Los Alamos
NATIONAL LABORATORY

Los Alamos National Laboratory
Los Alamos, New Mexico 87545

Date: December 20, 1995
In Reply Refer To: ESH-18/WQ&H:95-580
Mail Stop: K497
Telephone: (505) 667-4882

LANL-ER-00 1114

Mortandad (TA's 53, 61, 54

Mr. Beau Smith (6EN-WC)
U.S. Environmental Protection Agency
1445 Ross Avenue
Dallas, Texas 75202-2733

SUBJECT: ADDITIONAL SLUDGE QUALITY DATA

Dear Mr. Smith:

As you requested in our December 13, 1995, telephone conversation, I am enclosing more recent monitoring data on the sanitary sewage sludge applied by the Laboratory on reclamation sites at Technical Areas (TA)-61/53. Additional information regarding the application of sludge at this site was provided to you in the Laboratory's, "Notification of Planned Changes in Sludge Disposal Practices" submitted to your office on October 19, 1995. I hope the enclosed information will be helpful in answering any remaining questions which you may have regarding the quality of this sludge.

If you have any further questions, please feel free to contact me at (505) 667-4882. Specific information regarding the Laboratory's sludge monitoring program can be obtained from Bob Beers at (505) 667-7969.

Thank you for your cooperation in this matter.

Sincerely,

Alex A. Puglisi

Alex A. Puglisi
Project Leader
Water Quality and Hydrology Group

AAP/vc

Enclosures: a/s

Cy: Steven Rae, ESH-18, w/enc., MS K497
Michael Saladen, ESH-18, w/enc., MS K497
Neil Williams, ESH-18, w/enc., MS K497
Bob Beers, ESH-18, w/enc., MS K497
WQ&H File, w/enc., MS K497
CRM-4, w/enc., MS A150

4314

5-Dec-95

ample ID umber	Comments	Arsenic (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Mercury (mg/kg)	Molybdenum (mg/kg)	Nickel (mg/kg)	Selenium (mg/kg)	Zinc (mg/kg)
1.02811	Composite of Beds 7, 15	< 5	5.5	220	610	930	5.8	43	34	8	5100
1.02829	Retest of Bed 7					750					
1.02859		< 5	4.4	160	440	560	3.3	33	21	5	4700
1.03005		< 2	4.3	94	500	250	3.5	18	18	2.2	3800
1.03006		< 2	4.4	88	500	190	3.2	35	19	2.6	3900
5.00282		< 5	5.6	120	460	180	8.8	51	25	.5	3900
5.00283		< 5	5.6	130	530	220	8.8	52	26	.5	4000
5.00398		< 5	5.3	84	360	140	3.9	34	20	4.1	2600
5.00003		20	4.2	77	353	131	4.9	25	18	6	2490
5.00004		18	3	93	277	91	3.9	13	34	4.5	1950
verage Results (mg/kg):		**7**	**5**	**118**	**448**	**344** Avg in table 3	**5**	**34**	**24**	**5**	**3604** Avg over table 3
linimum Results (mg/kg):		**2**	**3**	**77**	**277**	**91**	**3**	**13**	**18**	**2**	**1950**
laximum Results (mg/kg):		**20**	**6**	**220**	**610**	**930** *	**9**	**52**	**34**	**8**	**5100**
03 Ceiling Limits (mg/kg):		***75***	***85***	***3000***	***4300***	***840***	***57***	***75***	***420***	***100***	***7500***
		Table 3 = 41	39	N/A (200)	1500	300	17	(75)	420	100	2800

See explanation in the attached copy of LANL's Response to NPDES Compliance Evaluation Report, submitted to NMED and EPA Region VI on April 21, 1995.

.0344 kg/mT

0.3604 kg/mT

RESPONSE TO NPDES COMPLIANCE EVALUATION REPORT
NMED Inspection of October 27-28, 1994

Los Alamos National Laboratory
NPDES Permit No. NM0028355

Reference: Section H - Sludge Disposal

(1) **Page 8, Further Explanations, Findings, states in part: "In summary, some sludge that initially tested high for lead was land applied, under Subsection B of 40 CFR Part 503, as a final cover soil enhancer over a radioactive waste landfill cap at TA-54 in April 1994 ... The permittee resampled the sludge ... The permittee expressed confidence to the inspector that the values received from the laboratory was accurate. Therefore, the discrepancy seems to point to a sampling error, because the samples were not "representative" (40 CFR Part 503.8 a.) of the quality of the sludge.**

Additionally, Page 5 of 5, Checklist, Section H, Number 2.c states: " Sampling of sludge was not "representative" as required in 40 CFR Part 503.8(a)."

Throughout the report numerous references are made to what the inspector perceives as sampling error in the sludge sampling program. The Laboratory disagrees with this finding and believes that its sampling program goes well beyond the regulatory minimum. Part 503 requires a facility of this size to test one time per year for compliance with metals limits in sludge. The Laboratory tested its sludge 9 times in 1993, not counting re-tests.

In the Narrative Summary, page 1, regarding sludge, the comment is made that "One composite's result was above 40 CFR 503's ceiling concentration for lead." One of the 9 samples, a composite from two drying beds did test above the Part 503 ceiling level for lead. In response to this, the Laboratory re-sampled the two beds individually. By separately testing the two beds, which had not been

commingled, better information could be obtained. Both re-sample results were below the ceiling for land application. The sludge was land applied, in full compliance with Part 503.

The fact that two sets of sample results might differ from a batch of sludge amounting to several cubic yards of material does not necessarily indicate either sampling error or unrepresentative sampling. Dried sanitary sludge is not a homogeneous material. A small particle containing lead, could skew the results of a larger quantity of sample. The Laboratory sampling personnel do take representative samples by compositing many small scoops of sludge from the bed into the sample container and mixing in the bag. The sampling program, as a whole, is clearly more representative than the regulatory minimum due to much larger number of analyses done than are actually required. The re-sampling for the two beds was prudent to investigate an apparently high value and allowed for better data by more thorough compositing.

Based on the full record, which was displayed to the inspectors, the sludge lead levels in 1993 had a low value of 120mg/kg, a median of 180mg/kg and a high value of 930 mg/kg, which was reduced to 750mg/kg on re-testing with better compositing. This is indicative of a sludge which may vary over a fairly wide range of lead values but which has a median value less than one fourth of the ceiling value for lead. There was only one bed of sludge that year which exceeded one half of the ceiling concentration for lead. The Laboratory is in compliance with Part 503. Completion date of corrective action: N\A.

applying 20 mT/acre

$0.0344 \text{ kg/mT} \times 20 \text{ mT/acre} = 0.69 \text{ kg/acre}$ lead

$0.3604 \text{ kg/mT} \times 20 \text{ mT/acre} = 7.21 \text{ kg/acre}$ zinc

1 acre = 0.405 hectares

$0.69 \text{ kg/acre} * \frac{X \text{ kg}}{0.405 \text{ hectare}} = 0.28 \text{ kg/hectare}$ lead

$7.21 \text{ kg/acre} = \frac{X \text{ kg}}{0.405 \text{ hec}} = 2.92 \text{ kg/hectare}$ zinc

Meets Table 2's limit

Los Alamos

Los Alamos National Laboratory
Los Alamos, New Mexico 87545

WATER QUALITY & HYDROLOGY GROUP, ESH-18
FAX TRANSMITTAL COVER SHEET

FAX #: (505) 665-9344 VERIFICATION #: (505) 665-0453

DATE: 12-21-95 LOG NO: WQ&H-FAX-95:

FROM: Mike Saladen PHONE #: (505) 665-6085
Alex Puglisi 664-1284

TO: Beau Smith FAX #: (214) 665-6490 PHONE #: (214) 665-6466
ORG: EPA - Region 6

TO: Ann Young FAX #: (505) 827-0160 PHONE #: (505) 827-2798
ORG: NMED - SGWB

TO: _____ FAX #: _____ PHONE #: (___) _____
ORG: _____

MESSAGE: Per your request, attached are more recent monitoring data on the Sanitary sewage sludge applied by the laboratory on reclamation sites at TAs 61 & 53. Please call if you have any questions or need additional information

NUMBER OF PAGES INCLUDING COVER: 5

CY: WQ&H FAX FILE

TEAM LEADER OR GROUP LEADER