Wash affected area with soap and water.

INHALATION

Move patient to fresh air. If breathing has stopped or is labored give assisted respiration (e.g. mouth-to-mouth). Supplemental oxygen may be indicated. Seek medical advice. Prevent aspiration of vomit. Turn victim's head to the side.

INGESTION

If swallowed, call a physician immediately. Remove stomach contents by gastric suction or induce vomiting only as directed by medical personnel. Never give anything by mouth to an unconscious person.

SECTION 5 - FIRE AND EXPLOSION DATA

FLASH POINT (closed cup)

No Data

UPPER EXPLOSION LIMIT (UEL)

No Data

LOWER EXPLOSION LIMIT (LEL)

No Data

AUTOIGNITION TEMPERATURE

No Data

FIRE HAZARD CLASSIFICATION (OSHA/NFPA)

Non-Combustible

EXTINGUISHING MEDIA

The product will only burn after the water it contains is driven off. For dry polymer use water or carbon dioxide. Product does not burn. Aqueous solution is not flammable.

SPECIAL FIRE FIGHTING PROCEDURES

No special procedures required. The product, as distributed, is noncombustible.

UNUSUAL FIRE AND EXPLOSION HAZARDS

When dried polymer burns, water (H₂O), carbon dioxide (CO₂), carbon monoxide (CO) and smoke are produced.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

CONTAINMENT TECHNIQUES (Removal of ignition sources, diking etc)

Stop the leak, if possible. Ventilate the space involved.

CLEAN-UP PROCEDURES

If recovery is not feasible, admix with dry soil, sand or non-reactive absorbent and place in an appropriate chemical waste container. Transfer to containers by suction, preparatory for later disposal. Place in metal containers for recovery or disposal. Flush area with water spray. Wash contaminated property (e.g., automobiles) quickly before the material dries. For large spills, recover spilled material with a vacuum truck.

OTHER EMERGENCY ADVICE

Spilled polymer emulsion is very slippery. Use care to avoid falls. A film will form on drying. Remove saturated clothing and wash contacted skin area with soap and water. Product imparts a milky white color to contaminated waters. Foaming may result. Sewage treatment plants may not be able to remove the white color imparted to the water.

SECTION 7 - HANDLING AND STORAGE

STORAGE

Keep away from: oxidizers. Avoid freezing temperatures during storage.

Minimize contact with atmospheric air to prevent inoculation with microorganisms.

HANDLING

Use only in well-ventilated areas. Avoid contact with eyes. Avoid breathing vapors. Avoid contact with skin. When using, do not eat, drink or smoke.

OTHER PRECAUTIONS

No special precautions required.

SECTION 8 - PERSONAL PROTECTION / EXPOSURE CONTROLS

EYE PROTECTION

Chemical safety glasses.

HAND PROTECTION

Rubber Gloves. The breakthrough time of the selected glove(s) must be greater than the intended use period.

RESPIRATORY PROTECTION

Not required under normal use.

PROTECTIVE CLOTHING

No specific recommendation.

ENGINEERING CONTROLS

Maintain air concentrations in work spaces in accord with standards outlined in Sections 2 and 3.



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WORK AND HYGIENIC PRACTICES

Minor components will migrate into the container headspace. Levels in excess of the exposure limits can accumulate in non-vented container headspaces. Under normal conditions of use in a well-ventilated space, the concentration of minor components in the workplace air will not exceed the exposure limits.

SECTION 9 - TYPICAL PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL FORM	Mobile liquid
COLOR	White (transparent once cured)
ODOR	Mild
pH	4.0-6.0
VAPOR PRESSURE	18.65 (mm Hg at 21°C (70°F))
VAPOR DENSITY (Air = 1)	Of water vapor
BOILING POINT	>100.00°C (>212.00°F)
SOLUBILITY IN WATER	Completely (100%) (until cured)
SPECIFIC GRAVITY (Water = 1)	1.04-1.10
MOLECULAR WEIGHT	Mixture

SECTION 10 - STABILITY AND REACTIVITY

CHEMICAL STABILITY

Stable at ambient temperatures. Coagulation may occur following freezing, thawing or boiling.

CONDITIONS TO AVOID (if unstable)

Not applicable

INCOMPATIBILITY (Materials to Avoid)

Mineral acids (i.e. sulfuric, phosphoric, etc.). Alkalis (i.e. Sodium or Potassium Hydroxide etc.).

HAZARDOUS DECOMPOSITION PRODUCTS (from burning, heating, or reaction with other materials).

Depending upon formulation conditions (such as pH>7), the level of acetaldehyde may increase as a result of hydrolysis of residual vinyl acetate monomer. Carbon Monoxide in a fire. Carbon Dioxide in a fire. Aldehydes. Acetic Acid.

HAZARDOUS POLYMERIZATION

Will not occur

CONDITIONS TO AVOID (if polymerization may occur)

Not applicable

SECTION 11 - TOXICOLOGICAL PROPERTIES

ACUTE ORAL TOXICITY

No Data

ACUTE DERMAL TOXICITY

No Data

ACUTE INHALATION TOXICITY

No Data

Components: Vinyl Acetate Monomer LC50 (1 h): 5,656 ppm Species: Rat

OTHER ACUTE EFFECTS

No Data

CHRONIC/SUBCHRONIC DATA

This product contains small amounts of vinyl acetate monomer. ACGIH evaluated vinyl acetate (1993) as an A3 Animal Carcinogen. Available evidence suggests that the agent is not likely to cause cancer in humans except under uncommon or unlikely routes of exposure. The International Agency for Research on Cancer (IARC) published a monograph on vinyl acetate (1995). In this monograph IARC indicates "there is inadequate evidence in humans for carcinogenicity of vinyl acetate. There is limited evidence in experimental animals for carcinogenicity of vinyl acetate." Normally, this lack of conclusive evidence would place a substance in the IARC Category 3 classification (Not classified as a human carcinogen). However, because vinyl acetate is metabolized to acetaldehyde, which has an IARC 2 B (Possibly carcinogenic to humans) classification, it also has been listed under Category 2B.

SECTION 12 - ECOLOGICAL INFORMATION

ECOTOXICITY

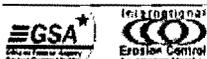
Common Name	Species	Test	Result	Concentration
Green Algae	Raphidocelus Subcapitata	96-hr chronic LC50	>1,000	Undiluted
Fathead Minnow	Pimephales Promelas	96-hr acute LC50	>1,208	Undiluted
Rainbow Trout	Oncorhynchus Mykiss	96-hr acute LC50	>1,000	Undiluted

ENVIRONMENTAL FATE

No Data

ADDITIONAL INFORMATION

No Data





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SECTION 13 - DISPOSAL CONSIDERATIONS

WASTE DISPOSAL

Comply with all Federal, State and Local Regulations. For small quantities (less than 100 gallons): Disposal to municipal or industrial wastewater treatment plants is normally acceptable. Obtain approval from these authorities before disposal. The product does impart a white, milky color to water, which may not be removed or sufficiently diluted by the treatment facility. The product may also cause foaming when agitated. The product can be chemically or biologically degraded. For large quantities: Disposal through licensed waste disposal facilities is suggested. The product can be incinerated, though chemical or biological treatment is sufficient. Chemical precipitation/coagulation can be used to facilitate removal of solids (consult manufacturer for detailed procedure). NOTE: As supplied or diluted, product material (foam included), when splashed on automobiles or other personal property, is difficult to remove if allowed to dry.

SECTION 14 - TRANSPORT INFORMATION

DOT NON-BULK SHIPPING NAME	Refer to Bill of Lading - Not DOT Regulated // Keep From Freezing // Not dangerous goods
DOT BULK SHIPPING NAME	Refer to Bill of Lading.
IMO SHIPPING DATA	Refer to Bill of Lading.
ICAO/IATA SHIPPING DATA	Refer to Bill of Lading - Not IATA Regulated // Keep From Freezing // Not dangerous goods
CFR	Not Regulated // Keep From Freezing // Not dangerous goods
IMDG	Not Regulated // Keep From Freezing // Not dangerous goods
CTC	Not Regulated // Keep From Freezing // Not dangerous goods

SECTION 15 - REGULATORY INFORMATION

TOXIC SUBSTANCES CONTROL ACT (TSCA)-

All components are included in the EPA Toxic Substances Control Act (TSCA) Chemical Substance Inventory.

TOXIC SUBSTANCE CONTROL ACT (TSCA) 12(b) COMPONENT(S)

None

OSHA Hazard Communication Standard (29CFR1910.1200) hazard class(es)

None

EPA SARA Title III Section 312 (40CFR370) hazard class

None

EPA SARA Title III Section 313 (40CFR372) toxic chemicals above "de minimis" level are

Vinyl Acetate Monomer

US. California Safe Drinking Water & Toxic Enforcement Act (Proposition 65)

WARNING! This product contains a chemical known in the State of California to cause cancer. Acetaldehyde

WHMIS HAZARD CLASSIFICATION

None

WHMIS INGREDIENT DISCLOSURE LIST

None

WHMIS SYMBOLS

None

EINECS / ELINCS MASTER INVENTORY (EU)

Included on EINECS inventory or polymer substance, monomers included on EINECS inventory or no longer polymer

DSL (Canada)

Included on inventory

AICS (Australia)

Included on inventory

ENCS (Japan)

Included on inventory

ECL (South Korea)

Included on inventory

SEPA (China)

Included on inventory

SECTION 16 - OTHER INFORMATION

HMIS Rating

Health	: 1
Flammability	: 0
Physical Hazard	: 0

