

DRILLING WASTE LANDSPREADING FIELD TRIAL

A JOINT RESEARCH PROJECT
OF
ALBERTA RESEARCH COUNCIL
ESSO RESOURCES CANADA LIMITED

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EXECUTIVE SUMMARY

Drilling associated with the oil and gas industry generates wastes that must be disposed of in an environmentally safe manner. A joint research program was developed and implemented by the Alberta Research Council and Esso Resources Canada Limited to identify the impact of different loading rates of KCl, NaCl, and freshwater gel drilling wastes landspread on Luvisolic soils commonly occurring in the Cold Lake area.

Sump site selection and sampling for the purpose of locating a supply of waste for field application was completed. This was followed by plot site selection and preparation prior to waste application. The soils in each of the 45 individual plots were sampled prior to waste application to provide baseline information so that comparisons could be made to results of subsequent sampling events. A total of 77 soil samples were collected.

The waste application was a major undertaking involving large equipment. The wastes were removed from the respective sumps by a large backhoe and loaded into a large cement truck where it was thoroughly mixed. The waste was spread by pail to maintain uniform application rates at each of the plots. Four rates of application and a control were utilized for each of the KCl, NaCl, and freshwater gel waste types. Each individual treatment was randomized three times.

Following waste application the materials were incorporated into the top 15 cm of the soil using a tractor mounted rototiller unit. Brome grass was hand broadcast at the rate of 75 kg/ha and 300 kg/ha of 16-20-0 fertilizer was applied. The plots were hand raked to incorporate the seed and fertilizer into the soil surface.

Soil sampling following waste application and selected tissue sampling was completed in mid-September. Vegetation cover was not adequate on all plots to obtain an appropriate sample. A total of 207 soil/waste samples and 27 tissue samples were obtained.

The data for the physical and chemical properties, saturated paste extract analysis, and total elemental analysis for the pre-application soil samples are presented and some statistical analysis was completed. Similar data for the post-application soil/waste mixture properties are presented. The data indicate that pH levels and CaCO_3 equivalent values increased as a result of the addition of waste. In general, elemental content also increased as a result of waste addition.

Despite the fact that the bromegrass was not seeded until mid-July an excellent crop became established, particularly on the freshwater gel plots. Unfortunately growth overall was not adequate to undertake a meaningful yield assessment.

The field experiment has been well established and should, over the next few years, provide excellent results in meeting the objective of the project.

1. INTRODUCTION

Drilling associated with the oil industry generates wastes that must be disposed of in an environmentally safe manner. Drilling in the Cold Lake area generates a number of different types of wastes dominated by freshwater gel wastes and potassium chloride (KCl) and sodium chloride (NaCl) types to a lesser extent. Landspreading is one of the disposal options available and loading rate guidelines have been established by the Energy Resources Conservation Board (ERCB 1975).

The Alberta Research Council is currently conducting research into sampling and characterization strategies to characterize major drilling waste types on a province wide basis. Greenhouse work is being conducted to assess the impact of these wastes on soils and plants. Field studies designed to validate and calibrate the greenhouse results would be very helpful from an operations standpoint to define maximum or tolerable loading on the basis of waste type.

As a result a joint program was developed by the Alberta Research Council and Esso Resources Canada Limited and undertaken in the Cold Lake area.

2. OBJECTIVE

The objective of the experiment is to identify the impact of different loading rates of KCl, NaCl, and freshwater gel drilling wastes landspread on Luvisolic soils commonly occurring in the Cold Lake area. Emphasis will be placed on determining maximum tolerable loading rates. The project is expected to continue for a minimum of three years to generate meaningful data for the development of recommendations.

3. MATERIALS AND METHODS

This section describes the experimental site and waste source location selection, site preparation, waste application, sampling, and methods of analysis. The variables for the experiment included waste type, application rate, and replicates.

3.1 EXPERIMENTAL PLOT SITE SELECTION

During the initial planning stage of the project it was intended that two plot sites or two different soil types would be selected for the experiment. It was finally concluded that one site characterized by a commonly occurring Luvisolic soil and within the Esso Cold Lake lease area (Figure 1) would be appropriate. The site selection criteria included a number specific requirements:

- relatively level terrain
- good drainage
- clear of vegetation cover (trees, shrubs, etc.)
- uniform surface characteristics
- good access by road
- about 120 m x 70 m in size
- greater than 300 m distant from any surface water

The site selected is located in LSD11-3-65-4-W4 adjacent to Pad D12 (Figure 2).

3.2 SUMP SELECTION AND SAMPLING

Sump site selection and sampling relative to locating the supply of waste material for field application was done April 18 and 19, 1988. The NaCl sump used was located in LSD3-15-65-4-W4 (Figure 2) and 12 solid-phase samples were obtained (4 holes x 3 depths). This sump had been sampled previously (Macyk et al. 1987). Five different sumps were inspected during the selection process for freshwater gel waste material. The site selected was located in LSD13-1-65-3-W4 (Figure 2) and 14 solid-phase samples were obtained (4 holes x 3 depths + 2 holes x 1 depth). Two

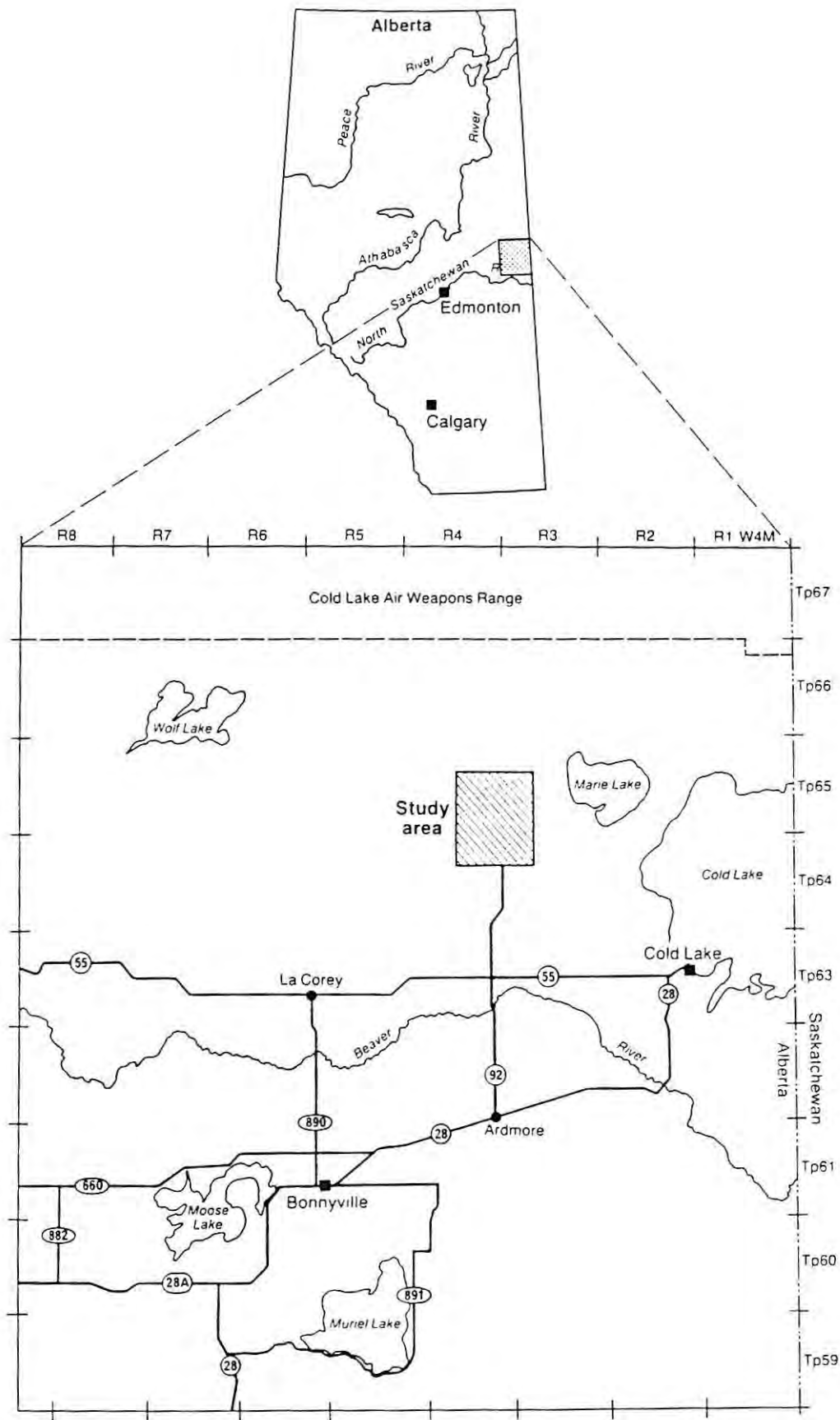


Figure 1. Location of drilling waste landspreading study area.

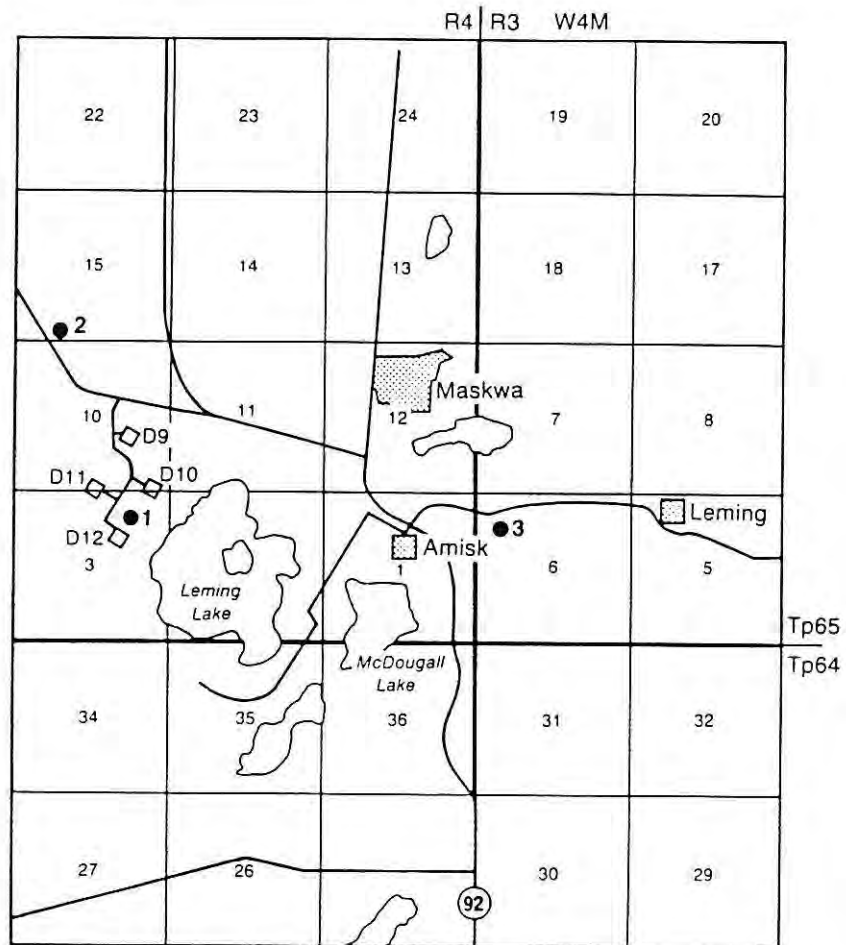


Figure 2. Location of plot area and waste source sites.

- 1 - Plot location
- 2 - NaCl sump site
- 3 - Freshwater gel sump site

liquid phase samples were also obtained. Methods of analysis pertinent to the waste materials sampled are described in Section 3.8.

3.3 PLOT SITE PREPARATION

Plot site preparation involved the cleanup of the area, grading and material replacement, and building of an access road from Pad D12. Plate 1 illustrates the area prior to any preparation work, whereas Plate 2 illustrates the area following material replacement and some removal of rocks and wood residue. The plots were staked out according to the details provided in Figure 3. Each plot was 5 m x 10 m in size with buffer strips of 2 and 5 m.

Most of the rocks and wood residue were removed by hand prior to waste application and seeding, although some of this work was undertaken after all treatment applications were completed. All plots were rototilled prior to waste application. Some major drainage work also had to be completed prior to waste application in the KCl and NaCl plots. Heavy rains caused ponding in some of the plots and adjacent to the study area.

3.4 SAMPLING PRIOR TO WASTE APPLICATION

The soils in each individual plot were sampled prior to waste application. A composite sample from five-sample locations was obtained for the 0 to 15 cm depth interval at each of the plots. Additional samples were obtained from the 15 to 30 cm, 30 to 60 cm, and 60 to 90 cm depth intervals at some of the plots. In order to document the sampling strategy for each plot, a number was assigned to each plot as shown in Figure 4. The sampling details are described for each of the 45 plots in Table 1.

The sampling was completed to provide baseline information for each of the plots including the control plots so that comparisons could be made to results of subsequent sampling events.

Plate 1. Plot area prior to any site preparation work.

Plate 2. Plot area following material replacement and removal of some residue.

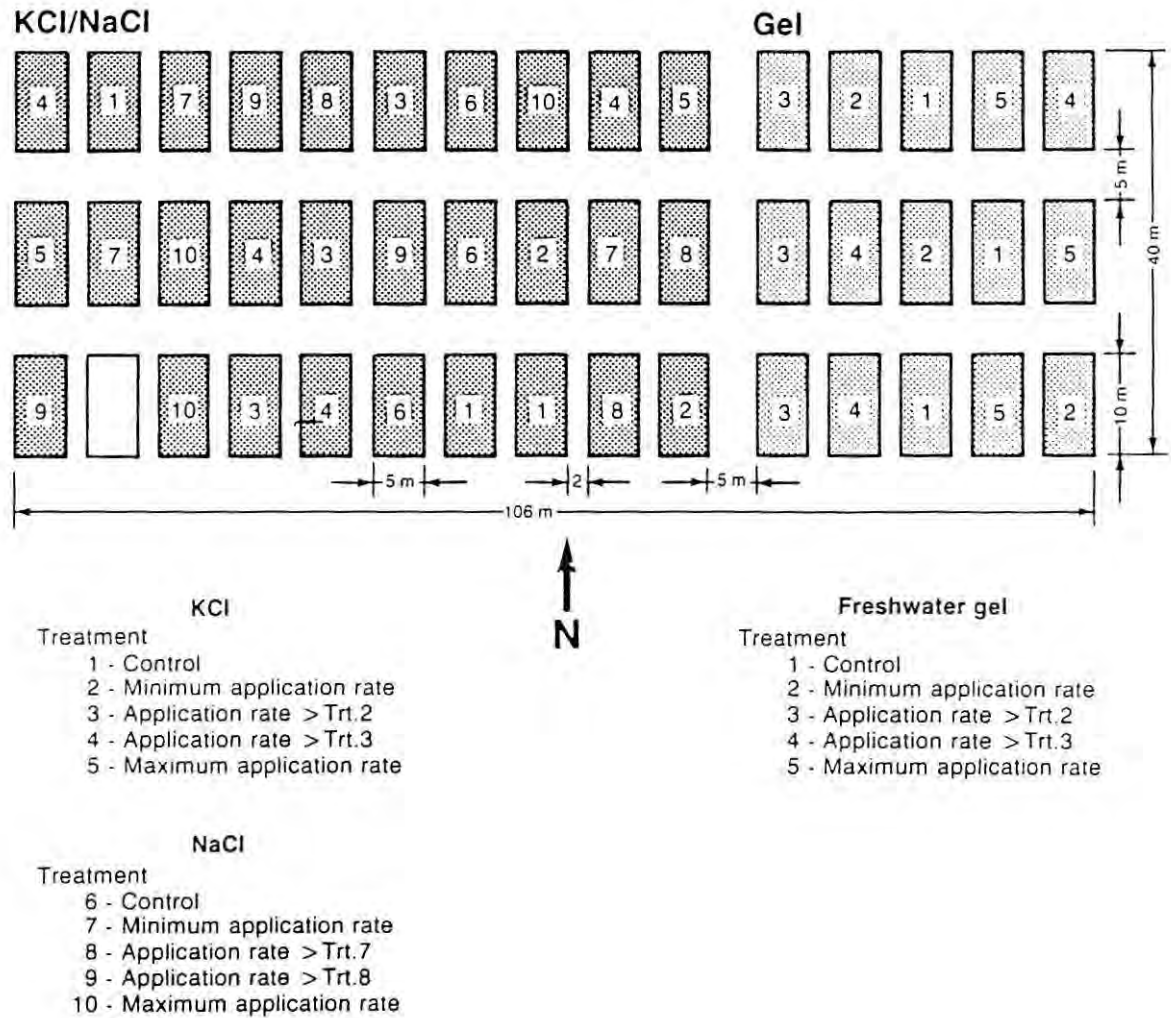


Figure 3. Schematic diagram of experimental design.

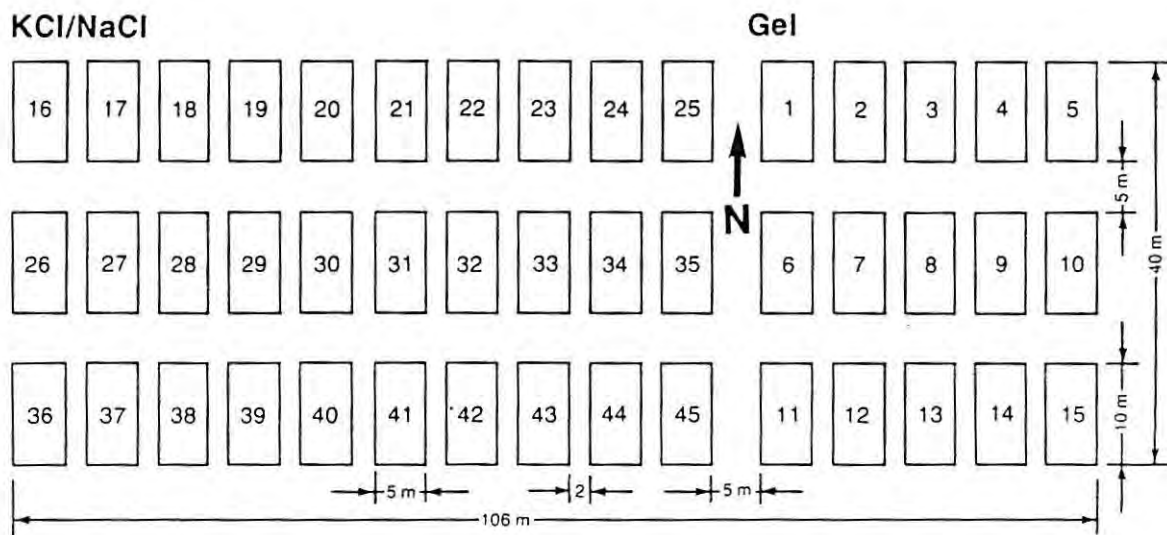


Figure 4. Key to plot layout for sample collection and data reporting.

Table 1. Soil samples collected prior to and following waste application.

Samples Collected

Plot No.	Treatment	Rate	Pre-Application		Post-Application	
			Sample No.	Depth (cm)	Sample No.	Depth (cm)
1	FWG	3	TME 19	0 to 15	TME 127	0 to 15
			TME 20	15 to 30	TME 128	15 to 30
			TME 21	30 to 60		
2	FWG	2	TME 12	0 to 15	TME 126	0 to 15
3	FWG	1	TME 11	0 to 15	TME 100	0 to 15
4	FWG	5	TME 8	0 to 15	TME 90-99	0 to 15
5	FWG	4	TME 1	0 to 15	TME 81	0 to 15
6	FWG	3	TME 18	0 to 15	TME 129	0 to 15
7	FWG	4	TME 13	0 to 15	TME 114-123	0 to 15
			TME 14	15 to 30	TME 124	15 to 30
			TME 15	30 to 60	TME 125	30 to 60
8	FWG	2	TME 10	0 to 15	TME 101-110	0 to 15
					TME 111	15 to 30
9	FWG	1	TME 7	0 to 15	TME 89	0 to 15
10	FWG	5	TME 2	0 to 15	TME 82	0 to 15
			TME 3	15 to 30	TME 83	15 to 30
			TME 4	30 to 60	TME 84	30 to 60
11	FWG	3	TME 17	0 to 15	TME 130-139	0 to 15
12	FWG	4	TME 16	0 to 15	TME 113	0 to 15
13	FWG	1	TME 9	0 to 15	TME 112	0 to 15
14	FWG	5	TME 6	0 to 15	TME 86	0 to 15
					TME 87	15 to 30
					TME 88	30 to 60
15	FWG	2	TME 5	0 to 15	TME 85	0 to 15

continued

Table 1. Continued.

Samples Collected						
Plot No.	Treatment	Rate	Pre-Application		Post-Application	
			Sample No.	Depth (cm)	Sample No.	Depth (cm)
16	KCl	4	TME 67	0 to 15	TME 261-270	0 to 15
			TME 68	15 to 30	TME 271	15 to 30
			TME 69	30 to 60	TME 272	30 to 45
			TME 70	60 to 90		
17	KCl	1	TME 66	0 to 15	TME 251-260	0 to 15
18	NaCl	7	TME 55	0 to 15	TME 233	0 to 15
19	NaCl	9	TME 51	0 to 15	TME 228	0 to 15
			TME 52	15 to 30	TME 229	15 to 30
			TME 53	30 to 60	TME 230	30 to 45
			TME 54	60 to 90	TME 231	45 to 60
					TME 232	60 to 90
20	NaCl	8	TME 43	0 to 15	TME 219	0 to 15
21	KCl	3	TME 42	0 to 15	TME 209-218	0 to 15
22	NaCl	6	TME 35	0 to 15	TME 192-201	0 to 15
23	NaCl	10	TME 32	0 to 15	TME 179-188	0 to 15
			TME 33	15 to 30	TME 189	15 to 30
			TME 34	30 to 60	TME 190	30 to 45
					TME 191	45 to 60
24	KCl	4	TME 25	0 to 15	TME 172	0 to 15
25	KCl	5	TME 24	0 to 15	TME 160-169	0 to 15
			TME 76	15 to 30	TME 170	15 to 30
			TME 77	30 to 60	TME 171	30 to 45
26	KCl	5	TME 71	0 to 15	TME 273	0 to 15
					TME 274	0 to 15
27	NaCl	7	TME 65	0 to 15	TME 241-250	0 to 15
28	NaCl	10	TME 56	0 to 15	TME 234	0 to 15

continued . . .

Table 1. Continued.

Samples Collected						
Plot No.	Treatment	Rate	Pre-Application		Post-Application	
			Sample No.	Depth (cm)	Sample No.	Depth (cm)
29	KCl	4	TME 47	0 to 15	TME 223	0 to 15
			TME 48	15 to 30	TME 224	15 to 30
			TME 49	30 to 60	TME 225	30 to 45
			TME 50	60 to 90	TME 226	45 to 60
					TME 227	60 to 90
30	KCl	3	TME 44	0 to 15	TME 220	0 to 15
31	NaCl	9	TME 39	0 to 15	TME 205	0 to 15
			TME 40	15 to 30	TME 206	15 to 30
			TME 41	30 to 60	TME 207	30 to 45
					TME 208	45 to 60
32	NaCl	6	TME 36	0 to 15	TME 202	0 to 15
33	KCl	2	TME 31	0 to 15	TME 178	0 to 15
34	NaCl	7	TME 26	0 to 15	TME 173	0 to 15
35	NaCl	8	TME 23	0 to 15	TME 150-159	0 to 15
			TME 73	15 to 30		
			TME 74	30 to 60		
			TME 75	60 to 90		
36	NaCl	9	TME 72	0 to 15	TME 275-284	0 to 15
37	KCl		TME 61	0 to 15	TME 240	0 to 15
			TME 62	15 to 30		
			TME 63	30 to 60		
			TME 64	60 to 90		
38	NaCl	30	TME 57	0 to 15	TME 235	0 to 15
			TME 58	15 to 30	TME 236	15 to 30
			TME 59	30 to 60	TME 237	30 to 45
			TME 60	60 to 90	TME 238	45 to 60
					TME 239	60 to 90
39	KCl	3	TME 46	0 to 15	TME 222	0 to 15

continued . . .

Table 1. Concluded.

Samples Collected						
Plot No.	Treatment	Rate	Pre-Application		Post-Application	
			Sample No.	Depth (cm)	Sample No.	Depth (cm)
40	KCl	2	TME 45	0 to 15	TME 221	0 to 15
41	NaCl	6	TME 38	0 to 15	TME 204	0 to 15
42	KCl	1	TME 37	0 to 15	TME 203	0 to 15
43	KCl	1	TME 30	0 to 15	TME 177	0 to 15
44	NaCl	8	TME 27	0 to 15	TME 174	0 to 15
			TME 28	15 to 30	TME 175	15 to 30
			TME 29	30 to 60	TME 176	30 to 60
45	KCl	2	TME 22	0 to 15	TME 140-149	0 to 15

3.5 WASTE APPLICATION

The waste application was a major undertaking involving large equipment. Weather did not cooperate as spreading was scheduled to begin May 31, and actually began June 28 with application of the freshwater wastes. Rain delayed application of the KCl and NaCl wastes until July 12 when this phase of the project was completed.

The waste was removed from the sump by a large backhoe and loaded into a 11 m³ capacity cement truck (Plate 3). The cement mixer was constantly revolving as the loading proceeded so that the material was thoroughly mixed. When the truck was filled a sample was removed for analytical purposes.

The waste was spread by pail to maintain uniform application rates at each of the plots. Barrels having a 200 L capacity were used for unloading the waste from the truck and the 10 and 20 L pails were then utilized for spreading (Plate 4). The maximum rates of freshwater gel required the application of 200 pails of waste. Some raking was required to maximize uniformity and to get the waste materials to the extreme margins of the plots. On the other hand extreme care was required in spreading the relatively small volumes of 40 L per plot. The volumes of waste spread and projected concentrations are presented in Tables 2 to 4. Concentrations actually achieved are described in Section 4.2.4 of the report.

Following waste application the materials were incorporated into the top 15 cm of the soil utilizing a tractor mounted rototiller unit (Plate 5). The number of passes made in each treatment was generally the same regardless of the difference in volumes of material added. For the freshwater gel plots receiving the higher application rates some time was left between passes or cultivations to allow for some drying to occur.

Plate 3. Loading waste from sump into cement mixer.

Plate 4. Spreading waste at experimental site.

Table 2. Volumes of freshwater gel waste spread and projected Cl concentrations.

1	- no waste added (control)
2	- Plot 15 received (70 pails* x 394 mg/L Cl**) + (10 pails x 384 mg/L Cl)
	- Plot 2 received 25 pails x 291 mg/L Cl ⁻
	- Plot 8 received 25 pails x 291 mg/L Cl ⁻
3	- Plot 1 received 50 pails x 291 mg/L Cl ⁻
	- Plot 6 received 50 pails x 291 mg/L Cl ⁻
	- Plot 11 received 50 pails x 291 mg/L Cl ⁻
4	- Plot 5 received 100 pails x 394 mg/L Cl ⁻
	- Plot 7 received 100 pails x 384 mg/L Cl ⁻
	- Plot 12 received 100 pails x 384 mg/L Cl ⁻
5	- Plot 4 received (100 pails x 394 mg/L Cl ⁻) + (100 pails x 384 mg/L Cl ⁻)
	- Plot 10 received (100 pails x 394 mg/L Cl ⁻) + (100 pails x 384 mg/L Cl ⁻)
	- Plot 14 received (100 pails x 394 mg/L Cl ⁻) + (100 pails x 384 mg/L Cl ⁻)

*1 pail = ≈ 20 L of material

**394 mg/L Cl - saturation extract concentration

Notes

- Plot 15 received much more than required. It is much closer to treatment (4) than (2).
 - May result in 4 reps of (4) and 2 reps of (2).
-

Table 3. Volumes of KCl waste spread and projected Cl⁻ concentrations.

-
-
- 1 - no waste added (control)
 - 2 - Plot 33 received 250 L x 26120 mg/L Cl⁻*
 - Plot 40 received 250 L x 26120 mg/L Cl⁻
 - Plot 45 received 250 L x 26120 mg/L Cl⁻
 - 3 - Plot 21 received 500 L x 26120 mg/L Cl⁻
 - Plot 30 received 500 L x 26120 mg/L Cl⁻
 - Plot 39 received 500 L x 26120 mg/L Cl⁻
 - 4 - Plot 16 received 1000 L x 26120 mg/L Cl⁻
 - Plot 24 received 1000 L x 26120 mg/L Cl⁻
 - Plot 29 received 1000 L x 26120 mg/L Cl⁻
 - 5 - Plot 25 received 2000 L x 26120 mg/L Cl⁻
 - Plot 26 received 1000 L x 26120 mg/L Cl⁻ in
N half of plot
 - Plot 37 received 200 L x 26120 mg/L Cl⁻
over entire plot - we had run out of material

*26120 mg/L Cl⁻ - saturation extract concentration

Notes

- Plot 26 received appropriate treatment in 1/2 of plot
 - Plot 37 received rate more equivalent to treatment (2)
 - May result in 4 reps of (2) and 2 reps of (5)
-

Table 4. Volumes of NaCl waste spread and projected Cl concentrations.

6 - no waste added (control)	
7 - Plot 18 received	45 L x 89930 mg/L Cl ⁻ *
- Plot 27 received	45 L x 89930 mg/L Cl ⁻
- Plot 34 received	45 L x 89930 mg/L Cl ⁻
8 - Plot 20 received	90 L x 89930 mg/L Cl ⁻
- Plot 35 received	90 L x 89930 mg/L Cl ⁻
- Plot 44 received	90 L x 89930 mg/L Cl ⁻
9 - Plot 19 received	180 L x 89930 mg/L Cl ⁻
- Plot 31 received	180 L x 89930 mg/L Cl ⁻
- Plot 36 received	180 L x 89930 mg/L Cl ⁻
10 - Plot 23 received	360 L x 89930 mg/L Cl ⁻
- Plot 28 received	360 L x 89930 mg/L Cl ⁻
- Plot 38 received	360 L x 89930 mg/L Cl ⁻

*89930 mg/L Cl⁻ - saturation extract concentration

Plate 5. Incorporating the waste with the soil.

3.6 PLOT SEEDING

All plots were seeded during the period July 11 and 12, 1988. Brome grass was hand broadcast at the rate of 75 kg/ha and 300 kg/ha of 16-20-0 fertilizer was applied. The plots were hand raked to incorporate the seed and fertilizer into the soil surface.

3.7 SAMPLING FOLLOWING WASTE APPLICATION

Soil sampling and selected tissue sampling was completed September 13 and 14, 1988. Each plot had samples taken in the 0 to 15 cm interval. In some plots a composite sample of five locations was obtained and in selected plots 10 individual samples were collected to assess degree of variability of chemical parameters. Sampling of the 15 to 30 cm, 30 to 45 cm, 45 to 60 cm, and 60 to 90 cm intervals was also completed in several plots. Details regarding sample distribution are provided in Table 1.

Plant tissue was collected from each of the freshwater gel amended plots and 12 of the KCl and NaCl amended plots were sampled. Vegetation cover on the remaining plots was not adequate to obtain an appropriate sample.

3.8 METHODS OF ANALYSIS

This section describes the methods used for analysis of the waste materials, soils, soil and waste mixtures, and the tissue collected.

3.8.1 Drilling Waste and Soil Analyses

Water content of sump solid samples was calculated after drying at 105°C for 24 hours, pH was measured in a paste (Doughty 1941) and in a 2:1 slurry of 0.01 M CaCl_2 (Peech 1965). Total carbon content was measured with a LECO CR12 carbon analyser (Leco Corporation 1979), CaCO_3 equivalent by acid dissolution (Bascomb 1961) and acid neutralizing capacity by addition of 0.5 M HCl, and back titration with 0.25 M NaOH (methods 1.004 and 1.005 (AOAC 1981)). Saturated pastes were prepared according to the

USDA Soil Salinity Laboratory method (USDA 1954; Rhoades 1982); were extracted and the extracts filtered through a 0.45 mm filter and analysed for pH, electrical conductivity, alkalinity, chloride, and for soluble salts (Na, K, Ca, Al, Cr, Fe, V, Ti, Cd, Cu, Pb, Zn, Mn, Mg, Li, Sr, B, Ba, P, S, Mo, Ni, Se, As, Co, Si) using an ARL model 3400 simultaneous Inductively Coupled Plasma Atomic Emission Spectrometer (ICP-AES). Cation exchange capacity (CEC) and extractable cations of the sump solid samples were determined by extraction with a normal (1 M at pH 7.0) ammonium acetate solution (Holmgren et al. 1977), where NH_4 ions were determined by a Tecator Kjeltac Auto 1030 Analyser distillation and titration unit and the exchangeable ions by the ICP-AES. The particle size analysis was done using a simplified hydrometer method (Gee and Bauder 1979).

DTPA- NH_4HCO_3 extractable elements (Fe, Cd, Cu, Pb, Zn, Mn, Ca, Mg, Na, K, B, P, Mo, Ni, Se) were determined by the method of Soltanpour and Workman (1981). Total elemental analysis of the solid sump samples was done by digestion in a CEM microwave digestion system. The procedure used included ashing the material overnight in a 425°C muffle furnace, digestion in a teflon bomb in the microwave oven with 1.5 mL HNO_3 , 4.5 mL HCl , and 10 mL HF for 10 min at 100% power, 20 min at 50% power, and 10 min at 100% power. The digested solutions were transferred and made up with saturated H_3BO_3 to 50 mL, and the metal concentrations measured using ICP-AES. Minerals were identified in the sump solid samples using a Phillips X-ray diffraction (XRD) instrument.

Oil content in the samples was measured gravimetrically by soxhlett extraction with methylene chloride (McGill and Rowell 1977). The methylene chloride extracts were separated into acid, base and neutral fractions by extracting with HCl or NaOH , and submitted for analysis by gas chromatography mass spectroscopy (GC-MS).

3.8.2 Methods of Plant Analysis

The grass samples were digested with a concentrated HNO_3 - HClO_4 acid mixture in a teflon bomb heated in a CEM microwave

Table 8. Statistical Parameters of the Chemical and Physical Properties of the 30 to 60 cm Depth Samples.

Statistics	pH H ₂ O	CaCl ₂	CaCO ₃ Eq (%)	Na	K	Extractable Ions Ca	Mg	CEC	TIC	Sand (%)	Silt	Clay
Count (N)	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00
Sum	89.60	85.10	26.06	0.43	3.55	224.49	57.71	130.65	3.13	733.00	306.00	261.00
Mean	6.89	6.55	2.00	0.03	0.27	17.27	4.44	10.05	0.24	56.38	23.54	20.08
SEM	0.34	0.33	0.69	0.01	0.04	3.72	0.73	0.68	0.08	2.10	0.79	1.63
Median	7.60	7.30	0.16	0.03	0.20	9.64	3.18	10.40	0.02	54.00	24.00	23.00
Variance	1.49	1.40	6.23	0.00	0.02	180.16	6.95	6.09	0.09	57.42	8.10	34.74
StDev (sd)	1.22	1.18	2.50	0.02	0.13	13.42	2.64	2.47	0.30	7.58	2.85	5.89
Maximum	8.10	7.70	5.87	0.08	0.51	38.70	9.12	13.90	0.70	77.00	28.00	25.00
Minimum	5.00	4.80	0.00	0.00	0.11	4.08	1.07	3.40	0.00	48.00	17.00	6.00
Range	3.10	2.90	5.87	0.08	0.40	34.62	8.05	10.50	0.70	29.00	11.00	19.00
Skewness	-0.56	-0.55	0.58	0.48	0.75	0.54	0.48	-1.48	0.58	1.89	-0.78	-1.65
Kurtosis	-1.78	-1.70	-1.84	-0.15	-0.97	-1.75	-1.18	4.29	-1.84	4.10	1.16	1.94

SEM = Standard Error of the Mean; CaCO₃ Eq = Calcium carbonate Equivalent (g CaCO₃ eq/100g);
CEC = Cation Exchange Capacity; TIC = Total Inorganic Carbon.

Table 9. Statistical Parameters of the Chemical and Physical Properties of the 60 to 90 cm Depth Samples.

Statistics	pH		CaCO ₃ Eq (%)	Extractable Ions					TIC	Sand	Silt (%)	Clay
	H ₂ O	CaCl ₂		Na	K	Ca	Mg	CEC				
Count (N)	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
Sum	40.20	38.40	6.17	0.39	1.72	66.09	21.06	56.00	0.74	358.00	128.00	114.00
Mean	6.70	6.40	1.03	0.07	0.29	11.02	3.51	9.33	0.12	59.67	21.33	19.00
SEM	0.44	0.41	0.85	0.03	0.07	4.34	1.05	1.57	0.10	7.01	3.89	3.34
Median	6.70	6.30	0.10	0.04	0.30	7.28	2.83	10.05	0.01	53.50	25.00	20.50
Variance	1.16	1.00	4.33	0.01	0.03	113.07	6.61	14.84	0.06	294.67	90.67	66.80
StDev (sd)	1.08	1.00	2.08	0.07	0.17	10.63	2.57	3.85	0.25	17.17	9.52	8.17
Maximum	8.00	7.65	5.24	0.21	0.47	31.76	8.23	13.10	0.63	94.00	27.00	27.00
Minimum	5.60	5.40	0.00	0.02	0.05	2.06	0.73	2.10	0.00	48.00	2.00	4.00
Range	2.40	2.25	5.24	0.19	0.42	29.70	7.50	11.00	0.63	46.00	25.00	23.00
Skewness	0.09	0.18	2.36	2.13	-0.28	1.99	1.44	-1.62	2.36	2.23	-2.39	-1.45
Kurtosis	-2.87	-2.62	5.61	4.64	-2.13	4.30	2.72	3.21	5.61	5.18	5.79	2.54

SEM = Standard Error of the Mean; CaCO₃ Eq = Calcium carbonate Equivalent (g CaCO₃ eq/100g);

CEC = Cation Exchange Capacity; TIC = Total Inorganic Carbon.

Table 10. Saturated Paste Extract Data for the Experimental Soils Prior to Waste Application.

Waste	Rate	Plot No.	Sample Number	Depth (cm)	pH	E.C. (dS/m)	Sat'n (%)	Alk.	Cl	Al	Cr	Fe (mg/L)	V	Ti	Cd	Cu
Freshwater	1	3	TME11	0-15	6.50	0.49	41.5	250.0	15.71	0.299	<0.02	0.166	<0.03	<0.010	<0.01	<0.010
Freshwater	1	9	7	0-15	7.30	0.63	38.5	256.0	21.97	0.433	<0.02	0.071	<0.03	<0.010	<0.01	<0.010
Freshwater	1	13	9	0-15	7.10	0.73	38.5	420.0	23.18	0.565	<0.02	0.112	<0.03	0.012	<0.01	<0.010
Freshwater	2	2	12	0-15	6.40	0.43	41.0	184.0	25.80	0.677	<0.02	0.646	<0.03	0.100	<0.01	0.018
Freshwater	2	8	10	0-15	7.30	0.57	35.0	320.0	19.72	0.413	<0.02	0.055	<0.03	<0.010	<0.01	<0.010
Freshwater	2	15	5	0-15	7.30	0.52	38.5	294.0	10.52	0.413	<0.02	0.063	<0.03	<0.010	<0.01	<0.010
Freshwater	3	1	19	0-15	6.80	0.44	36.8	219.0	20.67	0.370	<0.02	0.173	<0.03	0.020	<0.01	0.014
Freshwater	3	1	20	15-30	6.50	0.25	33.0	102.0	15.95	0.672	<0.02	5.063	<0.03	0.047	<0.01	0.013
Freshwater	3	1	21	30-60	5.40	0.31	33.5	139.0	15.53	0.616	<0.02	0.740	<0.03	<0.010	<0.01	<0.010
Freshwater	3	6	18	0-15	7.20	0.75	36.5	430.0	17.09	0.515	<0.02	0.047	<0.03	<0.010	<0.01	<0.010
Freshwater	3	11	17	0-15	7.20	0.59	38.0	338.0	15.50	0.400	<0.02	0.048	<0.03	<0.010	<0.01	<0.010
Freshwater	4	5	1	0-15	7.40	0.51	33.0	269.0	20.60	0.386	<0.02	0.042	<0.03	<0.010	<0.01	0.020
Freshwater	4	7	13	0-15	7.30	0.57	39.5	360.0	16.80	0.456	<0.02	0.065	<0.03	<0.010	<0.01	<0.010
Freshwater	4	7	14	15-30	8.03	0.45	38.5	245.0	8.76	<0.200	<0.02	0.017	<0.03	<0.010	<0.01	<0.010
Freshwater	4	7	15	30-60	7.01	0.36	34.5	185.0	11.26	<0.200	<0.02	<0.010	<0.03	<0.010	<0.01	<0.010
Freshwater	4	12	16	0-15	7.05	0.69	40.0	396.0	17.31	0.500	<0.02	0.067	<0.03	<0.010	<0.01	<0.010
Freshwater	5	4	8	0-15	7.45	0.49	37.0	269.0	12.35	0.354	<0.02	0.036	<0.03	<0.010	<0.01	0.013
Freshwater	5	10	2	0-15	7.40	0.64	38.0	374.0	17.41	0.455	<0.02	0.057	<0.03	<0.010	<0.01	<0.010
Freshwater	5	10	3	15-30	7.90	0.31	32.0	157.0	9.56	0.219	<0.02	<0.010	<0.03	<0.010	<0.01	0.014
Freshwater	5	10	4	30-60	7.90	0.26	35.0	128.0	8.86	0.250	<0.02	<0.010	<0.03	0.010	<0.01	0.015
Freshwater	5	14	6	0-15	7.25	0.62	37.5	255.0	19.09	0.455	<0.02	0.080	<0.03	<0.010	<0.01	<0.010
KCl	1	17	66	0-15	7.20	0.59	37.5	313.0	24.03	0.473	<0.02	0.075	<0.03	<0.010	<0.01	0.013
KCl	1	42	37	0-15	7.80	0.44	32.0	240.0	14.97	0.308	<0.02	0.032	<0.03	<0.010	<0.01	<0.010
KCl	1	43	30	0-15	7.75	0.49	31.5	262.0	18.35	0.352	<0.02	0.048	<0.03	<0.010	<0.01	0.012
KCl	2	33	31	0-15	7.40	0.58	36.0	303.0	31.05	0.418	<0.02	0.071	<0.03	<0.010	<0.01	<0.010
KCl	2	40	45	0-15	7.70	0.48	34.0	261.0	14.85	0.296	<0.02	0.050	<0.03	<0.010	<0.01	<0.010
KCl	2	45	22	0-15	7.40	0.56	35.0	316.0	15.79	0.403	<0.02	0.034	<0.03	<0.010	<0.01	0.014
KCl	3	21	42	0-15	7.40	0.68	41.0	376.0	22.09	0.485	<0.02	0.066	<0.03	<0.010	<0.01	0.012
KCl	3	30	44	0-15	7.10	0.36	37.0	180.0	17.04	0.219	<0.02	0.096	<0.03	<0.010	<0.01	<0.010
KCl	3	39	46	0-15	7.75	0.53	32.0	289.0	21.77	0.359	<0.02	0.052	<0.03	<0.010	<0.01	<0.010
KCl	4	16	67	0-15	7.20	0.69	42.0	383.0	26.82	0.586	<0.02	0.096	<0.03	0.019	<0.01	0.024
KCl	4	16	68	15-30	7.60	0.42	35.5	223.0	13.75	0.267	<0.02	0.024	<0.03	<0.010	<0.01	0.015
KCl	4	16	69	30-60	7.70	0.36	34.0	194.0	8.59	0.209	<0.02	0.011	<0.03	<0.010	<0.01	0.015
KCl	4	16	70	60-90	7.95	0.33	25.5	188.0	8.10	<0.200	<0.02	<0.010	<0.03	<0.010	<0.01	0.016
KCl	4	24	25	0-15	7.20	0.62	39.0	350.0	17.60	0.440	<0.02	0.069	<0.03	<0.010	<0.01	<0.010
KCl	4	29	47	0-15	7.73	0.53	37.0	281.0	23.66	0.385	<0.02	0.097	<0.03	<0.010	<0.01	<0.010
KCl	4	29	48	15-30	7.30	0.19	35.5	82.5	9.32	<0.200	<0.02	0.055	<0.03	<0.010	<0.01	<0.010
KCl	4	29	49	30-60	7.60	0.46	41.0	268.0	7.18	0.290	<0.02	<0.010	<0.03	<0.010	<0.01	<0.010
KCl	4	29	50	60-90	7.00	0.12	32.5	43.5	5.96	0.238	<0.02	0.132	<0.03	0.016	<0.01	<0.010
KCl	5	25	24	0-15	6.65	0.31	34.5	149.0	15.53	0.323	<0.02	1.318	<0.03	<0.010	<0.01	<0.010
KCl	5	25	76	15-30	6.35	0.52	33.0	270.0	11.82	0.425	<0.02	0.070	<0.03	<0.010	<0.01	<0.010
KCl	5	25	77	30-60	5.60	0.22	37.5	65.4	17.48	5.977	<0.02	6.747	<0.03	0.679	<0.01	0.031
KCl	5	26	71	0-15	7.63	0.57	35.5	319.0	19.57	0.452	<0.02	0.086	<0.03	<0.010	<0.01	0.014
KCl	5	37	61	0-15	7.40	0.52	34.0	293.0	19.52	0.391	<0.02	0.043	<0.03	<0.010	<0.01	0.016
KCl	5	37	62	15-30	7.10	0.57	37.5	304.0	23.32	0.448	<0.02	0.065	<0.03	<0.010	<0.01	0.021
KCl	5	37	63	30-60	6.90	0.16	36.0	68.8	6.67	<0.200	<0.02	0.108	<0.03	0.014	<0.01	<0.010
KCl	5	37	64	60-90	6.80	0.10	34.5	27.9	5.52	0.316	<0.02	0.201	<0.03	0.022	<0.01	<0.010

E.C. = Electrical Conductivity; Alk. = Alkalinity (mg CaCO₃/L).

Table 10. Saturated Paste Extract Data for the Experimental Soils Prior to Waste Application.

Waste	Rate	Plot No.	Sample Number	Depth (cm)	pH	E.C. (dS/m)	Sat'n (%)	Alk.	Cl	Al	Cr	Fe (mg/L)	V	Ti	Cd	Cu
Freshwater	1	3	TME11	0-15	6.50	0.49	41.5	250.0	15.71	0.299	<0.02	0.166	<0.03	<0.010	<0.01	<0.010
Freshwater	1	9	7	0-15	7.30	0.63	38.5	256.0	21.97	0.433	<0.02	0.071	<0.03	<0.010	<0.01	<0.010
Freshwater	1	13	9	0-15	7.10	0.73	38.5	420.0	23.18	0.565	<0.02	0.112	<0.03	0.012	<0.01	<0.010
Freshwater	2	2	12	0-15	6.40	0.43	41.0	184.0	25.80	0.677	<0.02	0.646	<0.03	0.100	<0.01	0.018
Freshwater	2	8	10	0-15	7.30	0.57	35.0	320.0	19.72	0.413	<0.02	0.055	<0.03	<0.010	<0.01	<0.010
Freshwater	2	15	5	0-15	7.30	0.52	38.5	294.0	10.52	0.413	<0.02	0.063	<0.03	<0.010	<0.01	<0.010
Freshwater	3	1	19	0-15	6.80	0.44	36.8	219.0	20.67	0.370	<0.02	0.173	<0.03	0.020	<0.01	0.014
Freshwater	3	1	20	15-30	6.50	0.25	33.0	102.0	15.95	0.672	<0.02	5.063	<0.03	0.047	<0.01	0.013
Freshwater	3	1	21	30-60	5.40	0.31	33.5	139.0	15.53	0.616	<0.02	0.740	<0.03	<0.010	<0.01	<0.010
Freshwater	3	6	18	0-15	7.20	0.75	36.5	430.0	17.09	0.515	<0.02	0.047	<0.03	<0.010	<0.01	<0.010
Freshwater	3	11	17	0-15	7.20	0.59	38.0	338.0	15.50	0.400	<0.02	0.048	<0.03	<0.010	<0.01	<0.010
Freshwater	4	5	1	0-15	7.40	0.51	33.0	269.0	20.60	0.386	<0.02	0.042	<0.03	<0.010	<0.01	0.020
Freshwater	4	7	13	0-15	7.30	0.57	39.5	360.0	16.80	0.456	<0.02	0.065	<0.03	<0.010	<0.01	<0.010
Freshwater	4	7	14	15-30	8.03	0.45	38.5	245.0	8.76	<0.200	<0.02	0.017	<0.03	<0.010	<0.01	<0.010
Freshwater	4	7	15	30-60	7.01	0.36	34.5	185.0	11.26	<0.200	<0.02	<0.010	<0.03	<0.010	<0.01	<0.010
Freshwater	4	12	16	0-15	7.05	0.69	40.0	396.0	17.31	0.500	<0.02	0.067	<0.03	<0.010	<0.01	<0.010
Freshwater	5	4	8	0-15	7.45	0.49	37.0	269.0	12.35	0.354	<0.02	0.036	<0.03	<0.010	<0.01	0.013
Freshwater	5	10	2	0-15	7.40	0.64	38.0	374.0	17.41	0.455	<0.02	0.057	<0.03	<0.010	<0.01	<0.010
Freshwater	5	10	3	15-30	7.90	0.31	32.0	157.0	9.56	0.219	<0.02	<0.010	<0.03	<0.010	<0.01	0.014
Freshwater	5	10	4	30-60	7.90	0.26	35.0	128.0	8.86	0.250	<0.02	<0.010	<0.03	0.010	<0.01	0.015
Freshwater	5	14	6	0-15	7.25	0.62	37.5	255.0	19.09	0.455	<0.02	0.080	<0.03	<0.010	<0.01	<0.010
KCl	1	17	66	0-15	7.20	0.59	37.5	313.0	24.03	0.473	<0.02	0.075	<0.03	<0.010	<0.01	0.013
KCl	1	42	37	0-15	7.80	0.44	32.0	240.0	14.97	0.308	<0.02	0.032	<0.03	<0.010	<0.01	<0.010
KCl	1	43	30	0-15	7.75	0.49	31.5	262.0	18.35	0.352	<0.02	0.048	<0.03	<0.010	<0.01	0.012
KCl	2	33	31	0-15	7.40	0.58	36.0	303.0	31.05	0.418	<0.02	0.071	<0.03	<0.010	<0.01	<0.010
KCl	2	40	45	0-15	7.70	0.48	34.0	261.0	14.85	0.296	<0.02	0.050	<0.03	<0.010	<0.01	<0.010
KCl	2	45	22	0-15	7.40	0.56	35.0	316.0	15.79	0.403	<0.02	0.034	<0.03	<0.010	<0.01	0.014
KCl	3	21	42	0-15	7.40	0.68	41.0	376.0	22.09	0.485	<0.02	0.066	<0.03	<0.010	<0.01	0.012
KCl	3	30	44	0-15	7.10	0.36	37.0	180.0	17.04	0.219	<0.02	0.096	<0.03	<0.010	<0.01	<0.010
KCl	3	39	46	0-15	7.75	0.53	32.0	289.0	21.77	0.359	<0.02	0.052	<0.03	<0.010	<0.01	<0.010
KCl	4	16	67	0-15	7.20	0.69	42.0	383.0	26.82	0.586	<0.02	0.096	<0.03	0.019	<0.01	0.024
KCl	4	16	68	15-30	7.60	0.42	35.5	223.0	13.75	0.267	<0.02	0.024	<0.03	<0.010	<0.01	0.015
KCl	4	16	69	30-60	7.70	0.36	34.0	194.0	8.59	0.209	<0.02	0.011	<0.03	<0.010	<0.01	0.015
KCl	4	16	70	60-90	7.95	0.33	25.5	188.0	8.10	<0.200	<0.02	<0.010	<0.03	<0.010	<0.01	0.016
KCl	4	24	25	0-15	7.20	0.62	39.0	350.0	17.60	0.440	<0.02	0.069	<0.03	<0.010	<0.01	<0.010
KCl	4	29	47	0-15	7.73	0.53	37.0	281.0	23.66	0.385	<0.02	0.097	<0.03	<0.010	<0.01	<0.010
KCl	4	29	48	15-30	7.30	0.19	35.5	82.5	9.32	<0.200	<0.02	0.055	<0.03	<0.010	<0.01	<0.010
KCl	4	29	49	30-60	7.60	0.46	41.0	268.0	7.18	0.290	<0.02	<0.010	<0.03	<0.010	<0.01	<0.010
KCl	4	29	50	60-90	7.00	0.12	32.5	43.5	5.96	0.238	<0.02	0.132	<0.03	0.016	<0.01	<0.010
KCl	5	25	24	0-15	6.65	0.31	34.5	149.0	15.53	0.323	<0.02	1.318	<0.03	<0.010	<0.01	<0.010
KCl	5	25	76	15-30	6.35	0.52	33.0	270.0	11.82	0.425	<0.02	0.070	<0.03	<0.010	<0.01	<0.010
KCl	5	25	77	30-60	5.60	0.22	37.5	65.4	17.48	5.977	<0.02	6.747	<0.03	0.679	<0.01	0.031
KCl	5	26	71	0-15	7.63	0.57	35.5	319.0	19.57	0.452	<0.02	0.086	<0.03	<0.010	<0.01	0.014
KCl	5	37	61	0-15	7.40	0.52	34.0	293.0	19.52	0.391	<0.02	0.043	<0.03	<0.010	<0.01	0.016
KCl	5	37	62	15-30	7.10	0.57	37.5	304.0	23.32	0.448	<0.02	0.065	<0.03	<0.010	<0.01	0.021
KCl	5	37	63	30-60	6.90	0.16	36.0	68.8	6.67	<0.200	<0.02	0.108	<0.03	0.014	<0.01	<0.010
KCl	5	37	64	60-90	6.80	0.10	34.5	27.9	5.52	0.316	<0.02	0.201	<0.03	0.022	<0.01	<0.010

E.C. = Electrical Conductivity; Alk. = Alkalinity (mg CaCO₃/L).

Table 10. Saturated Paste Extract Data for the Experimental Soils Prior to Waste Application.

Waste	Pb	Zn	Mn	Ca	Mg	Na	K	Li (mg/L)	Sr	B	Ba	P	Mo	Ni	Se
Freshwater	<0.10	0.109	0.875	83.33	19.95	13.40	7.98	<0.04	0.185	0.900	0.130	0.184	<0.05	<0.03	<0.30
Freshwater	<0.10	0.128	1.447	113.07	24.17	11.01	13.93	<0.04	0.185	0.582	0.123	0.361	<0.05	<0.03	<0.30
Freshwater	<0.10	0.077	2.582	139.69	31.27	12.15	19.82	<0.04	0.239	1.035	0.196	0.514	<0.05	<0.03	<0.30
Freshwater	<0.10	0.165	2.609	67.64	16.00	12.74	26.02	<0.04	0.140	1.014	0.149	0.788	<0.05	<0.03	<0.30
Freshwater	<0.10	0.050	0.542	111.19	21.74	12.72	13.50	<0.04	0.179	0.793	0.128	0.355	<0.05	<0.03	<0.30
Freshwater	<0.10	0.058	0.051	94.26	18.98	10.55	8.47	<0.04	0.126	0.889	0.081	0.327	<0.05	<0.03	<0.30
Freshwater	<0.10	0.170	2.621	74.81	19.27	11.63	16.93	<0.04	0.142	0.568	0.102	0.532	<0.05	<0.03	<0.30
Freshwater	<0.10	0.122	1.231	35.84	10.01	10.46	5.82	<0.04	0.103	1.276	0.031	0.404	<0.05	<0.03	<0.30
Freshwater	<0.10	0.454	1.519	35.23	13.48	9.82	8.09	<0.04	0.081	0.526	0.234	0.276	<0.05	<0.03	<0.30
Freshwater	<0.10	0.191	1.486	141.89	31.21	14.68	18.70	<0.04	0.247	1.447	0.155	0.479	<0.05	<0.03	<0.30
Freshwater	<0.10	0.105	1.200	105.74	26.06	15.60	9.02	<0.04	0.223	1.076	0.083	0.331	<0.05	<0.03	<0.30
Freshwater	<0.10	0.071	0.211	91.73	17.36	13.03	10.75	<0.04	0.143	0.919	0.073	0.237	<0.05	<0.03	<0.30
Freshwater	<0.10	0.090	1.107	117.11	27.64	12.40	13.69	<0.04	0.220	1.016	0.114	0.502	<0.05	<0.03	<0.30
Freshwater	<0.10	0.063	0.015	53.14	28.75	22.82	6.31	<0.04	0.165	0.528	0.033	0.200	<0.05	<0.03	<0.30
Freshwater	<0.10	0.047	<0.006	35.62	22.24	20.56	5.38	<0.04	0.105	0.910	0.008	<0.100	<0.05	<0.03	<0.30
Freshwater	<0.10	0.141	1.491	127.05	31.71	12.78	14.96	<0.04	0.262	1.023	0.149	0.641	<0.05	<0.03	<0.30
Freshwater	<0.10	0.046	0.077	90.42	17.75	10.02	8.86	<0.04	0.133	0.726	0.071	0.260	<0.05	<0.03	<0.30
Freshwater	<0.10	0.082	0.722	115.28	26.05	12.78	12.36	<0.04	0.178	1.000	0.111	0.384	<0.05	<0.03	<0.30
Freshwater	<0.10	0.054	<0.006	41.61	13.29	11.67	2.94	<0.04	0.052	1.094	0.030	<0.100	<0.05	<0.03	<0.30
Freshwater	<0.10	0.033	<0.006	32.38	9.97	10.60	2.08	<0.04	0.056	0.682	0.047	<0.100	<0.05	<0.03	<0.30
Freshwater	<0.10	0.093	1.187	115.51	25.32	11.16	11.22	<0.04	0.186	0.754	0.156	0.400	<0.05	<0.03	<0.30
KCl	<0.10	0.106	1.564	109.20	24.61	11.35	16.88	<0.04	0.185	0.059	0.119	0.425	<0.05	<0.03	<0.30
KCl	<0.10	0.078	0.253	79.91	18.75	13.22	7.12	<0.04	0.115	0.500	0.226	0.236	<0.05	<0.03	<0.30
KCl	<0.10	0.114	0.185	94.02	20.62	14.51	8.61	<0.04	0.139	1.159	0.064	0.258	<0.05	<0.03	<0.30
KCl	<0.10	0.092	2.312	109.36	22.92	14.36	12.15	<0.04	0.176	0.535	0.304	0.384	<0.05	<0.03	<0.30
KCl	<0.10	0.102	0.317	87.65	20.78	12.89	7.92	<0.04	0.133	0.456	0.238	0.265	<0.05	<0.03	<0.30
KCl	<0.10	0.136	0.500	99.19	22.92	13.54	12.16	<0.04	0.172	0.775	0.063	0.227	<0.05	<0.03	<0.30
KCl	<0.10	0.106	1.308	122.58	29.13	13.07	28.79	<0.04	0.235	0.537	0.341	0.511	<0.05	<0.03	<0.30
KCl	<0.10	0.078	1.299	57.77	13.23	11.69	12.82	<0.04	0.114	0.438	0.205	0.273	<0.05	<0.03	<0.30
KCl	<0.10	0.068	0.319	95.12	23.13	15.42	8.63	<0.04	0.155	0.602	0.282	0.281	<0.05	<0.03	<0.30
KCl	<0.10	0.137	4.262	127.03	28.74	11.56	21.68	<0.04	0.221	0.081	0.176	0.569	<0.05	<0.03	<0.30
KCl	<0.10	0.085	0.590	73.13	17.42	11.98	6.31	<0.04	0.104	<0.040	0.047	0.211	<0.05	<0.03	<0.30
KCl	<0.10	0.073	0.036	60.41	15.56	11.46	3.60	<0.04	0.075	<0.040	0.027	0.110	<0.05	<0.03	<0.30
KCl	<0.10	0.065	0.025	54.48	15.78	14.36	1.57	<0.04	0.062	<0.040	0.019	0.113	<0.05	<0.03	<0.30
KCl	<0.10	0.115	0.984	115.47	27.98	12.98	13.57	<0.04	0.198	0.944	0.110	0.362	<0.05	<0.03	<0.30
KCl	<0.10	0.111	2.201	93.94	21.40	15.16	15.05	<0.04	0.159	0.454	0.267	0.447	<0.05	<0.03	<0.30
KCl	<0.10	0.087	0.070	19.46	6.14	10.44	10.55	<0.04	0.057	0.616	0.212	0.113	<0.05	<0.03	<0.30
KCl	<0.10	0.034	0.107	73.18	16.84	11.39	14.32	<0.04	0.147	0.376	0.177	<0.100	<0.05	<0.03	<0.30
KCl	<0.10	0.034	0.025	9.60	2.60	8.34	7.95	<0.04	0.023	0.688	0.220	<0.100	<0.05	<0.03	<0.30
KCl	<0.10	0.163	2.749	49.68	13.44	11.25	9.57	<0.04	0.111	0.935	0.067	0.344	<0.05	<0.03	<0.30
KCl	<0.10	0.110	9.304	89.69	18.45	9.74	12.18	<0.04	0.185	0.073	0.144	0.380	<0.05	<0.03	<0.30
KCl	<0.10	0.319	1.833	36.85	8.19	11.30	9.40	<0.04	0.097	0.067	0.156	0.806	<0.05	<0.03	<0.30
KCl	<0.10	0.122	1.942	105.32	23.51	13.26	14.58	<0.04	0.175	0.056	0.113	0.391	<0.05	<0.03	<0.30
KCl	<0.10	0.084	0.337	97.54	22.27	13.90	8.54	<0.04	0.147	<0.040	0.067	0.273	<0.05	<0.03	<0.30
KCl	<0.10	0.085	3.154	100.03	23.28	13.56	13.86	<0.04	0.171	0.056	0.113	0.402	<0.05	<0.03	<0.30
KCl	<0.10	0.130	0.026	17.26	4.66	8.63	8.26	<0.04	0.035	0.048	0.022	<0.100	<0.05	<0.03	<0.30
KCl	<0.10	0.083	0.035	7.89	2.30	6.62	5.72	<0.04	0.019	0.053	0.008	<0.100	<0.05	<0.03	<0.30

Table 10. Saturated Paste Extract Data for the Experimental Soils Prior to Waste Application.

Waste	Co	S	Si	As
		(mg/L)		
Freshwater	<0.010	11.18	4.03	0.138
Freshwater	<0.010	7.06	4.77	0.161
Freshwater	<0.010	8.76	6.41	0.179
Freshwater	<0.010	9.35	10.70	0.099
Freshwater	<0.010	7.63	4.41	0.141
Freshwater	<0.010	7.66	5.90	0.140
Freshwater	<0.010	7.54	7.24	0.087
Freshwater	<0.010	6.25	13.75	0.056
Freshwater	0.012	6.81	15.72	0.039
Freshwater	<0.010	10.34	8.95	0.211
Freshwater	<0.010	7.24	4.46	0.133
Freshwater	<0.010	8.27	1.41	0.119
Freshwater	<0.010	8.63	5.63	0.137
Freshwater	<0.010	10.92	8.04	0.101
Freshwater	<0.010	5.77	8.79	0.080
Freshwater	<0.010	8.78	5.29	0.148
Freshwater	<0.010	7.95	3.30	0.125
Freshwater	<0.010	7.83	7.28	0.165
Freshwater	<0.010	5.75	8.44	0.082
Freshwater	<0.010	5.19	7.54	0.068
Freshwater	<0.010	8.64	5.42	0.148
KCl	<0.010	8.19	4.47	0.103
KCl	<0.010	7.84	6.60	0.091
KCl	<0.010	10.02	5.87	0.101
KCl	<0.010	9.40	4.36	0.111
KCl	<0.010	7.25	6.78	0.097
KCl	<0.010	8.07	3.13	0.115
KCl	<0.010	9.18	6.58	0.120
KCl	<0.010	5.67	5.03	0.074
KCl	<0.010	8.28	5.87	0.101
KCl	<0.010	7.60	6.01	0.119
KCl	<0.010	6.33	3.47	0.087
KCl	<0.010	6.54	3.65	0.076
KCl	<0.010	7.76	4.37	0.073
KCl	<0.010	8.89	5.78	0.121
KCl	<0.010	7.32	5.05	0.104
KCl	<0.010	5.78	7.90	0.041
KCl	<0.010	4.73	2.10	0.098
KCl	<0.010	3.01	9.50	0.033
KCl	<0.010	7.15	6.52	0.061
KCl	<0.010	7.25	5.05	0.044
KCl	<0.010	10.03	22.18	0.040
KCl	<0.010	7.27	3.76	0.115
KCl	<0.010	6.61	4.26	0.103
KCl	<0.010	7.31	3.87	0.107
KCl	<0.010	4.15	6.34	0.035
KCl	<0.010	3.68	10.25	<0.03

Table 10. Saturated Paste Extract Data for the Experimental Soils Prior to Waste Application.

Waste	Rate	Plot No.	Sample Number	Depth (cm)	pH	E.C. (dS/m)	Sat'n (%)	Alk.	Cl	Al	Cr	Fe (mg/L)	V	Ti	Cd	Cu
NaCl	6	22	35	0-15	7.00	0.59	37.5	305.0	28.26	0.478	<0.02	0.173	<0.03	0.015	<0.01	0.011
NaCl	6	32	36	0-15	7.50	0.54	34.5	295.0	26.72	0.383	<0.02	0.049	<0.03	<0.010	<0.01	0.011
NaCl	6	41	38	0-15	7.80	0.45	32.5	233.0	22.72	0.289	<0.02	0.026	<0.03	<0.010	<0.01	0.015
NaCl	7	18	55	0-15	7.60	0.66	37.5	368.0	19.48	0.500	<0.02	0.079	<0.03	<0.010	<0.01	<0.010
NaCl	7	27	65	0-15	6.90	0.45	38.0	225.0	25.19	0.455	<0.02	0.144	<0.03	0.018	<0.01	0.027
NaCl	7	34	26	0-15	7.40	0.61	36.5	344.0	21.87	0.443	<0.02	0.049	<0.03	<0.010	<0.01	<0.010
NaCl	8	20	43	0-15	7.50	0.65	39.5	361.0	25.07	0.518	<0.02	0.105	<0.03	0.011	<0.01	<0.010
NaCl	8	35	23	0-15	7.10	0.73	38.0	417.0	20.73	0.503	<0.02	0.049	<0.03	0.122	<0.01	<0.010
NaCl	8	35	73	15-30	7.30	0.76	37.5	419.0	18.42	0.511	<0.02	0.037	<0.03	<0.010	<0.01	0.010
NaCl	8	35	74	30-60	8.03	0.37	32.5	152.0	7.79	<0.200	<0.02	<0.010	<0.03	<0.010	<0.01	<0.010
NaCl	8	35	75	60-90	8.06	0.36	33.5	152.0	6.88	<0.200	<0.02	<0.010	<0.03	<0.010	<0.01	<0.010
NaCl	8	44	27	0-15	7.60	0.46	33.0	250.0	16.64	0.336	<0.02	0.030	<0.03	<0.010	<0.01	0.015
NaCl	8	44	28	15-30	7.80	0.33	34.5	181.0	7.83	0.218	<0.02	0.019	<0.03	<0.010	<0.01	0.014
NaCl	8	44	29	30-60	8.00	0.30	37.0	150.0	10.42	<0.200	<0.02	<0.010	<0.03	<0.010	<0.01	<0.010
NaCl	9	19	51	0-15	7.10	0.64	44.5	359.0	18.85	0.455	<0.02	0.090	<0.03	<0.010	<0.01	<0.010
NaCl	9	19	52	15-30	7.50	0.58	36.5	308.0	21.76	0.379	<0.02	0.074	<0.03	<0.010	<0.01	0.015
NaCl	9	19	53	30-60	7.90	0.31	25.5	94.7	18.21	0.383	<0.02	0.242	<0.03	0.016	<0.01	0.022
NaCl	9	19	54	60-90	7.50	0.16	22.5	52.5	16.41	11.174	<0.02	13.984	0.04	0.913	<0.01	0.036
NaCl	9	31	39	0-15	7.40	0.56	34.5	318.0	34.31	0.423	<0.02	0.047	<0.03	<0.010	<0.01	<0.010
NaCl	9	31	40	15-30	6.80	0.20	33.0	74.4	16.69	<0.200	<0.02	0.014	<0.03	<0.010	<0.01	<0.010
NaCl	9	31	41	30-60	6.90	0.11	33.0	40.3	7.33	<0.200	<0.02	0.045	<0.03	<0.010	<0.01	<0.010
NaCl	9	36	72	0-15	7.60	0.52	34.0	294.0	17.13	0.383	<0.02	0.037	<0.03	<0.010	<0.01	0.014
NaCl	10	23	32	0-15	7.00	0.55	40.5	260.0	36.03	0.412	<0.02	0.172	<0.03	<0.010	<0.01	<0.010
NaCl	10	23	33	15-30	7.10	0.58	37.5	322.0	16.51	0.372	<0.02	0.061	<0.03	<0.010	<0.01	<0.010
NaCl	10	23	34	30-60	7.90	0.34	36.0	186.0	7.57	<0.200	<0.02	<0.010	<0.03	<0.010	<0.01	<0.010
NaCl	10	28	56	0-15	7.00	0.43	38.0	217.0	22.58	0.423	<0.02	0.378	<0.03	0.021	<0.01	0.012
NaCl	10	38	57	0-15	7.40	0.52	37.0	295.0	14.60	0.395	<0.02	0.040	<0.03	<0.010	<0.01	0.018
NaCl	10	38	58	15-30	7.20	0.34	37.5	172.0	12.75	<0.200	<0.02	0.014	<0.03	<0.010	<0.01	<0.010
NaCl	10	38	59	30-60	6.80	0.16	39.0	56.2	7.49	<0.200	<0.02	0.088	<0.03	<0.010	<0.01	<0.010
NaCl	10	38	60	60-90	6.70	0.12	38.0	38.7	8.24	<0.200	<0.02	0.074	<0.03	<0.010	<0.01	<0.010

E.C. = Electrical Conductivity; Alk. = Alkalinity (mg CaCO₃/L).

Table 10. Saturated Paste Extract Data for the Experimental Soils Prior to Waste Application.

Waste	Pb	Zn	Mn	Ca	Mg	Na	K	Li (mg/L)	Sr	B	Ba	P	Mo	Ni	Se
NaCl	<0.10	0.146	2.650	106.73	24.33	12.97	23.79	<0.04	0.201	0.601	0.365	0.526	<0.05	<0.03	<0.30
NaCl	<0.10	0.097	0.577	100.59	21.81	15.72	10.65	<0.04	0.147	0.516	0.268	0.246	<0.05	<0.03	<0.30
NaCl	<0.10	0.053	0.129	77.30	19.89	15.36	6.32	<0.04	0.116	0.525	0.234	0.205	<0.05	<0.03	<0.30
NaCl	<0.10	0.106	0.750	125.31	27.86	12.61	14.00	<0.04	0.197	0.109	0.150	0.394	<0.05	<0.03	<0.30
NaCl	<0.10	0.130	2.233	78.71	17.96	13.20	13.74	<0.04	0.137	0.086	0.108	0.408	<0.05	<0.03	<0.30
NaCl	<0.10	0.091	0.667	114.10	24.71	15.21	12.29	<0.04	1.186	0.988	0.093	0.244	<0.05	<0.03	<0.30
NaCl	<0.10	0.118	1.256	124.85	29.22	12.70	18.06	<0.04	0.224	0.502	0.314	0.483	<0.05	<0.03	<0.30
NaCl	<0.10	0.122	1.479	131.85	32.66	12.74	16.55	<0.04	0.235	0.872	0.166	0.454	<0.05	<0.03	<0.30
NaCl	<0.10	0.065	0.311	126.34	42.02	15.23	10.38	<0.04	0.232	<0.040	0.125	0.344	<0.05	<0.03	<0.30
NaCl	<0.10	0.035	0.041	45.36	22.45	15.95	1.74	<0.04	0.088	<0.040	0.016	<0.100	<0.05	<0.03	<0.30
NaCl	<0.10	0.035	0.013	41.52	22.06	16.63	2.31	<0.04	0.083	<0.040	0.015	<0.100	<0.05	<0.03	<0.30
NaCl	<0.10	0.051	0.019	88.90	18.79	12.59	7.81	<0.04	0.134	0.791	0.065	0.209	<0.05	<0.03	<0.30
NaCl	<0.10	0.048	0.147	60.20	13.13	11.15	4.92	<0.04	0.082	0.907	0.032	0.153	<0.05	<0.03	<0.30
NaCl	<0.10	0.035	<0.006	47.81	11.81	10.66	1.62	<0.04	0.051	0.689	0.025	<0.100	<0.05	<0.03	<0.30
NaCl	<0.10	0.141	1.719	114.22	26.19	11.52	29.05	<0.04	0.209	0.139	0.168	0.467	<0.05	<0.03	<0.30
NaCl	<0.10	0.148	0.601	93.09	24.07	14.86	26.55	<0.04	0.165	0.175	0.166	0.344	<0.05	<0.03	<0.30
NaCl	<0.10	0.085	0.010	48.86	12.43	15.41	9.51	<0.04	0.067	0.191	0.108	0.117	<0.05	<0.03	<0.30
NaCl	<0.10	0.051	0.101	22.82	7.40	12.11	7.41	<0.04	0.042	0.184	0.098	0.354	<0.05	<0.03	<0.30
NaCl	<0.10	0.086	0.544	108.86	23.90	17.90	15.58	<0.04	0.183	0.680	0.327	0.366	<0.05	<0.03	<0.30
NaCl	<0.10	0.109	0.088	18.65	6.21	10.76	12.43	<0.04	0.045	0.489	0.171	<0.100	<0.05	<0.03	<0.30
NaCl	<0.10	0.083	0.045	8.76	2.82	8.87	8.73	<0.04	0.021	0.681	0.223	<0.100	<0.05	<0.03	<0.30
NaCl	<0.10	0.106	0.538	99.16	22.34	13.10	9.69	<0.04	0.152	<0.040	0.079	0.315	<0.05	<0.03	<0.30
NaCl	<0.10	0.118	1.652	97.17	22.68	14.42	17.89	<0.04	0.179	0.507	0.294	0.421	<0.05	<0.03	<0.30
NaCl	<0.10	0.083	4.347	97.80	26.06	12.52	20.76	<0.04	0.186	0.506	0.308	0.376	<0.05	<0.03	<0.30
NaCl	<0.10	0.052	0.044	42.45	18.82	15.14	5.95	<0.04	0.105	0.429	0.186	0.140	<0.05	<0.03	<0.30
NaCl	<0.10	0.137	3.220	75.21	17.15	11.19	14.78	<0.04	0.135	0.143	0.133	0.440	<0.05	<0.03	<0.30
NaCl	<0.10	0.067	0.264	97.36	21.44	12.96	7.87	<0.04	0.158	0.056	0.087	0.222	<0.05	<0.03	<0.30
NaCl	<0.10	0.061	0.641	48.47	11.32	10.73	13.01	<0.04	0.097	0.077	0.067	0.103	<0.05	<0.03	<0.30
NaCl	<0.10	0.061	0.158	15.77	4.15	7.81	8.75	<0.04	0.036	0.095	0.036	<0.100	<0.05	<0.03	<0.30
NaCl	<0.10	0.064	0.019	10.16	2.77	6.93	6.86	<0.04	0.023	0.117	0.033	<0.100	<0.05	<0.03	<0.30

Table 10. Saturated Paste Extract Data for the Experimental Soils Prior to Waste Application.

Waste	Co	S	Si	As
		(mg/L)		
NaCl	<0.010	10.56	6.53	0.108
NaCl	<0.010	7.67	4.42	0.109
NaCl	<0.010	8.08	8.13	0.087
NaCl	<0.010	8.46	5.84	0.112
NaCl	<0.010	5.86	4.82	0.074
NaCl	<0.010	8.26	4.31	0.111
NaCl	<0.010	9.86	6.06	0.123
NaCl	<0.010	10.01	7.36	0.148
NaCl	<0.010	15.69	8.37	0.154
NaCl	<0.010	17.36	10.22	0.061
NaCl	<0.010	16.66	10.10	0.052
NaCl	<0.010	8.75	4.58	0.108
NaCl	<0.010	5.83	4.98	0.076
NaCl	<0.010	5.60	6.62	0.066
NaCl	<0.010	7.40	4.56	0.101
NaCl	<0.010	7.06	6.43	0.106
NaCl	<0.010	7.11	2.88	0.066
NaCl	<0.010	5.78	31.24	0.040
NaCl	<0.010	8.36	3.99	0.112
NaCl	<0.010	3.99	6.34	0.043
NaCl	<0.010	5.38	12.16	<0.03
NaCl	<0.010	8.76	4.54	0.116
NaCl	<0.010	10.22	6.00	0.099
NaCl	<0.010	8.01	4.61	0.116
NaCl	<0.010	4.58	7.13	0.074
NaCl	<0.010	5.80	5.36	0.078
NaCl	<0.010	5.90	2.80	0.108
NaCl	<0.010	5.36	2.43	0.071
NaCl	<0.010	5.68	7.35	0.030
NaCl	<0.010	3.50	10.22	<0.03

Table 11. Statistical Parameters of Saturated Paste Extract Data for the 0-15 cm Depth Samples.

Statistics	pH	E.C. (dS/m)	Sat'n (Kg/Kg)	Alk.	Cl	Al	Cr	Fe	V (mg/L)	Ti	Cd	Cu	Pb	Zn	Mn
Count (N)	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
Sum	328.16	24.98	16.63	13490.00	926.53	18.98	0.90	5.43	1.35	0.70	0.45	0.55	4.5	4.76	56.44
Mean	7.29	0.56	0.37	299.78	20.59	0.42	0.02	0.12	0.03	0.02	0.01	0.01	0.1	0.11	1.25
SEM	0.05	0.01	0.00	9.77	0.80	0.01	0.00	0.03	0.00	0.00	0.00	0.00	0.0	0.01	0.15
Median	7.30	0.56	0.37	295.00	19.57	0.42	0.02	0.07	0.03	0.01	0.01	0.01	0.1	0.11	1.19
Variance	0.11	0.01	0.00	4298.09	28.69	0.01	0.00	0.04	0.00	0.00	0.00	0.00	0.0	0.00	0.97
StDev (sd)	0.32	0.10	0.03	65.56	5.36	0.08	0.00	0.21	0.00	0.02	0.00	0.00	0.0	0.03	0.99
Maximum	7.80	0.75	0.45	430.00	36.03	0.68	0.02	1.32	0.03	0.12	0.01	0.03	0.1	0.19	4.26
Minimum	6.40	0.31	0.32	149.00	10.52	0.22	0.02	0.03	0.03	0.01	0.01	0.01	0.1	0.05	0.02
Range	1.40	0.44	0.13	281.00	25.51	0.46	0.00	1.29	0.00	0.11	0.00	0.02	0.0	0.15	4.24
Skewness	-0.70	-0.11	0.16	-0.02	0.89	0.37		4.81		4.54		2.22		0.30	0.89
Kurtosis	0.62	-0.11	-0.13	-0.34	1.04	1.27		25.52		20.18		5.18		-0.19	0.50

SEM = Standard Error of the Mean; E.C. = Electrical Conductivity; Alk. = Alkalinity (mg CaCO₃/L).

Statistics	Ca	Mg	Na	K	Li	Sr	B	Ba (mg/L)	P	Mo	Ni	Se	Co	S	Si
Count (N)	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
Sum	4572.78	1038.91	588.97	622.33	1.80	8.82	27.87	7.31	16.94	2.25	1.35	13.50	0.45	369.49	245.00
Mean	101.62	2309.00	13.09	13.83	0.04	0.20	0.62	0.16	0.38	0.05	0.03	0.03	0.01	8.21	5.43
SEM	3.05	0.71	0.24	0.83	0.00	0.02	0.05	0.01	0.02	0.00	0.00	0.00	0.00	0.19	0.24
Median	100.59	22.92	12.96	13.50	0.04	0.18	0.60	0.13	0.37	0.05	0.03	0.03	0.01	8.19	5.36
Variance	417.43	22.44	2.50	31.07	0.00	0.02	0.13	0.01	0.02	0.00	0.00	0.00	0.00	1.64	2.70
StDev (sd)	20.43	4.74	1.58	5.57	0.00	0.16	0.36	0.09	0.13	0.00	0.00	0.00	0.00	1.28	1.64
Maximum	141.89	32.66	17.90	29.05	0.04	1.19	1.45	0.37	0.79	0.05	0.03	0.30	0.01	11.18	10.70
Minimum	49.68	13.23	10.02	6.32	0.04	0.11	0.04	0.06	0.18	0.05	0.03	0.30	0.01	5.67	1.41
Range	92.21	19.43	7.87	22.74	0.00	1.08	1.41	0.30	0.60	0.00	0.00	0.00	0.00	5.51	9.30
Skewness	-0.33	0.08	0.63	1.11		6.04	-0.12	0.82	0.81					0.12	0.60
Kurtosis	0.05	-0.41	0.74	1.04		38.98	-0.75	-0.48	1.00					-0.07	1.84

Statistics As
(mg/L)

Count (N)	45.00
Sum	5.26
Mean	0.12
SEM	0.00
Median	0.11
Variance	0.00
StDev (sd)	0.03
Maximum	0.21
Minimum	0.06
Range	0.15
Skewness	0.93
Kurtosis	1.82

Table 12. Statistical Parameters of Saturated Paste Extract Data for the 15-30 cm Depth Samples.

Statistics	pH	E.C. (dS/m)	Sat'n (Kg/Kg)	Alk.	Cl	Al	Cr	Fe	V (mg/L)	Ti	Cd	Cu	Pb	Zn	Mn
Count (N)	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.0	13.00	13.00
Sum	94.48	5.50	4.62	2859.90	186.44	4.31	0.26	5.52	0.39	0.17	0.13	0.16	1.3	1.12	20.51
Mean	7.27	0.42	0.36	219.99	14.34	0.33	0.02	0.42	0.03	0.01	0.01	0.01	0.1	0.09	1.58
SEM	0.14	0.05	0.01	28.84	1.38	0.04	0.00	0.39	0.00	0.00	0.00	0.00	0.0	0.01	0.74
Median	7.30	0.42	0.36	223.00	13.75	0.27	0.02	0.04	0.03	0.01	0.01	0.01	0.1	0.09	0.59
Variance	0.26	0.03	0.00	10813.55	24.66	0.02	0.00	1.94	0.00	0.00	0.00	0.00	0.0	0.00	7.15
StDev (sd)	0.51	0.17	0.02	103.99	4.97	0.15	0.00	1.39	0.00	0.01	0.00	0.00	0.0	0.03	2.67
Maximum	8.03	0.76	0.39	419.00	23.32	0.67	0.02	5.06	0.03	0.05	0.01	0.02	0.1	0.15	9.30
Minimum	6.35	0.19	0.32	74.40	7.83	0.20	0.02	0.01	0.03	0.01	0.01	0.01	0.1	0.05	0.01
Range	1.68	0.57	0.07	344.60	15.49	0.47	0.00	5.05	0.00	0.04	0.00	0.01	0.0	0.10	9.30
Skewness	-0.32	0.35	-0.28	0.23	0.42	1.02		3.60		3.61		1.49		0.71	2.39
Kurtosis	-0.51	-0.61	-1.48	-0.61	-0.79	0.40		12.99		13.00		2.41		-0.02	5.94

SEM = Standard Error of the Mean; E.C. = Electrical Conductivity; Alk. = Alkalinity (mg CaCO₃/L).

Statistics	Ca	Mg	Na	K	Li	Sr	B (mg/L)	Ba	P	Mo	Ni	Se	Co	S	Si
Count (N)	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.0	13.00	13.00	13.00
Sum	857.44	240.16	165.92	146.02	0.52	1.64	5.88	1.48	3.23	0.65	0.39	3.9	0.13	95.51	83.67
Mean	65.96	18.47	12.76	11.23	0.04	0.13	0.45	0.11	0.25	0.05	0.03	0.3	0.01	7.35	6.44
SEM	9.33	2.84	0.96	1.84	0.00	0.02	0.12	0.02	0.04	0.00	0.00	0.0	0.00	0.83	0.82
Median	60.20	17.42	11.67	10.55	0.04	0.10	0.49	0.11	0.21	0.05	0.03	0.3	0.01	6.33	6.34
Variance	1131.23	104.50	12.06	43.78	0.00	0.00	0.18	0.01	0.02	0.00	0.00	0.0	0.00	8.98	8.72
StDev (sd)	33.63	10.22	3.47	6.62	0.00	0.06	0.43	0.09	0.13	0.00	0.00	0.0	0.00	3.00	2.95
Maximum	126.34	42.02	22.82	26.55	0.04	0.23	1.28	0.31	0.40	0.05	0.03	0.3	0.01	15.69	13.75
Minimum	18.65	6.14	9.74	2.94	0.04	0.05	0.04	0.03	0.10	0.05	0.03	0.3	0.01	3.99	2.43
Range	107.69	35.88	13.08	23.61	0.00	0.19	1.24	0.28	0.30	0.00	0.00	0.0	0.00	11.71	11.32
Skewness	0.18	0.91	2.28	1.11		0.16	0.75	0.94	0.02					2.08	1.13
Kurtosis	-0.96	0.85	6.01	1.23		-1.26	-0.61	0.53	-2.01					4.93	2.05

Statistics	As (mg/L)
Count (N)	13.00
Sum	1.08
Mean	0.08
SEM	0.01
Median	0.08
Variance	0.00
StDev (sd)	0.03
Maximum	0.15
Minimum	0.04
Range	0.11
Skewness	0.51
Kurtosis	0.10

Table 13. Statistical Parameters of Saturated Paste Extract Data for the 30 to 60 cm Depth Samples.

Statistics	pH	E.C. (dS/m)	Sat'n (Kg/Kg)	Alk.	Cl	Al	Cr	Fe	V (mg/L)	Ti	Cd	Cu	Pb	Zn	Mn
Count (N)	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00
Sum	93.64	3.72	4.55	1727.40	134.38	9.12	0.26	8.04	0.39	0.81	0.13	0.17	1.30	1.44	3.84
Mean	7.20	0.29	0.35	132.88	10.34	0.70	0.02	0.62	0.03	0.06	0.01	0.01	0.10	0.11	0.30
SEM	0.25	0.03	0.01	18.40	1.13	0.44	0.00	0.51	0.00	0.05	0.00	0.00	0.00	0.04	0.17
Median	7.60	0.31	0.35	139.00	8.59	0.20	0.02	0.01	0.03	0.01	0.01	0.01	0.10	0.06	0.04
Variance	0.78	0.01	0.00	4401.64	16.73	2.53	0.00	3.43	0.00	0.03	0.00	0.00	0.00	0.02	0.38
StDev (sd)	0.88	0.10	0.04	66.34	4.09	1.59	0.00	1.85	0.00	0.19	0.00	0.01	0.00	0.13	0.62
Maximum	8.03	0.46	0.41	268.00	18.21	5.98	0.02	6.75	0.03	0.68	0.01	0.03	0.10	0.45	1.83
Minimum	5.40	0.11	0.26	40.30	6.67	0.20	0.02	0.01	0.03	0.01	0.01	0.01	0.10	0.03	0.01
Range	2.63	0.35	0.16	227.70	11.54	5.78	0.00	6.74	0.00	0.67	0.00	0.02	0.00	0.42	1.83
Skewness	-1.12	-0.29	-1.05	0.38	1.17	3.57		3.53		3.60		2.20		2.18	2.21
Kurtosis	0.33	-0.47	2.90	-0.29	-0.13	12.81		12.61		13.00		4.64		4.15	3.54

SEM = Standard Error of the Mean; E.C. = Electrical Conductivity; Alk. = Alkalinity (mg CaCO₃/L).

Statistics	Ca	Mg	Na	K	Li	Sr	B	Ba (mg/L)	P	Mo	Ni	Se	Co	S	Si	As
Count (N)	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00
Sum	499.93	163.42	157.59	87.41	0.52	0.96	4.77	1.27	2.25	0.65	0.39	3.90	0.13	88.92	113	0.76
Mean	38.46	12.57	12.12	6.72	0.04	0.07	0.37	0.10	0.17	0.05	0.03	0.30	0.01	6.84	8.67	0.06
SEM	4.97	1.81	1.01	1.04	0.00	0.01	0.09	0.02	0.05	0.00	0.00	0.00	0.00	0.97	1.53	0.01
Median	36.85	12.43	11.30	8.09	0.04	0.08	0.38	0.05	0.10	0.05	0.03	0.30	0.01	5.68	7.35	0.07
Variance	320.87	42.77	13.22	14.13	0.00	0.00	0.09	0.01	0.04	0.00	0.00	0.00	0.00	12.22	30.31	0.00
StDev (sd)	17.91	6.54	3.64	3.76	0.00	0.04	0.31	0.09	0.20	0.00	0.00	0.00	0.00	3.50	5.51	0.02
Maximum	73.18	22.45	20.56	14.32	0.04	0.15	0.91	0.23	0.81	0.05	0.03	0.30	0.01	17.36	22.18	0.10
Minimum	8.76	2.82	7.81	1.62	0.04	0.02	0.04	0.01	0.10	0.05	0.03	0.30	0.01	4.15	2.10	0.03
Range	64.42	19.63	12.76	12.70	0.00	0.13	0.87	0.23	0.71	0.00	0.00	0.00	0.00	13.21	20.08	0.07
Skewness	0.12	0.03	1.11	0.21		0.40	0.35	0.49	3.27				3.61	2.64	1.32	0.06
Kurtosis	0.03	-1.02	0.92	-0.24		0.03	-1.38	-1.61	11.03				13.00	7.58	2.02	-1.04

Table 14. Statistical Parameters of Saturated Paste Extract Data for the 60 to 90 cm Depth Samples.

Statistics	pH	E.C. (dS/m)	Sat'n (Kg/Kg)	Alk.	Cl	Al	Cr	Fe	V	Ti (mg/L)	Cd	Cu	Pb	Zn	Mn	Ca
Count (N)	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
Sum	44.01	1.19	1.87	502.60	51.10	12.33	0.12	14.41	0.19	0.98	0.06	0.09	0.60	0.33	0.22	146.47
Mean	7.34	0.20	0.31	83.77	8.52	2.05	0.02	2.40	0.03	0.16	0.01	0.02	0.10	0.06	0.04	24.41
SEM	0.24	0.05	0.02	27.85	1.64	1.82	0.00	2.32	0.00	0.15	0.00	0.00	0.00	0.01	0.01	7.95
Median	7.25	0.14	0.33	48.00	7.49	0.22	0.02	0.10	0.03	0.01	0.01	0.01	0.10	0.06	0.03	16.49
Variance	0.35	0.01	0.00	4654.29	16.16	19.96	0.00	32.20	0.00	0.13	0.00	0.00	0.00	0.00	0.00	378.91
StDev (sd)	0.59	0.12	0.06	68.22	4.02	4.47	0.00	5.67	0.00	0.37	0.00	0.01	0.00	0.02	0.03	19.47
Maximum	8.06	0.36	0.38	188.00	16.41	11.17	0.02	13.98	0.04	0.91	0.01	0.04	0.10	0.08	0.10	54.48
Minimum	6.70	0.10	0.22	27.90	5.52	0.20	0.02	0.01	0.03	0.01	0.01	0.01	0.10	0.03	0.01	7.89
Range	1.36	0.26	0.16	160.10	10.89	10.97	0.00	13.97	0.00	0.90	0.00	0.03	0.00	0.05	0.09	46.59
Skewness	0.25	0.88	-0.62	1.03	2.05	2.45		2.45	2.45	2.45		2.19		0.20	2.18	0.88
Kurtosis	-2.30	-1.73	-1.02	-1.17	4.51	6.00		6.00	6.00	6.00		4.84		-1.09	4.97	-1.05

SEM = Standard Error of the Mean; E.C. = Electrical Conductivity; Alk. = Alkalinity (mg CaCO₃/L).

Statistics	Mg	Na	K	Li	Sr	B	Ba	P (mg/L)	Mo	Ni	Se	Co	S	Si	As
Count (N)	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
Sum	52.91	64.99	31.82	0.24	0.25	1.12	0.39	0.87	0.30	0.18	1.80	0.06	40.38	75.66	0.26
Mean	8.82	10.83	5.30	0.04	0.04	0.19	0.07	0.14	0.05	0.03	0.30	0.01	6.73	12.61	0.04
SEM	3.38	1.70	1.11	0.00	0.01	0.10	0.03	0.04	0.00	0.00	0.00	0.00	2.11	3.84	0.01
Median	5.08	10.23	6.29	0.04	0.03	0.09	0.03	0.10	0.05	0.03	0.30	0.01	4.73	10.16	0.04
Variance	68.74	17.38	7.38	0.00	0.00	0.06	0.01	0.01	0.00	0.00	0.00	0.00	26.83	88.45	0.00
StDev (sd)	8.29	4.17	2.72	0.00	0.03	0.25	0.08	0.10	0.00	0.00	0.00	0.00	5.18	9.40	0.02
Maximum	22.06	16.63	7.95	0.04	0.08	0.69	0.22	0.35	0.05	0.03	0.30	0.01	16.66	31.24	0.07
Minimum	2.30	6.62	1.57	0.04	0.02	0.04	0.01	0.10	0.05	0.03	0.30	0.01	3.01	4.37	0.03
Range	19.76	10.02	6.37	0.00	0.06	0.65	0.21	0.25	0.00	0.00	0.00	0.00	13.65	26.87	0.04
Skewness	1.01	0.38	-0.70		0.89	2.19	1.75	2.44					1.87	2.10	1.39
Kurtosis	-0.66	-1.90	-1.77		-0.69	4.94	2.74	5.95					3.57	4.95	1.33

4.1.3 Total Elemental Analysis

Data for the total elemental content of the soils are presented in Table 15 and the associated statistical parameters in Tables 16 to 19.

Values for total elemental content of the soils were compared to the values that have been compiled for soils from an overall perspective (Table 20). All the values for the various elements shown in Table 15 are within the range of values normally found in soils (Table 20) except for Mo which is higher in the plot soils.

4.2 POST-APPLICATION SOIL PROPERTIES

A total of 207 samples were collected during the period September 13 and 14, 1988 in the plots following waste application and incorporation. Samples representing the 0 to 15 cm depth were collected at all plots and additional samples representing the 15 to 30 cm, 30 to 45 cm, 45 to 60 cm, and 60 to 90 cm depths were obtained at selected plots. In selected plots a total of 10 individual samples were collected from the 0 to 15 cm depth interval to assess the extent of variability that can occur with an individual plot area. Statistical analysis of the soil/waste properties was not undertaken for this report as the analysis would have to be completed on an individual plot or treatment basis for each analysis, element etc.

4.2.1 Chemical and Physical Properties

The data for the chemical and physical properties of the soil/waste mixtures are shown in Table 21. The data indicate that pH levels and CaCO_3 equivalent values increased as a result of the addition of waste. For example, pH in the 0 to 15 cm layer increased from 7.2 to 7.9 at Plot 8, 7.0 to 7.8 at Plot 11, 7.3 to 7.7 at Plot 16, 6.8 to 7.5 at Plot 23, 7.2 to 7.5 at Plot 24, and 7.1 to 7.3 at Plot 45 as a result of waste addition. Similarly, CaCO_3 equivalent increased from 0.32 to 0.90% at Plot 8, 0.36 to 0.73% at Plot 11, 0.24 to 0.82% at Plot 16, and 0.03 to 1.80% at Plot 23.

Table 15. Total Elemental Analysis Data for the Experimental Plot Soils Prior to Waste Application.

Waste	Rate	Plot No.	Sample Number	Depth (cm)	Mn	Na	K	Ca	Mg	P (mg/g)	Al	Fe	Ti	Ba	Cu (ug/g)	Zn
Freshwater	1	3	TME11	0-15	0.345	6.61	11.06	4.87	2.28	0.382	33.4	11.70	1.899	0.383	6.17	32.04
Freshwater	1	9	7	0-15	0.420	7.64	13.15	6.59	2.33	0.600	36.1	13.43	2.060	0.446	22.04	38.05
Freshwater	1	13	9	0-15	0.196	3.73	6.31	3.25	1.16	0.346	17.7	6.49	0.944	0.229	17.75	23.85
Freshwater	2	2	12	0-15	0.285	6.91	11.40	4.70	1.96	0.559	31.5	9.02	1.832	0.410	6.53	31.49
Freshwater	2	8	10	0-15	0.315	6.68	10.43	5.18	1.98	0.422	29.7	9.04	1.741	0.379	4.74	32.92
Freshwater	2	15	5	0-15	0.361	7.87	14.25	5.07	3.10	1.031	35.8	16.70	2.132	0.258	28.22	41.90
Freshwater	3	1	19	0-15	0.319	7.43	12.84	4.82	2.16	0.549	37.9	14.08	2.067	0.435	8.21	61.81
Freshwater	3	1	20	15-30	0.291	7.79	15.64	4.07	1.90	0.349	46.1	18.20	2.411	0.522	6.33	43.50
Freshwater	3	1	21	30-60	0.222	6.32	12.16	3.77	2.58	0.340	42.3	19.04	2.203	0.395	9.55	48.74
Freshwater	3	6	18	0-15	0.201	3.33	5.65	2.47	0.76	0.282	14.4	5.47	0.932	0.080	15.65	27.71
Freshwater	3	11	17	0-15	0.371	6.56	11.21	4.34	2.06	0.530	28.9	10.94	1.838	0.257	9.65	34.78
Freshwater	4	5	1	0-15	0.382	7.69	13.60	6.39	2.34	0.579	37.3	14.05	1.854	0.486	49.34	36.54
Freshwater	4	7	13	0-15	0.365	7.33	12.75	4.62	1.92	0.663	34.8	13.80	2.013	0.204	10.48	39.22
Freshwater	4	7	14	15-30	0.342	6.12	12.67	5.96	3.05	0.489	28.2	16.88	2.018	0.198	13.83	46.46
Freshwater	4	7	15	30-60	0.404	6.60	12.13	6.76	3.80	0.497	30.0	15.82	1.979	0.209	12.18	44.26
Freshwater	4	12	16	0-15	0.347	7.01	11.92	5.26	2.85	0.455	36.5	12.65	2.017	0.390	6.07	38.18
Freshwater	5	4	8	0-15	0.299	7.16	12.19	6.11	2.71	0.585	35.9	13.28	1.930	0.420	23.07	36.43
Freshwater	5	10	2	0-15	0.380	7.36	12.91	5.80	3.10	0.638	34.7	15.53	2.014	0.360	19.30	40.04
Freshwater	5	10	3	15-30	0.294	6.54	12.42	4.82	3.08	0.509	28.9	15.73	1.984	0.182	26.56	41.17
Freshwater	5	10	4	30-60	0.359	6.93	13.66	6.25	3.48	0.540	31.3	17.65	2.124	0.243	27.06	45.93
Freshwater	5	14	6	0-15	0.381	6.98	12.71	7.49	2.58	0.551	35.0	14.11	1.903	0.422	26.03	38.08
KCl	1	17	66	0-15	0.364	6.90	11.28	5.04	2.16	0.504	33.3	11.69	1.867	0.395	4.69	34.48
KCl	1	42	37	0-15	0.543	6.80	12.30	6.40	3.55	0.564	33.5	15.99	1.935	0.263	12.46	46.06
KCl	1	43	30	0-15	0.343	6.69	11.76	7.29	3.00	0.499	32.8	14.61	1.912	0.309	9.08	45.66
KCl	2	33	31	0-15	0.399	7.66	13.41	6.59	2.79	0.594	40.0	15.85	2.265	0.448	15.41	46.22
KCl	2	40	45	0-15	0.370	7.05	12.33	11.40	2.82	0.525	34.7	15.51	1.991	0.408	11.95	41.84
KCl	2	45	22	0-15	0.416	6.54	12.31	5.02	2.23	0.533	36.9	15.24	2.045	0.419	9.50	42.90
KCl	3	21	42	0-15	0.383	6.94	10.65	5.14	1.88	0.485	30.7	8.78	1.795	0.403	5.27	36.88
KCl	3	30	44	0-15	0.346	6.83	12.33	4.45	2.33	0.522	37.2	14.04	1.991	0.414	12.74	38.49
KCl	3	39	46	0-15	0.306	6.54	11.08	7.07	2.76	0.469	31.8	13.19	1.765	0.358	13.57	40.08
KCl	4	16	67	0-15	0.339	6.39	9.98	5.56	2.58	0.462	30.7	10.05	1.596	0.372	8.36	40.62
KCl	4	16	68	15-30	0.278	6.70	11.30	6.75	2.66	0.495	34.9	14.95	1.784	0.393	3.95	36.87
KCl	4	16	69	30-60	0.239	3.41	5.61	3.22	1.38	0.268	17.8	8.31	0.951	0.238	39.80	57.55
KCl	4	16	70	60-90	0.481	7.26	12.83	5.73	2.42	0.559	39.7	17.49	2.043	0.424	12.15	44.18
KCl	4	24	25	0-15	0.329	7.23	12.11	5.82	2.43	0.483	35.0	11.68	1.912	0.427	5.13	36.73
KCl	4	29	47	0-15	0.320	6.43	10.53	4.70	1.64	0.431	30.5	10.35	1.804	0.378	7.86	31.94
KCl	4	29	48	15-30	0.195	3.61	7.12	2.04	1.22	0.305	20.6	8.71	1.038	0.235	33.38	48.65
KCl	4	29	49	30-60	0.364	7.05	13.62	4.83	2.79	0.550	41.7	17.93	2.161	0.417	16.51	45.08
KCl	4	29	50	60-90	0.342	7.02	12.87	4.06	2.40	0.560	38.7	15.49	1.788	0.406	31.47	78.68
KCl	5	25	24	0-15	0.341	7.41	10.97	4.67	1.86	0.366	31.1	8.89	1.873	0.408	5.04	33.85
KCl	5	25	76	15-30	0.346	6.51	12.53	3.67	2.25	0.377	40.1	16.12	1.791	0.404	6.87	40.21
KCl	5	25	77	30-60	0.166	7.20	10.05	4.29	1.75	0.388	30.3	8.09	1.655	0.363	15.38	50.13
KCl	5	26	71	0-15	0.346	6.83	11.42	4.92	1.74	0.503	32.8	11.79	1.936	0.408	7.81	33.94
KCl	5	37	61	0-15	0.344	6.65	12.30	8.23	2.32	0.499	35.2	15.37	1.907	0.397	10.11	38.67
KCl	5	37	62	15-30	0.354	7.03	11.15	5.04	1.86	0.462	32.4	10.72	1.917	0.398	14.20	58.79
KCl	5	37	63	30-60	0.371	7.39	14.26	4.56	2.63	0.621	43.7	18.63	2.090	0.428	15.19	46.09
KCl	5	37	64	60-90	0.458	7.52	14.21	4.13	2.65	0.545	41.2	17.03	2.032	0.400	347.58	719

Table 15. Total Elemental Analysis Data for the Experimental Plot Soils Prior to Waste Application.

Waste	Rate	Plot No.	Sample Number	Depth (cm)	Cd	Pb	Mo	V	Cr (ug/g)	Ni	Sr	Li	Zr
Freshwater	1	3	TME11	0-15	0.000	4.11	25.3	36.4	26.2	8.52	88.2	17.9	94.1
Freshwater	1	9	7	0-15	0.525	12.86	28.6	52.2	53.3	30.97	100.8	44.6	130.7
Freshwater	1	13	9	0-15	0.005	6.93	18.9	30.5	29.3	19.83	55.4	28.8	62.2
Freshwater	2	2	12	0-15	0.000	8.23	25.8	30.6	27.2	8.80	89.1	16.2	91.4
Freshwater	2	8	10	0-15	0.527	9.22	23.4	29.5	21.1	5.27	87.2	14.0	71.9
Freshwater	2	15	5	0-15	2.328	16.58	34.0	61.1	86.7	52.95	92.5	50.0	146.3
Freshwater	3	1	19	0-15	0.000	10.12	28.4	45.7	40.5	15.86	97.9	18.9	100.1
Freshwater	3	1	20	15-30	0.000	13.97	30.1	58.0	45.3	18.45	104.1	26.9	113.6
Freshwater	3	1	21	30-60	0.000	11.02	30.1	63.7	50.0	26.94	83.3	27.4	100.9
Freshwater	3	6	18	0-15	0.138	6.04	23.3	28.7	26.2	19.63	50.6	20.4	62.6
Freshwater	3	11	17	0-15	0.000	8.88	26.7	37.3	32.5	13.96	79.2	18.5	90.9
Freshwater	4	5	1	0-15	0.000	12.00	24.0	55.7	48.5	29.34	108.3	48.0	112.6
Freshwater	4	7	13	0-15	0.000	9.26	25.6	43.4	41.7	20.22	89.2	20.5	94.5
Freshwater	4	7	14	15-30	0.261	9.66	25.1	57.4	48.6	21.40	72.8	25.3	101.3
Freshwater	4	7	15	30-60	0.297	8.62	24.7	50.5	40.1	26.14	81.4	23.2	90.0
Freshwater	4	12	16	0-15	0.000	11.86	30.4	40.2	32.7	11.86	92.5	18.5	87.3
Freshwater	5	4	8	0-15	0.304	11.23	26.7	53.4	52.5	32.79	98.4	48.0	117.2
Freshwater	5	10	2	0-15	0.000	10.37	24.8	55.9	47.5	25.64	93.3	41.5	117.3
Freshwater	5	10	3	15-30	0.000	9.01	24.8	60.7	58.5	37.27	73.6	44.3	128.4
Freshwater	5	10	4	30-60	0.497	10.92	26.8	66.5	66.5	39.97	80.7	45.2	133.6
Freshwater	5	14	6	0-15	0.274	13.97	27.7	56.7	48.2	29.59	95.6	49.0	117.0
KCl	1	17	66	0-15	0.000	6.90	26.5	36.7	33.9	11.58	91.6	15.7	85.8
KCl	1	42	37	0-15	0.000	8.11	29.8	50.7	54.2	24.91	86.0	21.7	99.1
KCl	1	43	30	0-15	0.567	8.79	25.0	46.5	39.4	14.46	88.8	19.9	90.2
KCl	2	33	31	0-15	1.453	12.21	33.7	54.1	51.2	21.80	102.6	26.7	125.6
KCl	2	40	45	0-15	0.000	19.72	30.2	51.7	51.4	26.00	97.1	22.4	98.3
KCl	2	45	22	0-15	0.000	10.86	28.8	49.1	40.7	36.66	89.6	21.7	109.2
KCl	3	21	42	0-15	0.293	8.78	25.8	31.0	24.3	9.07	93.4	14.0	80.2
KCl	3	30	44	0-15	0.000	11.70	29.1	48.4	40.3	20.28	93.1	22.4	98.6
KCl	3	39	46	0-15	0.617	17.57	27.4	41.9	45.9	23.12	86.6	21.6	95.0
KCl	4	16	67	0-15	0.000	12.84	29.0	32.3	32.9	11.35	87.5	16.1	74.4
KCl	4	16	68	15-30	0.263	9.74	26.3	42.4	39.5	13.43	92.2	12.9	81.9
KCl	4	16	69	30-60	0.037	6.89	50.0	58.9	57.0	43.85	83.8	43.7	83.0
KCl	4	16	70	60-90	0.276	10.22	26.5	55.2	51.9	25.68	96.4	23.5	103.3
KCl	4	24	25	0-15	0.285	9.97	25.6	39.3	33.0	14.81	94.8	16.5	78.3
KCl	4	29	47	0-15	0.253	14.45	25.9	37.0	37.3	16.47	86.2	19.0	81.4
KCl	4	29	48	15-30	0.026	9.16	41.4	55.2	55.3	42.02	72.7	38.0	81.7
KCl	4	29	49	30-60	0.000	11.11	33.7	59.4	48.9	30.16	97.5	23.8	119.7
KCl	4	29	50	60-90	0.000	12.90	29.7	49.8	43.9	26.06	94.4	21.4	87.5
KCl	5	25	24	0-15	0.000	8.39	26.0	30.8	23.2	9.23	96.0	14.8	85.9
KCl	5	25	76	15-30	0.000	3.92	26.5	52.0	55.7	24.52	88.5	22.6	84.6
KCl	5	25	77	30-60	0.000	9.11	24.8	27.9	25.1	7.98	94.0	13.1	71.2
KCl	5	26	71	0-15	0.000	10.26	26.1	39.8	35.4	16.12	90.6	19.8	94.5
KCl	5	37	61	0-15	0.000	9.35	26.0	48.5	38.9	14.91	91.7	20.2	85.4
KCl	5	37	62	15-30	0.000	8.47	23.4	32.4	26.7	7.97	92.2	11.5	87.4
KCl	5	37	63	30-60	0.000	9.43	28.8	59.2	45.8	21.47	99.2	21.2	97.4
KCl	5	37	64	60-90	0.000	11.50	26.8	53.9	42.4	14.31	91.7	17.6	87.1

Table 15. Total Elemental Analysis Data for the Experimental Plot Soils Prior to Waste Application.

Waste	Rate	Plot No.	Sample Number	Depth (cm)	Mn	Na	K	Ca	Mg	P (mg/g)	Al	Fe	Ti	Ba	Cu (ug/g)	Zn
NaCl	6	22	35	0-15	0.352	7.49	12.13	5.40	2.33	0.540	34.2	10.61	1.993	0.436	7.21	42.65
NaCl	6	32	36	0-15	0.375	6.68	11.38	6.77	2.70	0.486	33.6	12.80	1.844	0.381	10.79	41.83
NaCl	6	41	38	0-15	0.364	6.61	11.67	7.46	3.37	0.518	31.5	14.83	1.903	0.280	7.03	40.33
NaCl	7	18	55	0-15	0.449	7.05	12.62	7.53	1.96	0.592	34.3	14.84	1.884	0.394	10.16	44.71
NaCl	7	27	65	0-15	0.431	7.06	10.49	4.76	2.26	0.378	30.0	8.27	1.574	0.389	126.77	285
NaCl	7	34	26	0-15	0.362	7.08	10.70	5.47	2.04	0.392	30.3	8.68	1.852	0.402	4.68	32.44
NaCl	8	20	43	0-15	0.417	7.24	12.28	6.11	2.07	0.553	35.2	12.75	1.866	0.432	6.61	39.65
NaCl	8	35	23	0-15	0.479	8.51	13.80	6.39	2.29	0.561	38.1	12.38	2.290	0.486	6.94	45.50
NaCl	8	35	73	15-30	0.363	6.48	10.87	10.26	2.65	0.490	30.9	11.96	1.780	0.392	12.22	35.79
NaCl	8	35	74	30-60	0.476	7.08	12.57	9.29	3.84	0.533	30.0	15.79	1.763	0.392	15.63	57.40
NaCl	8	35	75	60-90	0.343	6.73	12.39	7.14	2.71	0.513	28.2	15.47	1.808	0.327	8.19	39.66
NaCl	8	44	27	0-15	0.368	7.88	12.28	7.60	2.49	0.480	35.5	12.04	2.027	0.438	5.75	38.22
NaCl	8	44	28	15-30	0.322	7.12	12.50	9.27	2.89	0.566	33.6	14.76	1.807	0.368	9.59	38.36
NaCl	8	44	29	30-60	0.334	6.28	12.34	9.15	4.11	0.514	30.4	17.01	1.987	0.282	13.25	42.35
NaCl	9	19	51	0-15	0.375	6.61	9.86	5.20	2.07	0.416	28.3	7.45	1.529	0.375	3.94	32.39
NaCl	9	19	52	15-30	0.384	7.51	10.57	5.81	2.10	0.416	29.5	9.66	1.130	0.377	6.21	27.33
NaCl	9	19	53	30-60	0.222	7.70	10.05	4.75	1.81	0.350	28.6	8.32	0.806	0.356	0.00	20.26
NaCl	9	19	54	60-90	0.097	7.81	10.04	4.16	1.26	0.269	26.6	6.08	0.627	0.346	0.51	15.30
NaCl	9	31	39	0-15	0.206	3.72	6.27	2.92	1.32	0.309	18.6	6.99	1.048	0.224	27.39	40.65
NaCl	9	31	40	15-30	0.503	7.44	13.45	3.70	2.03	0.547	38.7	16.15	2.028	0.396	286.73	597
NaCl	9	31	41	30-60	0.371	7.46	14.92	4.15	2.68	0.579	44.5	19.10	2.264	0.438	16.55	46.23
NaCl	9	36	72	0-15	0.330	6.96	12.51	5.78	2.73	0.544	35.5	14.91	1.929	0.362	6.61	39.91
NaCl	10	23	32	0-15	0.335	7.07	11.47	5.13	2.42	0.478	33.1	10.39	1.950	0.410	7.46	34.27
NaCl	10	23	33	15-30	0.386	7.09	11.52	5.88	2.30	0.503	33.4	12.20	1.863	0.404	10.16	35.82
NaCl	10	23	34	30-60	0.306	6.14	11.74	10.91	3.64	0.523	29.9	14.92	1.757	0.318	13.36	39.52
NaCl	10	28	56	0-15	0.388	6.98	10.98	4.52	1.78	0.492	31.8	9.98	1.789	0.408	4.45	32.17
NaCl	10	38	57	0-15	0.307	6.57	10.48	5.69	2.09	0.399	30.7	10.38	1.686	0.380	2.68	30.28
NaCl	10	38	58	15-30	0.354	7.19	12.71	5.28	2.30	0.555	38.2	15.67	1.880	0.413	14.79	41.53
NaCl	10	38	59	30-60	0.315	7.02	14.08	4.36	2.84	0.619	43.1	18.80	1.913	0.425	15.44	44.65
NaCl	10	38	60	60-90	0.338	7.21	14.32	4.56	3.20	0.658	45.7	20.36	2.275	0.432	13.57	48.11

Table 15. Total Elemental Analysis Data for the Experimental Plot Soils Prior to Waste Application.

Waste	Rate	Plot No.	Sample Number	Depth (cm)	Cd	Pb	Mo	V	Cr (ug/g)	Ni	Sr	Li	Zr
NaCl	6	22	35	0-15	0.000	8.65	27.4	37.5	32.0	7.78	98.0	18.4	89.6
NaCl	6	32	36	0-15	0.000	8.68	28.1	42.6	35.5	11.84	88.7	19.5	88.7
NaCl	6	41	38	0-15	0.917	8.55	25.4	47.0	40.6	10.39	87.1	16.2	88.0
NaCl	7	18	55	0-15	0.000	12.70	28.5	44.2	51.1	24.64	93.5	18.0	89.7
NaCl	7	27	65	0-15	0.000	9.46	25.8	26.7	21.8	4.30	88.9	12.6	68.5
NaCl	7	34	26	0-15	0.000	7.31	24.0	30.4	23.1	3.51	92.3	12.9	76.6
NaCl	8	20	43	0-15	0.264	12.42	27.2	43.6	33.8	15.60	96.0	20.1	86.2
NaCl	8	35	23	0-15	0.277	8.05	29.4	42.5	35.5	13.04	109.3	19.1	108.8
NaCl	8	35	73	15-30	0.000	7.27	25.3	46.8	32.9	16.88	98.6	25.0	90.2
NaCl	8	35	74	30-60	0.000	10.22	25.5	49.9	38.8	16.83	77.2	18.3	83.8
NaCl	8	35	75	60-90	0.000	10.49	20.7	49.6	41.7	18.68	75.0	18.2	78.8
NaCl	8	44	27	0-15	0.000	11.78	28.4	39.4	28.2	5.75	103.7	16.4	83.3
NaCl	8	44	28	15-30	0.266	11.45	29.8	46.1	52.7	22.11	94.3	18.4	88.4
NaCl	8	44	29	30-60	0.000	11.24	26.5	56.8	46.4	18.73	82.7	22.8	91.0
NaCl	9	19	51	0-15	0.000	9.86	22.8	23.1	19.7	7.32	87.3	12.7	69.0
NaCl	9	19	52	15-30	0.000	9.94	25.6	26.1	23.1	11.18	97.2	12.2	57.9
NaCl	9	19	53	30-60	0.278	7.22	23.6	17.2	15.8	6.66	97.7	3.6	40.0
NaCl	9	19	54	60-90	0.000	8.41	21.7	12.5	12.0	2.29	99.2	4.6	40.5
NaCl	9	31	39	0-15	0.181	5.29	37.8	44.6	40.3	27.71	69.7	32.8	81.7
NaCl	9	31	40	15-30	0.000	16.16	32.0	54.9	40.1	21.46	91.1	24.5	106.7
NaCl	9	31	41	30-60	0.000	10.56	32.5	66.5	52.2	27.68	99.0	27.1	114.7
NaCl	9	36	72	0-15	0.000	13.22	24.1	46.3	33.0	10.84	89.3	17.2	99.4
NaCl	10	23	32	0-15	0.000	9.67	28.2	38.1	33.7	11.05	92.9	19.1	93.1
NaCl	10	23	33	15-30	0.267	10.43	27.3	40.9	40.1	15.24	93.0	19.2	91.4
NaCl	10	23	34	30-60	0.000	10.52	27.3	51.2	38.9	17.63	84.4	23.6	92.7
NaCl	10	28	56	0-15	0.262	9.15	26.7	32.4	27.5	10.20	92.6	14.9	80.0
NaCl	10	38	57	0-15	0.000	6.70	22.5	31.9	24.1	6.97	87.9	12.3	68.1
NaCl	10	38	58	15-30	0.284	10.24	29.3	48.6	46.7	23.61	98.7	20.2	88.5
NaCl	10	38	59	30-60	0.281	9.27	31.2	58.1	52.8	24.43	96.9	23.9	88.7
NaCl	10	38	60	60-90	0.308	8.63	34.8	63.2	53.3	23.13	97.8	22.8	109.5

Table 16. Statistical Parameters of Total Elemental Analysis Data for the 0 to 15 cm Depth Samples.

Statistics	Mn	Na	K	Ca (ug/g)	Mg	Cu	Zn	Cd (ng/g)	Pb	P (ug/g)	Mo
Count (N)	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
Sum	15993.49	306682.07	516048.86	256001.76	103298.71	630.65	1961	9468.75	463079	22750.78	1214.72
Mean	355.41	6815.16	11467.75	5688.93	2295.53	14.01	43.58	210.42	10290.66	505.57	26.99
SEM	9.42	145.54	264.85	224.83	81.29	2.87	5.55	64.74	462.24	17.31	0.48
Median	360.78	6960.24	11756.00	5404.78	2292.08	8.36	38.22	0.00	9672.16	502.99	26.65
Variance	3994.91	953164.29	3156501	2274596.64	297373.82	370.72	1387	188586.78	9614760	13480.64	10.33
StDev (sd)	63.21	976.30	1776.65	1508.18	545.32	19.25	37.24	434.27	3100.77	116.11	3.21
Maximum	543.18	8505.76	14254.15	11400.73	3551.11	126.77	284.51	2327.59	19724.97	1030.54	37.77
Minimum	195.54	3333.42	5647.08	2468.17	755.90	2.68	23.85	0.00	4114.72	281.82	18.86
Range	347.64	5172.34	8607.06	8932.56	2795.22	124.09	260.66	2327.59	15610.25	748.72	18.91
Skewness	-0.13	-2.33	-1.76	1.07	-0.23	4.91	6.43	3.39	0.84	1.83	0.81
Kurtosis	2.35	6.60	3.99	3.74	0.89	27.76	42.41	13.52	1.31	8.71	2.68

SEM = Standard Error of the Mean.

Statistics	Al	Fe	Ti	V	Cr (ug/g)	Ba	Ni	Sr	Li	Zr
Count (N)	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
Sum	1466550.98	540626.52	82932.26	1865.54	1676.00	16768.91	766.94	4070.94	1009.68	4148.31
Mean	32590.02	12013.92	1842.94	41.46	37.24	372.64	17.04	90.47	22.44	92.18
SEM	748.23	425.68	41.49	1.38	1.83	11.99	1.49	1.59	1.57	2.67
Median	33456.29	12383.80	1902.73	41.93	35.40	394.95	14.81	91.74	19.07	89.68
Variance	25192994	8154000	77471.10	85.19	150.47	6470.06	99.85	113.24	110.87	320.19
StDev (sd)	5019.26	2855.52	278.34	9.23	12.27	80.44	9.99	10.64	10.53	17.89
Maximum	39999.63	16699.28	2289.86	61.10	86.70	486.49	52.95	109.32	50.04	146.35
Minimum	14441.26	5468.95	932.10	23.10	19.72	79.69	3.51	50.55	12.32	62.23
Range	25558.37	11230.33	1357.76	38.00	66.99	406.80	49.45	58.76	37.72	84.12
Skewness	-2.04	-0.40	-1.99	0.10	1.50	-1.64	1.28	-1.92	1.72	0.82
Kurtosis	5.12	-0.71	4.82	-0.79	4.57	3.11	2.38	6.03	1.84	0.98

Table 17. Statistical Parameters of Total Elemental Analysis Data for the 15 to 30 cm Depth Samples.

Statistics	Mn	Na	K	Ca (ug/g)	Mg	Cu	Zn	Cd (ng/g)	Pb	P (ug/g)	Mo
Count (N)	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00
Sum	4410.44	87141.12	154436.61	72534.62	30306.72	444.82	1091.37	1368.54	129439.15	6062.63	366.94
Mean	339.26	6703.16	11879.74	5579.59	2331.29	34.22	83.95	105.27	9956.86	466.36	28.23
SEM	19.86	289.77	539.22	620.49	147.67	21.17	42.79	37.33	818.96	22.59	1.30
Median	345.73	7030.09	12420.47	5275.66	2297.24	12.22	41.17	0.00	9743.30	490.30	26.48
Variance	5126.90	1091575.71	3779849.06	5005172.31	283484.65	5826.14	23807.77	18119.48	8718965.23	6634.38	21.88
StDev (sd)	71.60	1044.79	1944.18	2237.22	532.43	76.33	154.30	134.61	2952.79	81.45	4.68
Maximum	503.25	7791.33	15635.39	10257.07	3084.78	286.73	596.88	284.48	16161.93	565.77	41.39
Minimum	194.59	3607.55	7120.26	2039.68	1224.90	3.95	27.33	0.00	3923.15	305.35	23.42
Range	308.66	4183.78	8515.12	8217.39	1859.88	282.78	569.55	284.48	12238.79	260.41	17.98
Skewness	0.31	-2.36	-0.71	0.81	-0.34	3.53	3.59	0.54	0.24	-0.78	2.03
Kurtosis	2.34	6.97	3.06	0.77	0.03	12.61	12.92	-2.03	1.75	-0.35	5.06

SEM = Standard Error of the Mean.

Statistics	Al	Fe	Ti	V	Cr (ug/g)	Ba	Ni	Sr	Li	Zr
Count (N)	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00
Sum	435455.43	181708.28	23430.28	621.47	565.08	4682.74	275.55	1169.03	301.03	1202.07
Mean	33496.57	13977.56	1802.33	47.81	43.47	360.21	21.20	89.93	23.16	92.47
SEM	1776.93	829.44	100.02	2.86	3.09	26.73	2.66	2.89	2.66	4.78
Median	33384.40	14952.02	1862.55	48.65	45.34	392.63	21.40	92.18	22.56	88.47
Variance	41047117.55	8943666.47	130049.94	106.19	123.87	9284.94	92.26	108.86	91.93	297.29
StDev (sd)	6406.80	2990.60	360.62	10.31	11.13	96.36	9.61	10.43	9.59	17.24
Maximum	46062.86	18197.96	2411.00	60.66	58.47	521.95	42.02	104.13	44.34	128.39
Minimum	20613.28	8706.40	1037.79	26.09	23.11	181.99	7.97	72.68	11.46	57.89
Range	25449.58	9491.56	1373.21	34.57	35.36	339.97	34.05	31.44	32.88	70.50
Skewness	0.02	-0.53	-1.04	-0.85	-0.48	-0.78	1.02	-0.85	0.97	0.29
Kurtosis	0.75	-0.98	1.69	0.16	-0.65	0.30	0.95	-0.43	0.89	1.33

Table 18. Statistical Parameters of Total Elemental Analysis Data for the 30 to 60 cm Depth Samples.

Statistics	Mn	Na	K	Ca (ug/g)	Mg	Cu	Zn	Cd (ng/g)	Pb	P (ug/g)	Mo
Count (N)	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00
Sum	4149.35	86559.26	157194.79	76285.28	37345.68	209.90	588.19	1388.96	126115.57	6319.94	385.47
Mean	319.18	6658.40	12091.91	5868.10	2872.74	16.15	45.25	106.84	9701.20	486.15	29.65
SEM	24.02	301.43	680.56	679.68	241.41	2.55	2.54	46.93	401.37	31.32	1.91
Median	333.63	7022.43	12340.41	4748.53	2790.39	15.38	45.93	0.00	10217.48	522.80	27.29
Variance	7499.16	1181170.99	6021119.73	6005540.87	757651.86	84.75	83.66	28636.39	2094308.29	12751.18	47.29
StDev (sd)	86.60	1086.82	2453.80	2450.62	870.43	9.21	9.15	169.22	1447.17	112.92	6.88
Maximum	475.71	7702.51	14920.82	10914.36	4110.20	39.80	57.55	496.51	11236.36	621.16	50.00
Minimum	166.06	3410.15	5609.30	3217.65	1378.63	0.00	20.26	0.00	6887.04	267.94	23.59
Range	309.66	4292.36	9311.53	7696.71	2731.58	39.80	37.29	496.51	4349.33	353.22	26.41
Skewness	-0.16	-2.46	-1.61	1.07	-0.26	1.25	-1.54	1.35	-0.89	-0.74	2.40
Kurtosis	-0.39	7.29	3.35	-0.12	-0.97	3.70	4.66	0.65	-0.21	-0.61	6.85

SEM = Standard Error of the Mean.

Statistics	Al	Fe	Ti	V	Cr (ug/g)	Ba	Ni	Sr	Li	Zr
Count (N)	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00
Sum	443502.62	199405.52	23653.37	685.77	578.31	4504.96	308.47	1157.86	316.90	1206.78
Mean	34115.59	15338.89	1819.49	52.75	44.49	346.54	23.73	89.07	24.38	92.83
SEM	2249.68	1180.61	126.71	4.05	3.68	22.26	2.99	2.30	3.03	6.41
Median	30438.16	17010.99	1978.82	58.12	46.39	362.87	24.43	84.43	23.60	91.04
Variance	65793641.12	18119998.55	208716.34	213.55	175.62	6440.97	116.39	68.82	119.47	534.44
StDev (sd)	8111.33	4256.76	456.85	14.61	13.25	80.26	10.79	8.30	10.93	23.12
Maximum	44497.91	19099.80	2264.29	66.53	66.53	438.36	43.85	99.25	45.18	133.56
Minimum	17753.43	8085.47	806.36	17.21	15.82	209.44	6.66	77.23	3.61	39.97
Range	26744.47	11014.33	1457.93	49.32	50.71	228.92	37.19	22.02	41.57	93.59
Skewness	-0.22	-1.10	-1.51	-1.66	-0.73	-0.55	0.25	0.08	0.42	-0.49
Kurtosis	-0.48	-0.41	1.50	2.33	0.95	-1.22	0.00	-1.96	1.20	1.65

Table 19. Statistical Parameters of Total Elemental Analysis Data for the 60 to 90 cm Depth Samples.

Statistics	Mn	Na	K	Ca (ug/g)	Mg	Cu	Zn	Cd (ng/g)	Pb	P (ug/g)
Count (N)	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
Sum	2058.07	43546.07	76662.36	29788.78	14644.02	413.47	944.85	584.50	62156.26	3103.47
Mean	343.01	7257.68	12777.06	4964.80	2440.67	68.91	157.48	97.42	10359.38	517.25
SEM	55.62	153.82	635.42	504.99	263.95	55.89	112.59	61.75	696.40	53.50
Median	342.23	7235.17	12851.99	4360.98	2536.72	12.86	46.14	0.00	10354.23	551.74
Variance	18561.93	141963.33	2422571.88	1530061.79	418004.32	18741.32	76064.15	22880.29	2909833.22	17171.36
StDev (sd)	136.24	376.78	1556.46	1236.96	646.53	136.90	275.80	151.26	1705.82	131.04
Maximum	481.01	7806.76	14320.97	7142.06	3197.55	347.58	718.92	308.38	12898.75	658.38
Minimum	96.89	6728.53	10035.41	4062.59	1258.25	0.51	15.30	0.00	8413.83	268.99
Range	384.13	1078.23	4285.56	3079.47	1939.30	347.07	703.62	308.38	4484.92	389.39
Skewness	-1.28	0.12	-1.12	1.41	-1.32	2.42	2.42	0.99	0.32	-1.64
Kurtosis	2.29	-0.09	1.67	1.05	2.93	5.88	5.89	-1.76	-0.76	3.73

SEM = Standard Error of the Mean.

Statistics	Mo	Al	Fe	Ti	V (ug/g)	Cr	Ba	Ni	Sr	Li	Zr
Count (N)	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
Sum	160.26	220025.96	91916.88	10573.20	284.29	245.24	2335.43	110.15	554.45	108.09	506.70
Mean	26.71	36670.99	15319.48	1762.20	47.38	40.87	389.24	18.36	92.41	18.02	84.45
SEM	2.13	3103.65	1987.10	238.49	7.26	6.12	17.47	3.70	3.64	2.86	9.93
Median	26.67	39179.96	16258.75	1919.97	51.86	43.14	403.01	20.90	95.39	19.79	87.30
Variance	27.23	57795905.78	23691344.61	341257.00	316.64	224.83	1830.42	82.02	79.69	48.96	591.33
StDev (sd)	5.22	7602.36	4867.38	584.17	17.79	14.99	42.78	9.06	8.93	7.00	24.32
Maximum	34.85	45710.53	20355.88	2275.20	63.22	53.35	431.73	26.06	99.18	23.47	109.47
Minimum	20.73	26595.36	6078.36	626.96	12.49	11.98	327.04	2.29	74.98	4.59	40.54
Range	14.12	19115.17	14277.52	1648.24	50.72	41.37	104.69	23.76	24.20	18.88	68.93
Skewness	0.47	-0.53	-1.68	-1.94	-2.01	-1.85	-0.74	-1.31	-2.01	-1.85	-1.30
Kurtosis	-0.22	-1.49	3.69	4.22	4.57	3.94	-1.39	1.42	4.28	3.69	2.23

Table 20. Elemental constituents of soils.

Element	Mean	Maximum	Minimum	Element	Mean	Maximum	Minimum
C (%)	2.00			Li ($\mu\text{g/g}$)	20.00	200.0	5.000
Ca (mg/g)	13.70	500.0	7.000	Cr ($\mu\text{g/g}$)	100.00	1000.0	1.000
Mg (mg/g)	5.00	6.0	0.600	Cu ($\mu\text{g/g}$)	30.00	100.0	2.000
Ti (mg/g)	4.00	10.0	1.000	Hg ($\mu\text{g/g}$)	0.03	0.3	0.010
Na (mg/g)	6.30	7.5	0.750	Ni ($\mu\text{g/g}$)	40.00	500.0	5.000
S (mg/g)	0.70	10.0	0.030	Pb ($\mu\text{g/g}$)	10.00	200.0	2.000
P (mg/g)	0.60	5.0	0.200	Co ($\mu\text{g/g}$)	8.00	40.0	1.000
Sr (mg/g)	0.20	1.0	0.050	Mo ($\mu\text{g/g}$)	2.00	5.0	0.200
Al (mg/g)	71.00	300.0	10.000	Cd ($\mu\text{g/g}$)	0.06	0.7	0.010
Si (mg/g)	320.00	350.0	230.000	Se ($\mu\text{g/g}$)	0.30	2.0	0.100
B (mg/g)	0.01	0.1	0.002	Ag ($\mu\text{g/g}$)	0.05	5.0	0.010
Ba (mg/g)	0.43	3.0	0.100	Zn ($\mu\text{g/g}$)	50.00	300.0	10.000
Fe (mg/g)	38.00	550.0	7.000	V ($\mu\text{g/g}$)	100.0	500.0	20.000
K (mg/g)	8.30	30.0	0.400	As ($\mu\text{g/g}$)	5.00	50.0	1.000
Mn (mg/g)	0.60	3.0	0.020	Zr ($\mu\text{g/g}$)	300.0	2000.0	60.0

From Lindsay (1979).

Table 21. Chemical and Physical Properties of the Soil/Waste Mixtures.

Waste	Rate	Plot Number	Sample Number	Depth (cm)	pH H2O	pH CaCl2	CaCO3 Eq (%)	TOC	TIC (%)	TOC
Freshwater	1	3	TME100	0-15	7.1	6.90	0.40	1.56	0.05	1.51
Freshwater	1	9	89	0-15	7.6	7.20	0.56	1.59	0.07	1.52
Freshwater	1	13	112	0-15	7.2	6.80	0.22	1.88	0.03	1.85
Freshwater	2	2	126	0-15	7.1	6.90	0.28	2.42	0.03	2.39
Freshwater	2	8	101	0-15	7.7	7.40	0.96	1.27	0.12	1.15
Freshwater	2	8	102	0-15	7.7	7.40	1.04	1.40	0.12	1.28
Freshwater	2	8	103	0-15	7.7	7.20	0.44	1.72	0.05	1.67
Freshwater	2	8	104	0-15	7.8	7.40	0.84	1.58	0.10	1.48
Freshwater	2	8	105	0-15	7.7	7.40	0.80	1.01	0.10	0.91
Freshwater	2	8	106	0-15	8.8	7.90	1.28	1.15	0.15	1.00
Freshwater	2	8	107	0-15	7.5	7.10	0.44	1.29	0.05	1.24
Freshwater	2	8	108	0-15	7.8	7.40	0.76	1.24	0.09	1.15
Freshwater	2	8	109	0-15	8.2	7.60	0.99	1.20	0.12	1.08
Freshwater	2	8	110	0-15	7.8	7.50	1.07	1.42	0.13	1.29
Freshwater	2	8	111	15-30	7.6	7.30	0.40		0.05	
Freshwater	2	15	85	0-15	8.1	7.70	2.58	1.32	0.31	1.01
Freshwater	3	1	127	0-15	7.5	7.10	0.36	1.73	0.04	1.69
Freshwater	3	1	128	15-30	6.0	5.80	0.02		0.00	
Freshwater	3	6	129	0-15	8.1	7.80	1.36	1.68	0.16	1.52
Freshwater	3	11	130	0-15	7.8	7.60	0.97	1.79	0.12	1.67
Freshwater	3	11	131	0-15	7.8	7.50	0.81	1.33	0.10	1.23
Freshwater	3	11	132	0-15	8.0	7.50	0.65	1.10	0.08	1.02
Freshwater	3	11	133	0-15	7.9	7.40	0.85	0.91	0.10	0.81
Freshwater	3	11	134	0-15	7.7	7.40	0.61	1.26	0.07	1.19
Freshwater	3	11	135	0-15	7.5	7.30	0.61	1.17	0.07	1.10
Freshwater	3	11	136	0-15	7.6	7.30	0.57	1.65	0.07	1.58
Freshwater	3	11	137	0-15	7.8	7.40	0.65	1.65	0.08	1.57
Freshwater	3	11	138	0-15	7.9	7.50	0.93	1.56	0.11	1.45
Freshwater	3	11	139	0-15	7.6	7.30	0.65	1.71	0.08	1.63
Freshwater	4	5	81	0-15	7.9	7.50	0.88	1.24	0.11	1.13
Freshwater	4	7	114	0-15	8.2	8.00	1.31	1.81	0.16	1.65
Freshwater	4	7	115	0-15	8.3	8.00	1.12	1.38	0.13	1.25
Freshwater	4	7	116	0-15	8.2	7.90	0.96	1.28	0.12	1.16
Freshwater	4	7	117	0-15	8.0	7.60	1.12	1.36	0.13	1.23
Freshwater	4	7	118	0-15	8.2	8.00	1.60	1.45	0.19	1.26
Freshwater	4	7	119	0-15	8.1	7.70	1.08	1.57	0.13	1.44
Freshwater	4	7	120	0-15	8.3	7.60	0.76	1.91	0.09	1.82
Freshwater	4	7	121	0-15	7.8	7.40	0.64	1.47	0.08	1.39
Freshwater	4	7	122	0-15	8.1	7.90	0.96	1.39	0.12	1.27
Freshwater	4	7	123	0-15	7.8	7.50	0.52	1.44	0.06	1.38
Freshwater	4	7	124	15-30	7.3	7.00	0.92		0.11	
Freshwater	4	7	125	30-60	8.1	7.80	5.69		0.68	
Freshwater	4	12	113	0-15	8.1	7.70	1.03	1.65	0.12	1.53

CaCO3 Eq = Calcium carbonate equivalent (g CaCO3 eq/100g); CEC = Cation Exchange Capacity; TC = Total Carbon; TIC = Total Inorganic Carbon; TOC = Total Organic Carbon.

Table 21. Chemical and Physical Properties of the Soil/Waste Mixtures.

Waste	Rate	Plot	Sample Number	Depth (cm)	pH H ₂ O	pH CaCl ₂	CaCO ₃ Eq (%)	TOC	TIC (%)	TOC
Freshwater	5	4	TME90	0-15	8.4	8.10	1.65	1.53	0.20	1.33
Freshwater	5	4	91	0-15	8.4	8.20	1.84	1.50	0.22	1.28
Freshwater	5	4	92	0-15	8.5	8.20	1.56	1.44	0.19	1.25
Freshwater	5	4	93	0-15	8.4	8.10	2.31	1.48	0.28	1.20
Freshwater	5	4	94	0-15	8.4	8.10	1.76	1.47	0.21	1.26
Freshwater	5	4	95	0-15	8.6	8.10	1.28	1.40	0.15	1.25
Freshwater	5	4	96	0-15	8.0	7.70	0.72	1.73	0.09	1.64
Freshwater	5	4	97	0-15	8.2	7.90	1.15	1.53	0.14	1.39
Freshwater	5	4	98	0-15	8.2	7.90	0.91	1.54	0.11	1.43
Freshwater	5	4	99	0-15	8.5	8.20	1.40	1.30	0.17	1.13
Freshwater	5	10	82	0-15	8.4	8.00	2.05	1.93	0.25	1.68
Freshwater	5	10	83	15-30	8.0	7.60	3.23		0.39	
Freshwater	5	10	84	30-60	7.8	7.60	4.15		0.50	
Freshwater	5	14	86	0-15	8.4	8.00	1.57	1.68	0.19	1.49
Freshwater	5	14	87	15-30	7.6	7.30	0.65		0.08	
Freshwater	5	14	88	30-60	7.7	7.40	2.74		0.33	
KCl	1	17	251	0-15	7.3	7.00	0.43	2.01	0.05	1.96
KCl	1	17	252	0-15	7.3	7.10	0.71	1.20	0.09	1.11
KCl	1	17	253	0-15	7.1	6.70	0.18	1.83	0.02	1.81
KCl	1	17	254	0-15	7.3	6.90	0.24	1.61	0.03	1.58
KCl	1	17	255	0-15	7.3	6.80	0.12	1.54	0.01	1.53
KCl	1	17	256	0-15	7.3	6.80	0.16	1.92	0.02	1.90
KCl	1	17	257	0-15	7.3	6.90	0.22	0.91	0.03	0.88
KCl	1	17	258	0-15	7.3	7.10	0.55	1.03	0.07	0.96
KCl	1	17	259	0-15	7.4	6.90	0.16	1.28	0.02	1.26
KCl	1	17	260	0-15	7.2	7.00	0.12	1.88	0.01	1.87
KCl	1	42	203	0-15	7.8	7.50	1.85	1.19	0.22	0.97
KCl	1	43	177	0-15	7.7	7.40	1.62	1.04	0.19	0.85
KCl	2	33	178	0-15	7.4	7.10	0.45	1.48	0.05	1.43
KCl	2	40	221	0-15	7.5	7.60	1.32	1.89	0.16	1.73
KCl	2	45	140	0-15	7.5	7.30	0.89	0.83	0.11	0.72
KCl	2	45	141	0-15	6.9	6.90	0.16	0.69	0.02	0.67
KCl	2	45	142	0-15	6.7	6.70	0.16	0.95	0.02	0.93
KCl	2	45	143	0-15	7.3	7.10	0.61	1.32	0.07	1.25
KCl	2	45	144	0-15	7.4	7.20	1.05	0.72	0.13	0.59
KCl	2	45	145	0-15	7.6	7.30	1.09	0.99	0.13	0.86
KCl	2	45	146	0-15	7.2	7.10	0.36	1.47	0.04	1.43
KCl	2	45	147	0-15	7.2	7.00	0.32	1.26	0.04	1.22
KCl	2	45	148	0-15	7.5	7.20	0.49	1.26	0.06	1.20
KCl	2	45	149	0-15	7.7	7.40	1.07	1.00	0.13	0.87
KCl	3	21	209	0-15	7.2	7.00	0.32	2.85	0.04	2.81
KCl	3	21	210	0-15	7.4	7.00	0.32	2.21	0.04	2.17
KCl	3	21	211	0-15	7.5	7.20	0.40	2.18	0.05	2.13
KCl	3	21	212	0-15	7.3	7.00	0.24	2.51	0.03	2.48
KCl	3	21	213	0-15	7.3	7.00	0.20	3.28	0.02	3.26
KCl	3	21	214	0-15	7.2	7.00	0.32	2.43	0.04	2.39
KCl	3	21	215	0-15	7.4	7.10	0.32	2.08	0.04	2.04
KCl	3	21	216	0-15	7.4	7.20	0.36	2.03	0.04	1.99
KCl	3	21	217	0-15	7.2	7.20	0.44	2.39	0.05	2.34
KCl	3	21	218	0-15	7.2	6.90	0.36	2.10	0.04	2.06
KCl	3	30	220	0-15	7.2	7.10	0.36	1.70	0.04	1.66
KCl	3	39	222	0-15	7.5	7.50	0.72	1.15	0.09	1.06

CaCO₃ Eq = Calcium carbonate equivalent (g CaCO₃ eq/100g); CEC = Cation Exchange Capacity; TC = Total Carbon; TIC = Total Inorganic Carbon; TOC = Total Organic Carbon.

Table 21. Chemical and Physical Properties of the Soil/Waste Mixtures.

Waste	Rate	Plot Number	Sample Number	Depth (cm)	pH H2O	pH CaCl2	CaCO3 Eq (%)	TOC	TIC (%)	TOC
KCl	4	16	TME261	0-15	7.6	7.30	0.79	2.20	0.09	2.11
KCl	4	16	262	0-15	7.6	7.40	0.63	1.62	0.08	1.54
KCl	4	16	263	0-15	7.6	7.40	0.95	1.51	0.11	1.40
KCl	4	16	264	0-15	7.7	7.40	0.83	1.36	0.10	1.26
KCl	4	16	265	0-15	7.5	7.40	0.91	1.24	0.11	1.13
KCl	4	16	266	0-15	7.7	7.40	0.83	1.60	0.10	1.50
KCl	4	16	267	0-15	7.8	7.40	0.75	1.73	0.09	1.64
KCl	4	16	268	0-15	7.7	7.60	0.63	1.70	0.08	1.62
KCl	4	16	269	0-15	7.7	7.50	1.11	2.32	0.13	2.19
KCl	4	16	270	0-15	7.7	7.30	0.75	2.41	0.09	2.32
KCl	4	16	271	15-30	7.6	7.40	1.19		0.14	
KCl	4	16	272	30-45	7.4	7.30	0.71		0.09	
KCl	4	24	172	0-15	7.5	7.30	0.81	1.81	0.10	1.71
KCl	4	29	223	0-15	7.5	7.50	1.64	1.75	0.20	1.55
KCl	4	29	224	15-30	7.4	7.30	1.52		0.18	
KCl	4	29	225	30-45	6.5	6.40				
KCl	4	29	226	45-60	7.3	6.90	0.35		0.04	
KCl	4	29	227	60-90	6.0	5.90				
KCl	5	25	160	0-15	7.7	7.60	0.89	1.44	0.11	1.33
KCl	5	25	161	0-15	7.6	7.50	0.69	1.05	0.08	0.97
KCl	5	25	162	0-15	7.5	7.50	0.77	1.29	0.09	1.20
KCl	5	25	163	0-15	7.9	7.90	1.46	1.15	0.18	0.97
KCl	5	25	164	0-15	7.6	7.60	0.93	1.31	0.11	1.20
KCl	5	25	165	0-15	8.0	8.00	1.01	1.36	0.12	1.24
KCl	5	25	166	0-15	7.9	7.90	0.89	1.14	0.11	1.03
KCl	5	25	167	0-15	7.2	7.30	0.65	1.06	0.08	0.98
KCl	5	25	168	0-15	7.8	7.80	1.09	1.43	0.13	1.30
KCl	5	25	169	0-15	7.5	7.60	0.83	1.26	0.10	1.16
KCl	5	25	170	15-30	6.1	6.00				
KCl	5	25	171	30-45	5.1	4.90				
KCl	5	26	273	0-15	7.9	7.70	0.79	1.41	0.09	1.32
KCl	5	26	274	0-15	7.2	7.00	0.12	1.72	0.01	1.71
KCl	5	37	240	0-15	7.5	7.20	1.10	1.26	0.13	1.13
NaCl	6	22	192	0-15	6.8	6.50		1.51		
NaCl	6	22	193	0-15	6.9	6.50		1.75		
NaCl	6	22	194	0-15	7.2	6.70	0.18	2.23	0.02	2.21
NaCl	6	22	195	0-15	7.0	6.60	0.24	1.56	0.03	1.53
NaCl	6	22	196	0-15	7.1	6.70	0.20	2.09	0.02	2.07
NaCl	6	22	197	0-15	7.0	6.60	0.16	1.60	0.02	1.58
NaCl	6	22	198	0-15	7.4	6.90	0.28	1.64	0.03	1.61
NaCl	6	22	199	0-15	7.1	6.60	0.16	1.45	0.02	1.43
NaCl	6	22	200	0-15	7.2	6.70	0.20	1.43	0.02	1.41
NaCl	6	22	201	0-15	7.0	6.50	0.08	1.46	0.01	1.45
NaCl	6	32	202	0-15	7.4	7.00	0.52	1.98	0.06	1.92
NaCl	6	41	204	0-15	7.5	7.20	1.00	2.40	0.12	2.28

CaCO3 Eq = Calcium carbonate equivalent (g CaCO3 eq/100g); CEC = Cation Exchange Capacity; TC = Total Carbon; TIC = Total Inorganic Carbon; TOC = Total Organic Carbon.

Table 21. Chemical and Physical Properties of the Soil/Waste Mixtures.

Waste	Rate	Plot Number	Sample Number	Depth (cm)	pH H2O	pH CaCl2	CaCO3 Eq (%)	TOC	TIC (%)	TOC
NaCl	7	18	TME233	0-15	7.8	7.50	1.62	2.21	0.19	2.02
NaCl	7	27	241	0-15	7.1	7.00	0.36	1.53	0.04	1.49
NaCl	7	27	242	0-15	7.3	7.10	0.28	1.24	0.03	1.21
NaCl	7	27	243	0-15	7.4	7.00	0.36	1.96	0.04	1.92
NaCl	7	27	244	0-15	7.0	6.50	0.16	1.31	0.02	1.29
NaCl	7	27	245	0-15	7.2	6.80	0.16	1.22	0.02	1.20
NaCl	7	27	246	0-15	6.9	6.80	0.16	1.44	0.02	1.42
NaCl	7	27	247	0-15	7.1	6.70	0.20	1.39	0.02	1.37
NaCl	7	27	248	0-15	7.2	6.80	0.24	1.66	0.03	1.63
NaCl	7	27	249	0-15	6.7	6.50		1.88		
NaCl	7	27	250	0-15	6.8	6.60		1.61		
NaCl	7	34	173	0-15	7.4	7.30	0.65	1.64	0.08	1.56
NaCl	8	20	219	0-15	7.5	7.20	0.24	2.26	0.03	2.23
NaCl	8	35	150	0-15	7.0	6.80	0.20	2.00	0.02	1.98
NaCl	8	35	151	0-15	7.1	6.90	0.32	1.95	0.04	1.91
NaCl	8	35	152	0-15	7.0	6.90	0.12	1.86	0.01	1.85
NaCl	8	35	153	0-15	7.0	6.80	0.12	1.62	0.01	1.61
NaCl	8	35	154	0-15	7.4	7.40	0.77	1.58	0.09	1.49
NaCl	8	35	155	0-15	7.1	7.00	0.28	2.09	0.03	2.06
NaCl	8	35	156	0-15	7.1	7.00	0.53	1.94	0.06	1.88
NaCl	8	35	157	0-15	7.1	6.70	0.04	2.13	0.00	2.13
NaCl	8	35	158	0-15	6.9	6.80	0.08	1.82	0.01	1.81
NaCl	8	35	159	0-15	7.2	7.00	0.20	1.93	0.02	1.91
NaCl	8	44	174	0-15	7.6	7.40	0.93	1.43	0.11	1.32
NaCl	8	44	175	15-30	7.8	7.50	3.24		0.39	
NaCl	8	44	176	30-60	7.9	7.50	4.53		0.54	
NaCl	9	19	228	0-15	7.5	7.10	0.48	2.80	0.06	2.74
NaCl	9	19	229	15-30	7.4	7.00	0.40		0.05	
NaCl	9	19	230	30-45	7.5	7.00	0.16		0.02	
NaCl	9	19	231	45-60	7.4	6.90	0.08		0.01	
NaCl	9	19	232	60-90	7.3	6.90	0.08		0.01	
NaCl	9	31	205	0-15	7.3	7.20	0.36	1.67	0.04	1.63
NaCl	9	31	206	15-30	5.4	5.30	0.02		0.00	
NaCl	9	31	207	30-45	5.5	5.30				
NaCl	9	31	208	45-60	5.3	5.20				
NaCl	9	36	275	0-15	7.8	7.60	1.86	1.10	0.22	0.88
NaCl	9	36	276	0-15	7.5	7.20	0.95	2.26	0.11	2.15
NaCl	9	36	277	0-15	8.0	7.50	1.38	1.30	0.17	1.13
NaCl	9	36	278	0-15	7.7	7.50	0.95	1.20	0.11	1.09
NaCl	9	36	279	0-15	7.7	7.50	0.79	1.40	0.09	1.31
NaCl	9	36	280	0-15	7.7	7.40	0.87	1.08	0.10	0.98
NaCl	9	36	281	0-15	7.9	7.60	1.58	1.32	0.19	1.13
NaCl	9	36	282	0-15	7.8	7.50	1.26	1.31	0.15	1.16
NaCl	9	36	283	0-15	7.8	7.50	1.66	1.06	0.20	0.86
NaCl	9	36	284	0-15	7.7	7.50	2.25	0.87	0.27	0.60

CaCO3 Eq = Calcium carbonate equivalent (g CaCO3 eq/100g); CEC = Cation Exchange Capacity; TC = Total Carbon; TIC = Total Inorganic Carbon; TOC = Total Organic Carbon

Table 21. Chemical and Physical Properties of the Soil/Waste Mixtures.

Waste	Rate	Plot Number	Sample Number	Depth (cm)	pH		CaCO ₃ Eq (%)	TOC	TIC (%)	TOC
					H ₂ O	CaCl ₂				
NaCl	10	23	TME179	0-15	7.4	7.30	0.61	1.81	0.07	1.74
NaCl	10	23	180	0-15	7.2	7.30	0.53	1.73	0.06	1.67
NaCl	10	23	181	0-15	7.2	7.20	0.85	1.76	0.10	1.66
NaCl	10	23	182	0-15	7.6	7.60	0.93	2.52	0.11	2.41
NaCl	10	23	183	0-15	7.5	7.40	0.71	1.59	0.09	1.50
NaCl	10	23	184	0-15	7.6	7.60	1.09	2.11	0.13	1.98
NaCl	10	23	185	0-15	7.4	7.40	0.77	2.12	0.09	2.03
NaCl	10	23	186	0-15	7.6	7.50	1.37	1.66	0.16	1.50
NaCl	10	23	187	0-15	7.7	7.70	1.84	1.39	0.22	1.17
NaCl	10	23	188	0-15	7.4	7.40	0.60	1.27	0.07	1.20
NaCl	10	23	189	15-30	7.4	7.30	0.80		0.10	
NaCl	10	23	190	30-45	7.9	7.60	3.77		0.45	
NaCl	10	23	191	45-60	8.0	7.80	4.73		0.57	
NaCl	10	28	234	0-15	7.5	7.50	0.87	1.87	0.10	1.77
NaCl	10	38	235	0-15	7.8	7.70	2.02	1.22	0.24	0.98
NaCl	10	38	236	15-30	7.1	6.90	0.48		0.06	
NaCl	10	38	237	30-45	5.8	5.60				
NaCl	10	38	238	45-60	5.7	5.40				
NaCl	10	38	239	60-90	5.7	5.40				

CaCO₃ Eq = Calcium carbonate equivalent (g CaCO₃ eq/100g); CEC = Cation Exchange Capacity; TC = Total Carbon; TIC = Total Inorganic Carbon; TOC = Total Organic Carbon.

4.2.2 Total Elemental Analysis

Data for the total elemental content of the soil waste mixtures are presented in Table 22. In general elemental content increased as a result of waste addition as was anticipated.

4.2.3 DTPA Extract Data

DTPA extract data for the soil/waste mixtures are presented in Table 23. The literature indicates that DTPA soil extractions are correlated with plant uptake, i.e., as DTPA extractable elemental content increases plant uptake of that element generally increases. Interpretation of these data would involve comparison of the values for individual elements in the control plots and the treated plots. For example, K values for Treatments 1 (control), 2, 3, 4, and 5 have values of 157, 240, 447, 842, and 1360 $\mu\text{g/g}$ respectively. These values indicate an increase in the potential for plant uptake of K as the application rate increased. The DTPA data will be interpreted in more detail when tissue data are available for all treatments.

4.2.4 Chloride Concentration in the Waste/Soil Mixtures

The chloride concentration in the waste was used as the basis for application of the materials. Assessment of the chloride concentrations in the plots provide an indication of the rate of application actually achieved. Because the post-application sampling occurred approximately two months after the actual spreading some leaching or downward movement of some of the components, particularly chloride, was expected. This leaching complicates the determination of the concentration of chloride actually added at the time of application and affects the KCl and NaCl treatments to a greater extent than the freshwater treatments.

Table 24 provides the mean chloride concentrations which occurred prior to and following waste application for most of the treatments. The table does not include the data for the control treatments which include Freshwater 1, KCl 1 and NaCl 6.

Table 22. Total Elemental Analysis Data for the Soil/Waste Mixtures.

Waste	Rate	Plot Number	Sample Number	Depth (cm)	Mn	Na	K	Ca	Mg	P (mg/g)	Al	Fe	Ti	Ba	Cu	Zn (ug/g)	Cd
Freshwater	1	3	TME100	0-15	0.409	7.07	11.93	6.43	3.05	0.439	37.5	14.6	1.96	0.465	11.33	34.6	0.298
Freshwater	1	9	89	0-15	0.420	7.27	11.91	8.62	3.02	0.511	36.2	15.9	2.08	0.599	24.17	46.9	0.000
Freshwater	1	13	112	0-15	0.405	7.25	11.40	5.12	1.80	0.553	32.8	12.3	2.00	0.447	6.85	30.6	0.000
Freshwater	2	2	126	0-15	0.333	7.86	11.98	6.30	1.32	0.571	33.7	11.5	2.14	0.657	<2.96	32.9	0.000
Freshwater	2	8	101	0-15	0.368	7.71	12.15	7.43	2.16	0.663	35.8	15.9	1.94	0.268	6.12	43.9	0.000
Freshwater	2	8	102	0-15	0.410	7.87	12.33	9.30	2.89	0.778	37.6	15.3	2.00	0.560	11.74	41.5	0.573
Freshwater	2	8	103	0-15	0.409	7.80	12.21	7.12	2.48	0.522	35.6	12.7	2.02	0.496	10.02	36.4	0.000
Freshwater	2	8	104	0-15	0.422	8.02	12.29	8.02	1.79	0.534	35.5	15.0	1.98	0.422	14.00	40.5	0.255
Freshwater	2	8	105	0-15	0.378	8.20	14.37	6.73	1.75	0.613	39.8	18.9	2.13	0.189	17.08	41.3	0.237
Freshwater	2	8	106	0-15	0.371	7.78	13.04	5.89	2.46	0.674	37.9	17.7	2.07	0.272	13.98	42.3	0.118
Freshwater	2	8	107	0-15	0.355	7.60	12.57	5.39	2.60	0.673	36.7	16.6	1.98	0.448	6.61	32.2	0.000
Freshwater	2	8	108	0-15	0.436	7.38	11.67	5.60	2.75	0.680	35.0	15.5	1.98	0.394	13.53	43.5	0.576
Freshwater	2	8	109	0-15	0.383	7.89	12.59	4.99	2.83	0.671	36.5	17.1	2.10	0.325	22.20	44.9	0.261
Freshwater	2	8	110	0-15	0.364	7.35	12.07	4.03	2.13	0.668	33.6	16.4	1.97	0.204	16.72	39.0	0.265
Freshwater	2	8	111	15-30	0.326	7.46	12.98	4.18	2.02	0.576	36.0	16.5	1.98	0.333	6.90	31.2	0.238
Freshwater	2	15	85	0-15	0.327	7.33	11.72	7.47	3.85	0.588	33.2	16.0	2.08	0.348	13.47	41.3	0.612
Freshwater	3	1	127	0-15	0.457	10.07	15.72	6.12	1.57	0.717	42.7	17.1	2.74	0.595	11.30	46.4	0.000
Freshwater	3	1	128	15-30	0.317	7.31	14.71	4.70	2.57	0.405	46.4	22.2	2.21	0.535	9.66	43.1	0.000
Freshwater	3	6	129	0-15	0.387	8.24	12.66	5.51	1.87	0.663	33.1	16.0	2.17	0.493	10.13	45.9	0.000
Freshwater	3	11	130	0-15	0.429	8.38	13.74	4.53	2.54	0.667	39.0	16.1	2.16	0.300	12.62	45.0	0.000
Freshwater	3	11	131	0-15	0.391	7.85	13.42	6.96	2.65	0.618	38.6	18.3	2.16	0.600	8.18	41.8	0.000
Freshwater	3	11	132	0-15	0.354	7.25	12.38	7.67	2.41	0.638	36.1	17.2	2.06	0.576	10.34	44.0	0.000
Freshwater	3	11	133	0-15	0.376	7.83	13.04	7.62	2.76	0.642	39.5	17.4	2.08	0.627	12.75	42.7	0.000
Freshwater	3	11	134	0-15	0.388	7.84	13.75	6.92	2.40	0.545	40.2	19.9	2.10	0.517	14.38	62.3	0.000
Freshwater	3	11	135	0-15	0.330	7.76	12.13	6.49	2.28	0.503	37.3	14.9	1.98	0.499	<2.96	37.5	0.000
Freshwater	3	11	136	0-15	0.406	7.84	12.48	7.97	2.00	0.547	36.0	16.1	1.94	0.810	7.63	37.0	0.000
Freshwater	3	11	137	0-15	0.385	7.99	13.27	7.06	1.79	0.591	38.0	16.6	2.10	0.663	3.98	44.8	0.000
Freshwater	3	11	138	0-15	0.444	7.91	12.20	5.19	2.21	0.572	33.9	14.5	2.04	0.481	8.87	39.8	0.000
Freshwater	3	11	139	0-15	0.425	7.57	12.99	7.45	1.93	0.462	38.3	17.2	2.08	0.634	<2.96	39.3	0.000
Freshwater	4	5	81	0-15	0.334	7.30	11.71	8.11	3.17	0.512	36.4	13.9	2.00	0.554	12.52	43.0	0.000
Freshwater	4	7	114	0-15	0.420	7.46	12.61	4.89	2.68	0.623	35.4	17.0	2.06	0.276	11.17	44.4	0.272
Freshwater	4	7	115	0-15	0.354	7.63	12.52	5.40	2.94	0.711	36.9	15.1	2.05	0.424	<2.96	35.9	0.260
Freshwater	4	7	116	0-15	0.361	7.27	12.79	4.50	2.51	0.760	35.8	15.5	2.00	0.280	6.76	45.4	0.000
Freshwater	4	7	117	0-15	0.387	6.65	11.57	5.01	2.55	0.569	31.2	15.9	1.97	0.368	3.47	48.3	0.000
Freshwater	4	7	118	0-15	0.344	7.12	11.45	5.90	3.31	0.622	35.0	14.1	1.91	0.435	4.64	41.2	0.000
Freshwater	4	7	119	0-15	0.366	7.47	12.23	5.75	3.02	0.613	35.9	14.0	2.11	0.461	<2.96	37.9	0.000
Freshwater	4	7	120	0-15	0.378	7.75	11.88	6.89	2.67	0.619	35.8	13.3	2.09	0.593	10.85	77.2	0.000
Freshwater	4	7	121	0-15	0.352	7.20	12.02	6.77	2.49	0.611	35.4	15.8	2.00	0.631	13.04	37.0	0.000
Freshwater	4	7	122	0-15	0.384	7.27	11.92	8.24	2.09	0.595	35.9	16.3	2.07	0.762	11.84	39.2	0.263
Freshwater	4	7	123	0-15	0.465	7.92	12.69	7.15	2.48	0.661	37.0	15.9	2.12	0.687	10.40	40.8	0.000
Freshwater	4	7	124	15-30	0.421	7.97	13.73	7.93	3.42	0.471	45.0	22.8	2.20	0.561	23.11	53.0	0.000
Freshwater	4	7	125	30-60	0.361	6.17	12.86	6.76	3.24	0.551	29.6	20.6	2.23	0.292	18.33	47.2	0.000
Freshwater	4	12	113	0-15	0.358	7.43	11.62	5.47	2.92	0.603	34.7	12.9	2.07	0.405	14.80	41.0	5.691

Table 22. Total Elemental Analysis Data for the Soil/Waste Mixtures.

Waste	Rate	Plot Number	Sample Number	Depth (cm)	Pb	Mo	V	Cr	Ni (ug/g)	Sr	Li	Zr
Freshwater	1	3	TME100	0-15	8.95	20.0	49.5	36.1	20.87	95.7	24.2	93.9
Freshwater	1	9	89	0-15	9.60	17.6	46.9	70.0	21.40	101.0	21.1	99.6
Freshwater	1	13	112	0-15	13.97	<15.4	30.1	56.1	11.60	93.8	13.4	81.7
Freshwater	2	2	126	0-15	15.34	<15.4	25.4	47.4	<8.86	106.8	<11.	73.4
Freshwater	2	8	101	0-15	15.44	<15.4	36.2	67.9	19.44	104.6	14.6	76.7
Freshwater	2	8	102	0-15	13.46	18.6	48.1	54.4	24.91	113.9	22.9	95.3
Freshwater	2	8	103	0-15	18.99	17.4	42.7	41.2	21.63	106.8	20.0	90.7
Freshwater	2	8	104	0-15	17.57	20.9	45.1	79.7	30.81	111.0	21.6	92.9
Freshwater	2	8	105	0-15	18.27	21.4	53.1	92.8	35.82	109.1	25.6	125.3
Freshwater	2	8	106	0-15	14.45	20.3	50.7	82.0	38.23	101.7	22.4	109.9
Freshwater	2	8	107	0-15	14.31	<15.4	37.2	69.9	26.97	99.1	14.0	84.8
Freshwater	2	8	108	0-15	14.12	17.9	44.7	72.9	26.22	98.0	20.2	94.8
Freshwater	2	8	109	0-15	14.37	21.7	50.9	70.8	27.17	98.0	23.0	98.0
Freshwater	2	8	110	0-15	22.55	19.1	49.1	71.4	26.53	86.2	22.8	93.1
Freshwater	2	8	111	15-30	23.09	<15.4	40.7	72.4	19.04	91.6	15.7	90.0
Freshwater	2	15	85	0-15	10.41	18.4	53.0	65.2	25.71	94.0	24.8	101.6
Freshwater	3	1	127	0-15	22.90	18.7	45.8	76.7	18.14	130.6	20.5	109.8
Freshwater	3	1	128	15-30	16.34	23.3	61.2	94.1	29.96	98.0	28.5	98.8
Freshwater	3	6	129	0-15	20.53	<15.4	43.2	67.2	13.87	105.9	16.0	82.9
Freshwater	3	11	130	0-15	18.38	18.4	50.8	57.1	25.24	101.3	22.2	104.3
Freshwater	3	11	131	0-15	19.56	16.6	49.9	75.6	19.56	107.8	18.7	92.6
Freshwater	3	11	132	0-15	41.66	16.5	48.2	83.0	24.52	107.0	17.1	91.6
Freshwater	3	11	133	0-15	22.83	20.5	51.9	80.9	29.95	110.0	22.5	99.0
Freshwater	3	11	134	0-15	33.56	25.4	48.2	152.9	69.95	108.6	19.2	87.4
Freshwater	3	11	135	0-15	15.28	<15.4	34.3	50.7	11.53	102.4	12.4	74.7
Freshwater	3	11	136	0-15	22.31	<15.4	40.1	74.3	14.97	112.1	15.8	76.0
Freshwater	3	11	137	0-15	36.04	<15.4	47.4	71.0	14.57	114.7	13.2	68.4
Freshwater	3	11	138	0-15	22.54	16.7	39.8	70.2	19.76	101.6	16.5	88.9
Freshwater	3	11	139	0-15	15.87	<15.4	39.8	72.6	16.94	103.3	13.7	73.2
Freshwater	4	5	81	0-15	8.09	20.6	51.7	47.5	24.00	102.8	25.3	99.7
Freshwater	4	7	114	0-15	17.70	<15.4	39.5	72.4	14.98	88.8	14.4	92.9
Freshwater	4	7	115	0-15	12.49	<15.4	36.4	55.4	17.69	97.8	11.4	89.2
Freshwater	4	7	116	0-15	14.66	<15.4	42.1	50.2	17.31	85.6	17.1	85.1
Freshwater	4	7	117	0-15	7.21	<15.4	34.2	61.2	10.95	81.4	11.5	79.3
Freshwater	4	7	118	0-15	4.93	<15.4	36.9	40.6	12.48	92.0	14.2	89.1
Freshwater	4	7	119	0-15	11.84	<15.4	34.9	43.8	10.36	96.2	13.0	81.1
Freshwater	4	7	120	0-15	8.44	19.3	44.3	54.9	26.53	102.5	20.5	99.2
Freshwater	4	7	121	0-15	13.30	18.3	46.4	72.5	21.39	97.3	21.1	93.6
Freshwater	4	7	122	0-15	7.90	15.8	46.6	72.1	25.00	102.1	20.0	89.0
Freshwater	4	7	123	0-15	21.37	18.3	45.5	73.4	25.58	107.7	19.7	92.5
Freshwater	4	7	124	15-30	16.54	19.0	58.6	78.0	28.96	105.0	25.5	100.8
Freshwater	4	7	125	30-60	12.78	15.6	65.0	86.1	33.89	75.0	27.8	100.8
Freshwater	4	12	113	0-15	3.13	15.6	45.2	39.0	19.92	93.6	20.8	96.7

Table 22. Total Elemental Analysis Data for the Soil/Waste Mixtures.

Waste	Rate	Plot Number	Sample Number	Depth (cm)	Mn	Na	K	Ca	Mg	P (mg/g)	Al	Fe	Ti	Ba	Cu (ug/g)	Zn (ug/g)	Cd
Freshwater	5	4	90	0-15	0.336	7.55	12.47	10.14	2.91	0.647	37.4	16.1	1.99	0.564	<2.96	41.2	0.000
Freshwater	5	4	91	0-15	0.364	7.62	11.96	10.99	2.61	0.592	36.6	16.7	2.00	0.643	<2.96	40.5	0.595
Freshwater	5	4	92	0-15	0.408	7.81	12.93	10.07	2.83	0.698	37.8	18.2	2.09	0.511	11.67	44.8	0.271
Freshwater	5	4	93	0-15	0.354	7.45	12.46	11.09	3.21	0.637	35.9	17.4	2.12	0.482	11.68	44.2	0.316
Freshwater	5	4	94	0-15	0.371	7.37	11.88	10.14	2.78	0.693	35.8	15.5	1.99	0.619	10.24	42.7	0.292
Freshwater	5	4	95	0-15	0.359	7.60	12.53	9.45	2.72	0.664	37.8	17.2	2.03	0.739	9.67	39.9	0.000
Freshwater	5	4	96	0-15	0.320	7.34	11.72	7.93	2.74	0.529	37.7	15.8	1.99	0.782	3.39	39.5	0.309
Freshwater	5	4	97	0-15	0.349	7.62	12.95	6.29	2.33	0.677	36.8	17.2	1.98	0.251	17.42	42.0	0.000
Freshwater	5	4	98	0-15	0.363	7.55	12.65	8.51	3.00	0.682	38.8	17.2	2.01	0.780	13.64	38.9	0.000
Freshwater	5	4	99	0-15	0.335	7.34	12.36	8.75	2.35	0.688	36.7	16.6	1.99	0.614	13.26	42.7	0.241
Freshwater	5	10	82	0-15	0.412	7.94	12.87	12.35	2.74	0.569	37.8	17.9	2.18	0.647	4.48	45.4	0.840
Freshwater	5	10	83	15-30	0.321	6.72	12.37	10.12	2.91	0.447	29.7	16.5	1.90	0.372	14.41	38.7	0.000
Freshwater	5	10	84	30-60	0.298	6.28	11.24	12.36	4.05	0.409	32.0	16.2	1.93	0.398	<2.96	37.5	0.000
Freshwater	5	14	86	0-15	0.425	7.72	12.30	11.36	2.66	0.604	36.2	16.5	2.14	0.766	8.55	43.6	0.000
Freshwater	5	14	87	15-30	0.345	7.22	12.44	8.13	3.45	0.517	40.5	19.2	2.09	0.530	13.63	41.2	0.000
Freshwater	5	14	88	30-60	0.326	6.44	12.40	9.13	3.50	0.442	36.1	18.5	2.05	0.447	6.22	39.4	0.519
KCl	1	17	251	0-15	0.333	6.47	11.62	5.42	2.19	0.501	32.6	13.4	1.82	0.207	7.49	36.3	0.000
KCl	1	17	252	0-15	0.153	2.92	5.21	2.61	1.09	0.246	14.7	6.4	0.76	0.093	6.53	16.1	0.000
KCl	1	17	253	0-15	0.391	7.41	14.50	5.75	2.49	0.632	39.3	17.9	2.09	0.261	29.94	48.8	0.000
KCl	1	17	254	0-15	0.362	7.73	15.41	5.43	2.27	0.636	40.7	19.1	1.96	0.252	23.29	45.8	0.000
KCl	1	17	255	0-15	0.365	7.09	12.92	5.80	2.64	0.483	35.0	14.2	1.86	0.242	24.15	46.3	0.000
KCl	1	17	256	0-15	0.409	7.58	14.46	4.68	1.40	0.582	35.2	15.9	2.08	0.223	35.01	45.1	0.000
KCl	1	17	257	0-15	0.355	7.41	14.98	5.60	2.04	0.576	39.6	19.3	2.04	0.231	34.36	48.0	0.000
KCl	1	17	258	0-15	0.361	8.03	15.73	6.93	3.29	0.662	40.8	18.8	1.87	0.263	38.11	48.2	0.000
KCl	1	17	259	0-15	0.387	7.85	14.83	6.13	2.65	0.673	40.0	18.0	2.14	0.259	23.69	45.8	0.257
KCl	1	17	260	0-15	0.425	7.98	14.71	6.66	2.67	0.657	39.0	16.2	2.17	0.254	24.48	47.3	0.556
KCl	1	42	203	0-15	0.365	7.18	12.33	7.18	3.44	0.542	29.8	13.7	1.87	0.187	76.49	51.1	0.000
KCl	1	43	177	0-15	0.410	9.68	12.88	8.03	2.32	0.614	37.2	15.7	2.23	0.248	26.35	42.1	0.280
KCl	2	33	178	0-15	0.352	8.19	12.04	6.47	2.61	0.519	35.9	16.0	2.02	0.204	27.67	40.3	0.269
KCl	2	40	221	0-15	0.361	6.71	11.22	8.16	2.25	0.423	32.1	13.4	1.82	0.219	17.20	43.1	0.282
KCl	2	45	140	0-15	0.451	7.51	13.17	7.48	2.96	0.610	36.7	18.1	1.97	0.462	13.19	36.8	0.000
KCl	2	45	141	0-15	0.272	7.12	12.69	5.59	2.20	1.201	37.0	15.5	1.92	0.527	17.52	38.4	0.262
KCl	2	45	142	0-15	0.352	7.73	13.65	6.02	2.49	0.905	39.4	16.3	2.08	0.570	3.34	34.0	0.303
KCl	2	45	143	0-15	0.469	9.38	18.02	7.09	2.20	1.069	48.7	22.5	2.64	0.288	12.42	48.4	0.000
KCl	2	45	144	0-15	0.491	8.90	17.29	6.95	3.08	0.632	51.0	24.7	2.71	0.244	15.88	51.7	0.289
KCl	2	45	145	0-15	0.490	10.09	17.83	9.31	2.29	0.614	48.3	22.7	2.68	0.292	17.13	49.4	0.000
KCl	2	45	146	0-15	0.512	9.09	14.82	6.50	2.22	0.605	40.6	15.3	2.40	0.278	11.45	41.9	0.000
KCl	2	45	147	0-15	0.435	8.27	13.85	5.20	1.50	0.489	38.5	16.7	2.22	0.263	16.91	41.0	0.000
KCl	2	45	148	0-15	0.440	9.48	15.98	7.55	1.95	0.529	43.5	18.5	2.38	0.290	15.23	44.8	0.299
KCl	2	45	149	0-15	0.436	9.01	17.12	4.33	2.28	0.560	44.1	20.4	2.58	0.189	8.85	44.5	0.000
KCl	3	21	209	0-15	0.414	7.93	14.82	6.72	2.48	0.757	34.6	14.7	1.91	0.246	76.94	58.6	0.000
KCl	3	21	210	0-15	0.441	8.56	15.22	7.12	2.78	0.836	36.3	15.1	1.98	0.251	82.25	75.0	0.000
KCl	3	21	211	0-15	0.410	8.33	14.73	7.34	2.96	0.760	33.9	13.3	1.90	0.266	97.69	62.4	0.000
KCl	3	21	212	0-15	0.370	6.49	11.98	5.62	2.67	0.459	33.5	14.0	1.70	0.232	28.30	42.0	0.000
KCl	3	21	213	0-15	0.414	7.57	13.14	5.85	2.49	0.520	36.2	13.3	1.95	0.248	20.61	48.8	0.000
KCl	3	21	214	0-15	0.353	6.65	11.60	5.33	1.71	0.504	31.6	12.7	1.73	0.212	24.06	37.4	0.000
KCl	3	21	215	0-15	0.453	7.38	12.68	6.56	2.54	0.475	34.1	13.6	1.85	0.247	34.91	51.2	0.000
KCl	3	21	216	0-15	0.458	7.46	12.97	6.64	2.85	0.473	37.8	15.2	2.11	0.242	17.64	43.0	0.276
KCl	3	21	217	0-15	0.418	7.25	13.44	6.91	2.88	0.474	38.0	16.2	2.04	0.300	12.86	58.4	0.000
KCl	3	21	218	0-15	0.404	8.09	13.80	5.77	2.23	0.634	37.1	14.7	2.15	0.158	19.46	41.7	0.000
KCl	3	30	220	0-15	0.369	6.77	11.21	5.72	1.83	0.416	31.1	11.7	1.80	0.241	9.04	37.8	0.000
KCl	3	39	222	0-15	0.386	7.44	13.14	5.31	2.88	0.483	35.6	16.1	2.14	0.152	13.33	40.0	0.000

Table 22. Total Elemental Analysis Data for the Soil/Waste Mixtures.

Waste	Rate	Plot Number	Sample Number	Depth (cm)	Pb	Mo	V	Cr	Ni (ug/g)	Sr	Li	Zr
Freshwater	5	4	90	0-15	13.55	<15.4	42.7	56.2	14.13	110.4	16.7	81.9
Freshwater	5	4	91	0-15	14.89	<15.4	39.0	80.4	19.35	113.1	13.7	72.9
Freshwater	5	4	92	0-15	18.45	22.3	56.2	103.9	43.96	115.1	23.3	96.6
Freshwater	5	4	93	0-15	8.52	18.3	54.3	80.8	32.84	108.9	23.4	94.1
Freshwater	5	4	94	0-15	10.53	18.4	50.9	58.2	26.03	110.0	22.5	95.1
Freshwater	5	4	95	0-15	13.00	15.8	50.9	75.5	22.82	113.2	22.4	94.0
Freshwater	5	4	96	0-15	5.86	<15.4	34.9	57.7	12.03	106.2	13.0	74.4
Freshwater	5	4	97	0-15	11.61	23.2	52.8	87.1	42.75	95.5	26.1	94.5
Freshwater	5	4	98	0-15	11.31	17.4	50.2	71.4	26.98	111.1	24.1	91.7
Freshwater	5	4	99	0-15	5.78	18.1	51.1	62.2	25.55	108.0	22.7	88.0
Freshwater	5	10	82	0-15	14.29	<15.4	46.5	68.9	8.96	119.9	16.0	81.8
Freshwater	5	10	83	15-30	10.57	16.6	55.7	57.9	29.78	89.1	24.0	94.6
Freshwater	5	10	84	30-60	4.43	<15.4	43.1	36.6	<8.86	87.4	14.2	77.7
Freshwater	5	14	86	0-15	23.85	15.8	48.2	65.2	15.79	116.4	19.7	87.7
Freshwater	5	14	87	15-30	10.29	18.1	57.9	70.9	29.76	102.6	26.7	98.2
Freshwater	5	14	88	30-60	8.56	<15.4	51.3	57.0	19.71	88.9	18.7	94.1
KCl	1	17	251	0-15	10.82	18.9	48.0	58.3	26.91	114.0	20.3	97.1
KCl	1	17	252	0-15	5.17	<15.4	21.1	32.8	16.05	50.6	11.7	51.3
KCl	1	17	253	0-15	10.26	35.6	68.1	102.1	66.14	80.4	43.9	156.0
KCl	1	17	254	0-15	10.77	29.5	64.1	85.6	49.08	79.9	36.6	140.0
KCl	1	17	255	0-15	16.30	27.1	53.0	71.9	48.31	77.1	36.7	132.1
KCl	1	17	256	0-15	18.36	37.6	65.1	102.4	71.74	78.6	48.2	192.8
KCl	1	17	257	0-15	13.33	38.5	69.5	145.4	88.73	78.0	46.7	194.6
KCl	1	17	258	0-15	20.12	42.1	70.1	111.0	78.35	84.1	51.5	162.5
KCl	1	17	259	0-15	28.06	29.9	63.9	87.3	53.04	84.7	37.8	160.4
KCl	1	17	260	0-15	16.41	29.2	61.7	75.9	53.40	82.9	37.8	173.0
KCl	1	42	203	0-15	5.91	60.0	81.8	86.2	90.67	115.5	87.7	239.5
KCl	1	43	177	0-15	12.90	28.6	53.8	75.7	39.25	137.7	40.4	160.9
KCl	2	33	178	0-15	14.77	32.0	56.9	73.1	42.71	119.5	42.7	160.9
KCl	2	40	221	0-15	8.74	20.3	46.0	56.7	12.12	124.3	15.8	101.5
KCl	2	45	140	0-15	15.72	21.6	48.8	82.8	27.51	97.4	21.9	92.6
KCl	2	45	141	0-15	16.48	17.0	41.8	55.4	21.97	95.7	18.0	82.4
KCl	2	45	142	0-15	14.26	<15.4	37.0	72.8	12.44	103.8	15.5	81.3
KCl	2	45	143	0-15	17.60	26.7	67.6	81.0	34.94	124.2	29.8	143.1
KCl	2	45	144	0-15	12.99	28.3	77.1	104.8	47.93	120.1	33.2	174.4
KCl	2	45	145	0-15	12.36	28.1	64.6	103.9	34.82	134.8	31.2	167.1
KCl	2	45	146	0-15	17.78	25.0	50.0	57.9	24.41	117.2	25.3	130.2
KCl	2	45	147	0-15	20.06	24.1	49.3	66.5	37.83	110.6	27.5	128.4
KCl	2	45	148	0-15	12.54	25.1	58.8	85.1	34.93	125.7	29.6	140.3
KCl	2	45	149	0-15	16.08	20.7	57.3	70.1	25.63	105.5	25.4	143.8
KCl	3	21	209	0-15	11.38	65.3	85.8	96.7	96.24	139.5	88.1	247.1
KCl	3	21	210	0-15	11.52	67.5	89.5	112.8	109	141.7	94.6	261.2
KCl	3	21	211	0-15	14.60	78.6	96.1	104.2	119	142.9	111	288.1
KCl	3	21	212	0-15	16.25	25.5	52.7	75.6	25.77	120.2	29.7	98.3
KCl	3	21	213	0-15	8.75	26.8	45.5	65.8	19.76	137.2	20.6	111.5
KCl	3	21	214	0-15	16.84	24.6	45.4	59.6	20.05	117.6	26.2	102.9
KCl	3	21	215	0-15	12.95	31.5	51.2	83.1	33.79	133.5	34.6	133.5
KCl	3	21	216	0-15	12.40	25.6	49.1	68.1	17.91	135.0	17.4	110.2
KCl	3	21	217	0-15	15.38	22.1	50.1	72.1	8.95	136.5	13.1	93.4
KCl	3	21	218	0-15	20.28	27.4	46.3	81.7	21.65	135.4	18.9	129.6
KCl	3	30	220	0-15	13.15	16.7	38.4	48.2	<8.86	122.	<11.4	74.0
KCl	3	39	222	0-15	11.91	25.2	55.0	60.1	13.61	123.1	11.6	117.7

Table 22. Total Elemental Analysis Data for the Soil/Waste Mixtures.

Waste	Rate	Plot Number	Sample Number	Depth (cm)	Mn	Na	K	Ca	Mg	P (mg/g)	Al	Fe	Ti	Ba	Cu	Zn (ug/g)	Cd
KCl	4	16	261	0-15	0.453	7.48	14.08	8.09	2.71	0.669	36.3	15.9	2.05	0.288	27.55	48.5	0.551
KCl	4	16	262	0-15	0.438	7.85	15.02	6.86	2.63	0.660	39.0	16.7	1.99	0.278	30.81	52.8	0.531
KCl	4	16	263	0-15	0.397	8.30	16.98	7.30	2.46	0.679	40.6	18.1	2.23	0.259	28.82	51.2	0.280
KCl	4	16	264	0-15	0.397	8.13	14.55	7.25	2.59	0.622	38.7	16.9	2.11	0.268	19.05	46.3	0.122
KCl	4	16	265	0-15	0.364	7.42	14.48	5.32	1.49	0.558	36.4	17.0	2.12	0.152	11.41	37.6	0.278
KCl	4	16	266	0-15	0.436	8.04	14.73	6.54	1.79	0.621	36.9	16.5	2.12	0.263	7.82	37.5	0.000
KCl	4	16	267	0-15	0.425	8.18	14.65	9.05	2.61	0.597	38.6	16.0	1.81	0.301	8.06	35.7	0.000
KCl	4	16	268	0-15	0.374	7.74	15.11	7.21	2.69	0.606	38.9	16.9	2.02	0.284	16.36	38.2	0.000
KCl	4	16	269	0-15	0.414	8.34	15.09	8.45	2.86	0.704	38.7	16.4	1.98	0.341	14.89	44.1	0.000
KCl	4	16	270	0-15	0.444	7.59	13.66	7.40	2.28	0.587	35.9	14.8	2.07	0.303	6.33	37.3	0.274
KCl	4	16	271	15-30	0.345	7.06	13.20	8.74	2.92	0.532	37.3	18.1	1.94	0.233	16.10	30.8	0.000
KCl	4	16	272	30-45	0.307	6.89	12.75	6.67	3.02	0.407	40.0	18.8	1.88	0.228	17.92	35.0	0.000
KCl	4	24	172	0-15	0.334	7.28	11.61	7.28	2.87	0.503	33.9	13.0	2.02	0.217	17.87	42.0	0.000
KCl	4	29	223	0-15	0.409	7.50	13.17	6.25	2.51	0.552	36.3	15.0	2.11	0.246	11.39	42.0	0.000
KCl	4	29	224	15-30	0.389	7.86	14.79	4.84	2.93	0.559	42.6	20.0	2.35	0.144	19.95	46.1	0.000
KCl	4	29	225	30-45	0.317	7.74	14.90	5.11	2.98	0.520	43.0	18.7	2.14	0.227	22.76	42.5	0.000
KCl	4	29	226	45-60	0.331	7.20	14.21	4.86	2.49	0.509	41.6	19.0	2.14	0.161	27.32	45.2	0.000
KCl	4	29	227	60-90	0.378	7.80	14.42	4.72	2.64	0.516	43.5	18.8	2.14	0.204	15.97	43.0	0.000
KCl	5	25	160	0-15	0.404	7.29	12.95	7.15	2.38	0.438	36.3	14.8	2.02	0.135	<2.96	39.6	0.000
KCl	5	25	161	0-15	0.370	7.28	12.70	6.13	2.07	0.400	34.5	14.1	2.04	0.120	<2.96	33.4	0.000
KCl	5	25	162	0-15	0.376	7.10	11.99	6.81	1.96	0.396	34.2	15.1	1.94	0.294	<2.96	34.8	0.000
KCl	5	25	163	0-15	0.381	7.01	13.08	6.23	2.65	0.412	36.5	16.7	2.02	0.081	<2.96	40.2	0.000
KCl	5	25	164	0-15	0.472	7.64	12.94	6.67	2.09	0.463	34.2	15.0	1.90	0.151	<2.96	39.0	0.000
KCl	5	25	165	0-15	0.331	7.20	12.76	8.53	2.29	0.430	35.1	15.4	2.00	0.257	<2.96	39.7	0.000
KCl	5	25	166	0-15	0.344	7.46	12.52	8.39	2.17	0.501	35.6	15.3	2.03	0.313	7.24	41.7	0.000
KCl	5	25	167	0-15	0.335	7.49	12.67	6.77	2.33	0.493	35.6	14.6	2.11	0.218	5.64	39.2	0.000
KCl	5	25	168	0-15	0.317	7.92	14.27	9.25	2.44	0.537	37.4	16.1	2.13	0.234	10.31	45.1	0.000
KCl	5	25	169	0-15	0.330	7.92	14.25	7.95	2.60	0.544	37.3	15.5	1.99	0.171	13.15	43.1	0.000
KCl	5	25	170	15-30	0.447	7.34	12.26	5.00	2.13	0.309	37.1	14.9	2.07	0.213	8.72	34.9	0.000
KCl	5	25	171	30-45	0.304	7.82	11.42	5.18	2.12	0.301	34.0	12.2	2.06	0.174	17.01	35.8	0.000
KCl	5	26	273	0-15	0.374	7.92	15.03	7.25	2.24	0.632	36.4	15.5	2.21	0.272	17.80	41.1	0.263
KCl	5	26	274	0-15	0.398	7.60	13.66	4.96	1.57	0.559	35.6	14.5	2.14	0.252	23.46	33.7	0.000
KCl	5	37	240	0-15	0.472	6.98	11.71	6.65	2.33	0.485	32.3	14.7	1.92	0.236	25.41	40.6	0.257
NaCl	6	22	192	0-15	0.374	6.21	11.88	4.60	2.71	0.533	31.3	14.7	1.84	0.198	49.00	47.6	0.000
NaCl	6	22	193	0-15	0.306	6.67	11.11	4.81	2.33	0.540	29.1	9.9	1.79	0.214	52.97	43.5	0.288
NaCl	6	22	194	0-15	0.360	6.85	11.51	5.56	2.25	0.606	28.7	10.6	1.69	0.209	63.32	46.5	0.000
NaCl	6	22	195	0-15	0.387	7.98	13.48	5.87	2.57	0.695	34.5	13.4	2.06	0.257	52.31	48.6	0.000
NaCl	6	22	196	0-15	0.408	7.64	12.82	6.16	3.07	0.666	35.1	13.6	1.96	0.243	52.89	52.3	0.000
NaCl	6	22	197	0-15	0.379	7.92	13.68	5.81	2.90	0.670	35.6	14.0	2.06	0.243	64.44	55.0	0.000
NaCl	6	22	198	0-15	0.403	8.26	13.61	6.87	3.22	0.687	36.2	14.1	1.91	0.255	69.05	52.8	0.000
NaCl	6	22	199	0-15	0.423	8.09	14.19	6.00	2.64	0.728	36.5	15.8	2.05	0.243	58.18	52.2	0.000
NaCl	6	22	200	0-15	0.417	7.75	13.50	6.02	2.93	0.673	34.9	14.7	1.98	0.240	68.67	53.3	0.000
NaCl	6	22	201	0-15	0.382	7.85	13.80	5.84	3.35	0.778	36.4	14.6	2.02	0.246	70.22	56.2	0.157
NaCl	6	32	202	0-15	0.399	6.58	11.17	6.20	2.54	0.532	27.8	11.5	1.76	0.197	62.72	60.5	0.000
NaCl	6	41	204	0-15	0.388	7.29	12.34	9.73	3.15	0.546	30.5	13.4	1.88	0.222	79.50	54.7	0.000

Table 22. Total Elemental Analysis Data for the Soil/Waste Mixtures.

Waste	Rate	Plot Number	Sample Number	Depth (cm)	Pb	Mo	V	Cr	Ni (ug/g)	Sr	Li	Zr
KCl	4	16	261	0-15	9.92	33.3	63.4	76.9	51.25	85.1	39.1	144.1
KCl	4	16	262	0-15	17.26	35.1	67.2	81.3	61.34	89.8	43.6	147.4
KCl	4	16	263	0-15	11.47	33.3	71.1	95.1	63.80	91.8	42.3	181.6
KCl	4	16	264	0-15	10.42	26.0	57.5	80.5	45.58	88.3	30.1	133.6
KCl	4	16	265	0-15	19.48	23.7	54.5	76.5	37.29	75.7	31.7	156.7
KCl	4	16	266	0-15	14.33	21.6	50.3	70.6	31.26	88.1	26.3	154.7
KCl	4	16	267	0-15	22.94	28.5	48.7	100.8	54.57	93.3	29.5	118.4
KCl	4	16	268	0-15	12.54	30.0	58.1	88.4	49.91	87.3	38.2	140.7
KCl	4	16	269	0-15	27.31	27.0	55.9	75.1	45.30	96.5	35.1	134.0
KCl	4	16	270	0-15	19.75	22.5	50.5	53.2	27.15	86.9	29.3	128.6
KCl	4	16	271	15-30	13.60	24.4	58.9	72.5	44.14	78.8	35.8	146.6
KCl	4	16	272	30-45	16.57	26.3	61.4	68.4	40.46	77.1	37.5	137.4
KCl	4	24	172	0-15	16.68	22.3	45.0	55.1	27.40	131.9	27.7	129.8
KCl	4	29	223	0-15	11.67	23.3	51.4	57.5	11.39	139.	<11.4	87.5
KCl	4	29	224	15-30	11.06	31.0	67.7	103.3	42.60	125.9	18.3	139.4
KCl	4	29	225	30-45	9.84	31.4	65.2	94.1	35.38	136.3	20.9	112.3
KCl	4	29	226	45-60	13.53	30.9	65.1	76.8	26.81	125.9	23.0	114.1
KCl	4	29	227	60-90	10.74	25.6	62.0	99.7	38.28	136.9	15.1	95.8
KCl	5	25	160	0-15	14.10	<15.4	38.8	38.0	<8.86	131.8	<11.4	76.2
KCl	5	25	161	0-15	13.32	<15.4	26.4	33.2	<8.86	127.3	<11.4	51.6
KCl	5	25	162	0-15	16.39	<15.4	26.6	50.9	<8.86	133.4	<11.4	66.4
KCl	5	25	163	0-15	15.09	<15.4	43.3	40.5	<8.86	118.0	<11.4	86.1
KCl	5	25	164	0-15	16.25	<15.4	34.7	66.9	11.10	136.8	<11.4	89.6
KCl	5	25	165	0-15	14.56	<15.4	40.0	58.2	<8.86	135.0	<11.4	82.5
KCl	5	25	166	0-15	12.45	<15.4	42.3	68.9	22.01	141.9	18.2	95.3
KCl	5	25	167	0-15	14.67	17.8	38.6	79.3	26.52	133.4	16.1	102.7
KCl	5	25	168	0-15	18.27	18.6	49.5	63.4	24.16	150.3	22.4	105.5
KCl	5	25	169	0-15	47.10	19.0	46.5	62.4	24.78	142.5	23.6	113.8
KCl	5	25	170	15-30	12.70	17.4	42.3	61.5	18.93	124.3	21.9	7472
KCl	5	25	171	30-45	12.56	23.3	38.7	64.1	30.09	126.4	29.0	125.1
KCl	5	26	273	0-15	21.73	28.5	59.2	59.4	36.23	89.4	37.3	153.7
KCl	5	26	274	0-15	14.76	37.2	57.5	66.4	48.51	79.9	45.3	191.9
KCl	5	37	240	0-15	14.12	26.2	49.8	67.5	18.48	123.5	19.8	100.9
NaCl	6	22	192	0-15	11.61	42.2	67.4	66.8	62.88	105.6	63.2	214.1
NaCl	6	22	193	0-15	9.50	40.6	57.3	53.3	63.62	112.9	64.5	201.8
NaCl	6	22	194	0-15	8.13	48.5	64.2	64.5	74.64	115.0	75.5	214.1
NaCl	6	22	195	0-15	13.87	51.4	64.2	126.6	99.99	132.9	63.3	199.7
NaCl	6	22	196	0-15	8.67	48.4	64.8	71.4	67.23	128.5	65.1	205.9
NaCl	6	22	197	0-15	11.81	55.8	72.5	100.4	91.82	130.2	72.2	230.9
NaCl	6	22	198	0-15	8.10	59.0	72.9	79.7	84.94	139.1	81.4	248.6
NaCl	6	22	199	0-15	13.77	55.1	75.8	89.1	81.56	131.7	71.2	221.1
NaCl	6	22	200	0-15	6.49	61.4	78.9	108.4	104	131.4	81.6	236.6
NaCl	6	22	201	0-15	7.40	62.1	80.1	91.7	92.70	131.6	84.1	249.2
NaCl	6	32	202	0-15	11.99	51.0	67.2	71.5	77.21	108.7	72.5	223.4
NaCl	6	41	204	0-15	7.78	61.1	85.0	89.6	95.92	126.5	90.2	250.0

Table 22. Total Elemental Analysis Data for the Soil/Waste Mixtures.

Waste	Rate	Plot Number	Sample Number	Depth (cm)	Mn	Na	K	Ca	Mg (mg/g)	P	Al	Fe	Ti	Ba	Cu	Zn (ug/g)	Cd
NaCl	7	18	233	0-15	0.378	6.29	10.79	5.84	3.01	0.451	29.4	13.7	1.81	0.157	24.55	40.5	0.000
NaCl	7	27	241	0-15	0.369	7.45	12.09	5.91	2.09	0.478	35.6	15.3	1.87	0.231	20.72	39.0	0.276
NaCl	7	27	242	0-15	0.442	8.41	13.81	5.99	2.36	0.575	38.9	17.3	1.97	0.244	22.41	43.9	0.287
NaCl	7	27	243	0-15	0.368	7.75	12.76	5.81	2.48	0.534	37.2	15.5	1.79	0.231	74.87	66.0	0.278
NaCl	7	27	244	0-15	0.472	7.69	12.94	4.58	1.84	0.550	34.1	14.2	1.91	0.199	5.17	33.6	0.287
NaCl	7	27	245	0-15	0.448	7.52	12.82	4.63	2.03	0.590	35.6	15.9	1.79	0.223	17.62	38.5	0.271
NaCl	7	27	246	0-15	0.429	7.63	12.24	5.41	2.12	0.503	35.3	13.9	2.01	0.222	6.41	37.1	0.267
NaCl	7	27	247	0-15	0.421	6.78	11.91	4.88	2.12	0.512	34.6	15.8	1.89	0.211	7.39	43.6	0.528
NaCl	7	27	248	0-15	0.383	7.38	12.27	5.33	2.22	0.473	35.3	14.4	2.02	0.219	5.38	39.0	0.269
NaCl	7	27	249	0-15	0.392	6.85	11.60	4.55	1.57	0.430	31.9	13.0	1.95	0.199	9.64	38.3	0.567
NaCl	7	27	250	0-15	0.364	7.06	12.23	4.18	1.11	0.583	33.8	14.6	1.94	0.186	5.04	37.5	0.000
NaCl	7	34	173	0-15	0.378	7.41	12.04	7.63	2.86	0.472	35.6	14.8	2.08	0.209	22.55	39.9	0.000
NaCl	8	20	219	0-15	0.425	6.99	10.94	6.54	1.78	0.415	30.8	11.0	1.98	0.207	8.26	38.7	0.285
NaCl	8	35	150	0-15	0.478	8.45	13.26	5.64	1.95	0.554	38.6	15.8	2.25	0.233	12.76	40.0	0.000
NaCl	8	35	151	0-15	0.484	8.23	12.97	6.08	1.99	0.561	36.8	14.6	2.22	0.230	11.04	36.8	0.307
NaCl	8	35	152	0-15	0.599	9.70	15.20	6.33	2.14	0.589	43.3	17.7	2.64	0.264	11.45	47.0	0.000
NaCl	8	35	153	0-15	0.439	8.25	13.52	4.98	1.94	0.493	37.9	14.7	2.27	0.226	11.60	38.6	0.000
NaCl	8	35	154	0-15	0.408	8.52	12.86	4.59	1.89	0.514	35.2	14.8	2.16	0.165	14.61	39.5	0.000
NaCl	8	35	155	0-15	0.481	8.68	13.66	4.85	1.50	0.538	37.1	15.8	2.32	0.225	16.46	40.8	0.000
NaCl	8	35	156	0-15	0.593	10.04	14.82	5.81	1.67	0.590	41.2	14.8	2.54	0.255	11.35	42.5	0.130
NaCl	8	35	157	0-15	0.468	8.23	13.06	5.26	1.52	0.548	36.6	14.5	2.21	0.227	12.43	42.5	0.289
NaCl	8	35	158	0-15	0.471	8.10	12.89	4.91	1.50	0.448	35.3	12.3	2.19	0.226	13.27	36.0	0.000
NaCl	8	35	159	0-15	0.528	8.56	13.55	6.14	1.47	0.605	38.3	16.7	2.18	0.235	15.83	40.2	0.293
NaCl	8	44	174	0-15	0.358	7.21	10.73	8.61	2.79	0.430	32.8	13.2	1.96	0.223	21.38	37.4	0.000
NaCl	8	44	175	15-30	0.353	7.09	12.52	6.51	3.30	0.487	32.7	18.2	2.04	0.132	27.06	39.7	0.263
NaCl	8	44	176	30-60	0.326	7.73	9.86	6.60	2.21	0.462	30.0	12.2	1.76	0.209	17.41	35.1	0.256
NaCl	9	19	228	0-15	0.414	7.10	11.12	6.61	2.27	0.457	31.2	12.4	1.85	0.215	24.70	43.0	0.269
NaCl	9	19	229	15-30	0.441	7.61	12.36	6.21	2.48	0.468	36.6	17.1	1.81	0.225	18.63	37.3	0.000
NaCl	9	19	230	30-45	0.142	8.04	11.74	4.91	1.96	0.319	30.8	11.1	0.82	0.208	16.04	20.0	0.000
NaCl	9	19	231	45-60	0.125	8.61	12.14	4.09	1.42	0.335	30.4	10.4	0.72	0.182	17.81	20.4	0.000
NaCl	9	19	232	60-90	0.251	7.60	11.90	4.43	1.70	0.409	33.2	14.7	1.31	0.199	14.65	29.1	0.120
NaCl	9	31	205	0-15	0.395	7.40	12.11	6.27	2.85	0.560	31.3	13.4	1.82	0.219	69.68	50.4	0.000
NaCl	9	31	206	15-30	0.331	8.36	15.64	5.29	3.99	0.676	42.5	19.8	2.07	0.246	84.42	60.5	0.000
NaCl	9	31	207	30-45	0.324	8.01	17.15	4.71	3.36	0.699	44.1	21.6	2.26	0.249	87.27	66.0	0.000
NaCl	9	31	208	45-60	0.321	8.05	16.05	4.91	3.65	0.681	42.4	19.8	2.13	0.243	91.36	64.3	0.000
NaCl	9	36	275	0-15	0.410	7.91	14.37	5.13	2.30	0.617	34.7	19.7	2.16	0.121	21.78	38.7	0.253
NaCl	9	36	276	0-15	0.513	9.12	16.10	4.82	2.33	0.616	38.6	18.8	2.07	0.218	45.23	44.0	0.302
NaCl	9	36	277	0-15	0.371	7.55	13.55	4.67	2.16	0.598	33.7	16.4	2.10	0.202	31.75	36.9	0.000
NaCl	9	36	278	0-15	0.382	8.03	14.56	6.47	2.36	0.590	36.1	17.6	1.88	0.233	39.00	38.5	0.000
NaCl	9	36	279	0-15	0.382	7.31	13.01	5.63	1.99	0.585	33.2	15.8	2.00	0.221	42.76	34.6	0.000
NaCl	9	36	280	0-15	0.404	7.66	13.96	5.57	2.35	0.646	36.8	18.1	2.10	0.222	37.36	38.4	0.000
NaCl	9	36	281	0-15	0.366	7.63	14.93	5.09	2.56	0.592	34.9	18.1	1.96	0.204	40.78	39.9	0.000
NaCl	9	36	282	0-15	0.380	7.74	14.16	4.59	2.37	0.638	34.4	18.3	2.00	0.157	45.29	42.5	0.000
NaCl	9	36	283	0-15	0.361	7.33	13.55	6.61	2.16	0.563	32.7	17.5	1.90	0.201	43.42	36.5	0.000
NaCl	9	36	284	0-15	0.316	6.88	12.75	4.29	1.96	0.078	27.8	15.0	1.75	0.148	47.03	34.7	0.236

Table 22. Total Elemental Analysis Data for the Soil/Waste Mixtures.

Waste	Rate	Plot Number	Sample Number	Depth (cm)	Pb	Mo	V	Cr (ug/g)	Ni	Sr	Li	Zr
NaCl	7	18	233	0-15	14.84	24.3	51.0	65.8	24.01	106.3	25.4	107.7
NaCl	7	27	241	0-15	14.65	25.7	50.3	81.8	23.76	127.7	21.8	100.6
NaCl	7	27	242	0-15	20.97	30.4	58.3	91.9	35.33	134.4	25.3	109.4
NaCl	7	27	243	0-15	10.02	32.6	57.6	82.7	36.18	132.2	31.5	116.3
NaCl	7	27	244	0-15	11.21	19.5	37.4	80.8	35.06	121.3	18.7	102.9
NaCl	7	27	245	0-15	16.54	25.2	49.9	96.5	52.60	117.7	30.1	119.6
NaCl	7	27	246	0-15	13.36	21.1	42.2	94.1	39.82	128.5	18.2	113.0
NaCl	7	27	247	0-15	11.09	21.1	44.6	82.9	32.47	113.0	20.6	102.9
NaCl	7	27	248	0-15	14.79	15.9	41.7	73.9	29.31	121.3	16.1	106.5
NaCl	7	27	249	0-15	11.06	19.0	42.0	62.1	22.40	114.3	21.3	128.4
NaCl	7	27	250	0-15	16.52	17.9	37.0	72.3	24.36	113.4	17.6	101.1
NaCl	7	34	173	0-15	16.48	28.3	50.3	67.1	33.54	130.7	33.0	142.8
NaCl	8	20	219	0-15	10.82	17.4	34.7	49.5	<8.86	120.4	<11.4	93.1
NaCl	8	35	150	0-15	16.16	21.8	44.8	80.0	25.24	108.6	23.8	133.3
NaCl	8	35	151	0-15	12.58	19.9	45.1	69.0	23.62	104.0	23.0	140.2
NaCl	8	35	152	0-15	12.66	26.5	50.9	91.6	32.25	122.4	26.2	167.9
NaCl	8	35	153	0-15	27.35	23.5	46.1	68.1	27.35	105.5	25.3	135.9
NaCl	8	35	154	0-15	18.13	21.1	48.4	58.7	25.71	94.4	26.5	132.1
NaCl	8	35	155	0-15	23.77	23.2	49.4	75.9	26.82	104.2	28.6	143.5
NaCl	8	35	156	0-15	14.31	24.4	47.9	56.9	23.17	120.3	25.1	143.4
NaCl	8	35	157	0-15	15.03	21.1	42.2	70.5	19.94	107.8	23.4	114.1
NaCl	8	35	158	0-15	14.15	19.8	41.6	45.4	16.51	104.7	24.5	130.9
NaCl	8	35	159	0-15	8.50	23.4	47.5	81.5	27.55	109.6	27.3	117.5
NaCl	8	44	174	0-15	10.69	23.1	46.1	57.7	29.82	122.9	33.5	145.2
NaCl	8	44	175	15-30	12.35	27.6	60.7	89.3	46.49	111.1	38.3	149.7
NaCl	8	44	176	30-60	9.22	22.3	39.9	59.1	30.72	109.6	27.9	132.9
NaCl	9	19	228	0-15	6.44	23.4	41.3	62.0	13.69	121.9	13.2	79.7
NaCl	9	19	229	15-30	4.11	23.0	49.6	77.0	16.99	133.4	14.0	102.7
NaCl	9	19	230	30-45	18.29	19.1	31.8	44.5	16.60	134.8	<11.4	58.3
NaCl	9	19	231	45-60	16.00	23.7	27.6	39.7	16.00	136.8	<11.4	51.4
NaCl	9	19	232	60-90	22.94	19.1	38.6	59.2	21.30	126.5	<11.4	83.3
NaCl	9	31	205	0-15	10.08	57.8	74.1	79.5	83.62	121.3	81.2	233.4
NaCl	9	31	206	15-30	23.59	68.8	100	119.6	112	139.0	93.2	274.8
NaCl	9	31	207	30-45	15.74	69.6	112	112.1	111	134.2	97.8	288.6
NaCl	9	31	208	45-60	22.63	71.8	109	122.0	118	132.5	104	295.3
NaCl	9	36	275	0-15	25.07	30.9	65.1	86.3	46.84	66.8	40.0	157.7
NaCl	9	36	276	0-15	25.33	43.7	70.3	114.0	77.18	79.9	56.4	207.7
NaCl	9	36	277	0-15	13.31	39.2	64.3	100.9	65.79	73.0	50.7	207.1
NaCl	9	36	278	0-15	12.46	39.5	69.6	88.6	64.46	79.9	57.7	188.8
NaCl	9	36	279	0-15	13.09	44.8	71.6	82.9	71.55	72.1	65.2	224.3
NaCl	9	36	280	0-15	10.36	42.3	71.4	84.8	62.17	75.5	57.3	198.2
NaCl	9	36	281	0-15	11.45	45.5	74.6	102.5	74.85	76.0	61.7	191.0
NaCl	9	36	282	0-15	16.47	44.3	75.4	109.9	81.06	69.5	63.6	208.2
NaCl	9	36	283	0-15	8.68	40.7	73.7	99.5	72.68	72.2	63.7	203.9
NaCl	9	36	284	0-15	10.63	44.3	70.0	89.8	75.63	61.7	65.7	226.2

Table 22. Total Elemental Analysis Data for the Soil/Waste Mixtures.

Waste	Rate	Plot Number	Sample Number	Depth (cm)	Mn	Na	K	Ca	Mg (mg/g)	P	Al	Fe	Ti	Ba	Cu	Zn (ug/g)	Cd
NaCl	10	23	179	0-15	0.499	7.99	12.81	7.76	2.87	0.552	38.3	15.6	2.21	0.215	35.14	43.4	0.591
NaCl	10	23	180	0-15	0.394	7.25	13.07	11.07	3.59	0.530	34.9	18.7	2.16	0.204	41.49	44.7	0.292
NaCl	10	23	181	0-15	0.400	8.58	12.44	6.20	2.07	0.684	33.5	14.7	1.95	0.184	18.69	51.1	0.260
NaCl	10	23	182	0-15	0.430	7.99	12.28	9.26	2.42	0.599	32.5	14.9	1.93	0.235	25.55	47.8	0.304
NaCl	10	23	183	0-15	0.354	8.01	12.02	7.15	2.96	0.587	33.7	14.1	1.83	0.222	30.41	46.1	0.314
NaCl	10	23	184	0-15	0.395	8.41	12.95	7.20	2.68	0.646	35.1	15.8	1.97	0.141	34.88	52.2	0.000
NaCl	10	23	185	0-15	0.404	7.93	11.68	8.58	2.84	0.555	31.8	13.1	1.89	0.221	31.38	45.5	0.000
NaCl	10	23	186	0-15	0.330	8.21	11.82	8.32	4.16	0.580	33.7	13.7	1.85	0.206	33.13	48.5	0.000
NaCl	10	23	187	0-15	0.349	7.99	12.70	7.82	2.43	0.514	33.6	16.7	1.89	0.194	28.32	52.1	0.000
NaCl	10	23	188	0-15	0.309	7.90	11.66	5.79	2.18	0.579	31.0	13.4	1.80	0.167	37.62	44.7	0.000
NaCl	10	23	189	15-30	0.316	6.57	12.32	6.46	3.46	0.535	34.6	16.7	1.81	0.196	48.27	48.6	0.307
NaCl	10	23	190	30-45	0.279	5.73	11.03	6.83	4.11	0.512	27.7	15.3	1.72	0.146	45.62	48.1	0.275
NaCl	10	23	191	45-60	0.259	6.04	11.35	6.96	3.90	0.511	25.8	14.7	1.62	0.131	49.43	49.2	0.278
NaCl	10	28	234	0-15	0.400	7.09	10.31	5.30	1.73	0.409	27.2	10.7	1.85	0.086	26.33	41.8	0.286
NaCl	10	38	235	0-15	0.384	7.44	12.32	7.47	2.92	0.440	34.2	16.2	2.10	0.201	7.29	48.8	0.270
NaCl	10	38	236	15-30	0.418	7.91	13.80	5.54	2.40	0.566	40.0	23.8	1.75	0.230	26.73	54.0	0.267
NaCl	10	38	237	30-45	0.316	7.24	14.79	4.39	2.78	0.532	42.6	21.1	1.94	0.232	30.78	49.1	0.000
NaCl	10	38	238	45-60	0.267	7.10	14.82	4.11	2.50	0.539	43.8	21.4	2.09	0.231	<2.96	47.8	0.000
NaCl	10	38	239	60-90	0.300	7.44	15.28	4.18	2.46	0.523	43.2	20.5	2.15	0.237	<2.96	50.1	0.286

Waste	Pb	Mo	V	Cr (ug/g)	Ni	Sr	Li	Zr
NaCl	10.93	37.5	59.1	74.1	47.25	137.6	47.2	184.3
NaCl	11.60	34.5	72.0	87.0	59.64	125.4	55.5	187.6
NaCl	14.54	26.0	43.6	68.3	32.45	124.1	28.8	153.1
NaCl	14.60	28.3	47.1	75.7	36.50	125.3	35.3	140.8
NaCl	12.85	32.3	51.4	65.5	42.64	122.3	41.7	163.3
NaCl	16.20	37.9	60.7	71.1	58.22	121.4	48.6	165.9
NaCl	16.70	31.4	50.1	68.2	42.03	122.6	42.0	157.2
NaCl	14.76	36.7	51.2	66.9	48.18	122.0	46.4	158.7
NaCl	14.82	27.0	52.7	78.6	41.30	119.1	41.0	143.2
NaCl	14.61	38.2	53.0	70.9	51.15	113.1	48.4	170.2
NaCl	10.14	44.0	68.6	80.2	68.86	113.7	56.6	194.6
NaCl	11.82	36.3	64.9	68.4	57.99	95.4	56.6	179.2
NaCl	9.16	36.4	63.9	75.0	64.15	97.5	57.8	182.7
NaCl	13.74	25.5	45.2	60.1	23.47	109.0	26.0	110.5
NaCl	13.22	19.4	47.5	64.2	<8.86	124.7	<11.0	82.8
NaCl	69.51	31.0	61.8	109.9	53.20	140.3	25.1	98.9
NaCl	8.32	32.7	72.4	81.2	36.88	128.4	32.7	119.0
NaCl	16.77	34.7	77.1	81.3	32.70	124.6	37.7	126.0
NaCl	12.03	33.2	75.6	89.6	41.52	129.7	38.4	144.6

Table 23. DTPA-NH₄HCO₃ Extract Data for the Soil/Waste Mixtures.

Waste	Rate	Plot Number	Sample Number	Depth (cm)	Fe	Cd	Cu	Pb	Zn	Mn (ug/g)	Ca	Mg	Na	K	B
Freshwater	1	3	TME100	0-15	129.86	0.07	1.15	1.00	1.41	10.21	401.13	163.12	0.18	110.50	<0.10
Freshwater	1	9	89	0-15	75.41	0.06	0.98	0.86	1.76	12.99	428.58	123.34	2.22	107.22	<0.10
Freshwater	1	13	112	0-15	100.88	0.07	0.97	0.70	2.40	18.29	446.48	108.42	9.01	119.60	<0.10
Freshwater	2	2	126	0-15	137.70	0.08	1.40	1.81	3.45	17.52	416.55	93.39	59.55	146.73	<0.10
Freshwater	2	8	101	0-15	93.96	0.07	1.87	3.26	2.83	13.36	409.33	107.89	51.75	104.20	<0.10
Freshwater	2	8	102	0-15	102.06	0.07	1.76	2.70	3.26	15.91	418.58	119.72	54.20	112.32	<0.10
Freshwater	2	8	103	0-15	115.53	0.08	1.36	1.87	3.02	22.36	411.15	107.39	68.80	117.32	<0.10
Freshwater	2	8	104	0-15	107.56	0.07	1.83	2.80	3.50	19.45	381.98	117.07	65.33	116.52	<0.10
Freshwater	2	8	105	0-15	88.44	0.05	1.46	1.50	1.61	11.68	403.80	123.89	36.36	105.69	<0.10
Freshwater	2	8	106	0-15	115.53	0.07	2.99	4.43	4.54	11.44	397.98	112.69	205.00	131.08	0.22
Freshwater	2	8	107	0-15	86.70	0.05	1.21	1.11	1.43	10.54	427.15	126.57	25.85	113.60	<0.10
Freshwater	2	8	108	0-15	73.85	0.05	1.57	2.07	2.31	11.15	425.35	116.94	53.55	115.05	<0.10
Freshwater	2	8	109	0-15	91.13	0.05	1.84	2.65	2.94	11.34	420.38	121.19	89.50	118.88	<0.10
Freshwater	2	8	110	0-15	78.30	0.06	1.70	2.70	2.54	10.67	419.83	119.24	59.55	117.45	<0.10
Freshwater	2	8	111	15-30	93.83	0.04	1.70	1.21	0.94	42.73	389.58	115.84	15.49	111.13	<0.10
Freshwater	2	15	85	0-15	85.78	0.06	1.94	2.07	2.25	11.01	425.05	137.32	90.18	94.32	<0.10
Freshwater	3	1	127	0-15	101.83	0.05	1.44	2.01	2.89	16.16	375.18	88.97	83.43	122.08	<0.10
Freshwater	3	1	128	15-30	155.58	0.04	0.71	1.37	0.80	78.64	306.15	180.04	13.22	107.70	<0.10
Freshwater	3	6	129	0-15	102.82	0.07	2.17	3.13	4.06	12.48	424.90	112.52	127.25	110.70	<0.10
Freshwater	3	11	130	0-15	107.30	0.07	2.31	3.59	3.72	21.46	387.75	140.67	109.70	116.93	<0.10
Freshwater	3	11	131	0-15	104.05	0.06	1.76	2.53	2.68	13.23	399.55	136.77	92.28	129.88	<0.10
Freshwater	3	11	132	0-15	103.95	0.05	2.00	2.96	3.02	11.56	414.38	106.84	123.83	123.90	<0.10
Freshwater	3	11	133	0-15	85.83	0.05	2.40	2.21	2.47	10.73	416.63	140.42	55.23	128.93	<0.10
Freshwater	3	11	134	0-15	101.70	0.05	1.73	2.09	2.64	18.09	396.05	124.89	73.18	105.28	<0.10
Freshwater	3	11	135	0-15	97.80	0.06	1.35	1.72	1.93	20.19	390.10	134.74	71.78	105.63	<0.10
Freshwater	3	11	136	0-15	144.28	0.07	1.79	3.04	2.97	23.41	389.48	106.49	109.70	135.53	<0.10
Freshwater	3	11	137	0-15	130.05	0.07	2.17	3.13	3.68	23.62	382.83	109.94	171.55	144.63	<0.10
Freshwater	3	11	138	0-15	124.28	0.07	1.96	3.17	3.70	24.58	388.70	124.02	72.88	131.75	<0.10
Freshwater	3	11	139	0-15	102.93	0.06	1.74	1.99	2.74	23.01	374.43	156.42	133.35	119.65	<0.10
Freshwater	4	5	81	0-15	100.73	0.07	2.03	2.19	2.58	15.03	398.88	110.57	77.60	117.77	<0.10
Freshwater	4	7	114	0-15	99.85	0.06	2.12	2.34	2.93	24.45	403.28	112.99	115.32	124.52	<0.10
Freshwater	4	7	115	0-15	98.18	0.05	2.04	2.16	2.53	19.70	418.33	108.27	111.83	131.05	<0.10
Freshwater	4	7	116	0-15	105.45	0.05	1.72	1.70	2.21	16.09	400.20	119.77	83.85	129.15	<0.10
Freshwater	4	7	117	0-15	75.58	0.05	1.59	1.57	2.09	15.10	407.05	165.09	41.67	100.40	<0.10
Freshwater	4	7	118	0-15	94.80	0.06	2.16	2.84	2.73	19.53	427.63	128.09	91.28	123.60	<0.10
Freshwater	4	7	119	0-15	93.73	0.06	1.81	2.19	2.74	21.23	438.95	120.32	86.28	124.90	<0.10
Freshwater	4	7	120	0-15	99.70	0.06	1.63	1.73	2.75	17.71	453.25	130.97	52.40	123.30	<0.10
Freshwater	4	7	121	0-15	86.53	0.05	1.47	1.48	1.94	14.35	441.65	134.19	59.15	108.25	<0.10
Freshwater	4	7	122	0-15	104.21	0.06	1.76	1.88	2.51	15.75	433.28	138.57	79.39	113.68	<0.10
Freshwater	4	7	123	0-15	88.55	0.07	1.38	1.72	2.28	21.11	440.43	112.77	78.65	120.63	<0.10
Freshwater	4	7	124	15-30	72.38	0.03	0.89	1.09	0.42	62.86	335.28	216.69	11.63	88.85	<0.10
Freshwater	4	7	125	30-60	16.33	<0.02	1.86	0.81	0.22	2.23	261.88	533.97	17.90	113.98	<0.10
Freshwater	4	12	113	0-15	111.48	0.06	2.20	2.98	3.20	22.82	415.48	119.64	114.05	141.55	<0.10

Table 23. DTPA-NH₄HCO₃ Extract Data for the Soil/Waste Mixtures.

Waste	Rate	Plot Number	Sample Number	Depth (cm)	P	Mo (ug/g)	Ni	Se
Freshwater	1	3	TME100	0-15	14.61	<0.12	0.88	0.80
Freshwater	1	9	89	0-15	22.82	<0.12	0.43	<0.7
Freshwater	1	13	112	0-15	33.50	<0.12	0.53	<0.7
Freshwater	2	2	126	0-15	32.12	<0.12	0.87	0.77
Freshwater	2	8	101	0-15	37.07	<0.12	1.22	<0.7
Freshwater	2	8	102	0-15	52.80	<0.12	0.93	<0.7
Freshwater	2	8	103	0-15	28.08	<0.12	0.74	0.85
Freshwater	2	8	104	0-15	23.08	0.13	0.67	<0.7
Freshwater	2	8	105	0-15	40.78	<0.12	0.59	<0.7
Freshwater	2	8	106	0-15	38.94	0.19	0.97	<0.7
Freshwater	2	8	107	0-15	46.50	<0.12	0.54	<0.7
Freshwater	2	8	108	0-15	41.67	<0.12	0.55	<0.7
Freshwater	2	8	109	0-15	26.17	<0.12	0.66	<0.7
Freshwater	2	8	110	0-15	29.87	<0.12	0.69	<0.7
Freshwater	2	8	111	15-30	23.97	<0.12	0.64	1.03
Freshwater	2	15	85	0-15	31.13	<0.12	0.57	<0.7
Freshwater	3	1	127	0-15	28.44	<0.12	0.67	<0.7
Freshwater	3	1	128	15-30	6.98	<0.12	0.34	1.50
Freshwater	3	6	129	0-15	35.89	0.13	0.71	<0.7
Freshwater	3	11	130	0-15	25.53	0.14	0.94	0.78
Freshwater	3	11	131	0-15	28.19	0.15	0.71	<0.7
Freshwater	3	11	132	0-15	25.92	0.14	0.75	<0.7
Freshwater	3	11	133	0-15	37.47	<0.12	0.60	<0.7
Freshwater	3	11	134	0-15	22.40	<0.12	0.64	<0.7
Freshwater	3	11	135	0-15	24.19	<0.12	0.58	<0.7
Freshwater	3	11	136	0-15	22.50	0.14	0.72	0.87
Freshwater	3	11	137	0-15	23.12	0.20	0.97	0.75
Freshwater	3	11	138	0-15	23.88	0.13	0.79	0.86
Freshwater	3	11	139	0-15	19.96	<0.12	0.81	0.83
Freshwater	4	5	81	0-15	34.82	<0.12	0.59	<0.7
Freshwater	4	7	114	0-15	32.69	<0.12	0.60	0.83
Freshwater	4	7	115	0-15	37.40	<0.12	0.58	<0.7
Freshwater	4	7	116	0-15	35.99	<0.12	0.60	<0.7
Freshwater	4	7	117	0-15	30.55	<0.12	0.51	<0.7
Freshwater	4	7	118	0-15	38.66	<0.12	0.69	0.77
Freshwater	4	7	119	0-15	32.49	<0.12	0.64	0.80
Freshwater	4	7	120	0-15	31.75	<0.12	0.69	<0.7
Freshwater	4	7	121	0-15	37.66	<0.12	0.63	<0.7
Freshwater	4	7	122	0-15	28.33	<0.12	0.72	0.83
Freshwater	4	7	123	0-15	28.40	<0.12	0.60	0.86
Freshwater	4	7	124	15-30	6.32	<0.12	0.36	1.50
Freshwater	4	7	125	30-60	1.54	<0.12	0.08	<0.7
Freshwater	4	12	113	0-15	48.33	<0.12	0.74	0.82

Table 23. DTPA-NH₄HCO₃ Extract Data for the Soil/Waste Mixtures.

Waste	Rate	Plot Number	Sample Number	Depth (cm)	Fe	Cd	Cu	Pb	Zn	Mn	Ca (ug/g)	Mg	Na	K	B
Freshwater	5	4	90	0-15	121.53	0.07	2.93	4.02	3.86	24.20	394.05	96.49	186.03	135.17	0.29
Freshwater	5	4	91	0-15	142.58	0.08	3.32	5.11	4.72	26.37	368.68	111.34	233.30	144.50	0.36
Freshwater	5	4	92	0-15	128.68	0.08	2.85	4.07	3.63	24.94	373.08	94.04	175.73	130.85	0.25
Freshwater	5	4	93	0-15	109.93	0.07	2.68	3.61	3.29	21.00	391.20	121.84	180.53	114.97	0.18
Freshwater	5	4	94	0-15	133.41	0.08	3.06	4.31	4.38	24.88	383.83	110.57	183.20	129.67	0.30
Freshwater	5	4	95	0-15	133.33	0.07	2.72	4.23	3.70	22.47	397.90	98.17	190.13	127.37	0.23
Freshwater	5	4	96	0-15	135.78	0.07	2.29	2.64	2.86	23.59	381.18	114.89	135.20	126.70	<0.10
Freshwater	5	4	97	0-15	124.33	0.07	2.57	3.38	3.36	22.49	396.13	111.17	139.75	127.17	0.18
Freshwater	5	4	98	0-15	122.63	0.07	2.24	3.11	3.11	22.82	396.83	106.84	136.33	126.27	<0.10
Freshwater	5	4	99	0-15	140.33	0.08	2.96	4.22	3.88	21.15	376.05	108.02	194.55	126.32	0.32
Freshwater	5	10	82	0-15	113.33	0.09	3.22	4.35	4.69	32.39	389.45	108.99	190.80	134.15	0.29
Freshwater	5	10	83	15-30	41.40	0.04	1.65	1.06	0.79	7.37	376.43	240.97	89.18	82.40	<0.10
Freshwater	5	10	84	30-60	16.61	0.03	1.47	0.77	0.25	1.51	340.73	320.14	14.61	81.20	<0.10
Freshwater	5	14	86	0-15	126.20	0.08	3.16	4.28	4.44	26.47	402.90	114.39	174.45	120.65	0.23
Freshwater	5	14	87	15-30	56.74	0.05	1.94	1.10	1.00	14.91	389.85	267.01	32.75	91.66	<0.10
Freshwater	5	14	88	30-60	15.71	<0.02	1.79	0.58	0.12	1.72	352.15	339.32	6.39	80.85	<0.10
KCl	1	17	251	0-15	138.48	0.07	1.38	1.04	2.37	26.84	366.13	136.21	5.53	219.96	<0.10
KCl	1	17	252	0-15	95.08	0.06	0.98	0.81	2.14	15.12	388.28	123.06	18.91	348.88	<0.10
KCl	1	17	253	0-15	128.96	0.07	1.26	0.94	2.44	33.89	365.50	152.26	14.27	241.01	<0.10
KCl	1	17	254	0-15	119.98	0.07	1.29	0.97	2.17	24.77	369.70	135.36	29.60	372.23	<0.10
KCl	1	17	255	0-15	119.08	0.07	0.94	0.90	2.19	22.91	379.35	128.54	6.71	188.88	<0.10
KCl	1	17	256	0-15	104.81	0.07	1.08	0.91	2.71	26.77	391.38	133.76	13.30	209.63	<0.10
KCl	1	17	257	0-15	109.88	0.05	1.18	0.92	1.62	26.44	373.53	140.44	14.43	279.88	<0.10
KCl	1	17	258	0-15	89.98	0.06	1.00	0.81	1.44	19.04	403.00	127.36	24.04	393.21	<0.10
KCl	1	17	259	0-15	112.43	0.07	1.21	0.93	2.24	21.38	386.40	137.64	<0.125	134.38	<0.10
KCl	1	17	260	0-15	121.38	0.08	1.22	0.94	3.18	26.67	379.85	125.19	30.36	313.13	<0.10
KCl	1	42	203	0-15	66.84	0.04	0.96	0.69	0.82	12.83	382.55	154.56	3.15	100.30	<0.10
KCl	1	43	177	0-15	67.82	0.09	1.68	0.62	0.63	10.33	399.83	156.21	<0.125	100.32	<0.10
KCl	2	33	178	0-15	71.12	0.09	0.82	0.49	1.93	11.28	430.78	117.51	<0.125	98.83	<0.10
KCl	2	40	221	0-15	84.79	0.07	1.86	1.51	2.21	22.50	382.10	150.28	36.99	266.66	<0.10
KCl	2	45	140	0-15	101.39	0.05	1.06	1.01	0.87	11.31	399.24	118.37	16.26	281.99	<0.10
KCl	2	45	141	0-15	119.15	0.03	0.67	0.80	0.71	5.04	427.08	89.91	23.95	328.25	<0.10
KCl	2	45	142	0-15	114.56	0.04	0.89	0.92	1.50	9.98	436.68	106.16	29.52	334.93	<0.10
KCl	2	45	143	0-15	107.16	0.04	1.07	1.03	1.30	10.97	420.93	104.84	10.46	420.08	<0.10
KCl	2	45	144	0-15	97.71	0.04	1.34	0.87	0.78	7.72	389.48	159.41	29.30	369.65	<0.10
KCl	2	45	145	0-15	75.48	0.04	1.15	1.05	1.25	11.11	433.35	118.94	23.30	305.53	<0.10
KCl	2	45	146	0-15	96.53	0.06	1.01	1.28	2.53	19.68	434.05	93.01	39.53	357.55	<0.10
KCl	2	45	147	0-15	101.43	0.05	0.98	1.50	2.45	22.68	434.48	88.31	30.83	456.13	<0.10
KCl	2	45	148	0-15	93.61	0.05	1.30	1.60	2.14	15.11	410.35	97.19	23.09	379.48	<0.10
KCl	2	45	149	0-15	91.08	0.04	1.43	1.57	1.41	10.05	380.73	110.99	15.70	317.88	<0.10
KCl	3	21	209	0-15	118.42	0.09	0.54	1.71	4.88	29.61	426.65	102.44	38.01	522.25	<0.10
KCl	3	21	210	0-15	131.92	0.07	0.48	1.42	4.32	34.44	379.56	96.35	28.73	474.26	<0.10
KCl	3	21	211	0-15	104.94	0.08	1.33	2.23	3.55	20.21	430.70	84.66	22.84	618.46	<0.10
KCl	3	21	212	0-15	110.17	0.08	1.18	1.57	3.64	24.66	416.00	93.23	34.51	653.96	<0.10
KCl	3	21	213	0-15	109.79	0.09	0.99	1.24	5.03	26.04	425.93	87.41	30.45	575.96	<0.10
KCl	3	21	214	0-15	113.29	0.08	1.26	1.68	4.05	26.39	410.25	99.16	35.04	555.96	<0.10
KCl	3	21	215	0-15	116.67	0.09	1.47	1.87	3.78	31.61	396.30	98.41	34.08	557.21	<0.10
KCl	3	21	216	0-15	101.94	0.08	1.49	1.54	3.72	31.56	400.65	112.90	19.31	411.94	<0.10
KCl	3	21	217	0-15	110.72	0.09	1.54	2.73	4.16	36.53	405.18	102.58	36.60	608.21	<0.10
KCl	3	21	218	0-15	116.17	0.07	1.04	1.12	2.95	23.03	416.80	104.96	20.05	295.51	<0.10
KCl	3	30	220	0-15	119.92	0.08	1.59	2.19	3.18	26.69	394.85	105.56	39.78	427.61	<0.10
KCl	3	39	222	0-15	84.54	0.06	1.91	2.15	1.60	21.59	378.85	138.86	177.95	386.19	<0.10

Table 23. DTPA-NH₄HCO₃ Extract Data for the Soil/Waste Mixtures.

Waste	Rate	Plot Number	Sample Number	Depth (cm)	P	Mo (ug/g)	Ni	Se
Freshwater	5	4	90	0-15	52.95	0.16	0.78	0.92
Freshwater	5	4	91	0-15	54.18	0.18	0.85	0.96
Freshwater	5	4	92	0-15	61.78	0.18	0.77	0.93
Freshwater	5	4	93	0-15	36.06	0.15	0.71	0.95
Freshwater	5	4	94	0-15	48.72	0.17	0.87	0.94
Freshwater	5	4	95	0-15	46.11	0.15	0.69	0.94
Freshwater	5	4	96	0-15	31.26	0.14	0.84	1.04
Freshwater	5	4	97	0-15	43.22	0.15	0.75	0.94
Freshwater	5	4	98	0-15	50.55	0.13	0.71	1.01
Freshwater	5	4	99	0-15	48.83	0.17	0.84	1.11
Freshwater	5	10	82	0-15	37.27	0.16	0.98	1.14
Freshwater	5	10	83	15-30	10.11	<0.12	0.37	<0.7
Freshwater	5	10	84	30-60	1.61	<0.12	0.11	<0.7
Freshwater	5	14	86	0-15	40.99	0.15	0.96	1.05
Freshwater	5	14	87	15-30	10.15	<0.12	1.12	0.84
Freshwater	5	14	88	30-60	1.26	<0.12	0.26	<0.7
KCl	1	17	251	0-15	18.68	<0.12	0.61	0.79
KCl	1	17	252	0-15	19.08	<0.12	0.33	<0.7
KCl	1	17	253	0-15	19.87	<0.12	0.40	<0.7
KCl	1	17	254	0-15	22.69	<0.12	0.41	<0.7
KCl	1	17	255	0-15	16.22	<0.12	0.27	0.76
KCl	1	17	256	0-15	21.40	<0.12	0.30	<0.7
KCl	1	17	257	0-15	17.26	<0.12	0.34	<0.7
KCl	1	17	258	0-15	18.04	<0.12	0.32	<0.7
KCl	1	17	259	0-15	20.35	<0.12	0.35	<0.7
KCl	1	17	260	0-15	22.64	<0.12	0.34	<0.7
KCl	1	42	203	0-15	15.84	<0.12	0.68	<0.7
KCl	1	43	177	0-15	13.57	<0.12	0.54	<0.7
KCl	2	33	178	0-15	24.69	<0.12	0.30	<0.7
KCl	2	40	221	0-15	16.45	<0.12	1.45	<0.7
KCl	2	45	140	0-15	33.27	<0.12	0.39	<0.7
KCl	2	45	141	0-15	36.35	0.18	0.23	0.80
KCl	2	45	142	0-15	26.08	0.18	0.43	0.84
KCl	2	45	143	0-15	35.97	0.20	0.39	0.88
KCl	2	45	144	0-15	16.82	0.20	0.34	0.87
KCl	2	45	145	0-15	16.10	0.20	0.33	0.82
KCl	2	45	146	0-15	42.83	0.19	0.39	0.97
KCl	2	45	147	0-15	19.98	0.21	0.33	1.10
KCl	2	45	148	0-15	17.95	0.20	0.38	0.76
KCl	2	45	149	0-15	17.77	0.21	0.33	0.82
KCl	3	21	209	0-15	27.77	<0.12	0.58	1.07
KCl	3	21	210	0-15	27.20	<0.12	0.44	0.79
KCl	3	21	211	0-15	24.27	<0.12	1.42	<0.7
KCl	3	21	212	0-15	25.11	<0.12	1.28	0.78
KCl	3	21	213	0-15	24.42	<0.12	1.14	<0.7
KCl	3	21	214	0-15	27.85	<0.12	1.24	<0.7
KCl	3	21	215	0-15	23.01	<0.12	1.30	0.86
KCl	3	21	216	0-15	18.60	<0.12	1.29	0.76
KCl	3	21	217	0-15	26.79	<0.12	1.36	0.86
KCl	3	21	218	0-15	21.80	<0.12	1.14	<0.7
KCl	3	30	220	0-15	19.83	<0.12	1.34	0.76
KCl	3	39	222	0-15	16.51	<0.12	1.45	<0.7

Table 23. DTPA-NH₄HCO₃ Extract Data for the Soil/Waste Mixtures.

Waste	Rate	Plot Number	Sample Number	Depth (cm)	Fe	Cd	Cu	Pb	Zn	Mn (ug/g)	Ca	Mg	Na	K	B
KCl	4	16	261	0-15	113.45	0.08	1.68	2.30	4.03	21.20	402.23	100.38	12.61	485.63	<0.10
KCl	4	16	262	0-15	111.88	0.08	2.27	3.56	4.12	37.77	379.10	101.51	32.00	806.48	<0.10
KCl	4	16	263	0-15	101.56	0.08	2.30	3.58	4.16	24.60	394.43	89.54	33.35	851.73	<0.10
KCl	4	16	264	0-15	118.21	0.08	2.15	2.35	3.18	25.63	382.65	102.29	13.78	454.13	<0.10
KCl	4	16	265	0-15	89.33	0.07	1.89	2.49	3.09	17.16	385.00	122.74	36.03	589.73	<0.10
KCl	4	16	266	0-15	97.76	0.08	1.99	2.40	3.85	23.50	397.10	86.86	25.89	740.73	<0.10
KCl	4	16	267	0-15	105.76	0.08	2.11	3.06	4.33	23.45	385.75	98.54	7.84	488.93	<0.10
KCl	4	16	268	0-15	116.46	0.07	1.87	2.85	3.54	25.76	383.35	106.91	19.60	648.48	<0.10
KCl	4	16	269	0-15	120.26	0.10	2.75	5.16	6.31	26.17	385.75	90.44	50.55	992.73	<0.10
KCl	4	16	270	0-15	136.11	0.10	2.40	3.91	5.15	31.11	385.28	91.79	14.25	626.98	<0.10
KCl	4	16	271	15-30	71.53	0.04	1.90	0.79	0.27	33.36	321.90	202.86	2.09	95.93	<0.10
KCl	4	16	272	30-45	46.39	0.03	1.80	0.74	0.12	7.08	332.84	269.83	4.37	87.25	<0.10
KCl	4	24	172	0-15	110.26	0.08	2.03	3.83	4.16	19.41	406.00	95.24	76.03	971.75	<0.10
KCl	4	29	223	0-15	101.49	0.08	1.94	3.41	3.80	21.40	407.28	92.46	117.55	847.21	<0.10
KCl	4	29	224	15-30	53.37	0.03	2.18	0.60	0.21	12.83	311.38	249.78	<0.125	150.51	<0.10
KCl	4	29	225	30-45	71.34	0.03	2.37	0.59	0.39	6.62	306.63	210.31	11.02	243.24	<0.10
KCl	4	29	226	45-60	73.82	0.03	2.66	0.58	0.35	8.69	311.05	236.71	0.54	182.81	<0.10
KCl	4	29	227	60-90	56.82	0.04	2.29	0.62	0.60	8.78	354.45	235.81	12.46	173.19	<0.10
KCl	5	25	160	0-15	113.78	0.09	2.17	4.87	4.30	33.94	393.30	71.09	99.95	1444.75	0.19
KCl	5	25	161	0-15	127.03	0.08	2.06	5.11	4.04	33.12	375.23	67.94	157.60	1718.25	0.13
KCl	5	25	162	0-15	116.83	0.07	2.10	4.77	3.96	36.13	357.23	101.94	210.13	1786.75	<0.10
KCl	5	25	163	0-15	90.93	0.08	3.17	5.53	4.18	23.54	379.45	139.46	157.90	1531.50	0.13
KCl	5	25	164	0-15	127.01	0.09	2.48	6.10	4.64	57.30	382.10	87.49	191.43	1901.25	0.18
KCl	5	25	165	0-15	139.81	0.09	2.49	5.11	4.39	26.10	385.03	75.51	120.38	1587.75	0.24
KCl	5	25	166	0-15	138.23	0.08	2.59	6.02	4.54	45.01	370.13	79.89	105.88	1316.25	0.20
KCl	5	25	167	0-15	132.41	0.06	1.78	3.97	3.23	22.89	366.48	77.61	116.73	1255.25	<0.10
KCl	5	25	168	0-15	136.26	0.08	2.79	6.09	4.77	26.87	358.25	65.51	132.83	1838.00	0.29
KCl	5	25	169	0-15	125.80	0.09	2.50	5.60	5.06	23.20	384.05	76.51	260.93	2269.00	0.20
KCl	5	25	170	15-30	197.51	0.08	1.16	1.71	1.34	214.55	210.25	91.44	25.38	242.08	<0.10
KCl	5	25	171	30-45	378.73	0.10	0.93	1.52	0.89	132.90	459.45	77.59	14.62	127.95	<0.10
KCl	5	26	273	0-15	124.01	0.10	2.45	4.86	4.83	20.76	391.35	85.14	66.55	1060.73	0.19
KCl	5	26	274	0-15	112.88	0.07	1.01	1.09	2.46	22.19	393.50	121.19	4.83	171.61	<0.10
KCl	5	37	240	0-15	97.99	0.07	1.72	2.05	2.04	23.16	379.23	128.63	68.38	291.14	<0.10
NaCl	6	22	192	0-15	119.17	0.09	0.86	0.64	1.71	18.78	382.20	167.56	4.74	142.40	<0.10
NaCl	6	22	193	0-15	101.64	0.09	0.70	0.58	2.41	13.14	423.83	103.34	<0.125	146.65	<0.10
NaCl	6	22	194	0-15	96.94	0.06	0.13	0.67	2.69	16.35	437.68	112.11	<0.125	141.65	<0.10
NaCl	6	22	195	0-15	103.49	0.07	0.19	0.84	2.25	11.56	451.70	120.54	5.54	140.83	<0.10
NaCl	6	22	196	0-15	144.77	0.09	0.41	1.10	3.20	28.74	414.53	126.86	36.48	153.93	<0.10
NaCl	6	22	197	0-15	120.11	0.07	0.22	1.08	2.39	15.52	431.93	134.91	5.34	137.75	<0.10
NaCl	6	22	198	0-15	104.24	0.06	0.19	0.88	2.24	15.28	434.88	121.81	<0.125	133.30	<0.10
NaCl	6	22	199	0-15	116.44	0.07	0.11	0.99	2.09	12.79	447.40	129.26	<0.125	147.90	<0.10
NaCl	6	22	200	0-15	95.04	0.03	0.06	0.46	1.89	11.65	377.30	113.01	<0.125	140.80	<0.10
NaCl	6	22	201	0-15	152.99	0.06	0.17	0.85	1.77	19.13	383.25	147.51	15.62	161.38	<0.10
NaCl	6	32	202	0-15	120.44	0.09	0.57	1.14	3.11	24.40	418.05	125.76	<0.125	133.63	<0.10
NaCl	6	41	204	0-15	99.62	0.07	0.79	0.89	2.74	18.53	398.13	151.86	6.83	118.48	<0.10

Table 23. DTPA-NH₄HCO₃ Extract Data for the Soil/Waste Mixtures.

Waste	Rate	Plot Number	Sample Number	Depth (cm)	P	Mo (ug/g)	Ni	Se
KCl	4	16	261	0-15	32.13	0.05	0.55	0.95
KCl	4	16	262	0-15	23.56	0.14	0.72	0.77
KCl	4	16	263	0-15	24.73	0.15	0.72	<0.7
KCl	4	16	264	0-15	24.00	<0.12	0.64	0.76
KCl	4	16	265	0-15	18.04	<0.12	0.61	<0.7
KCl	4	16	266	0-15	23.36	<0.12	0.63	<0.7
KCl	4	16	267	0-15	23.81	<0.12	0.71	<0.7
KCl	4	16	268	0-15	22.97	<0.12	0.64	0.76
KCl	4	16	269	0-15	43.44	0.18	0.98	0.79
KCl	4	16	270	0-15	27.05	<0.12	1.34	0.76
KCl	4	16	271	15-30	11.44	<0.12	1.12	0.81
KCl	4	16	272	30-45	3.19	<0.12	0.44	<0.7
KCl	4	24	172	0-15	26.07	0.18	0.77	0.91
KCl	4	29	223	0-15	24.56	0.14	1.53	<0.7
KCl	4	29	224	15-30	5.18	<0.12	1.54	<0.7
KCl	4	29	225	30-45	6.31	<0.12	1.76	<0.7
KCl	4	29	226	45-60	6.39	<0.12	1.79	<0.7
KCl	4	29	227	60-90	7.89	<0.12	1.52	<0.7
KCl	5	25	160	0-15	24.64	0.29	1.01	1.53
KCl	5	25	161	0-15	36.81	0.22	0.83	1.30
KCl	5	25	162	0-15	20.60	0.22	0.86	1.18
KCl	5	25	163	0-15	20.13	0.26	1.50	1.32
KCl	5	25	164	0-15	30.09	0.30	1.19	1.61
KCl	5	25	165	0-15	27.86	0.26	0.98	1.31
KCl	5	25	166	0-15	38.62	0.23	1.02	1.64
KCl	5	25	167	0-15	40.98	0.16	0.58	0.81
KCl	5	25	168	0-15	32.01	0.27	0.93	1.12
KCl	5	25	169	0-15	30.00	0.31	0.98	1.23
KCl	5	25	170	15-30	11.71	0.19	0.29	3.60
KCl	5	25	171	30-45	12.39	0.16	0.37	3.03
KCl	5	26	273	0-15	31.15	0.17	0.86	<0.7
KCl	5	26	274	0-15	16.87	<0.12	0.32	<0.7
KCl	5	37	240	0-15	22.14	<0.12	1.42	<0.7
NaCl	6	22	192	0-15	16.49	<0.12	0.35	0.82
NaCl	6	22	193	0-15	17.90	<0.12	0.29	<0.7
NaCl	6	22	194	0-15	22.52	<0.12	0.35	<0.7
NaCl	6	22	195	0-15	19.29	<0.12	0.37	0.87
NaCl	6	22	196	0-15	20.46	<0.12	0.53	1.13
NaCl	6	22	197	0-15	17.01	<0.12	0.45	1.00
NaCl	6	22	198	0-15	18.28	<0.12	0.42	0.88
NaCl	6	22	199	0-15	15.99	<0.12	0.44	0.96
NaCl	6	22	200	0-15	15.53	<0.12	0.22	<0.7
NaCl	6	22	201	0-15	23.32	<0.12	0.37	0.84
NaCl	6	32	202	0-15	21.52	<0.12	1.48	1.03
NaCl	6	41	204	0-15	17.01	<0.12	0.61	0.79

Table 23. DTPA-NH₄HC0₃ Extract Data for the Soil/Waste Mixtures.

Waste	Rate	Plot Number	Sample Number	Depth (cm)	Fe	Cd	Cu	Pb	Zn	Mn	Ca (ug/g)	Mg	Na	K	B
NaCl	7	18	233	0-15	84.97	0.08	1.46	1.71	3.12	23.27	394.40	147.71	170.15	120.31	<0.10
NaCl	7	27	241	0-15	125.19	0.07	0.97	1.39	2.93	31.26	376.85	138.96	488.30	130.74	<0.10
NaCl	7	27	242	0-15	111.32	0.07	0.84	1.12	2.38	28.78	390.35	112.96	373.80	105.61	<0.10
NaCl	7	27	243	0-15	118.32	0.07	1.04	1.22	2.50	24.28	375.88	139.56	124.20	126.36	<0.10
NaCl	7	27	244	0-15	122.22	0.06	0.70	0.82	1.93	20.83	405.23	105.71	44.30	119.68	<0.10
NaCl	7	27	245	0-15	106.78	0.06	0.82	0.83	1.69	20.38	397.96	125.98	120.19	104.91	<0.10
NaCl	7	27	246	0-15	106.51	0.07	0.88	0.99	2.20	25.51	374.08	155.66	199.00	142.91	<0.10
NaCl	7	27	247	0-15	107.05	0.07	0.75	0.95	2.48	21.26	404.15	115.29	117.80	131.48	<0.10
NaCl	7	27	248	0-15	108.18	0.07	0.80	0.94	2.40	24.51	400.10	124.76	176.23	126.41	<0.10
NaCl	7	27	249	0-15	110.63	0.08	0.98	0.88	3.51	29.78	400.28	111.94	154.43	123.83	<0.10
NaCl	7	27	250	0-15	97.56	0.07	0.85	0.86	2.44	19.00	409.53	121.16	176.45	125.51	<0.10
NaCl	7	34	173	0-15	84.63	0.06	1.40	2.00	2.73	18.42	408.08	109.99	139.10	351.98	<0.10
NaCl	8	20	219	0-15	106.97	0.08	1.27	1.14	3.38	31.43	404.30	110.23	183.63	122.66	<0.10
NaCl	8	35	150	0-15	72.21	0.07	0.68	0.93	2.48	14.68	410.50	98.31	83.30	177.90	<0.10
NaCl	8	35	151	0-15	74.16	0.07	0.77	0.89	2.95	16.76	446.57	103.39	177.30	112.72	<0.10
NaCl	8	35	152	0-15	82.31	0.06	0.78	0.82	2.65	20.49	425.78	120.14	255.73	125.85	<0.10
NaCl	8	35	153	0-15	86.41	0.06	0.73	0.69	2.13	15.80	453.78	93.99	135.25	249.03	<0.10
NaCl	8	35	154	0-15	71.81	0.06	1.02	1.15	2.56	20.03	440.55	110.29	630.75	122.70	<0.10
NaCl	8	35	155	0-15	83.36	0.07	0.86	1.06	2.98	23.17	436.03	111.49	426.45	144.58	<0.10
NaCl	8	35	156	0-15	77.78	0.07	0.79	0.88	2.74	20.56	456.45	108.19	312.88	165.83	<0.10
NaCl	8	35	157	0-15	75.62	0.06	0.65	0.60	2.51	11.88	460.46	100.50	79.78	165.15	<0.10
NaCl	8	35	158	0-15	73.43	0.07	0.73	0.94	2.45	13.44	446.08	112.61	172.83	158.78	<0.10
NaCl	8	35	159	0-15	75.03	0.07	0.88	0.98	2.68	17.13	440.68	104.34	148.75	181.70	<0.10
NaCl	8	44	174	0-15	98.98	0.06	1.14	1.16	1.91	27.14	402.35	111.46	320.45	91.60	<0.10
NaCl	8	44	175	15-30	54.87	0.03	1.81	0.70	0.22	15.90	333.73	213.86	5.98	91.46	<0.10
NaCl	8	44	176	30-60	35.06	0.05	1.56	0.32	0.15	6.35	328.68	233.16	1.43	93.95	<0.10
NaCl	9	19	228	0-15	96.07	0.09	1.06	1.26	4.71	32.26	417.08	99.78	414.58	144.14	<0.10
NaCl	9	19	229	15-30	119.04	0.06	2.31	1.09	2.38	178.37	271.73	158.71	0.76	145.91	<0.10
NaCl	9	19	230	30-45	52.67	<0.02	0.85	0.29	0.17	7.00	331.18	81.18	37.32	44.16	<0.10
NaCl	9	19	231	45-60	31.57	<0.02	0.83	0.31	0.05	2.95	316.35	61.58	80.73	40.36	<0.10
NaCl	9	19	232	60-90	20.37	<0.02	0.93	0.36	0.05	2.57	324.70	92.61	59.60	47.49	<0.10
NaCl	9	31	205	0-15	130.39	0.08	0.92	1.39	2.72	39.47	392.23	133.96	443.78	131.58	<0.10
NaCl	9	31	206	15-30	86.60	0.03	3.14	0.60	0.38	5.33	301.70	250.95	64.58	197.17	<0.10
NaCl	9	31	207	30-45	77.82	0.03	2.19	0.74	0.34	2.79	347.45	309.01	15.42	211.45	<0.10
NaCl	9	31	208	45-60	66.67	<0.02	2.06	0.64	0.40	2.49	348.55	308.74	3.92	211.88	<0.10
NaCl	9	36	275	0-15	60.28	0.05	1.40	0.97	1.19	13.81	387.43	142.91	445.30	99.13	<0.10
NaCl	9	36	276	0-15	79.66	0.08	1.05	1.01	3.04	25.71	414.20	127.09	296.30	116.68	<0.10
NaCl	9	36	277	0-15	81.91	0.06	1.60	1.65	1.81	18.77	375.10	141.09	243.38	110.51	<0.10
NaCl	9	36	278	0-15	88.08	0.06	1.66	1.06	1.58	18.96	377.18	142.16	202.20	121.83	<0.10
NaCl	9	36	279	0-15	98.83	0.06	1.68	1.54	1.74	29.42	368.93	128.76	465.50	110.93	<0.10
NaCl	9	36	280	0-15	84.31	0.05	1.66	0.96	1.31	14.59	373.10	153.36	266.75	130.68	<0.10
NaCl	9	36	281	0-15	88.36	0.06	2.29	2.54	3.18	20.64	355.78	155.54	283.00	129.71	<0.10
NaCl	9	36	282	0-15	76.83	0.07	1.59	1.53	1.94	19.15	385.33	154.54	496.98	100.28	<0.10
NaCl	9	36	283	0-15	70.18	0.06	1.43	1.06	1.52	15.99	384.20	140.84	400.08	116.38	<0.10
NaCl	9	36	284	0-15	67.61	0.05	1.24	0.80	0.85	10.75	384.40	147.79	278.38	97.71	<0.10

Table 23. DTPA-NH4HCO3 Extract Data for the Soil/Waste Mixtures.

Waste	Rate	Plot Number	Sample Number	Depth (cm)	P	Mo (ug/g)	Ni	Se
NaCl	7	18	233	0-15	18.63	<0.12	1.28	0.77
NaCl	7	27	241	0-15	19.08	<0.12	1.19	0.75
NaCl	7	27	242	0-15	22.23	<0.12	1.14	0.81
NaCl	7	27	243	0-15	19.57	<0.12	1.14	<0.7
NaCl	7	27	244	0-15	18.58	<0.12	1.03	<0.7
NaCl	7	27	245	0-15	17.00	<0.12	1.05	<0.7
NaCl	7	27	246	0-15	15.25	<0.12	0.29	0.82
NaCl	7	27	247	0-15	18.80	<0.12	0.28	<0.7
NaCl	7	27	248	0-15	20.08	<0.12	0.30	<0.7
NaCl	7	27	249	0-15	20.04	<0.12	0.41	0.82
NaCl	7	27	250	0-15	19.02	<0.12	1.37	<0.7
NaCl	7	34	173	0-15	20.89	<0.12	0.52	0.94
NaCl	8	20	219	0-15	22.85	<0.12	1.29	0.79
NaCl	8	35	150	0-15	14.77	0.20	0.21	1.03
NaCl	8	35	151	0-15	22.61	0.20	0.27	0.98
NaCl	8	35	152	0-15	18.39	0.31	0.23	1.15
NaCl	8	35	153	0-15	23.81	<0.12	0.22	0.79
NaCl	8	35	154	0-15	17.94	<0.12	0.28	0.93
NaCl	8	35	155	0-15	31.31	<0.12	0.32	1.02
NaCl	8	35	156	0-15	26.01	<0.12	0.28	1.00
NaCl	8	35	157	0-15	18.47	<0.12	0.19	0.87
NaCl	8	35	158	0-15	16.15	<0.12	0.27	0.99
NaCl	8	35	159	0-15	22.36	<0.12	0.28	0.99
NaCl	8	44	174	0-15	25.89	<0.12	0.39	1.12
NaCl	8	44	175	15-30	6.71	<0.12	0.40	0.88
NaCl	8	44	176	30-60	5.20	<0.12	0.14	<0.7
NaCl	9	19	228	0-15	29.05	<0.12	1.57	0.82
NaCl	9	19	229	15-30	18.27	<0.12	1.47	2.58
NaCl	9	19	230	30-45	6.39	<0.12	1.03	<0.7
NaCl	9	19	231	45-60	5.21	<0.12	0.99	<0.7
NaCl	9	19	232	60-90	3.75	<0.12	0.95	<0.7
NaCl	9	31	205	0-15	19.83	<0.12	0.69	1.11
NaCl	9	31	206	15-30	6.91	<0.12	0.54	<0.7
NaCl	9	31	207	30-45	6.97	<0.12	1.32	0.86
NaCl	9	31	208	45-60	7.93	<0.12	1.31	<0.7
NaCl	9	36	275	0-15	19.38	<0.12	0.38	<0.7
NaCl	9	36	276	0-15	17.39	<0.12	0.37	<0.7
NaCl	9	36	277	0-15	18.22	<0.12	0.50	<0.7
NaCl	9	36	278	0-15	16.10	<0.12	0.46	<0.7
NaCl	9	36	279	0-15	20.72	<0.12	0.55	<0.7
NaCl	9	36	280	0-15	15.54	<0.12	0.46	<0.7
NaCl	9	36	281	0-15	15.40	<0.12	0.70	<0.7
NaCl	9	36	282	0-15	19.12	<0.12	0.54	<0.7
NaCl	9	36	283	0-15	19.80	<0.12	0.43	<0.7
NaCl	9	36	284	0-15	10.11	<0.12	0.25	<0.7

Table 23. DTPA-NH₄HCO₃ Extract Data for the Soil/Waste Mixtures.

Waste	Rate	Plot Number	Sample Number	Depth (cm)	Fe	Cd	Cu	Pb	Zn	Mn	Ca (ug/g)	Mg	Na	K	B
NaCl	10	23	179	0-15	87.39	0.10	0.83	1.48	2.66	20.29	431.53	119.71	1397	119.10	<0.10
NaCl	10	23	180	0-15	91.77	0.10	0.90	1.47	2.80	31.62	402.45	105.34	1689	135.40	<0.10
NaCl	10	23	181	0-15	91.67	0.11	1.03	1.77	3.17	29.54	423.60	122.11	1337	237.25	<0.10
NaCl	10	23	182	0-15	97.74	0.13	1.17	1.91	4.62	37.95	412.63	122.79	1022	147.83	<0.10
NaCl	10	23	183	0-15	95.57	0.10	1.11	1.74	2.73	21.53	413.45	105.34	1074	130.98	<0.10
NaCl	10	23	184	0-15	98.12	0.09	1.17	2.24	3.28	25.23	397.70	101.76	1443	134.43	<0.10
NaCl	10	23	185	0-15	87.42	0.09	0.92	1.55	3.08	27.78	418.58	96.16	1054	124.20	<0.10
NaCl	10	23	186	0-15	95.82	0.08	1.01	1.72	2.82	30.97	362.40	100.66	1610	131.15	<0.10
NaCl	10	23	187	0-15	87.67	0.08	1.25	2.82	3.14	17.98	375.95	143.41	1462	118.83	<0.10
NaCl	10	23	188	0-15	97.19	0.08	0.97	1.29	2.21	35.68	388.60	117.56	1279	115.48	<0.10
NaCl	10	23	189	15-30	102.46	0.08	3.16	0.82	0.80	98.57	308.05	222.89	24.3	133.98	<0.10
NaCl	10	23	190	30-45	37.89	0.06	2.03	0.42	0.23	19.00	312.48	371.91	9.46	114.45	<0.10
NaCl	10	23	191	45-60	11.80	0.06	1.52	0.35	0.15	0.99	284.70	405.74	10.6	92.08	<0.10
NaCl	10	28	234	0-15	123.82	0.09	1.13	2.31	4.18	59.30	380.68	84.86	1042	103.96	<0.10
NaCl	10	38	235	0-15	95.59	0.07	1.64	2.71	2.41	30.35	380.55	134.63	671	96.91	<0.10
NaCl	10	38	236	15-30	153.69	0.07	2.31	1.34	2.72	171.32	256.40	160.76	26.6	149.71	<0.10
NaCl	10	38	237	30-45	55.59	<0.02	2.37	0.67	0.34	7.23	354.93	222.86	5.67	169.71	<0.10
NaCl	10	38	238	45-60	53.62	<0.02	2.77	0.80	0.41	2.14	332.25	263.21	1.87	188.09	<0.10
NaCl	10	38	239	60-90	54.87	0.03	2.60	0.72	0.44	2.64	351.40	258.08	1.44	180.54	<0.10

Waste	P	Mo (ug/g)	Ni	Se
NaCl	31.82	<0.12	0.35	0.89
NaCl	27.54	<0.12	0.37	1.15
NaCl	33.90	<0.12	0.45	0.96
NaCl	33.86	<0.12	0.48	1.18
NaCl	20.08	<0.12	0.42	0.91
NaCl	30.46	<0.12	1.23	0.81
NaCl	26.27	<0.12	0.60	0.79
NaCl	30.83	<0.12	0.30	0.81
NaCl	16.90	<0.12	0.33	<0.7
NaCl	27.97	<0.12	0.29	1.00
NaCl	10.94	<0.12	0.78	1.81
NaCl	4.02	<0.12	0.18	<0.7
NaCl	0.53	<0.12	0.12	<0.7
NaCl	28.22	<0.12	1.25	1.25
NaCl	19.75	<0.12	1.42	0.81
NaCl	18.15	0.14	1.49	2.21
NaCl	6.38	<0.12	1.44	<0.7
NaCl	5.89	<0.12	1.45	<0.7
NaCl	6.58	<0.12	1.58	<0.7

Table 24. Chloride concentration in the experimental plots prior to and following waste application.

Waste Type	Treatment No.	Soil Depth (cm)	Chloride (mg/L)	
			Pre*	Post**
Freshwater	2	0 to 15	18.7	22.3
Freshwater	3	0 to 15	17.8	33.0
	3	15 to 30	15.9	15.8
	3	30 to 60	15.3	-
Freshwater	4	0 to 15	18.2	36.3
	4	15 to 30	8.8	15.9
	4	30 to 60	11.3	11.6
Freshwater	5	0 to 15	16.3	40.0
	5	15 to 30	9.6	37.9
	5	30 to 60	8.9	15.8
KCl	2	0 to 15	20.6	396
KCl	3	0 to 15	20.3	942
KCl	4	0 to 15	22.7	1070
		15 to 30	11.5	69.1
		30 to 60	7.9	107.4
		60 to 90	7.0	17.9
KCl	5	0 to 15	18.2	3135
		15 to 30	17.6	889
		30 to 60	6.7	555
		60 to 90	5.5	-
NaCl	7	0 to 15	22.2	480
	8	0 to 15	20.8	870
		15 to 30	13.1	85.1
		30 to 60	9.1	9.7
		60 to 90	6.9	-

continued . . .

Table 24. Concluded.

Waste Type	Treatment No.	Soil Depth (cm)	Chloride (mg/L)	
			Pre*	Post**
NaCl	9	0 to 15	23.4	1150
		15 to 30	19.2	168
		30 to 60	12.8	96.2
		60 to 90	16.4	144.1
NaCl	10	0 to 15	24.4	3352
		15 to 30	14.6	206.1
		30 to 60	7.5	34.3
		60 to 90	8.2	27.8

*Pre-Application.

**Post-Application.

The data contained in Table 24 will be used to calculate the actual amount of material that was added and allow for conversion to kg Cl/ha achieved.

4.3 GRASS GROWTH ON THE EXPERIMENTAL PLOTS

Two months elapsed from the date of seeding to the time that field observations and sampling were completed.

4.3.1 Grass Growth Achieved

Despite the fact that the bromegrass was not seeded until mid-July an excellent crop became established, particularly on the freshwater gel plots (Plate 6). Lesser growth was achieved on the KCl and NaCl treated plots particularly those with the higher application rates (Plate 7). It was interesting to note that the plots with the maximum rates of KCl and NaCl attracted the most wildlife despite the fact that the vegetation cover was very sparse (Plate 8). Perhaps the salt concentration of the soil/waste mixture attracted them to these particular plots.

Growth overall for the experimental plots was not adequate to undertake a meaningful yield assessment. The grass cover should have a full growing season to develop so that an accurate assessment of yield could be obtained.

4.3.2 Tissue Sampling

Tissue samples were obtained from each of the freshwater gel treated plots and from selected NaCl and KCl treated plots where vegetation cover was adequate to supply enough material for a sample (Plate 9).

Plate 6. Growth on the freshwater gel treated plots.

Plate 7. Growth on the KCl and NaCl treated plots.

Plate 8. Wildlife seemed attracted to plots with highest KCl and NaCl waste application rates.

Plate 9. Tissue samples were collected at several plots.

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