July 25, 2005

Mr Don Abrams
Minnesota Pollution Control Agency
Southern District Remediation
520 Lafayette Road North
St Paul, Minnesota 55155-4194

RE: Subsurface Exploration Report
Freeway Landfill

Dear Mr Abrams,

Fuller Engineering Services (FES) was retained by the MPCA to gather information concerning the existing topography and subsurface conditions at the Freeway Landfill site in Burnsville, Minnesota. Bergerson-Caswell was retained by the MPCA to perform soil borings to determine the subsurface conditions. FES was on-site during this work to document the material encountered at the boring locations. Gorman Surveying, Inc. was retained by FES to generate a topographic map of the existing landfill surface.

Eighty-five boring locations were proposed by the MPCA to determine the subsurface conditions on the site. The borings were laid out on a ±400-foot grid. The Minnesota River bound this grid on the north, Interstate 35W on the east, the Kraemer Quarry Property on the south and west. Borings 80 through 85 were on the west shoulder of southbound 35W and were therefor deleted. Borings 34, 70, 71, 72, and 79 were not accessible and were deleted. In all, 74 borings were advanced on the site.

Gorman staked the proposed boring locations. The boring locations were identified with a predetermined boring number, the northing and easting coordinates and the elevation. Borings 5,9,16,18,19,25,26,33,60,64,66,68,69,73,74,77,and 78 were moved from their original locations during drilling operations due to surface inaccessibility or subsurface obstructions. The actual locations and surface elevations were resurveyed by Gorman.

From April 25 through May 12, 2005 Bergerson-Caswell was on site to perform the soil borings. Bergerson-Caswell used a track-mounted drilling rig in areas with difficult accessibility and a large truck-mounted rig on the open, flatter areas of the site. Both rigs advanced solid-stem, 4-inch flyte augers to retrieve the soil samples. From 5 feet to 20 feet of auger would be advanced by slowly screwing the auger into the soil. The auger would be withdrawn and the samples on the flytes observed to determine material type and depth below the surface. Because the augers were "screwed" at slow speed instead of spun at a high rate of revolution, the sample was more representative of the in-place material and the depth estimation was fairly accurate.

The logs of the borings are found in Appendix A. Each log contains the boring number, date drilled and surface elevation at the boring location. A description of the material encountered and the corresponding depths are also given, as is the depth to any free water found immediately after boring completion. A series of east-west oriented cross sections were developed depicting a generalized profile of the material layers encountered. The material encountered included the soil layer above the waste, the waste, the natural soil below the waste and bedrock (if present).

The soil layer varied from 1 foot to 25 feet in depth and ranged in consistency from silty sand to clayey sand to clayey silt. The waste ranged in type from mixed municipal solid waste to demolition fill. When describing the waste, an estimate is made of the amount of soil contained in the various layers of waste. A key to the descriptions is as follows:

Mostly soil = ±75% soil
With soil = ±50% soil
Some soil = ±25% soil
Trace soil = observable

The waste decomposition ranged from highly decomposed to MSW showing very little decomposition. The moisture content of the waste corresponded to the degree of decomposition with the highly decomposed waste being very moist to saturated with the MSW showing little decomposition being relatively dry.

Other information gathered at each boring location included the amount of landfill gases present. The gases measured using a GEM 500 sensor included methane, carbon dioxide and oxygen. The measurement was obtained at a depth of 3 feet below the surface at completion of the boring. It is my opinion that readings taken on May 11, 2005 could be erroneous due to the passing of a frontal system.

All borings were abandoned using bentonite chips and cuttings from the borings.

FES was requested to estimate the amount of waste and soil cover over the waste. To obtain this estimate a series of eight cross sections was developed. These cross sections are oriented in the east-west direction. Drawings 1 through 4 present these cross sections. Based on these cross sections and an average end area calculation, the amount of waste is estimated at 4,847,000 cubic yards and the amount of soil cover above the waste is estimated at 1,775,000 cubic yards.

Also attached is the topographic survey performed by Gorman. Drawing 1 presents the topographic information. Drawing 2 presents the results of the subsurface investigation superimposed over the topography. A disc containing an electronic copy of the survey information is included.

If we can provide additional information regarding this work, please contact me.

Sincerely,

Peter S. Fuller, PE

Appendix A

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 1 DATE 5/4/05

N E ELEV 682.51

ft	ft	DESCRIPTION
0	3	Sugar Sand med grained Tan dry
3	7	Silty Sand fine to med grained brown dry
(675±) 7	10	Weathered bedrock
		After drilling #4 I am not sure that the weathered bedrock is not waste rock fill. This casts doubt on the validity of our bedrock elevation of 675±
		No Water

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 2 DATE 5/4/05

N E ELEV 694 [52]

ft	ft	DESCRIPTION
0	19	Sandy clay, trace gravel, firm Dk Brown moist
19	26	Clayey Silt saturated @ 22'
668 [5]	26	Bedrock
		CH_4 0
		CO_2 0
		O_2 20.3
672 [5]	22	H_2O

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 3 DATE 5/4/05

N E ELEV 698.42

ft	ft	DESCRIPTION
0	5	Sandy Clay Dk Brown Firm moist
	?	with limestone pieces
5	29	Clayey Silt grey wet
		organic layer at 27'
~~695~~	29	Bedrock
		CH_4 10
		CO_2 3
		O_2 16
		No H_2O

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 4 DATE 5/4/05

N E ELEV 710 84

ft	ft	DESCRIPTION
0	6	Sandy clay trace gravel brown moist
6	14	Sandy clay Trace gravel black moist
14	18	Clayey Sand / Sandy Clay black moist organic layer 16-17'
18	20	* Waste Rock *
20	22	Sandy Clay Brown
(682)	22	Bedrock
		CH_4 68
		CO_2 32
		O - O
		* At first thought this was weathered bedrock but underlying clay shown this is waste rock / fill. This is the second hole (see #1) where we have seen this material.
		No Water

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 5 DATE 5/11/05

N E ELEV 729 ~~95~~ 729

ft	ft	DESCRIPTION
0	5	Silty sand coarse gr Brown dry
5	12	Sandy Clay brown moist stiff
12	16	Silty sand brown dry
16	23	Limestone waste rock (fine to medium grained with trace rock fragments)
(706)	23	Bedrock
		CH_4 14
		CO_2 4
		O_2 13.1
		No water table

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 6 DATE 5/4/05

N E ELEV

ft	ft	DESCRIPTION
	0	Bedrock at surface

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 7 DATE 5/4/05

N E ELEV 694.8

ft	ft	DESCRIPTION
	0	Bedrock at surface

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 8 DATE 5/5/05

N E ELEV 696.96

ft	ft	DESCRIPTION
0	1.2'	Sandy silt and gravel dry
	9.2'	Bedrock
		No gas readings
		No H2O

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 9 DATE 5/4/05

N E ELEV ~~908~~ 27

ft	ft	DESCRIPTION
0	4	Silty Sand med grained Brown dry
4	13	Sandy Clay Brown Lean
13	15	Weathered Limestone
	15	EOB
		CH_4 0
		CO_2 1.0
		O_2 17.0
		No H_2O

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 10 DATE 5/4/05

N E ELEV 717.55

ft	ft	DESCRIPTION
0	8	Silty Sand fine to med grained some gravel Brown Dry
8	10	Clayey Sand black moist
10	19	MSW with soil decomposed mat wood @ 17' concrete @ 18'
19	28	Clayey Silt grey wet @ 22'
689±	28'	Bedrock
		CH_4 64
		CO_2 37
		O_2 0
695±	22	H_2O

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 11 DATE 5/4/05

N E ELEV 720.00

ft	ft	DESCRIPTION
0	4	Silty sand some rubble dry
4	17	MSW trace soil semi decomposed moist
17	19	MSW trace soil decomposed dry bleach with wood chips
19	27	Clayey Silt grey moist
27	30	Weathered Bedrock
(27)	30	EOB
		CH_4 66
		CO_2 35
		O_2 0
		Rig moved after 20' B auger in ground. Pulled forward and power drilled to bedrock. This took additional 20 minutes
		No water

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 12 DATE 5/5/05

N E ELEV 722.9

ft	ft	DESCRIPTION
0	6	Sandy Silt Black organics
6	25	MSW semi decomposed moist
25	30	Sandy Silt Dk Brown organics
30	32	Weathered limestone
(690)	32	Bedrock
		No Water

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 13 DATE 5/5/05

N E ELEV 727 94

ft	ft	DESCRIPTION
0	3	Silty Sand Brown moist
3	13.5	Silty Clay DK Brown moist
13.5	30	MSW some soil semi decomposed moist
		wire and wood waste @ 20
30	32	MSW highly decomposed
32	37	Silty clay Black moist
691	37	bedrock
		CH_4 62
		CO_2 42
		O_2 0
		No water

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 14 DATE 5/5/05

N E ELEV 717.78

ft	ft	DESCRIPTION
0	6	Silty sand coarse dk Brown moist
6	22	MSW little soil semi decomposed moist
22	28	Silty clay Black saturated.
		Organics 22-23'
690'	28'	Bedrock
		CH_4 65
		CO_2 39
		O_2 1.5
694	22'	H_2O

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 15 DATE 5/5/05

N E ELEV 718.44

ft	ft	DESCRIPTION
0	2	Sandy Clay Black moist
2	5	Silty Sand tan dry
5	20	MSW some soil some debris moist
20	22	Silty clay stiff black saturated
696.5	22	Bedrock
698.5	20	H2O

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 16 DATE 5/5/05

N E ELEV 720.17

ft	ft	DESCRIPTION
0	3	Sand with gravel Brown moist
3	4	Silty sand grey clay
4	8	MSW ozone soil decomposed moist
8	9	Silty sand some moist
9	22.5	MSW ozone soil decomposed moist
22.5	23	Weathered bedrock
	23	Bedrock
		CH_4 66
		CO_2 39
		O_2 1.5
		No H_2O

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 17 DATE 5/3/05

N E ELEV 707.49

ft	ft	DESCRIPTION
0	5	Silty sand fine grained Brown dry
5	19	Silty sand fine grained brown saturated below 12'
	EOB	
		CH_4 2
		CO_2 3
		O_2 17
		near river stopped no waste / bedrock
695	12	H_2O

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 18 DATE 5/4/03

N E ELEV 696.04 ±697

ft	ft	DESCRIPTION
0	5	Silty sand fine grained Brown moist
5	14	Silt gray saturated @ 8'
14	15	marl
	15	Bedrock
±682		
		CH_4 16
		CO_2 4
		O_2 15
689	8'	H_2O

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 19 DATE 5/11/05

N E ELEV 724 49

ft	ft	DESCRIPTION
0	4	Silty sand medium gr Brown dry
4	25	MSW some soil semi decomposed moist → dry
25	26	Swamp organics
26	32	Silty clay grey stiff moist
	32	Bedrock
		CH_4 0.1
		CO_2 0.1
		O_2 20.0
		No Water Table

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 20 DATE 5/11/05

N E ELEV ~726.00

ft	ft	DESCRIPTION
0	9	Silty sand coarse brown dry
9	13	MSW Trace soil semi decomposed dry
13	27	MSW some soil and wood decomposed moist → wet @ 20'
27	28	Swamp organics
28	32	Silty clay, grey stiff moist
(24)	32	Bedrock
		CH_4 0.1
		CO_2 0.1
		O_2 20.1
		No H_2O table

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 21 DATE 5/11/05

N E ELEV 731 20

ft	ft	DESCRIPTION
0	3	Clayey Sand Brown moist
3	16	Sandy/Silty Clay Brown wet
16	30	MSW with soil, decomposed moist
(701)	30	refusal
		CH_4 0.1
		CO_2 0.1
		O_2 20.1
		no H_2O table

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 22 DATE 5/16/05

N E ELEV 730 80

ft	ft	DESCRIPTION
0	7	Clayey/Silty sand coarse gr Brown moist
7	10	Silty sand coarse gr brown dry
10	31	MSW Like soil semi decomposed dry → wet @ 18'
31	33	Sand and Swamp organics
33	36	Silty Clay Rock wet
36	38	Weathered Bedrock
(694)	38	EOB
		CH_4 0.1
		CO_2 0.1
		O_2 20.1
698	33'	H_2O in Sand

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 23 DATE 5/11/05

N E ELEV 730 ±0

ft	ft	DESCRIPTION
0	10	Silty / Clayey Sand Brown moist
10	31	MSW, trace soil semi decomposed moist
31	32	Marl
(698)	32	Bedrock
		CH_4 0.1
		CO_2 0.1
		O_2 20.2
		no water table

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 24 DATE 5/10/05

N E ELEV 723 97

ft	ft	DESCRIPTION
0	4	Silty sand coarse gr Brown moist
4	5	Clayey sand grey moist
5	12	MSW some soil semi-decomposed moist
12	27	MSW trace soil semi-decomposed wet @ 24"
(697)	27'	refusal (Bedrock)
		CH_4 54
		CO_2 31
		O_2 3
		No water table

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 25 DATE 5/3/05

N E ELEV 708.64

ft	ft	DESCRIPTION
0	2	Silty Sand some gravel Brown dry
2	5	Sandy Silt grey moist
5	9	MSW some silt decomposed moist @ 8'
9	29	Silt grey soft saturated
	29	EOB
		CH_4 9
		CO_2 9
		O_2 14
	9	H_2O

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 26 DATE 5/3/05

N E ELEV 711 45

ft	ft	DESCRIPTION
0	3	Sandy Clay Brown dry
3	4	Silty Sand Black
4	14	MSW some soil decomposed moist
14	17	Sand grey wet
17	29	Silt grey soft saturated
	29	EOB
		CH_4 54
		CO_2 27
		O_2 0
	14	H_2O

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 27 DATE 5/10/05

N E ELEV 724.56

ft	ft	DESCRIPTION
0	3	Silty Sand Brown dry
3	6	Soil mixed with trace MSW
6	8	Soil layer silty sand coarse gr Brown
8	10	Wood debris
10	26	MSW trace soil decomposed moist
26	27	Sand medium grained @ 26'
27	33	Silty clay grey saturated soft
(689)	33	Bedrock
		CH_4 0.2
		CO_2 0.1
		O_2 21.0
695.5	26	H_2O

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 28 DATE 5/10/05

N E ELEV 734.89

ft	ft	DESCRIPTION
0	9	Silty sand Brown dry
9	11	Sandy clay Brown stiff
11	18	Demo fill wood/soil mixture
18	28	MSW little soil semi decomposed moist
28	38	MSW little soil decomposed moist
38	43	Silty clay grey moist
692	43	Bedrock
		CH_4 55
		CO_2 29
		O_2 2.1
709		No water

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 29 DATE 5/11/05

N E ELEV 737.60

ft	ft	DESCRIPTION
0	3	Clayey Sand coarse Brown moist
3	9	Sandy clay Brown soft moist
9	17	clayey Sand coarse Brown moist
17	37	MSW with soil decomposed moist
37	40	Silty clay grey moist stiff
(698)	40	Bedrock
		CH_4 0.1
		CO_2 0.1
		O_2 20.0
		No H_2O table

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 30 **DATE** 5/10/05

N **E** **ELEV** 744 92

ft	ft	DESCRIPTION
0	6	Silty sand coarse gr Brown dry
6	10	Sandy clay Brown dry to moist
10	15	Silty sand medium gr Brown dry
15	18	Silty clay grey moist
18	20	Silty sand coarse grained Brown dry
20	26	Sandy clay trace MSW @ 21-23'
26	29	MSW with soil and wood
29	38	MSW Trace soil semi-decomposed moist
		wet @ 31' @ 35'
38	45	MSW with soil highly decomposed Black
45	48	Swamp Organics
48	52½	Silty Clay grey soft saturated
(692 5)	52½	Bedrock
		CH_4 1.7
		CO_2 1.1
		O_2 19.6
710	35'	H_2O

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 31 DATE 5/10/05

N E ELEV 745 06

ft	ft	DESCRIPTION
0	5	Silty Sand Course gr Brown dry
5	8	clayey Sand grey moist
8	12	Sandy clay grey dry
12	20	Sandy clay black moist
20	25	Silty sand course gr brown moist
25	47	MSW little soil decomposed wet @ 25'
47	50	MSW mostly soil and cardboard highly decomposed
50	54	Silty clay black
54	55	Marl
(690)	55	Bedrock
		CH_4 58
		CO_2 26
		O_2 2.7
(720)	25'	H_2O

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 32 DATE 5/10/05

N E ELEV 734 13

ft	ft	DESCRIPTION
0	3	Silty sand coarse grained Brown dry
3	10	Sandy clay brown stiff moist
10	28	MSW with soil decomposed moist
28	38	MSW mostly soil with pieces of wood
646	38	Refusal (Bedrock?)
		CH_4 39
		CO_2 22
		O_2 8.1
		drilled for 3 minutes at refusal
		Grey powder on drill bit. Probably
		is bedrock but could be concrete
		No H_2O.

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 33 DATE 5/10/05

N E ELEV 726.55

ft	ft	DESCRIPTION
0	3	Silty sand coarse Brown dry
3	8	Sandy clay/clayey sand brown moist
8	21	MSW trace soil semi-decomposed moist
21	22	Sand layer
22	27	MSW with soil decomposed black moist
	27	refusal Bedrock
		Moved 15'W and open down to 26 feet when we met refusal. Assumed this is bedrock.
		CH_4 65
		CO_2 35
		O_2 0
		No water table

34 not drilled

25

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 35 DATE 5/3/05

N E ELEV 707 48

ft	ft	DESCRIPTION
0	4	Silty sand Brown Dry wood chips
4	6	Mixed waste plastic bags
6	12	Silty sand, black moist
12	20	Silt grey wet @ 12'
	EOB	
		CH_4 0
		CO_2 0
		O_2 19.3
		No free water noted

60

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 36 DATE 5/03/05

N E ELEV 707 81

ft	ft	DESCRIPTION
0	4	Silty Sand brown asphalt pieces @ 3'
4	7	Sandy silt grey moist
7	8	yard waste + plastic highly decomposed
8	12	Soil layer wet
12	20	MSW some soil highly decomposed
		saturated at 13'
20	40	Silt grey soft saturated
	EOB	
		CH_4 5
		CO_2 9
		O_2 16
(695)	13	H_2O

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 37 DATE 5/10/05

N E ELEV 722.22

ft	ft	DESCRIPTION
0	1	Silty sand medium gr Brown dry
1	5	Sandy clay gray moist
5	9	MSW some soil highly decomposed wet
9	24	MSW some soil decomposed moist
24	32	MSW some soil highly decomposed wet
32	39	Silty clay gray soft saturated
(683)	39	Bedrock
		CH_4 65
		CO_2 36
		O_2 0
		At 15' hit concrete block. Moved hole 15' east and redrilled
(696)	26	H_2O

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 38 DATE 5/10/05

N E ELEV 726.98

ft	ft	DESCRIPTION
0	4	Silty Sand coarse gr Brown dry
4	10	Sandy/Silty clay moist
10	28	MSW some soil decomposed moist
(699)	28	Bedrock
		CH_4 0.2
		CO_2 0.1
		O_2 20.2
		No H_2O

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 39 DATE 5/9/05

N E ELEV 732.91

ft	ft	DESCRIPTION
0	2	Silty sand brown dry
2	8	Sandy clay Dk Brown Moist
8	33	MSW some soil decomposed moist to wet
33	39	Silty clay block moist
39	40	marl
(693)	40	Bedrock
		CH_4 0.1
		CO_2 0.3
		O_2 20.2
		no H_2O

(235)

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 40 DATE 5/9/05

N E ELEV 738 23

ft	ft	DESCRIPTION
0	15	Silty sand coarse gr Dk Brown dry
15	18	Silty sand trace MSW and brick rubble
18	22	MSW with soil semi decomposed moist
22	27	MSW trace soil semi decomposed moist
27	45	MSW with soil decomposed moist wood @ 38'
(643)	45	refusal - felt like bedrock but auger did not have rock fragments on tip.

CH_4 66
CO_2 34
O_2 0

No water

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 41 DATE 5/9/05

N E ELEV 744.86

ft	ft	DESCRIPTION
0	8	Silty sand med gr Black dry
8	10	Silty Sand fine gr Brown moist
10	15	Sandy/Silty Clay Brown wet
15	17	Silty sand coarse gr Brown wet
17	48	MSW semi decomposed little soil dry to moist wood @ 40-44
48	53	Silty clay grey wet ▽ 48'
53	55	Marl
690	55	Bedrock
		CH_4 68
		CO_2 34
		O O
691	48	H_2O

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 42 DATE 5/11/05

N E ELEV 749 79

ft	ft	DESCRIPTION
0	7	Clayey Sand medium gr Brown moist
7	15	Sandy clay soft wet
15	17	Silty sand coarse gr Brown dry
17	21	Sandy clay brown Stiff
21	25	Silty sand coarse gr Brown dry
25	29	MSW some soil semi decomposed moist
29	40	MSW Trace soil semi decomposed moist
40	45	MSW with soil decomposed moist
45	52	Demo debris soil and rich rubble with wood dry
52	54	Silty clay black stiff
(54)	54	Bedrock
		CH_4 37
		CO_2 25
		O_2 7.1
		No water table

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 43 DATE 4/28/05

N E ELEV 745.65

ft	ft	DESCRIPTION
0	4	Clayey sand trace gravel Brown
4	9	Sandy Clay grey Dense
9	11	Clayey Sand grey
11	16	Silty clay soft moist 12'-15'
16	19	Clayey sand grey dry
19	23	MSW trace soil Semi decomposed moist
23	29	MSW with soil " " moist
29	31	Sandy clay soil layer
31	38	MSW trace soil Semi decomposed moist
38	43	Swamp vegetation and soil
43	46	Sandy clay with swamp vegetation
(700)	96	Bedrock
		CH_4 - 70
		CO_2 - 30
		O_2 - 0
		* During drilling all samples moist but no free water observed. Hole set open overnight due to equipment break down Water observed in hole to depth of 19' next morning.
(726)	19	H_2O*

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 44 DATE 4/29/05

N E ELEV 745.84

ft	ft	DESCRIPTION
0	4	Sandy Clay / Clayey Sand brown
4	7	Sandy Clay grey
7	9	Clayey Sand brown moist
9	13	Sandy clay grey moist
13	14	Sandy clay brown wet
14	17	clayey Sand grey saturated soft
17	19	Sandy Clay grey saturated
19	27	MSW with soil wet semidecomposed
27	34	MSW some soil wet semi decomposed
34	38	MSW some soil moist semi decomposed
38	40	organic vegetation layer moist
40	44	Sandy rubble dup
44	50	MSW with soil moist
50	55	Silty Clay grey mod @ end
(691)	55	Bedrock
		CH_4 67
		CO_2 33
		O_2 0
		No free water noted

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 45 DATE 4/29/05

N E ELEV 742.98

ft	ft	DESCRIPTION
0	2	Clayey Sand brown
2	6	Sandy Clay brown
6	10	Silty clay brown moist → wet
10	17	Silty/clayey sand wet
17	22	MSW little soil semi decomposed moist
22	32	MSW no soil semi decomposed moist
32	42	MSW some soil decomposed wet
42	46	MSW and organic decomposed wet
46	48	Silty clay grey
(695)	48	Bedrock
		CH_4 65
		CO_2 35
		O_2 0
		no free water noted

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 46 **DATE** 5/2/05

N **E** **ELEV** 738.00

ft	ft	DESCRIPTION
0	5	Sandy clay/Clay sand Brown moist
5	10	Silty clay Brown saturated
10	12	MSW with soil semi-decomposed moist
12	14	Sand Silty clay brown
14	20	MSW some soil moist Semi decomposed
20	25	MSW trace soil moist very little decomposition
25	40	? - no sample
	40	EOB
		CH_4 66
		CO_2 32
		O_2 -
		Auger kept getting stuck and could not be pulled out below 25'. To remove auger they had to screw it back out which lost the sample. Broke 2 compressed joints. BC (Jack) said new engine is too powerfull for rig which is why it is breaking U-joints. Auger catches on soil/waste pulls front of rig off ground and breaks U-joint all before operator can respond or engine kills. They may replace U-joint with direct rotation drive head. Once this is complete Jack wonders what part will break next.

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 47 DATE 5/2/05

N E ELEV 734.72

ft	ft	DESCRIPTION
0	2	Silty Sand Brown
2	6	Silty Clay Brown wet
6	7	Sand grey wet
7	12	MSW fibrous soil wet semi-decomposed
12	15	Soil Sandy Clay wet
15	30	MSW some soil wet highly decomposed
30	35	Soil and swamp vegetation trace MSW highly decomposed
35	37	Silty Clay lots of swamp vegetation
(698)	37	bedrock
		CH_4 26
		CO_2 9
		O_2 13
	8	H_2O

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 48 DATE 5/11/05

N E ELEV 730 35

ft	ft	DESCRIPTION
0 -	5	Sandy Clay brown moist
5 -	30	MSW trace soil semi decomposed moist
(700) -	30	Bedrock
		CH_4 59
		CO_2 32
		O_2 1.4
		No water table

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 49 DATE 4/27/05

N E ELEV 724.07

ft	ft	DESCRIPTION
0	3	Sandy Clay Brown
3	4	Sandy clay Grey
4	23	Waste some soil moist @ 5
		Saturated @ 14'
23	25	Marl
(699)	25	Bedrock
		CH_4 41
		CO_2 22
		O_2 4
710	14	Water Level

(1555)

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 50 DATE 5/3/05

N E ELEV 706 67

ft	ft	DESCRIPTION
0 -	2½	Silty clay Brown moist
2½ -	3½	Soil with trace MSW
3½ -	8'	Silty clay brown wet
8 -	10	Silty clay black wet
10 -	15	Silt grey saturated
-	EOTS	
		CH_4 9.1
		CO_2 8.2
		O_2 0
697 -	10	H_2O

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 51 DATE 5/3/05

N E ELEV 706 92

ft	ft	DESCRIPTION
0	3	Silty Clay Black wet @ 3'
3	14	MSW trace soil semi-decomposed moist
14	25	Silt grey soft saturated
	25	EOB
		CH_4 42
		CO_2 23
		O_2 0
699	8	H_2O

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 52 DATE 5/9/05

N E ELEV 718.50

ft	ft	DESCRIPTION
0	2	Silty Sand Beach dry
2	5	Sand medium grained with shells dry
5	30	MSW Some soil Black moist ▼23'
30	42	Silty clay grey saturated
676	42	Bedrock
		CH_4 46
		CO_2 25
		O_2 2
695	23	H_2O

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 53 DATE 5/9/05

N E ELEV 726.58

ft	ft	DESCRIPTION
0	4½	Silty Sand brown
4½	34	MSW little soil semi decomposed dry to moist
34	36	Silty Clay grey
36	37	Marl
(690)	37	Bedrock
		No gas readings
		No water

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 54 DATE 5/9/05

N E ELEV 731 28

ft	ft	DESCRIPTION
0	4	Silty Sand brown dry
4	8	MSW trace soil decomposed moist
8	17	Silty Clay black
17	21	MSW trace soil semi decomposed moist
21	29	MSW some soil decomposed moist
29	35	MSW some soil highly decomposed moist
35	36	Bedrock

695

CH_4 66
CO_2 33
O_2 0

No Water

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 55 DATE 4/28/05

N E ELEV 739.91

ft	ft	DESCRIPTION
0	4	Sandy Clay brown
4	6	Sandy Clay grey
6	7	Silty sand trace gravel grey
7	9	clayey sand trace gravel grey
9	31	Waste some soil moist to 16'
		H2O @ 16'
31	33	Silty/clayey sand fill (clean fill)
33	36	Silty Clay grey (clean fill)
36	43	Organic Swamp reclaim mat
43	48	Silty clay grey
(692)	48	Bedrock
		CH_4 65
		CO_2 35 pressure
		O_2 0
(724)	46	H_2O

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 56 DATE 4/28/05

N E ELEV 733.12

ft	ft	DESCRIPTION
0	2	Sandy Clay Brown
2	4	Silty Sand trace gravel gray
4	5	Silty Sand, Black stained
5	9	MSW some soil semi-decomposed moist @ 5' Sat @ 8
9	37½	MSW some soil, decomposed
		6" soil layer @ 20' & 24' sandy clay
		12" layer of yardwaste 24-25
		vegetation matt @ 34'
37½	40	Silty clay Grey
(693)	40	Bedrock
		CH_4 68
		CO_2 32
		O_2 0
725'	8'	H_2O

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 57 DATE 4/29/05

N E ELEV 737.75

ft	ft	DESCRIPTION
0	7	Sandy Clay Brown
7	9	Silty Sand Brown
9	17	MSW with soil semi decomposed @ 10'
		Soil layer 13'-14'
17	22	Soil layer Sandy clay fill
22	27	MSW some soil decomposed
27	37	(Swamp organics mixed with soil fill
37	44	Clayey Sand some gravel, pleach saturate
44	48	MSW with soil highly decomposed (eat
(690)	48	Bedrock
		CH_4 22
		CO_2 14
		O_2 8
		Waste appeared to stop @ 17'. We were surprised to find MSW @ 44-48. Soil and organics from 17'-44' are fill.
728	10	H_2O

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 58 DATE 4/29/05

N E ELEV 732.78

ft	ft	DESCRIPTION
0	6	Sandy clay Brown } dense
6	10	Sandy clay dk Brown }
10	16	MSW with soil matrix semi decomposed
16	33	MSW some soil highly decomposed saturated
33	34	marl
(699)	34	bedrock
		CH_4 67
		CO_2 34
		O_2 0
(716)	17	Water level in waste

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 59 DATE 4/27/05

N E ELEV 724 ±20

ft	ft	DESCRIPTION
0	½	Silty Sand Brown
½	5	Demo-Waste plastic, paint, soil
5	15	MSW partially decomposed trace soil
15	27	Demo Waste soil / brick concrete @ 15'-16'.
	27	Bedrock (697)
		No clay / mark above bedrock
		CH_4 58
		CO_2 30
		O_2 0
		Everything dry no water table

130.5

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 60B DATE 4/25/05

N E ELEV 715.21

moved E20' Est

ft	ft	DESCRIPTION
0	2½	silty sand,
2	2½	Class-5 gravel
2½	5½	Sandy Clay
5½	14½	Weath slightly decomposed a transsoil
14½	34½	Silty Clay, grey soft
	EOB	
		CH_4 6.3
		CO_2 10
		O_2 8.4
60A		Instld 23½' Drilled and abandoned

H20 in silty clay but no free water
I guess water table @ 19'

157½
(181)

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 61 DATE 4/26/05

N E ELEV 708.78

ft	ft	DESCRIPTION
0	3.5	Silty sand roots moist
3.5	9	Waste with soil decomposed
9	14	Waste some soil decomposed
		H_2O @ 12'
14	17	Waste decomposed trace soil wet
17	36	Silty grey clay soft saturated
(673)	36	refusal
		CH_4 19.9
		CO_2 10.7
		O_2 12.0
		on side slope of waste
(697)	12	H_2O

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 62 DATE 4/25/05

N E ELEV 698 —

moved 10' West

ft	ft	DESCRIPTION
0	5½'	Brown/gray clay medium dense piece of waste @ 5½' could be cop.
5½	14	Silty clay gray soft natural
		End of Boring
		CH_4 1.0
		CO_2 0.4
		O_2 19.2
		@ Toe B Waste slope
	2	H_2O

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 63 DATE 4/25/05

N E ELEV 724.02

ft	ft	DESCRIPTION
		asphalt road surface 3"
0	4	black silty sand
4	18	waste dry decomposed
18'	28'	waste & soil saturated black slurry *
28	32'	clay & marl
(692)	32'	refusal
		CH_4 65%
		CO_2 34
		* lab work indicates the black slurry
		comes from waste which is below
		the water and decomposed.
706	18	H_2O

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 64 DATE 4/26/05

N E ELEV 746.27

ft	ft	DESCRIPTION
0	4	Silty sand grey
4	11	Waste black mottly soil
11	13	soil layer clayey silt
13	20	Waste some soil slightly decomposed
20	26	Waste trace soil "
26	31	Waste some soil "
31	35	Clayey soil trace waste
35	53	Waste some soil slightly decomposed wet @ 47' and decomposed
53	55	Silty Clay grey / marl
	55'	Bedrock
		CH_4 69
		CO_2 35
		O_2 0
	47	H_2O

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 65 **DATE** 4/25/05

N **E** **ELEV** 731.95

ft		ft	DESCRIPTION
0	-	3	Silty clay brown
3	-	17	MSW trace soil semi-decompos
17	-	32'	waste with soil black slurry*
32	-	41	clayey soil
(691)	-		Refusal
	-		
	-		
	-		CH_4 41
	-		CO_2 21
	-		O_2 7
	-		
	-		
	-		* later work indicates this black slurry
	-		comes from waste which is below
	-		the water and decomposed
(715)	-	17	H_2O

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 66 DATE 4/25/05

N E ELEV 729.60

ft	ft	DESCRIPTION
0	3	Silty Sand Brown
3	12	Waste with soil/wood
12	21	Waste some soil decomposed moist from 12 down
21	32	Saturated black gloopy * BC called end of waste I think end of waste is nearer the 26' layer
32	36	Soil clayey silt / sandy clay
	36	refusal
		CH_4 65
		CO_2 29
		O_2 0
		* late work indicates the black gloopy comes from waste which is below the water and decomposed
	21	H_2O

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 67 DATE 4/26/05

N E ELEV 733.01

ft	ft	DESCRIPTION
0	3	Brown silty sand/clayey sand
3	14	Waste lots of soil Black decomposed soil layers @ 8' and 12'
		Water @ 14'
14	34	Waste some soil - saturated black, decomposed
34	38	silty clay gray
38	41	marl
(692)	41	Bedrock
		Based on this boring it appears that the black saturated slurry comes from decomposed waste below the water level.
		CH_4 49
		CO_2 21 pressure
		O_2 6
(719)	14	H_2O

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 68 DATE 4/27/05

N E ELEV 731.41

ft	ft	DESCRIPTION
0	2	Sandy Clay, Brown
2	3	Silty Sand, gray
3	7.5	Sandy / Silty clay, gray
7.5	18	Waste, no soil, partially decomposed
		moist
18	42½	Silty Clay, gray
	4PW	Bedrock
		CH_4 68
		CO_2 36
		O_2 0
	15	H_2O

7.5

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 69 DATE 4/27/05

N E ELEV 722.71

ft	ft	DESCRIPTION
0	1½	Clayey Sand Brown
1½	5	Waste - plastic rags some soil
5	13	Demo Waste rubble (brick, wood soil) concrete @ 8'
13	18½	Demo waste rubble (soil wood plastic carpet) Moist @ 18½'
18½	25	Mostly sand with paper and cardboard
25	30½	Demo waste brick and sand
30½	32	Mud
	32	Bedrock
		CH_4 54
		CO_2 32
		O_2 0
		Most below 18½' but no free water

70, 71, 72 not drilled

73

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 73 **DATE** 5/12/05

N **E** **ELEV** 743.69

ft	ft	DESCRIPTION
0	3	Silty Sand
3	8	Sandy Clay
8	15	MSW and Soil Mix
15	38	MSW some soil decomposed moist
38	45	Silty clay
	48	Bedrock

74

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 74 **DATE** 5/12/05

N **E** **ELEV** 736.72 ±3ft.

ft	ft	DESCRIPTION
0	3	Silty sand medium dk Brown moist
3	8	Silty clay grey moist
8	12	MSW some soil decomposed moist
12	37	MSW mostly soil with trace wood and MSW
37	42	Silty clay grey moist to wet
	42	Bedrock
		CH_4 16
		CO_2 8
		O_2 14.2
		Did not encounter water table however lower portion of clay above bedrock were wet.

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 25 DATE 4/27/05

N E ELEV 724.62

ft	ft	DESCRIPTION
0	2	Silty Sand Brown
2	9	Waste decomposed Saturated @ 5' Black
9	26	Waste decomposed Saturated with layer at 17'
26	27	Silty clay, grey
27	29	Marl
(695)	29	Bedrock
		CH_4 59
		CO_2 30
		O_2 2
719	5	Water Level

72

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 76 **DATE** 5/12/05

N **E** **ELEV** 725.80

ft	ft	DESCRIPTION
0	3	Silty Clay moist
3	8	MSW some soil decomposed moist
8	27	MSW trace soil semi decomposed dry
27	29	Swamp organics wet
(697)	29	Bedrock
		CH_4 64
		CO_2 36
		O_2 0
		did not encounter H_2O table however organics above bedrock were wet

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 77 DATE 5/11/05

N E ELEV ~716.21

ft	ft	DESCRIPTION
0	15	Silty/clayey sand
15	17	Soil with trace MSW
17	20	Silty clay Black moist
	20	Bedrock
±697		
		CH_4 6.1
		CO_2 3.0
		O_2 16.4
		No water table

79-85 not drilled

71

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. 78 **DATE** 5/11/05

N **E** **ELEV** 724.14

ft	ft	DESCRIPTION
0	7	Silty/Clayey Sand coarse brown dry → moist
7	27	MSW with soil decomposed moist
~27	31	Silty clay black moist
	31	Bedrock
		CH_4 60
		CO_2 40
		O_2 0
		no water table

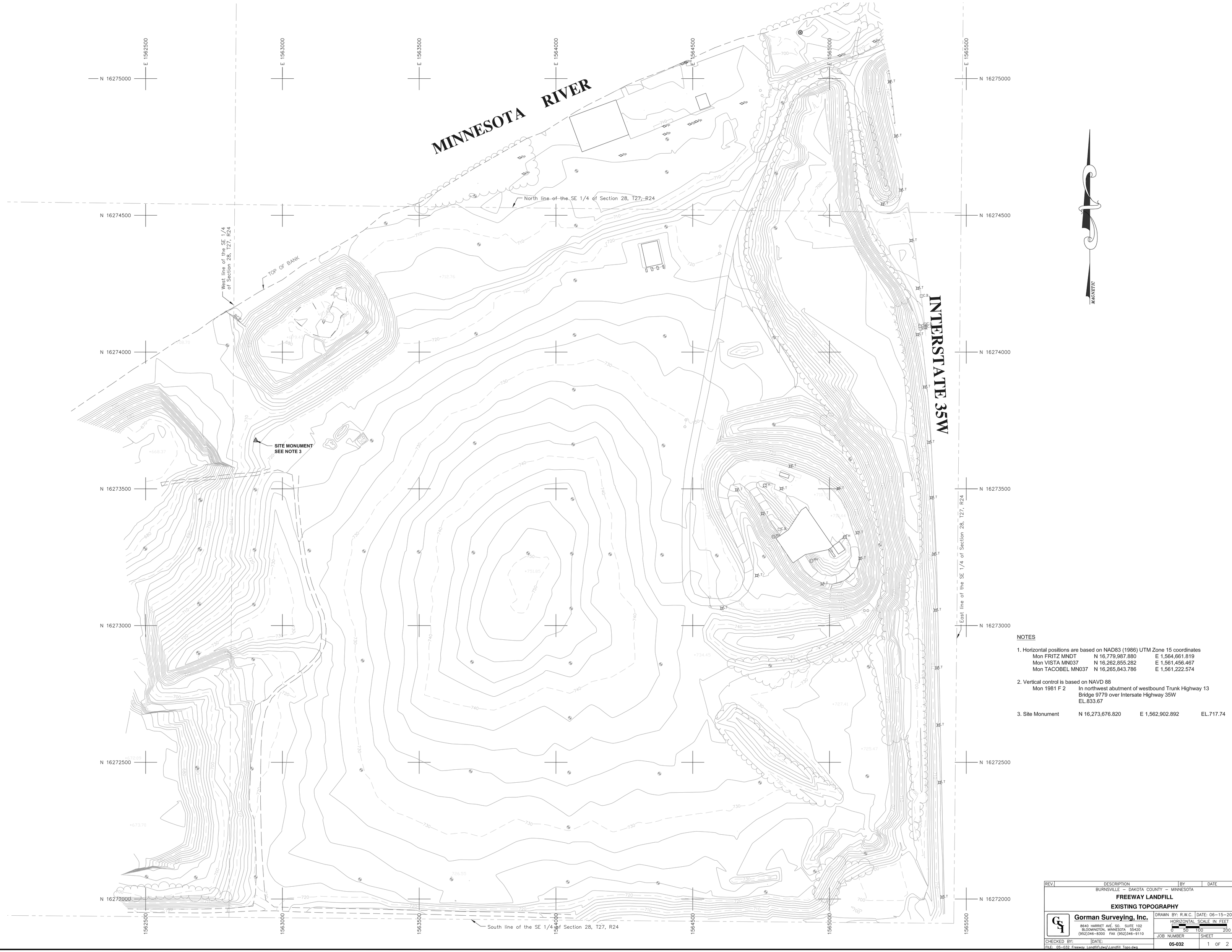
75-85

SUBSURFACE INVESTIGATION
FREEWAY LANDFILL

BORING NO. _____ **DATE** _____

N _____ **E** _____ **ELEV** _____

ft	ft	DESCRIPTION
		These borings were eliminated
		70 71 72 79 80 81
		82 83 84 85 34



NOTES

1. Horizontal positions are based on NAD83 (1986) UTM Zone 15 coordinates

Mon FRITZ MNDT	N 16,779,987.880	E 1,564,661.819
Mon VISTA MN037	N 16,262,855.282	E 1,561,456.467
Mon TACOBEL MN037	N 16,265,843.786	E 1,561,222.574

2. Vertical control is based on NAVD 88
   Mon 1981 F 2 — In northwest abutment of westbound Trunk Highway 13 Bridge 9779 over Intersate Highway 35W EL.833.67

3. Site Monument — N 16,273,676.820 — E 1,562,902.892 — EL.717.74

REV.	DESCRIPTION	BY	DATE

BURNSVILLE – DAKOTA COUNTY – MINNESOTA

FREEWAY LANDFILL

EXISTING TOPOGRAPHY

Gorman Surveying, Inc.
8640 HARRIET AVE. SO. SUITE 102
BLOOMINGTON, MINNESOTA 55420
(952)346-8300 FAX (952)346-9110

DRAWN BY: R.W.C. | DATE: 06-15-2005

HORIZONTAL SCALE IN FEET
0 50 100 200

CHECKED BY: | DATE:

JOB NUMBER: 05-032 | SHEET: 1 OF 2

FILE: 05-032 Freeway Landfill\dwg\Landfill Topo.dwg

MINNESOTA RIVER

INTERSTATE 35W

N 16275000 E 1562500 E 1563000 E 1563500 E 1564000 E 1564500 E 1565000 E 1565500

N 16274500 N 16274000 N 16273500 N 16273000 N 16272500 N 16272000

LINE 1 LINE 2 LINE 3 LINE 4 LINE 5 LINE 6 LINE 7 LINE 8

North line of the SE 1/4 of Section 28, T27, R24

West line of the SE 1/4 of Section 28, T27, R24

East line of the SE 1/4 of Section 28, T27, R24

South line of the SE 1/4 of Section 28, T27, R24

TOP OF BANK

SITE MONUMENT SEE NOTE 3

MAGNETIC

1 682.51 none / none 0 % / none / 675.51

2 694.52 672.52 / none 0 % / none / none / 668.52

3 698.42 none / none 10% / none / 669.42

4 710.84 none / none 68% / none / 688.84

5 729.95 none / none 14% / none / 706.95

6 690.42 none / none 0 % / none / 690.42

7 694.8 none / none 0 % / none / 694.8

8 696.96 none / none 0 % / none / 695.76

9 708.27 none / none 0 % / none / 695.27

10 717.55 695.55 / 707.55 64% / 698.55 / 689.55

11 720.00 none / 716.00 66% / 701.00 / 790.00

12 722.19 none / 716.19 0 % / 697.19 / 690.19

13 727.94 none / 714.44 62% / 695.94 / 690.94

14 717.78 695.78 / 711.78 65% / 695.78 / 689.78

15 718.44 698.44 / 713.44 0 % / 698.44 / 696.44

16 720.17 none / 716.17 66% / 697.67 / 697.67

17 707.49 695.49 / none 2% / none / none / none

18 696.04 688.04 / none 16% / none / 681.04

19 724.49 none / 720.49 0.1% / 699.49 / 692.49

20 726.00 none / 717.00 0.1% / 699.00 / 694.00

21 731.20 none / 715.20 0.1% / 701.20 / 701.20

22 730.80 697.80 / 720.80 0.1% / 699.80 / 694.80

23 730.00 none / 720.00 0.1% / 699.00 / 698.00

24 723.97 none / 718.97 54% / 696.97 / 696.97

25 708.64 699.64 / 703.64 9% / 699.64 / none

26 711.45 697.45 / 707.45 54% / 697.45 / none

27 721.56 695.56 / 713.56 0.2% / 695.56 / 688.56

28 734.89 none / 723.89 55% / 698.89 / 691.89

29 737.60 none / 720.60 0.1% / 700.60 / 697.60

30 744.92 709.45 / 723.92 7.7% / 699.92 / 692.45

31 745.06 720.06 / 720.06 58% / 695.06 / 690.06

32 734.13 none / 724.13 39% / 696.13 / 696.13

33 726.55 none / 718.55 65% / 699.55 / 699.55

34 none

35 707.48 none / 703.48 0% / 701.48 / none

36 707.81 694.81 / 700.81 5% / 687.81 / none

37 722.22 696.22 / 717.22 65% / 690.22 / 683.22

38 726.98 none / 716.98 0.2% / 698.98 / 698.98

39 732.91 none / 724.91 0.1% / 699.91 / 692.91

40 738.23 none / 72323 66% / 693.23 / 693.23

41 744.86 696.86 / 727.86 68% / 696.86 / 689.86

42 749.79 none / 724.79 37% / 697.79 / 695.79 / 745.65 / 726.65 / 707.65 / 699.65

43 726.65 / 70%

44 745.84 none / 746.84 67% / 695.84 / 690.84

45 742.98 none / 725.98 65% / 696.98 / 694.98

46 738.00 none / 728.00 66% / ??? / 698.00

47 734.72 726.72 / 727.72 26% / 699.72 / 697.72

48 730.35 none / 725.35 59% / 700.35 / 700.35

49 724.07 710.07 / 720.07 41% / 701.07 / 699.07

50 706.67 696.67 / 704.17 9.1% / 703.17 / none

51 706.92 698.92 / 703.92 42% / 692.92 / none

52 718.50 695.50 / 713.50 46% / 688.50 / 676.50

53 726.58 none / 722.08 none / 592.58 / 689.58

54 731.28 none / 727.28 66% / 696.28 / 696.28

55 723.91 / 65%

56 733.12 725.12 / 728.12 68% / 695.62 / 693.12

57 737.75 727.75 / 728.75 22% / 689.75 / 689.75

58 732.78 715.78 / 722.78 67% / 699.78 / 688.78

59 724.20 none / 723.70 58% / 697.20 / 697.20

60 715.21 none / 709.71 6.3% / 700.71 / none

61 708.78 696.78 / 705.28 19.9% / 691.78 / 672.78

62 698.00 696.00 / 692.50 1.0% / 692.00 / none

63 724.02 706.02 / 720.02 65% / 696.02 / 692.00

64 746.27 699.27 / 742.27 69% / 693.27 / 691.27

65 714.95 / 728.95 41% / 699.95 / 690.95

66 729.60 708.60 / 726.60 65% / 697.60 / 693.60

67 733.01 714.01 / 730.01 49% / 699.01 / 692.01

68 731.41 716.41 / 723.91 68% / 713.41 / 688.91

69 722.71 none / 721.21 54% / 692.21 / 690.71

70 none

71 none

72 none

73 743.69 none / 735.69 no readings / 705.69 / 698.69

74 736.72 none / 728.72 16% / 699.72 / 694.72

75 724.62 719.62 / 722.62 59% / 698.62 / 695.62

76 725.80 none / 722.80 64% / 698.80 / 696.80

77 716.21 none / 710.21 6.1% / 699.21 / 696.21

78 724.14 none / 717.14 60% / 697.14 / 693.14

712.76 678.09 679.43 668.37 672.09 673.70 708.70 710.95 710.44 734.45 727.41 725.47 740.98

KEY

76
725.80 none
722.80 64%
698.80
696.80

BORING NUMBER
SURFACE ELEVATION
ELEVATION TOP OF WASTE
ELEVATION BOTTOM OF WASTE
ELEVATION OF BEDROCK
ELEVATION GROUNDWATER
METHANE CONCENTRATION
@ 3' BELOW SURFACE

NOTES

1. Horizontal positions are based on NAD83 (1986) UTM Zone 15 coordinates

Mon FRITZ MNDT	N 16,779,987.880	E 1,564,661.819
Mon VISTA MN037	N 16,262,855.282	E 1,561,456.467
Mon TACOBEL MN037	N 16,265,843.786	E 1,561,222.574

2. Vertical control is based on NAVD 88
   Mon 1981 F 2 — In northwest abutment of westbound Trunk Highway 13 Bridge 9779 over Intersate Highway 35W EL.833.67

3. Site Monument — N 16,273,676.820 — E 1,562,902.892 — EL.717.74

REV.	DESCRIPTION	BY	DATE

BURNSVILLE – DAKOTA COUNTY – MINNESOTA

FREEWAY LANDFILL

SUBSURFACE EXPLORATION RESULTS

Gorman Surveying, Inc.
8640 HARRIET AVE. SO. SUITE 102
BLOOMINGTON, MINNESOTA 55420
(952)346-8300 FAX (952)346-9110

DRAWN BY: R.W.C. | DATE: 06-15-2005

HORIZONTAL SCALE IN FEET
0 50 100 200

CHECKED BY: | DATE:

JOB NUMBER: 05-032 | SHEET: 2 OF 2

FILE: 05-032 Freeway Landfill\dwg\Landfill Topo.dwg