

AMMONIUM NITRATE FERTILIZER PROGRAM
1987 COMPLETION REPORT

LICENSE SUB-1010; DOCKET 40-8027
CHAPTER 1 - FERTILIZER DISTRIBUTION
COMMITMENT 13

SEQUOYAH FUELS CORPORATION
OKLAHOMA CITY, OKLAHOMA

APRIL 29, 1988

8805120261 880429
PDR ADOCK 04008027
C PDR

AMMONIUM NITRATE FERTILIZER PROGRAM
LICENSE SUB-1010; DOCKET 40-8027
1987 COMPLETION REPORT
SEQUOYAH FUELS CORPORATION
OKLAHOMA CITY, OKLAHOMA

INTRODUCTION

Source material license SUB-1010, issued to Sequoyah Fuels Corporation (SFC), and renewed on September 20, 1985, authorizes the application of nitrogen fertilizer produced from neutralized, barium treated raffinate on SFC owned or controlled lands for production of crops that are not used directly as human food. Examples of SFC's use of this nitrogen fertilizer are for livestock forage and seed production.

The 1987 fertilizer application program included comprehensive agricultural and environmental management oversight of fertilizer application to maximize plant nutrient utilization and forage production. Oklahoma State University agronomist and soil scientist Dr. Billy Tucker continued to provide program oversight and recommendations for overall program enhancement. The 1988 program application and sampling schedule is provided in Figure 1.

In accordance with license requirements, this completion report describes the 1987 nitrogen fertilizer application program and presents detailed sampling and analysis results for the two test-plot areas in the program.

APPLICATION AREAS

Facility produced ammonium nitrate fertilizer was applied in 1987 to Sequoyah Fuels owned lands adjacent to the Sequoyah Facility and company owned land near Warner, Oklahoma. Application areas adjacent to the facility in 1987 were the 270, Remer and 885 acre plots. Areas near Warner included the Rabbit Hill lands comprising over 1,500 acres and the George's Fork Ranch comprising 7,600 acres of pasture area. The program test plot acreages include the 270 plot adjacent to the facility and the Rabbit Hill property.

AMMONIUM NITRATE APPLICATION

Pre-growing season soil samples were taken in the spring of 1987 and analyzed. From these sampling results, Dr. Tucker established nitrogen application rates. Dr. Tucker made additional nutrient recommendations, e.g. phosphorus and potassium, based upon the soil analyses from test area soil samples taken following the growing season in the fall of 1986.

The facility produced liquid ammonium nitrate fertilizer was distributed by two methods in 1987. Application to the timber strip areas and more rugged terrain was done with a 2,200 gallon Ag-Chem AG-GATOR. The gently rolling pasture areas received application from 6,000 gallon semi-tankers equipped with spray headers. The tanker discharge flows were calibrated and travel speeds adjusted to achieve the program nitrogen application rate. Applications began in April and ended in September. A total of 18.7 million gallons were applied. The ammonium nitrate fertilizer stored in Ponds 3E,

3W, 5, and 6 was used for the 1987 program with composite samples collected and analyzed for each application sequence. The average chemical composition of the fertilizer solution is presented in Table 1. A summary of the areas and nitrogen application rates for 1987 is given in Table 2.

Transport of the fertilizer to Rabbit Hill and the George's Fork Ranch, located approximately 10 miles west of the Sequoyah Facility, was by dedicated semi-tanker. Upon arrival at the acreage, the solution was loaded directly to the AG-GATOR for immediate application or was applied immediately by the transport vehicle. Applications to the nearby Sequoyah Facility areas also were by these two methods.

COMMERCIAL FERTILIZER SUPPLEMENT APPLICATION

Commercial fertilizer supplements were applied during 1987 at rates established from the 1986 post application season soil analyses. These commercial plant food supplements were applied according to Dr. Tucker's recommendations and consisted of phosphate, lime, and a blend of sulfur, potassium and magnesium (K-Mag). K-Mag application provided the 1987 potassium needs in areas where forage was to be harvested. Typical analyses for the commercial fertilizer products are provided in Table 3.

Sequoyah Fuels Corporation purchased the phosphate supplement from IMC Florida Operations. The chemical analysis of the SFC fertilizer compares favorably, on a pound per pound dry basis, with the trace constituents found in the commercial products. Only the elements molybdenum (Mo) and nickel (Ni) were present in concentrations greater than in the commercial supplements applied to the acreage.

Commercial fertilizer application rates for the Sequoyah 270 and Rabbit Hill test acreages are presented in Tables 4 and 5. The commercial fertilizer supplements were applied by a commercial vendor.

PROGRAM ENVIRONMENTAL MONITORING RESULTS

1. Soil

The 1987 pre-growing season samples for the 270 and Rabbit Hill acreages were taken in February and analyses are provided in Tables 6 and 7, respectively. Soil analyses were completed for the top six inches of soil and the interval from six inches to twelve inches. The results showed no discernable concentration changes with depth. Post-season soil sampling was done in November of 1987 and results are provided in Tables 8 and 9 for the 270 and Rabbit Hill acreages respectively.

In addition to pre- and post-season sampling, soil nitrogen ($\text{NO}_3\text{-N}$) levels were monitored between individual fertilizer applications (those areas projected to receive more than 200 pounds N per acre) to assess nitrogen utilization and ensure compatibility with forage uptake and growing season conditions.

2. Water

Sequoyah Acreage: Surface water samples were taken and analyzed for the Sequoyah area 270-acre test plot runoff retention pond (NPDES Outfall 002) and Farm Ponds 1, 2 and 3 on the 270 acre plot. The results are provided in Table 10. Monitored constituents remained constant during the growing season period.

Groundwater at the 270 acre plot was sampled from monitor wells 270-1 through 270-3. The results are provided in Table 11.

The wells on the 270-acre plot showed no upward trends for monitored constituents.

Rabbit Hill Acreage: Seven monitor wells were sampled and two surface water samples were taken at Rabbit Hill during the 1987 application season. Monitor well results are given in Table 12. The surface water data is provided in Table 10. All nitrate levels were below the 10 mg/l action level.

3. Vegetation

Forage samples were collected prior to each hay cutting and evaluated in accordance with NRC license requirements. Hay harvests were conducted when the yield from pasture growth was estimated to be 1 1/2 to 2 tons per acre. Analytical data for the cuttings from Sequoyah and Rabbit Hill acreages are provided in Tables 13 and 14, respectively. All hay met the U.S. Nuclear Regulatory Commission release guidelines and was released to Kerr-McGee Ranching Division for unrestricted use or sale.

4. Cummulative Loading

The cumulative application totals, in pounds per acre, for the trace constituents present in Sequoyah fertilizer are presented in Attachment 1. The amount of loading is very small and is substantially below the limitations established by NRC which are based on the irrigation water standards.

FORAGE MANAGEMENT PROGRAM

Hay harvest began in early May and continued through late fall and was dictated by the vegetation growth yields and the needs for cattle grazing. Summer hay production consisted chiefly of Bermuda grass and some fescue in low lying areas. The acreages were overseeded with rye grass in the fall to provide winter growth and forage.

Approximately 1,060 head of cattle are grazed on the pasture lands. This herd comprises the current cow-calf operation being maintained at the George's Fork ranch. SFC's year-round crop and ranch management program will continue to be an important component of the agriculture program.

FIGURE 1
1988 - AMMONIUM NITRATE FERTILIZER SCHEDULE

	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
PREPARE OPERATING PROCEDURES	•	—										
AMMONIUM NITRATE APPLICATION AFE	•	—										
AMMONIUM NITRATE APPLICATION QUOTES		•	—									
AMMONIUM NITRATE APPLICATION CONTRACTS			•	—								
AMMONIUM NITRATE APPLICATION					•							
GALLONS APPLIED (SCHEDULE)												
GALLONS APPLIED (ACTUAL)												
FALL OVERSEEDING AFE				•	—							
SEED PURCHASE					•	—						
OVERSEEDING QUOTES						•	—					
OVERSEEDING CONTRACTS						•	—	•				
OVERSEEDING								•	—			

TABLE 1

Average Concentrations of Elements in Ammonium Nitrate
Fertilizer Solution
1987 Applications

<u>ELEMENT/UNIT</u>		<u>SEQUOYAH*</u>	<u>RABBIT HILL*</u>
As	ppm	2.2	2.0
B	ppm	1.8	1.95
Ba	ppm	0.33	0.26
Cd	ppm	<0.28	<0.28
Co	ppm	0.66	<0.65
Cr	ppm	0.52	<0.52
Cu	ppm	5.2	3.3
Fe	ppm	<0.23	0.21
Hg	ppm	<0.001	<0.001
Mg	ppm	130.	103.
Mn	ppm	8.85	6.7
Mo	ppm	11.5	8.9
N	ppm	27,775.	20,862.
Ni	ppm	9.1	5.75
Pb	ppm	<2.9	2.45
Se	ppm	2.	1.965
U	ppm	0.011	0.0075
V	ppm	<0.24	0.215
Z	ppm	1.95	1.6
Ra-226	pCi/l	0.34	0.16
Th-230	pCi/l	0.041	0.013
Alpha	pCi/l	<10.	12.

* Average of 2 composites

TABLE 2
AMMONIUM NITRATE FERTILIZER PROGRAM
1987 APPLICATION SUMMARY

	<u>Sequoyan</u>		<u>Rabbit Hill</u>	
Application No.	1	2	1	2
Dates	Apr/May	Jul/Sept	Apr/May	Aug/Sept
Application Area (acres)	1,112	607	545	397
Volume Applied (Gallons)	1,175,000	610,000	725,000	460,000
Average Nitrate (gN/l)	26	30	24	17
Total Nitrogen Applied (lbs/ac)	229	201	265	164

TABLE 3
Commercial Fertilizer Analysis
1987 Applications

ELEMENT/UNIT		POTASSIUM	PHOSPHATE	AG LIME 9B2	SUL-MAG
As,	ppm	<2	12	7.8	<2
B,	ppm	5.0	21	3.1	19
Ba,	ppm	0.85	37	21	11
Cd,	ppm	<0.5	4.3	<0.5	1.1
Co,	ppm	<0.7	3.8	<0.7	<0.7
Cr,	ppm	0.45	84	1.8	0.85
Cu,	ppm	2.2	5.1	2.1	1.7
Fe,	ppm	970	13,000	2,100	250
Hg,	ppm	<0.5	<0.5	<0.5	<0.5
Mg,	ppm	2,200	3,700	3,700	110,000
Mn,	ppm	6.0	350	77	12
Mo,	ppm	<0.4	11	8.0	0.45
Ni,	ppm	<0.8	16	1.8	<0.8
Pb,	ppm	<7	<7	<7	<7
Se,	ppm	<3	<3	<3	<3
V,	ppm	<0.4	140	1.6	0.50
Zn,	ppm	3.4	82	10	3.1
F,	ppm	120	8,860	36	30
Alpha,	pCi/g	<10	220	<10	<10
Ra-226,	pCi/g	0.005 ± 0.010	12.1 ± 1.31	0.005 ± 0.007	0.064 ± 0.056
Th-230,	pCi/g	0.011 ± 0.022	74.5 ± 1.2	0.108 ± 0.028	0.044 ± 0.008
U-238,	ppm	<2	87	<2	<2

TABLE 4
270 Acre Plot
1987 Commercial Fertilization and Agricultural
Lime Application Rates

<u>AREA</u>	<u>ACRES</u>	<u>K₂O*</u> <u>LBS/AC</u>	<u>P₂O₅</u> <u>LBS/AC</u>	<u>AG-LIME</u> <u>TONS/AC</u>
270N	91	50	40	0
270S	99	50	40	0
270SW	13	50	40	0
BALLFIELD	11	50	40	0
270W	19	50	40	0
270SE	16	0	60	0

*Note - Potassium requirements were met by using K-Mag for open pasture areas.

TABLE 5
Rabbit Hill Acreage
1987 Commercial Fertilization and Agricultural
Lime Application Rates

<u>AREA</u>	<u>ACRES</u>	<u>K₂O*</u> <u>LBS/AC</u>	<u>P₂O₅</u> <u>LBS/AC</u>	<u>AG-LIME</u> <u>TONS/AC</u>
RH-1	9	20	30	0
RH-2	130	50	60	0
RH-3	27	20	30	0
RH-4	47	0	0	0
RH-5	44	50	60	0
RH-5W	3	50	60	0
RH-6	188	50	60	0
RH-6S	2	20	30	0
RH-7	55	20	30	0
RH-8	45	0	0	0
RH-9	49	20	30	0
RH-9W	26	50	60	0
1 (TIMBER)	44	20	30	0

* Note - Potassium requirements for harvestable
acres were met by the addition of K-Mag

TABLE 6

1987 PRE-SEASON SOIL ANALYSIS
270 ACRE PLOT

AREA	DEPTH	As ppm	B ppm	Co ppm	Cu ppm	Fe ppm	Mn ppm	Mo ppm	Ni ppm	Pb ppm	V ppm	Zn ppm	Ra-226 pCi/g	Th-230 pCi/g	U238 ppm	pH	N LBS/AC
270-N	0-6" C	<5.5	<2.4	5.2	4.4	18,000	380	<1.0	8.1	10	12	14	0.85	0.93	2.1	7.0	5
270-N	6-12"	<5.5	<2.4	6.8	4.0	18,000	470	<1.0	7.2	11	19	18	1.17	1.19	<2	6.4	8
270-S	0-6" C	<5.5	3.5	6.2	4.6	17,000	410	<1.0	5.2	12	21	17	0.97	1.08	2.4	5.8	22
270-S	6-12"	<5.5	2.7	6.9	4.1	13,000	320	<1.0	7.3	14	23	18	0.75	0.95	<2	4.5	7

TABLE 7

1987 PRE-SEASON SOIL ANALYSIS
RABBIT HILL ACREAGE

AREA	DEPTH	As ppm	B ppm	Co ppm	Cu ppm	Fe ppm	Mn ppm	Mo ppm	Ni ppm	Pb ppm	V ppm	Zn ppm	Ra-226 pCi/g	Th-230 pCi/g	U238 ppm	pH	N LBS/AC
RH-2	0-6" C	<5.5	<2.4	5.6	4.2	12,000	200	<1.0	5.5	20	11	14	1.21	0.86	2.2	5.7	1
RH-2	6-12"	<5.5	<2.4	5.3	4.9	24,000	370	<1.0	7.9	21	19	14	1.17	0.83	<2	5.5	2
RH-4	0-6" C	<5.5	3.8	7.2	4.1	47,000	920	<1.0	5.3	17	22	14	1.34	0.96	<2	6.6	19
RH-4	6-12"	<5.5	2.6	4.0	4.0	38,000	440	<1.0	6.4	18	10	13	1.03	1.07	<2	5.6	6
RH-5	0-6" C	<5.5	2.5	5.0	2.9	30,000	530	<1.0	6.1	19	17	16	1.04	0.95	<2	6.3	13
RH-5	6-12"	<5.5	<2.4	4.1	4.8	22,000	560	<1.0	5.7	10	24	15	0.95	0.95	<2	5.6	5
RH-6	0-6" C	<5.5	<2.4	4.8	3.8	34,000	760	<1.0	6.6	14	16	11	0.66	0.95	2	5.9	23
RH-6	6-12"	<5.5	<2.4	5.5	2.7	22,000	800	<1.0	7.5	15	13	13	1.16	0.85	2.2	4.9	44
RH-9	0-6" C	<5.5	<2.4	4.8	4.1	18,000	360	<1.0	5.4	12	16	22	0.95	0.91	<2	5.8	6
RH-9	6-12"	<5.5	<2.4	3.2	5.2	23,000	440	<1.1	6.9	14	13	19	0.93	1.16	2	5.4	5

TABLE 8
1987 POST SEASON SOIL ANALYSES
270 ACRE PLOT

Area	Depth Inches	As ppm	B ppm	Co ppm	Cu ppm	Fe ppm	Mn ppm	Mo ppm	Ni ppm	Pb ppm	V ppm	Zn ppm	Alpha pCi/g	Ra-226t pCi/g	Th-230 pCi/g	U ppm	Nitrate pH lbs/ac	
270-N	0-6C	12	6.6	7.3	20	40,000	510	<5.5	17	17	48	28	<11	0.79	0.993	2.4	6.1	16
270-N	6-12	9	<5.9	8.1	13	35,000	420	<5.5	9.7	20	32	20	23	1.16	0.869	2.9	6.6	11
270-S	0-6C	10	<5.9	5.2	77	24,000	540	<5.5	17	14	35	19	13	1.05	0.807	2.7	5.4	10
270-S	6-12	7	<5.9	9.3	13	20,000	660	<5.5	6.9	15	44	16	12	0.59	0.544	1.8	4.9	2

0826E

TABLE 9
1987 POST SEASON SOIL ANALYSES
RABBIT HILL ACREAGE

Area	Depth Inches	As ppm	B ppm	Co ppm	Cu ppm	Fe ppm	Mn ppm	Mo ppm	Ni ppm	Pb ppm	V ppm	Zn ppm	Alpha pCi/g	Ra-226t pCi/g	Th-230 pCi/g	U ppm	Nitrate	
																	pH	lbs/ac
RH-2	0-6C	6	<5.9	7.7	19	26,000	370	<5.5	25	19	40	44	15	0.59	0.596	2.3	5.6	11
RH-2	6-12	6	<5.9	8.5	87	30,000	400	<5.5	22	16	44	27	13	0.83	0.636	2.0	5.4	4
RH-4	0-6C	24	12	17	16	65,000	1,000	<5.5	29	36	81	51	14	0.59	0.452	3.4	6.8	14
RH-4	6-12	26	19	22	19	71,000	530	<5.5	41	36	120	65	13	1.11	1.12	4.0	5.8	2
RH-5	0-6C	11	6.4	9.6	16	28,000	530	<5.5	16	19	51	28	16	0.76	0.779	2.6	5.9	18
RH-5	6-12	10	6.5	6.7	12	26,000	210	<5.5	11	17	50	22	17	0.86	0.906	2.9	5.8	20
RH-6	0-6C	15	6.6	11	11	46,000	580	<5.5	17	28	58	34	11	0.77	1.05	2.5	6.0	14
RH-6	6-12	6	6.1	7.8	13	21,000	330	<5.5	13	14	42	21	14	0.75	0.663	2.5	5.5	7
RH-9	0-6C	7	6.8	8.1	12	24,000	410	<5.5	13	18	44	25	19	0.53	0.807	2.9	5.2	25
RH-9	6-12	6	11	9.2	50	21,000	430	<5.5	14	18	51	34	11	0.63	1.02	2.5	4.9	10

0526E

TABLE 10

1987 SURFACE WATER MONITORING
270 ACRE AND RABBIT HILL ACREAGE

Date	Location	NO ₃ (N) mg/l	NH ₄ (N) mg/l	pH	AS mg/l	Cu mg/l	Mo mg/l	Pb mg/l	Se mg/l	Alpha pCi/l	Ra-226 pCi/l	U mg/l
270 Acre Plot												
4/87	FP-1	0.2	<0.2	10.3	<0.11	<0.015	0.019	*	<0.15	<10		
6/87		0.5	<0.2	7.2	<0.29	<0.01	<0.07	<0.38	<0.37	<10		
8/87		0.1	<0.2	8.6	<0.29	0.06	<0.07	<0.38	<0.37	<10		
10/87		0.2	0.9	7.2	0.002	<0.01	<0.15	<0.11	<0.01	14		
11/87		0.2	0.9	7.3	0.004	<0.01	<0.07	<0.01	<0.01	<10		
4/87	FP-2	0.2	<0.2	7.5	<0.11	<0.015	<0.018	*	<0.15	<10		
6/87		1.1	<0.2	7.2	<0.29	<0.01	<0.07	<0.38	<0.37	<10		
8/87		0.1	<0.2	8.1	<0.29	0.04	<0.07	<0.38	<0.37	<10		
10/87		0.2	<0.2	7.4	0.002	<0.01	<0.15	<0.11	<0.01	<10		
11/87		<0.2	<0.2	7.6	0.003	<0.01	<0.07	<0.01	<0.01	<10		
4/87	FP-3	1.2	0.3	7.3	<0.11	<0.015	0.032	*	<0.15	<10		
6/87		1.4	<0.2	7.0	<0.29	<0.01	<0.07	<0.38	<0.37	<10		
8/87		0.1	<0.2	7.6	<0.29	0.07	<0.07	<0.38	<0.37	11		
10/87		0.2	0.2	7.4	0.003	<0.01	<0.15	<0.11	<0.01	<10		
11/87		<0.2	<0.2	7.9	0.004	<0.01	<0.07	<0.01	<0.01	<10		
4/87	Ret. Pond	1.2	<0.2	7.2	<0.11	<0.015	0.025	*	<0.15	<10		
6/87		0.9	<0.2	7.1	<0.29	<0.01	<0.07	<0.38	<0.37	<10		
8/87		0.1	<0.2	7.8	<0.29	0.04	<0.07	<0.38	<0.37	<10		
10/87		<0.2	<0.2	7.5	0.002	<0.01	<0.15	<0.11	<0.01	12		
11/87		<0.2	<0.2	7.7	0.003	<0.01	<0.07	<0.01	<0.01	<10		
Rabbit Hill Acreage												
4/87	R.H. Lake	0.6	<0.2	9.6	<0.11	0.016	0.048	*	<0.15	<10		
6/87		0.2	<0.2	7.2	<0.29	<0.01	<0.07	<0.38	<0.37	<10		
8/87		<0.1	<0.2	7.4	<0.29	0.05	<0.07	<0.38	<0.37	<10		
10/87		<0.2	<0.2	7.7	0.001	<0.01	<0.15	<0.11	<0.01	<10		
11/87		<0.2	<0.2	7.7	0.001	<0.01	<0.07	<0.01	<0.01	<10		
4/87	RH-3	0.1	<0.2	7.6	<0.11	<0.015	<0.018	*	<0.15	<10		
6/87		0.1	<0.2	7.2	<0.29	<0.01	<0.07	<0.38	<0.37	<10		
8/87		<0.1	<0.2	7.9	<0.29	0.04	<0.07	<0.38	<0.37	<10		
10/87		1.1	<0.2	7.6	0.001	<0.01	<0.15	<0.11	<0.01	<10		
11/87		<0.2	<0.2	7.7	0.001	<0.01	<0.07	<0.01	<0.01	<10		

* Results not available

TABLE 11
1987 MONITOR WELL ANALYSES
270 ACRE PLOT

Date	Location	NO ₃ (N) mg/l	NH ₄ (N) mg/l	pH	As mg/l	B mg/l	Cd mg/l	Cu mg/l	Mo mg/l	Ni mg/l	Se mg/l	Alpha pCi/l	Ra-226 pCi/l	U mg/l
4/87	270GM-1	1.1	<0.2	7.7	<0.11	1.0	0.016	<0.015	<0.018	<0.069	<0.15	<10		
6/87		<0.1	<0.2	7.6	<0.29	0.81	<0.04	0.01	<0.07	<0.11	<0.37	<10		
8/87		0.5	<0.2	7.7	<0.29	0.84	<0.04	0.03	<0.07	<0.11	<0.37	<10		
10/87		0.9	0.3	7.8	<0.001	0.47	<0.016	<0.01	<0.15	<0.035	<0.01	<10		
11/87		0.4	<0.2	7.7	0.001	0.80	<0.04	<0.01	<0.07	<0.11	<0.01	<10		
4/87	270GM-2	0.3	<0.2	8.0	<0.11	0.34	<0.015	<0.015	<0.018	<0.069	<0.15	<10	1.12	0.007
6/87		4.2	<0.2	7.8	<0.29	0.32	<0.04	<0.01	<0.07	<0.11	<0.37	19		
8/87		1.2	<0.2	7.7	<0.29	0.37	<0.04	0.02	<0.07	<0.11	<0.37	<10		
10/87		1.2	<0.2	7.8	<0.001	<0.14	<0.016	<0.01	<0.15	<0.035	<0.01	<10		
11/87		1.2	<0.2	7.5	<0.001	0.42	<0.04	<0.01	<0.07	<0.11	<0.01	<10		
4/87	270GM-3	0.1	<0.2	7.2	<0.11	0.16	<0.015	<0.015	<0.018	<0.069	<0.15	<10		
6/87		0.1	<0.2	7.2	<0.29	0.12	<0.04	0.01	<0.07	<0.11	<0.37	11		
8/87		<0.2	0.3	7.3	<0.29	0.10	<0.04	0.03	<0.07	<0.11	<0.37	<10		
10/87		<0.2	0.3	7.4	<0.001	<0.14	<0.016	<0.01	<0.15	<0.035	<0.01	<10		
11/87		0.1	<0.2	7.5	<0.001	0.11	<0.04	<0.01	<0.07	<0.11	<0.01	<10		

TABLE 12
MONITOR WELLS
RABBIT HILL 1987

Date	Location	NO ₃ (N) mg/L	NH ₄ (N) mg/L	pH	As mg/L	B mg/L	Cd mg/L	Cu mg/L	Mo mg/L	Ni mg/L	Se mg/L	Alpha pCi/L	Ra-226 pCi/L	U mg/L
4/87	RHMJ-1	0.1	<0.2	7.2	<0.11	0.20	<0.015	<0.015	<0.018	<0.069	<0.15	<10		
6/87		1.8	<0.2	7.3	<0.29	0.13	<0.04	<0.01	<0.07	<0.11	<0.37	<10		
8/87		0.2	<0.2	7.3	<0.29	0.14	<0.04	0.03	<0.07	<0.11	<0.37	<10		
10/87		0.3	<0.2	7.5	<0.001	<0.14	<0.016	<0.01	<0.15	<0.035	<0.01	<10		
11/87		0.1	<0.2	7.4	<0.001	0.13	<0.04	<0.01	<0.07	<0.11	<0.01	<10		
4/87	RHMJ-2	0.1	0.2	7.7	<0.11	0.28	<0.015	<0.015	0.035	<0.069	<0.15	<10		
6/87		0.7	<0.2	7.6	<0.29	0.23	<0.04	<0.01	<0.07	<0.11	<0.37	<10		
8/87		0.1	0.4	7.7	<0.29	0.24	<0.04	0.03	<0.07	<0.11	<0.37	<10		
10/87		0.3	0.4	7.9	<0.001	<0.14	<0.016	<0.01	<0.15	<0.035	<0.01	<10		
11/87		0.3	0.4	7.8	0.001	0.26	<0.04	<0.01	<0.07	<0.11	<0.01	<10		
4/87	RHMJ-3	0.1	<0.2	7.3	<0.11	0.23	<0.015	<0.015	<0.018	<0.069	<0.15	<10		
6/87		<0.1	<0.2	7.3	<0.29	0.17	<0.04	<0.01	<0.07	<0.11	<0.37	<10		
8/87		0.1	<0.2	7.4	<0.29	0.18	<0.04	<0.03	<0.07	<0.11	<0.37	<10		
10/87		0.1	<0.3	7.7	<0.001	<0.14	<0.016	<0.01	<0.15	<0.035	<0.01	<10		
11/87		<0.1	0.2	7.5	<0.001	0.18	<0.04	<0.01	<0.07	<0.11	<0.01	<10		
4/87	RHMJ-4	<0.1	<0.2	7.3	<0.11	0.28	<0.015	<0.015	<0.018	<0.069	<0.15	<10		
6/87		0.2	<0.2	7.3	<0.29	0.21	<0.04	0.01	<0.07	<0.11	<0.37	<10		
8/87		0.1	<0.2	7.3	<0.29	0.21	<0.04	<0.03	<0.07	<0.11	<0.37	<10		
10/87		0.1	<0.2	7.6	<0.001	<0.14	<0.016	<0.01	<0.15	<0.035	<0.01	<10		
11/87		0.1	<0.2	7.5	0.001	0.31	<0.04	<0.01	<0.07	<0.035	<0.01	<10		
4/87	RHMJ-5	<0.1	<0.2	7.8	<0.11	0.79	<0.015	<0.015	<0.018	<0.069	<0.15	<10		
6/87		0.1	<0.2	7.7	<0.29	0.62	<0.04	0.01	<0.07	<0.11	<0.37	<10		
8/87		<0.2	<0.2	8.0	<0.29	0.66	<0.04	0.03	<0.07	<0.11	<0.37	<10		
10/87		0.2	<0.2	8.0	0.002	0.72	<0.016	<0.01	<0.15	<0.035	<0.01	<10		
11/87		0.1	<0.2	7.8	0.005	0.69	<0.04	<0.01	<0.02	<0.11	<0.01	<10		
4/87	RHMJ-6	0.1	<0.2	7.3	<0.11	0.52	<0.015	<0.015	<0.018	<0.069	<0.15	<10		
6/87		0.1	<0.2	7.4	<0.29	0.41	<0.04	0.05	<0.07	<0.11	<0.37	<10		
8/87		0.3	<0.2	7.4	<0.29	0.43	<0.04	0.03	<0.07	<0.11	<0.37	<10		
10/87		0.3	<0.2	7.5	<0.001	0.51	<0.016	<0.01	<0.15	<0.035	<0.01	<10		
11/87		0.1	<0.2	7.6	<0.001	0.58	<0.04	<0.01	<0.07	<0.11	<0.01	<10		
4/87	RHMJ-7	5.7	<0.2	6.6	<0.11	0.056	0.017	<0.015	<0.018	<0.069	<0.15	<10		
6/87		5.2	<0.2	6.4	<0.29	<0.01	<0.04	0.02	<0.07	<0.11	<0.37	<10		
8/87		3.5	<0.2	6.8	<0.29	0.04	<0.04	0.03	<0.07	<0.11	<0.37	<10		
10/87		0.4	<0.2	7.4	0.005	<0.14	<0.016	<0.01	<0.15	<0.035	<0.01	<10		
11/87		0.1	<0.2	7.0	0.001	<0.01	<0.04	<0.01	<0.07	<0.11	<0.01	<10		

TABLE 13
1987 FORAGE RESULTS
270 ACRE PLOT

AREA	DATE	As ppm	B ppm	Co ppm	Cu ppm	Fe ppm	Mn ppm	Mo ppm	Ni ppm	Pb ppm	V ppm	Zn ppm	U ppm	Th-230 pCi/gm	Ra-226 pCi/gm	Nitrate ppm	Protein (Dig-Dry) Percent	Protein (Crude-Dry) Percent	Moisture Percent
270-N	05/08/87	<5.5	3.2	1.1	6.8	190	260	2.8	<3.4	2.9	<1.2	41	<0.2	0.0034	0.04	7300	12.20%	16.90%	77.00%
270-N	06/09/87	<5.5	4.6	<.55	4.2	360	230	<1.4	<3.4	<2.5	<1.2	44	<0.2	0.0045	0.06	8500	12.20%	16.80%	75.80%
270-N	08/17/87	<7.2	4.8	<2.3	7.8	100	62	2.0	<2.8	9.5	<0.5	22	<0.2	0.004	0.033	2600	10.00%	14.50%	75.00%
270-S	05/08/87	<5.5	4.5	<.55	6.4	210	240	2.1	<3.4	<2.5	<1.2	41	<0.2	0.003	0.03	10,100	12.80%	17.50%	74.00%
270-S	06/09/87	<5.5	3.0	<.55	5.1	190	180	1.6	<3.4	<2.5	<1.2	42	<0.2	0.002	0.05	4400	12.10%	16.80%	75.40%
270-S	08/12/87	<7.2	8.6	<2.3	12	330	160	<1.7	3.0	9.5	<0.5	31	<0.2	0.038	0.007	1200	11.80%	16.50%	69.00%

0833E

TABLE 14
1987 FORAGE RESULTS
RABBIT HILL ACREAGE

AREA	DATE	As ppm	B ppm	Co ppm	Cu ppm	Fe ppm	Mn ppm	Mo ppm	Ni ppm	Pb ppm	V ppm	Zn ppm	U ppm	Th-230 pCi/gm	Ra-226 pCi/gm	Nitrate ppm	Protein (Dig-Dry) Percent	Protein (Crude-Dry) Percent	Weight Percent
RH-2	05/08/87	<5.5	3.5	<0.55	6.0	220	130	1.6	<3.4	<2.5	<1.2	39	<0.2	0.0015	0.04	3300	13.70%	18.50%	80.00%
RH-2	06/09/87	<5.5	3.8	<0.55	6.7	300	240	2.1	<3.4	<2.5	<1.2	45	<0.2	0.004	0.04	2200	12.00%	16.60%	70.30%
RH-2	08/17/87	<5.5	9.1	3.2	7.9	85	58	3.8	<2.8	<9.5	<0.5	20	<0.2	0.008	0.035	2000	11.80%	16.40%	69.00%
RH-5	05/26/87	<5.5	4.9	<0.55	5.7	240	150	1.1	<3.4	<2.5	<1.2	42	<0.2	0.002	0.025	4800	7.00%	11.30%	66.00%
RH-5	08/12/87	<7.2	7.0	<2.3	10	160	46	1.8	<2.8	<9.5	<0.5	31	<0.2	0.016	0.072	2600	14.10%	18.90%	69.00%
RH-6	05/11/87	<5.5	5.2	<0.55	6.8	260	120	1.6	<3.4	3.6	<1.2	42	<0.2	0.0024	0.03	15,700	14.20%	19.00%	74.00%
RH-6	06/09/87	<5.5	3.1	<5.5	4.2	280	220	1.5	<3.4	<2.5	<1.2	41	<0.2	0.002	0.0004	3700	15.10%	20.00%	75.30%
RH-6	08/17/87	<7.2	6.0	<2.3	11	120	70	<1.7	<2.8	<9.5	<0.5	22	<0.2	0.008	0.022	4700	9.90%	14.40%	77.00%
9W	05/11/87	<5.5	4.8	<0.55	6.0	210	210	2.4	<3.4	<2.5	<1.2	48	<0.2	0.005	0.04	4500	14.70%	19.60%	75.00%
9W	08/31/87	<7.2	6.2	2.3	10	110	200	1.9	<2.8	<9.5	<0.5	29	<0.2	0.01	0.027	2700	15.30%	20.30%	73.00%

0833E

ATTACHMENT 1

Total Cumulative Loading

Rabbit Hill and
270 Acre Test Plots

1987 Application

TOTAL CUMULATIVE LOADING
(LBS/ACRE)

DATE 03/22/88

LOCATION: 19-2

AREA: RABBIT HILL

ACRES: 130.00

ELEMENTS	APPLICATION			1987	1986 YTD	CUMULATIVE
	FIRST	SECOND	THIRD	TOTAL	TOTAL	TOTAL
NITROGEN	312.494	168.9067	0.0000	481.4007	1187.00	1668.40
ARSENIC	0.0362	0.0109	0.0000	0.0471	0.050	0.0971
BORON	0.0162	0.0258	0.0000	0.0420	0.020	0.0620
CADMIUM	0.0050	0.0016	0.0000	0.0066	0.020	0.0266
CHROMIUM	0.0021	0.0086	0.0000	0.0107	0.020	0.0307
COBALT	0.0115	0.0038	0.0000	0.0153	0.030	0.0453
COPPER	0.0300	0.0417	0.0000	0.0717	0.190	0.2617
IRON	0.0034	0.0015	0.0000	0.0049	0.020	0.0249
LEAD	0.0475	0.0109	0.0000	0.0584	0.030	0.0884
MANGANESE	0.0675	0.0795	0.0000	0.1470	0.250	0.3970
MOLYBDENUM	0.0725	0.1192	0.0000	0.1917	0.490	0.6817
NICKEL	0.0487	0.0755	0.0000	0.1242	0.310	0.4342
SELENIUM	0.0462	0.0023	0.0000	0.0485	0.020	0.0685
URANIUM	0.0001	0.0001	0.0000	0.0002	0.010	0.0102
VADNIUM	0.0025	0.0023	0.0000	0.0048	0.020	0.0248
ZINC	0.0200	0.0159	0.0000	0.0359	0.040	0.0759

TOTAL GAL.

PER/ACRES

GAL.	195000	155000	350000	2692.31
------	--------	--------	--------	---------

LOCATION: 19-3

AREA: RABBIT HILL

ACRES: 27.00

ELEMENTS	APPLICATION			1987	1986 YTD	CUMULATIVE
	FIRST	SECOND	THIRD	TOTAL	TOTAL	TOTAL
NITROGEN	0.000	0.0000	0.0000	0.0000	1680.85	1680.85
ARSENIC	0.0000	0.0000	0.0000	0.0000	0.064	0.0640
BORON	0.0000	0.0000	0.0000	0.0000	0.039	0.0390
CADMIUM	0.0000	0.0000	0.0000	0.0000	0.021	0.0210
CHROMIUM	0.0000	0.0000	0.0000	0.0000	0.021	0.0210
COBALT	0.0000	0.0000	0.0000	0.0000	0.037	0.0370
COPPER	0.0000	0.0000	0.0000	0.0000	0.313	0.3130
IRON	0.0000	0.0000	0.0000	0.0000	0.022	0.0220
LEAD	0.0000	0.0000	0.0000	0.0000	0.031	0.0310
MANGANESE	0.0000	0.0000	0.0000	0.0000	0.381	0.3810
MOLYBDENUM	0.0000	0.0000	0.0000	0.0000	0.646	0.6460
NICKEL	0.0000	0.0000	0.0000	0.0000	0.555	0.5550
SELENIUM	0.0000	0.0000	0.0000	0.0000	0.021	0.0210
URANIUM	0.0000	0.0000	0.0000	0.0000	0.010	0.0100
VADNIUM	0.0000	0.0000	0.0000	0.0000	0.039	0.0390
ZINC	0.0000	0.0000	0.0000	0.0000	0.080	0.0800

TOTAL GAL.

PER/ACRES

GAL.	0	0	0	0.00
------	---	---	---	------

TOTAL CUMULATIVE LOADING
(LBS/ACRE)

DATE 03/22/38

LOCATION: 19-4

AREA: RABBIT HILL

ACRES: 40.00

ELEMENTS	APPLICATION			1987	1986 YTD	CUMULATIVE
	FIRST	SECOND	THIRD	TOTAL	TOTAL	TOTAL
NITROGEN	0.000	0.2000	0.0000	0.0000	1084.58	1084.58
ARSENIC	0.0000	0.0000	0.0000	0.0000	0.049	0.0490
BORON	0.0000	0.0000	0.0000	0.0000	0.023	0.0230
CADMIUM	0.0000	0.0000	0.0000	0.0000	0.010	0.0100
CHROMIUM	0.0000	0.0000	0.0000	0.0000	0.010	0.0100
COBALT	0.0000	0.0000	0.0000	0.0000	0.024	0.0240
COPPER	0.0000	0.0000	0.0000	0.0000	0.195	0.1950
IRON	0.0000	0.0000	0.0000	0.0000	0.011	0.0110
LEAD	0.0000	0.0000	0.0000	0.0000	0.020	0.0200
MANGANESE	0.0000	0.0000	0.0000	0.0000	0.293	0.2930
MOLYBDENUM	0.0000	0.0000	0.0000	0.0000	0.394	0.3940
NICKEL	0.0000	0.0000	0.0000	0.0000	0.383	0.3830
SELENIUM	0.0000	0.0000	0.0000	0.0000	0.011	0.0110
URANIUM	0.0000	0.0000	0.0000	0.0000	0.000	0.0000
VADNIUM	0.0000	0.0000	0.0000	0.0000	0.025	0.0250
ZINC	0.0000	0.0000	0.0000	0.0000	0.056	0.0560

TOTAL GAL.

PER/ACRES

GAL.

0

0

0

0.00

LOCATION: 19-1

AREA: RABBIT HILL

ACRES: 9.00

ELEMENTS	APPLICATION			1987	1986 YTD	CUMULATIVE
	FIRST	SECOND	THIRD	TOTAL	TOTAL	TOTAL
NITROGEN	347.215	157.4041	0.0000	504.6191	1151.16	1655.78
ARSENIC	0.0403	0.0102	0.0000	0.0505	0.056	0.1065
BORON	0.0181	0.0241	0.0000	0.0422	0.037	0.0792
CADMIUM	0.0056	0.0015	0.0000	0.0071	0.020	0.0271
CHROMIUM	0.0024	0.0081	0.0000	0.0105	0.020	0.0305
COBALT	0.0128	0.0035	0.0000	0.0163	0.033	0.0493
COPPER	0.0333	0.0389	0.0000	0.0722	0.202	0.2742
IRON	0.0037	0.0014	0.0000	0.0051	0.021	0.0261
LEAD	0.0528	0.0102	0.0000	0.0630	0.031	0.0940
MANGANESE	0.0750	0.0741	0.0000	0.1491	0.273	0.4221
MOLYBDENUM	0.0806	0.1111	0.0000	0.1917	0.445	0.6367
NICKEL	0.0542	0.0704	0.0000	0.1246	0.362	0.4866
SELENIUM	0.0514	0.0021	0.0000	0.0535	0.020	0.0735
URANIUM	0.0001	0.0001	0.0000	0.0002	0.010	0.0102
VADNIUM	0.0028	0.0021	0.0000	0.0049	0.025	0.0299
ZINC	0.0222	0.0148	0.0000	0.0370	0.054	0.0910

TOTAL GAL.

PER/ACRES

GAL.

15000

10000

25000

2777.78

TOTAL CUMULATIVE LOADING
(LBS/ACRE)

DATE 03/22/88

LOCATION: 19-1-TIMBER		AREA: RABBIT HILL			ACRES: 44.00	
ELEMENTS	APPLICATION			1987	1986 YTD	CUMULATIVE
	FIRST	SECOND	THIRD	TOTAL	TOTAL	TOTAL
NITROGEN	213.064	0.0000	0.0000	213.0640	541.58	754.64
ARSENIC	0.0247	0.0000	0.0000	0.0247	0.033	0.0577
BORON	0.0111	0.0000	0.0000	0.0111	0.018	0.0291
CADMIUM	0.0034	0.0000	0.0000	0.0034	0.020	0.0234
CHROMIUM	0.0014	0.0000	0.0000	0.0014	0.020	0.0214
COBALT	0.0078	0.0000	0.0000	0.0078	0.022	0.0298
COPPER	0.0205	0.0000	0.0000	0.0205	0.076	0.0965
IRON	0.0023	0.0000	0.0000	0.0023	0.020	0.0223
LEAD	0.0324	0.0000	0.0000	0.0324	0.020	0.0524
MANGANESE	0.0460	0.0000	0.0000	0.0460	0.132	0.1780
MOLYBDENUM	0.0494	0.0000	0.0000	0.0494	0.177	0.2264
NICKEL	0.0332	0.0000	0.0000	0.0332	0.166	0.1992
SELENIUM	0.0315	0.0000	0.0000	0.0315	0.020	0.0515
URANIUM	0.0000	0.0000	0.0000	0.0000	0.010	0.0100
VADNIUM	0.0017	0.0000	0.0000	0.0017	0.022	0.0237
ZINC	0.0136	0.0000	0.0000	0.0136	0.037	0.0506
TOTAL GAL.				PER/ACRES		
GAL.	45000	0	0	45000	1022.73	

LOCATION: 25-5-WEST		AREA: RABBIT HILL			ACRES: 3.00	
ELEMENTS	APPLICATION			1987	1986 YTD	CUMULATIVE
	FIRST	SECOND	THIRD	TOTAL	TOTAL	TOTAL
NITROGEN	0.0000	0.0000	0.0000	0.0000	1521.27	1521.27
ARSENIC	0.0000	0.0000	0.0000	0.0000	0.050	0.0500
BORON	0.0000	0.0000	0.0000	0.0000	0.048	0.0480
CADMIUM	0.0000	0.0000	0.0000	0.0000	0.021	0.0210
CHROMIUM	0.0000	0.0000	0.0000	0.0000	0.021	0.0210
COBALT	0.0000	0.0000	0.0000	0.0000	0.035	0.0350
COPPER	0.0000	0.0000	0.0000	0.0000	0.296	0.2960
IRON	0.0000	0.0000	0.0000	0.0000	0.021	0.0210
LEAD	0.0000	0.0000	0.0000	0.0000	0.031	0.0310
MANGANESE	0.0000	0.0000	0.0000	0.0000	0.376	0.3760
MOLYBDENUM	0.0000	0.0000	0.0000	0.0000	0.652	0.6520
NICKEL	0.0000	0.0000	0.0000	0.0000	0.493	0.4930
SELENIUM	0.0000	0.0000	0.0000	0.0000	0.020	0.0200
URANIUM	0.0000	0.0000	0.0000	0.0000	0.020	0.0200
VADNIUM	0.0000	0.0000	0.0000	0.0000	0.028	0.0280
ZINC	0.0000	0.0000	0.0000	0.0000	0.074	0.0740
TOTAL GAL.				PER/ACRES		
GAL.	0	0	0	0	0.00	

TOTAL CUMULATIVE LOADING
(LBS/ACRE)

DATE 03/22/88

LOCATION: 25-5

AREA: RABBIT HILL

ACRES: 44.00

ELEMENTS	APPLICATION			1987	1986 YTD	CUMULATIVE
	FIRST	SECOND	THIRD	TOTAL	TOTAL	TOTAL
NITROGEN	260.411	160.9815	0.0000	421.3925	1486.09	1907.48
ARSENIC	0.0302	0.0104	0.0000	0.0406	0.059	0.0996
BORON	0.0135	0.0246	0.0000	0.0381	0.051	0.0891
CADMIUM	0.0042	0.0015	0.0000	0.0057	0.021	0.0267
CHROMIUM	0.0018	0.0082	0.0000	0.0100	0.021	0.0310
COBALT	0.0096	0.0036	0.0000	0.0132	0.003	0.0522
COPPER	0.0250	0.0398	0.0000	0.0648	0.282	0.3468
IRON	0.0026	0.0014	0.0000	0.0042	0.022	0.0262
LEAD	0.0396	0.0104	0.0000	0.0500	0.031	0.0810
MANGANESE	0.0562	0.0758	0.0000	0.1320	0.390	0.5220
MOLYBDENUM	0.0604	0.1136	0.0000	0.1740	0.539	0.7130
NICKEL	0.0406	0.0720	0.0000	0.1126	0.566	0.6786
SELENIUM	0.0385	0.0022	0.0000	0.0407	0.021	0.0617
URANIUM	0.0001	0.0001	0.0000	0.0002	0.010	0.0102
VADNIUM	0.0021	0.0022	0.0000	0.0043	0.047	0.0513
ZINC	0.0167	0.0152	0.0000	0.0319	0.088	0.1199

TOTAL GAL.

PER/ACRES

GAL.	55000	50000	105000	2386.36
------	-------	-------	--------	---------

LOCATION: 30-9

AREA: RABBIT HILL

ACRES: 49.00

ELEMENTS	APPLICATION			1987	1986 YTD	CUMULATIVE
	FIRST	SECOND	THIRD	TOTAL	TOTAL	TOTAL
NITROGEN	255.097	0.0000	0.0000	255.0970	1208.74	1463.84
ARSENIC	0.0296	0.0000	0.0000	0.0296	0.056	0.0856
BORON	0.0133	0.0000	0.0000	0.0133	0.006	0.0393
CADMIUM	0.0041	0.0000	0.0000	0.0041	0.020	0.0241
CHROMIUM	0.0017	0.0000	0.0000	0.0017	0.020	0.0217
COBALT	0.0094	0.0000	0.0000	0.0094	0.023	0.0324
COPPER	0.0245	0.0000	0.0000	0.0245	0.209	0.2335
IRON	0.0028	0.0000	0.0000	0.0028	0.021	0.0238
LEAD	0.0388	0.0000	0.0000	0.0388	0.021	0.0598
MANGANESE	0.0551	0.0000	0.0000	0.0551	0.260	0.3151
MOLYBDENUM	0.0592	0.0000	0.0000	0.0592	0.402	0.5512
NICKEL	0.0398	0.0000	0.0000	0.0398	0.337	0.3768
SELENIUM	0.0378	0.0000	0.0000	0.0378	0.020	0.0578
URANIUM	0.0001	0.0000	0.0000	0.0001	0.010	0.0101
VADNIUM	0.0020	0.0000	0.0000	0.0020	0.025	0.0270
ZINC	0.0163	0.0000	0.0000	0.0163	0.054	0.0703

TOTAL GAL.

PER/ACRES

GAL.	60000	0	60000	1224.49
------	-------	---	-------	---------

TOTAL CUMULATIVE LOADING
(LBS/ACRE)

DATE 03/22/88

LOCATION: 30-9-WEST		AREA: RABBIT HILL			ACRES: 26.00	
ELEMENTS	APPLICATION			1987	1986 YTD	CUMULATIVE
	FIRST	SECOND	THIRD	TOTAL	TOTAL	TOTAL
NITROGEN	200.316	108.9721	0.0000	309.2881	971.10	1280.39
ARSENIC	0.0232	0.0071	0.0000	0.0303	0.046	0.0763
BORON	0.0104	0.0167	0.0000	0.0271	0.026	0.0531
CADMIUM	0.0032	0.0010	0.0000	0.0042	0.020	0.0242
CHROMIUM	0.0014	0.0056	0.0000	0.0070	0.020	0.0270
COBALT	0.0074	0.0024	0.0000	0.0098	0.023	0.0328
COPPER	0.0192	0.0269	0.0000	0.0461	0.161	0.2071
IRON	0.0022	0.0010	0.0000	0.0032	0.021	0.0242
LEAD	0.0304	0.0071	0.0000	0.0375	0.021	0.0585
MANGANESE	0.0433	0.0513	0.0000	0.0946	0.202	0.2966
MOLYBDENUM	0.0465	0.0769	0.0000	0.1234	0.354	0.4774
NICKEL	0.0312	0.0487	0.0000	0.0799	0.280	0.3599
SELENIUM	0.0296	0.0015	0.0000	0.0311	0.020	0.0511
URANIUM	0.0000	0.0001	0.0000	0.0001	0.010	0.0101
VADNIUM	0.0016	0.0015	0.0000	0.0031	0.025	0.0281
ZINC	0.0128	0.0103	0.0000	0.0231	0.044	0.0671
TOTAL GAL.				PER/ACRES		
GAL.	25000	20000	45000	1730.77		

LOCATION: 30-7		AREA: RABBIT HILL			ACRES: 55.00	
ELEMENTS	APPLICATION			1987	1986 YTD	CUMULATIVE
	FIRST	SECOND	THIRD	TOTAL	TOTAL	TOTAL
NITROGEN	0.000	128.7852	0.0000	128.7852	922.16	1050.95
ARSENIC	0.0000	0.0083	0.0000	0.0083	0.036	0.0443
BORON	0.0000	0.0197	0.0000	0.0197	0.027	0.0467
CADMIUM	0.0000	0.0012	0.0000	0.0012	0.020	0.0212
CHROMIUM	0.0000	0.0066	0.0000	0.0066	0.020	0.0266
COBALT	0.0000	0.0029	0.0000	0.0029	0.023	0.0259
COPPER	0.0000	0.0316	0.0000	0.0316	0.152	0.1838
IRON	0.0000	0.0011	0.0000	0.0011	0.021	0.0221
LEAD	0.0000	0.0083	0.0000	0.0083	0.021	0.0293
MANGANESE	0.0000	0.0606	0.0000	0.0606	0.213	0.2736
MOLYBDENUM	0.0000	0.0909	0.0000	0.0909	0.335	0.4259
NICKEL	0.0000	0.0576	0.0000	0.0576	0.272	0.3296
SELENIUM	0.0000	0.0017	0.0000	0.0017	0.020	0.0217
URANIUM	0.0000	0.0001	0.0000	0.0001	0.010	0.0101
VADNIUM	0.0000	0.0017	0.0000	0.0017	0.020	0.0217
ZINC	0.0000	0.0101	0.0000	0.0101	0.044	0.0541
TOTAL GAL.				PER/ACRES		
GAL.	0	50000	50000	909.09		

TOTAL CUMULATIVE LOADING
(LBS/ACRE)

DATE 03/22/88

LOCATION: 30-6

AREA: RABBIT HILL

ACRES: 190.00

ELEMENTS	APPLICATION			1987	1986 YTD	CUMULATIVE
	FIRST	SECOND	THIRD	TOTAL	TOTAL	TOTAL
NITROGEN	307.011	167.7597	0.0000	474.7707	1722.80	2197.57
ARSENIC	0.0356	0.0109	0.0000	0.0465	0.064	0.1105
BORON	0.0160	0.0257	0.0000	0.0417	0.039	0.0807
CADMIUM	0.0049	0.0016	0.0000	0.0065	0.031	0.0375
CHROMIUM	0.0021	0.0086	0.0000	0.0107	0.031	0.0417
COBALT	0.0113	0.0037	0.0000	0.0150	0.037	0.0520
COPPER	0.0295	0.0414	0.0000	0.0709	0.302	0.3729
IRON	0.0033	0.0015	0.0000	0.0048	0.032	0.0368
LEAD	0.0467	0.0109	0.0000	0.0576	0.031	0.0886
MANGANESE	0.0663	0.0789	0.0000	0.1452	0.411	0.5562
MOLYBDENUM	0.0712	0.1184	0.0000	0.1896	0.666	0.8556
NICKEL	0.0479	0.0750	0.0000	0.1229	0.555	0.6779
SELENIUM	0.0454	0.0023	0.0000	0.0477	0.031	0.0787
URANIUM	0.0001	0.0001	0.0000	0.0002	0.020	0.0202
VADNIUM	0.0025	0.0023	0.0000	0.0048	0.049	0.0538
ZINC	0.0196	0.0158	0.0000	0.0354	0.080	0.1154

TOTAL GAL.

PER/ACRES

GAL.	280000	225000	505000	2657.89
------	--------	--------	--------	---------

LOCATION: 30-8

AREA: RABBIT HILL

ACRES: 25.00

ELEMENTS	APPLICATION			1987	1986 YTD	CUMULATIVE
	FIRST	SECOND	THIRD	TOTAL	TOTAL	TOTAL
NITROGEN	0.000	0.0000	0.0000	0.0000	479.25	479.25
ARSENIC	0.0000	0.0000	0.0000	0.0000	0.035	0.0350
BORON	0.0000	0.0000	0.0000	0.0000	0.025	0.0250
CADMIUM	0.0000	0.0000	0.0000	0.0000	0.020	0.0200
CHROMIUM	0.0000	0.0000	0.0000	0.0000	0.020	0.0200
COBALT	0.0000	0.0000	0.0000	0.0000	0.023	0.0230
COPPER	0.0000	0.0000	0.0000	0.0000	0.097	0.0970
IRON	0.0000	0.0000	0.0000	0.0000	0.021	0.0210
LEAD	0.0000	0.0000	0.0000	0.0000	0.021	0.0210
MANGANESE	0.0000	0.0000	0.0000	0.0000	0.137	0.1370
MOLYBDENUM	0.0000	0.0000	0.0000	0.0000	0.170	0.1700
NICKEL	0.0000	0.0000	0.0000	0.0000	0.173	0.1730
SELENIUM	0.0000	0.0000	0.0000	0.0000	0.020	0.0200
URANIUM	0.0000	0.0000	0.0000	0.0000	0.010	0.0100
VADNIUM	0.0000	0.0000	0.0000	0.0000	0.025	0.0250
ZINC	0.0000	0.0000	0.0000	0.0000	0.043	0.0430

TOTAL GAL.

PER/ACRES

GAL.	0	0	0	0.00
------	---	---	---	------

LOCATION: 270-WEST

AREA: SEQUOYAH

ACRES: 19.00

ELEMENTS	APPLICATION			1987	1986 YTD	CUMULATIVE
	FIRST	SECOND	THIRD	TOTAL	TOTAL	TOTAL
NITROGEN	228.065	263.1524	0.0000	491.2174	1432.30	1923.52
ARSENIC	0.0254	0.0132	0.0000	0.0386	0.054	0.0926
BORON	0.0043	0.0272	0.0000	0.0315	0.034	0.0655
CADMIUM	0.0035	0.0014	0.0000	0.0049	0.021	0.0259
CHROMIUM	0.0015	0.0076	0.0000	0.0091	0.021	0.0301
COBALT	0.0079	0.0037	0.0000	0.0116	0.037	0.0486
COPPER	0.0456	0.0456	0.0000	0.0912	0.337	0.4282
IRON	0.0026	0.0013	0.0000	0.0039	0.022	0.0259
LEAD	0.0333	0.0096	0.0000	0.0429	0.022	0.0649
MANGANESE	0.0702	0.0851	0.0000	0.1553	0.422	0.5773
MOLYBDENUM	0.0693	0.1316	0.0000	0.2009	0.598	0.7989
NICKEL	0.0781	0.0821	0.0000	0.1602	0.515	0.6752
SELENIUM	0.0325	0.0026	0.0000	0.0351	0.021	0.0561
URANIUM	0.0001	0.0001	0.0000	0.0002	0.010	0.0102
VADNIUM	0.0018	0.0024	0.0000	0.0042	0.037	0.0412
ZINC	0.0175	0.0167	0.0000	0.0342	0.070	0.1042

TOTAL GAL.

PER/ACRES

GAL.

20000

20000

40000

2105.26

TOTAL CUMULATIVE LOADING
(LBS/ACRE)

DATE 03/22/88

LOCATION: 270-NORTH				AREA: SEQUOYAH	ACRES: 90.00		
ELEMENTS	APPLICATION			1987	1986 YTD	CUMULATIVE	
	FIRST	SECOND	THIRD	TOTAL	TOTAL	TOTAL	
NITROGEN	324.993	291.6606	0.0000	616.6536	1379.70	1996.35	
ARSENIC	0.0362	0.0146	0.0000	0.0508	0.066	0.1168	
BORON	0.0061	0.0301	0.0000	0.0362	0.037	0.0732	
CADMIUM	0.0050	0.0016	0.0000	0.0066	0.021	0.0276	
CHROMIUM	0.0021	0.0085	0.0000	0.0106	0.021	0.0316	
COBALT	0.0112	0.0041	0.0000	0.0153	0.038	0.0533	
COPPER	0.0650	0.0506	0.0000	0.1156	0.321	0.4366	
IRON	0.0037	0.0015	0.0000	0.0052	0.022	0.0272	
LEAD	0.0475	0.0107	0.0000	0.0582	0.022	0.0802	
MANGANESE	0.1000	0.0943	0.0000	0.1943	0.457	0.6513	
MOLYBDENUM	0.0987	0.1458	0.0000	0.2445	0.513	0.7575	
NICKEL	0.1112	0.0910	0.0000	0.2022	0.520	0.7222	
SELENIUM	0.0462	0.0029	0.0000	0.0491	0.021	0.0701	
URANIUM	0.0001	0.0001	0.0000	0.0002	0.010	0.0102	
VADNIUM	0.0025	0.0026	0.0000	0.0051	0.038	0.0431	
ZINC	0.0250	0.0185	0.0000	0.0435	0.074	0.1175	

TOTAL GAL.

PER/ACRES

GAL.	135000	105000	240000	2666.67
------	--------	--------	--------	---------

LOCATION: 270-SOUTHWEST				AREA: SEQUOYAH	ACRES: 12.00		
ELEMENTS	APPLICATION			1987	1986 YTD	CUMULATIVE	
	FIRST	SECOND	THIRD	TOTAL	TOTAL	TOTAL	
NITROGEN	306.938	312.4935	0.0000	619.4315	1480.63	2100.06	
ARSENIC	0.0342	0.0156	0.0000	0.0498	0.054	0.1038	
BORON	0.0058	0.0323	0.0000	0.0381	0.035	0.0731	
CADMIUM	0.0047	0.0017	0.0000	0.0064	0.021	0.0274	
CHROMIUM	0.0020	0.0091	0.0000	0.0111	0.021	0.0321	
COBALT	0.0106	0.0044	0.0000	0.0150	0.037	0.0520	
COPPER	0.0614	0.0542	0.0000	0.1156	0.349	0.4646	
IRON	0.0035	0.0016	0.0000	0.0051	0.022	0.0271	
LEAD	0.0449	0.0115	0.0000	0.0564	0.022	0.0784	
MANGANESE	0.0944	0.1010	0.0000	0.1954	0.434	0.6294	
MOLYBDENUM	0.0933	0.1562	0.0000	0.2495	0.620	0.8695	
NICKEL	0.1051	0.0975	0.0000	0.2026	0.528	0.7306	
SELENIUM	0.0437	0.0031	0.0000	0.0468	0.021	0.0678	
URANIUM	0.0001	0.0001	0.0000	0.0002	0.010	0.0102	
VADNIUM	0.0024	0.0028	0.0000	0.0052	0.037	0.0422	
ZINC	0.0236	0.0198	0.0000	0.0434	0.081	0.1244	

TOTAL GAL.

PER/ACRES

GAL.	17000	15000	32000	2666.67
------	-------	-------	-------	---------

TOTAL CUMULATIVE LOADING
(LBS/ACRE)

DATE 03/22/88

LOCATION: 270-SOUTHEAST

AREA: SEQUOYAH

ACRES: 15.00

ELEMENTS	APPLICATION			1987	1988 YTD	CUMULATIVE
	FIRST	SECOND	THIRD	TOTAL	TOTAL	TOTAL
NITROGEN	0.000	166.6632	0.0000	166.6632	506.33	672.99
ARSENIC	0.0000	0.0083	0.0000	0.0083	0.014	0.0223
BORON	0.0000	0.0172	0.0000	0.0172	0.009	0.0262
CADMIUM	0.0000	0.0009	0.0000	0.0009	0.010	0.0109
CHROMIUM	0.0000	0.0048	0.0000	0.0048	0.010	0.0148
COBALT	0.0000	0.0023	0.0000	0.0023	0.013	0.0153
COPPER	0.0000	0.0289	0.0000	0.0289	0.096	0.1249
IRON	0.0000	0.0008	0.0000	0.0008	0.011	0.0118
LEAD	0.0000	0.0061	0.0000	0.0061	0.010	0.0161
MANGANESE	0.0000	0.0539	0.0000	0.0539	0.127	0.1809
MOLYBDENUM	0.0000	0.0833	0.0000	0.0833	0.183	0.2663
NICKEL	0.0000	0.0520	0.0000	0.0520	0.153	0.2050
SELENIUM	0.0000	0.0017	0.0000	0.0017	0.010	0.0117
URANIUM	0.0000	0.0001	0.0000	0.0001	0.000	0.0001
VADNIUM	0.0000	0.0015	0.0000	0.0015	0.013	0.0145
ZINC	0.0000	0.0106	0.0000	0.0106	0.021	0.0316

TOTAL GAL.

PER/ACRES

GAL.

0

10000

10000

00000

LOCATION: 270-FET FOND

AREA: SEQUOYAH

ACRES: 15.00

ELEMENTS	APPLICATION			1987	1988 YTD	CUMULATIVE
	FIRST	SECOND	THIRD	TOTAL	TOTAL	TOTAL
NITROGEN	0.000	0.0000	0.0000	0.0000	337.00	337.00
ARSENIC	0.0000	0.0000	0.0000	0.0000	0.010	0.0100
BORON	0.0000	0.0000	0.0000	0.0000	0.000	0.0000
CADMIUM	0.0000	0.0000	0.0000	0.0000	0.010	0.0100
CHROMIUM	0.0000	0.0000	0.0000	0.0000	0.010	0.0100
COBALT	0.0000	0.0000	0.0000	0.0000	0.010	0.0100
COPPER	0.0000	0.0000	0.0000	0.0000	0.040	0.0400
IRON	0.0000	0.0000	0.0000	0.0000	0.010	0.0100
LEAD	0.0000	0.0000	0.0000	0.0000	0.010	0.0100
MANGANESE	0.0000	0.0000	0.0000	0.0000	0.070	0.0700
MOLYBDENUM	0.0000	0.0000	0.0000	0.0000	0.120	0.1200
NICKEL	0.0000	0.0000	0.0000	0.0000	0.070	0.0700
SELENIUM	0.0000	0.0000	0.0000	0.0000	0.010	0.0100
URANIUM	0.0000	0.0000	0.0000	0.0000	0.000	0.0000
VADNIUM	0.0000	0.0000	0.0000	0.0000	0.010	0.0100
ZINC	0.0000	0.0000	0.0000	0.0000	0.010	0.0100

TOTAL GAL.

PER/ACRES

GAL.

0

0

0

0.00

TOTAL CUMULATIVE LOADING
(LBS/ACRE)

DATE 03/22/86

LOCATION: 270-SOUTH
ELEMENTS

AREA: SEQUOYAH

ACRES: 99.00

	FIRST	SECOND	THIRD	1987 TOTAL	1986 YTD TOTAL	CUMULATIVE TOTAL
NITROGEN	207.908	290.3980	0.0000	498.3060	1263.07	1761.38
ARSENIC	0.0232	0.0145	0.0000	0.0377	0.054	0.0917
BORON	0.0039	0.0300	0.0000	0.0339	0.044	0.0779
CADMIUM	0.0032	0.0015	0.0000	0.0047	0.021	0.0257
CHROMIUM	0.0014	0.0084	0.0000	0.0098	0.021	0.0308
COSALT	0.0072	0.0041	0.0000	0.0113	0.037	0.0483
COPPER	0.0416	0.0503	0.0000	0.0919	0.315	0.4069
IRON	0.0024	0.0015	0.0000	0.0039	0.022	0.0259
LEAD	0.0304	0.0106	0.0000	0.0410	0.032	0.0730
MANGANESE	0.0640	0.0939	0.0000	0.1579	0.399	0.5569
MOLYBDENUM	0.0632	0.1452	0.0000	0.2084	0.525	0.7334
NICKEL	0.0712	0.0906	0.0000	0.1618	0.470	0.6318
SELENIUM	0.0296	0.0029	0.0000	0.0325	0.021	0.0535
URANIUM	0.0001	0.0001	0.0000	0.0002	0.010	0.0102
VADNIUM	0.0016	0.0026	0.0000	0.0042	0.036	0.0402
ZINC	0.0160	0.0184	0.0000	0.0344	0.080	0.1144

TOTAL GAL.

PER/ACRES

GAL.

95000

115000

210000

2121.21

LOCATION: BALLFIELD
ELEMENTS

AREA: SEQUOYAH

ACRES: 11.00

ELEMENTS	APPLICATION			1987	1986 YTD	CUMULATIVE
	FIRST	SECOND	THIRD	TOTAL	TOTAL	TOTAL
NITROGEN	295.448	227.2680	0.0000	522.7160	652.00	1174.72
ARSENIC	0.0330	0.0114	0.0000	0.0444	0.020	0.0644
BORON	0.0056	0.0235	0.0000	0.0291	0.010	0.0391
CADMIUM	0.0045	0.0012	0.0000	0.0057	0.020	0.0257
CHROMIUM	0.0019	0.0066	0.0000	0.0085	0.020	0.0285
COBALT	0.0102	0.0032	0.0000	0.0134	0.020	0.0334
COPPER	0.0591	0.0394	0.0000	0.0985	0.100	0.1985
IRON	0.0034	0.0011	0.0000	0.0045	0.020	0.0245
LEAD	0.0432	0.0083	0.0000	0.0515	0.020	0.0715
MANGANESE	0.0909	0.0735	0.0000	0.1644	0.110	0.2744
MOLYBDENUM	0.0898	0.1136	0.0000	0.2034	0.310	0.5134
NICKEL	0.1011	0.0709	0.0000	0.1720	0.150	0.3220
SELENIUM	0.0420	0.0023	0.0000	0.0443	0.020	0.0643
URANIUM	0.0001	0.0001	0.0000	0.0002	0.010	0.0102
VADNIUM	0.0023	0.0020	0.0000	0.0043	0.020	0.0243
ZINC	0.0227	0.0144	0.0000	0.0371	0.040	0.0771

TOTAL GAL.

PER/ACRES

GAL.

15000

10000

25000

2272.73