RECON SYSTEMS INC.

ROUTE 202N, P.O. BOX 460, THREE BRIDGES, N.J. 08887
201-782-5900

BR 2.2 #31 4.0

STACK SAMPLING REPORT

For

City of New London
100 Trumbull Street
New London CT 06320

Source Tested:

No. 1 Sludge Incinerator
Trumbull Street
Sewage Treatment Plant

In Fulfillment of

Purchase Order No. 46614

RECON Project No. 2029

April 26, 1984

SUMMARY

The following results were obtained:

Test No.	1	2	3
Combined sludge, scum, grit and screenings rate, dry tons/hour	0.647	0.732	0.925
Particulate emissions, pounds/hour	0.539	0.532	0.577
pounds/dry ton	0.833	0.727	0.624

Since the allowable standard is 1.30 pounds/dry ton, we believe this testing program demonstrated compliance.

The Connecticut DEP Summary Report Data forms follow.

Samples from this project will be retained for sixty days from the date of this report unless otherwise directed.

This report is submitted by:

Robert M. Wolfertz, Manager
Environmental Services
April 26, 1984

I am in responsible charge of RECON's stack test work, and have discussed and reviewed the procedures and results of this set of tests with the relevant field and laboratory personnel.

Norman J. Weinstein, P.E.
New Jersey License 19536

Process Information: SEWAGE SLUDGE INCINERATORS

I. Results

	TEST NUMBER 1	2	3		
1. Particulates (lbs/dry ton)	0.833	0.727	0.624	Avg.	0.728
(gr/SCF @ 12% CO_2)	0.0169	0.0216	0.0180	Avg.	0.0188

II. Description

1. Maximum Feed Rate (lb/hr) — 12,000 lb/hr. Peak
2. Normal Feed Rate — 9,860 lb/hr.
3. Method of Feeding — Conveyor
4. Method of Stoking — Variable Speed Rabble Arms
5. Fuel:

   maximum firing rate (gal/hr, CFH) — Natural Gas - 7,000 CFH

   type - ultimate and proximate analysis

6. Dampers:

   method of activation — Semi-automatic

III. Operating Parameters During Test

1. Actual Burner Firing Rate (gal/hr, CFH) — 3,416 CFH
2. Material Incinerated:

   % moisture — 83-86 Sludge only

   feed rate (lb/hr) - dry — 1294-1850

   incineration outlet temperature (s) (°F) — 700° F.

IV. Normal Operating Times

1. Hrs/Day — 24
2. Days/Week — 7
3. Weeks/Month — 1
4. Shut Down Period (If Applicable)

ANY ADDITIONAL INFORMATION AVAILABLE:

THIS FORM MUST BE COMPLETED AND INCLUDED IN FINAL REPORT

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VELOCITY AND FLOW RATE DATA

Sample No.	1	2	3
Date	3/14/84	3/14/84	3/15/84
Time	1240-1402	1609-1732	1045-1210
Stack Diameter (in)	36½	36½	36½
Stack Cross Section (sq ft)	7.17	7.17	7.17
Barometric ("Hg)	30.19	30.19	30.32
Average Stack Temperature (^{o}F)	106	111	114
Stack Pressure ("H_2O-gage)	+0.09	+0.07	+0.10
Moisture (% vol)	5.0	5.5	4.4
Average Velocity (ft/sec)	27.45	30.00	29.34
Actual Flow Rate (acfm)	11,800	12,900	12,600
Standard Flow Rate (scfm)	11,200	12,100	11,800
Dry Standard Flow Rate (dscfm)	10,600	11,400	11,300

Standard Conditions are 70°F, 29.92 "Hg.

STACK GAS COMPOSITION

Sample No.	1	2	3
Date	3/14/84	3/14/84	3/15/84
Time	1240-1402	1609-1732	1045-1210
		% By Volume (Dry Basis)	
ONSITE FYRITE			
CO_2	4.0	3.0	4.0
O_2	16.0	17.0	16.0
N_2 (By Difference)	80.0	80.0	80.0
LAB ORSAT			
CO_2	4.2	3.0	2.5*
CO	0.0	0.0	0.0
O_2	15.0	16.5	17.1
N_2 (By Difference)	80.8	80.5	80.4

*Suspect - use Fyrite data.

PARTICULATE EMISSIONS

Sample No.	1	2	3
Date	3/14/84	3/14/84	3/15/84
Time	1240-1402	1609-1732	1045-1210

Sampling Data

No. 9 Nozzle Size (in)	0.25	0.25	0.25
No. of Sampling Points	12	12	12
Sampling Time (min)	72	72	72
Sample Volume (dscf)	36.3	38.4	37.5
% Isokinetic	100	98	97

Emissions Data

Particulates

Grains/dscf	0.0059	0.0054	0.0060
Grains/dscf @ 12% CO_2	0.0169	0.0216	0.0180
Pounds/hour	0.539	0.532	0.577
Pounds/dry ton	0.833	0.727	0.624

SLUDGE, SCUM, GRIT AND SCREENINGS ANALYSES+

	Test No. 1		Test No. 2		Test No. 3	
Date	3/14/84		3/14/84		3/15/84	
Time	1240-1402		1609-1732		1045-1210	
Sludge	As Received	Dry Basis	As Received	Dry Basis	As Received	Dry Basis
% H_2O (loss on drying at 103°C	86.10	--	83.11	--	83.56	--
% Combustible (volatiles at 550°C)	11.15	80.20	13.47	79.75	12.74	77.49
% Ash	2.75	19.80	3.42	20.25	3.70	22.51
Grit and Screenings						
% H_2O (loss on drying at 103°C)	49.9	--	43.34	--	43.90	--
Scum (Grease)						
% H_2O (loss on drying at 103°C)	30.23	--	28.18	--	18.19	--

All % are by weight

+As per "Standard Methods for the Examination of Water and Wastewater," 15th ed.; Section 209 G. Volatile and Fixed Matter in Nonfiltrable Residue and in Solid and Semisolid Samples; part 'c': p. 97.

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PROCESS INFORMATION

Test No.	1	2	3
Test Durations, Hours	1.367	1.383	1.417
Sludge Rate, Wet Tons/Hour	4.375	4.096	5.392
% Solids	13.9	16.9	16.4
Sludge Rate, Dry Tons/Hour	0.608	0.692	0.884
Grit and Screenings Rate, Wet Tons/Hour	0.0329	0.0325	0.0318
% Solids	50.1	56.7	56.1
Grit and Screenings Rate, Dry Tons/Hour	0.016	0.018	0.018
Grease Rate,+ Wet Tons/Hour	0.0328	0.0304	0.0282
% Solids	69.8	71.8	81.8
Grease Rate, Dry Tons/Hour	0.023	0.022	0.023
Total Dry Tons/Hour fed	0.647	0.732	0.925

See raw data following.

+Based on estimated bulk density of 8 pounds/gallon.