SOIL MECHANICS
ENVIRONMENTAL SERVICES
3770 MERRICK ROAD • SEAFORD, L.I., NEW YORK 11783
(516) 221-7500 • FAX (516) 679-1900

July 17, 2009

Suffolk County Department of
Health Services
Office of Pollution Control
15 Horseblock Place
Farmingville, N.Y. 11738
Attn: Ms. Janet Gremli
Sr. Public Health Sanitarian

Re: Stop & Shop Supermarket Center
Union Blvd.
West Islip, N.Y.
SMES # 09-282

Dear Ms. Gremli:

Forwarded herewith are the results of septic system and storm water run-off drywell leaching structure assessment and remediation activities recently completed at the above referenced facility. The scope of work, completed in general conformance with our letter of 6/7/09 under your supervision and direction, included the following:

1) Trace dye analysis of existing: (i) floor drains, sinks, toilets, etc. located within the existing supermarket building; and (ii) active house traps to confirm outfall to the municipal sewer system (see Site Plan #2).
2). Investigation of a total of 38 sub-grade septic system and storm water run-off drywell structures (see Table below) to determine their status, nature, leaching potential, etc. Investigative efforts included geophysical survey, utilizing ground penetrating radar (GPR), of suspect areas on the subject property and excavation of exploratory test pits at identified radar anomalies.

Total Units	Structure Description
1	sewer ejector pit (IP)
1	grease trap (GT)
13	drywells (DWs)
3	leaching pool (LPs)
8	cesspools (CP)
2	distribution boxes (DBs)
10	septic tank (STs)

3). Collection of preliminary assessment samples for laboratory analysis from all suspect structures, utilizing disposable bailer, or direct push sampling equipment, to determine the need for the implementation of appropriate remedial efforts.

4). Removal of liquid phase waste material from structures requiring implementation of remedial effort, utilizing a pump truck, and disposed of same at a regulated facility.

5). Removal of sludge phase waste from structures requiring implementation of remedial effort until a condition of visually clean was achieved, utilizing a vactor or hydraulic backhoe.

6). Waste characterization analysis of removed wastes in general conformance with the requirements of the final disposal facility.

7). Transportation and disposal of all generated wastes at a regulated facility (note: under no circumstances were wastes commingled, i.e., septic waste with storm drain waste).

8) Inspection of the interior of structures subject to investigation/remediation for any evidence of additional outfall structure(s); assessment/remediation of any newly identified structures, as required.

9). Collection of post remediation confirmation samples, under the supervision of the Suffolk County Department of Health Services (SCDHS), from septic system and storm water run-off drywell structures subject to cleanup efforts to confirm the effectiveness of remedial efforts.

10). Containerization of all acquired assessment or post remediation confirmation samples into new laboratory supplied glassware appropriate for the targeted analytical parameters, utilizing dedicated hermetically sealed sampling equipment.

Qualified Soil Mechanics Environmental Services personnel collected all samples in accordance with appropriate sampling and decontamination protocols. The samples for analysis were iced to 4^0 Centigrade and hand delivered to Long Island Analytical Laboratories of Holbrook, NY (NYS certified), in accordance with appropriate Chain of Custody procedures. Holding time for the samples did not exceed 12 hours.

11). Splitting of all recovered samples with the SCDHS, as requested.

12). Laboratory analysis of all acquired samples by Long Island Analytical Laboratories (Holbrook, N.Y. - New York State ELAP certified). See Table A for complete listing of targeted analytical parameters, sample depths, sampling location, sample identification numbers, etc.

13). Backfilling/replenishing of selected structures after remediation with virgin sand from a known source upon receipt of authorization to proceed from the SCDHS.

The results of septic system and storm water run-off drywell structure assessment and remediation efforts are as follows (see Site Figure #1, #2, Tables A, #1, #2, complete laboratory reports, chains of custody, and disposal manifests appended):

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I Results of Trace Dye Analysis

Trace dye analysis of existing: (i) floor drains, sinks, toilets, grease traps, etc. located within the existing supermarket building; and (ii) house traps was conducted to confirm their outfall status. The results of this phase of investigative efforts confirmed the following (see Site Figure #1 and #2):

a). Floor drains, sinks, toilets, etc. located within the existing supermarket building outfall to the municipal sewer system;

b). floor drains, sinks, toilets, and the grease trap located between column lines A.1 and C of the existing supermarket building outfall to a sewer ejector pit (IP), located on the southern portion of the property. The ejector pit inturn outfalls to the municipal sewer system; and

c). house traps currently utilized at the shopping center property discharge to the municipal sewer system.

II Results of Geophysical Survey and Excavation of Exploratory Test Pit Excavations

Geophysical survey of suspect areas on the subject property, utilizing ground Penetrating radar (GPR), was conducted to confirm the presence of all active/inactive sub-grade septic system and storm water run-off drywell structures (see Figure #1). The survey was completed utilizing a Geophysical Survey Systems, Inc. (GSSI) SIR System - 2 (Subsurface Interface Radar) equipped with a 400-Mhz antenna unit.

Subsequent to completion of geophysical survey a series of exploratory test pit excavations were completed at identified GPR anomalies to confirm the presence and or absence of suspect structures. Based on the results of the aforementioned and visual inspection of structures during implementation of remedial efforts, the following sub-grade structures, which were previously inaccessible, were identified (see Table A for a complete sample summary):

- LP-1, LP-2, LP-3;
- CP-6A, CP-6B; and
- DW-6A, DW-7A, and DW-9A.

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III Results of Preliminary Assessment Activities

A total of 38 sub-grade septic system and storm water run-off drywell structures were investigated to determine their status, nature, leaching potential and presence and/or absence of associated outfall structures. Based on the aforementioned, preliminary assessment samples were collected for laboratory analysis from 21 of the 38 structures investigated by SCDHS and/or Soil Mechanics personnel for laboratory analysis (see Table A for complete sample summary).

Some of the structures investigated were active while others were previously abandoned, some via backfilling (see Table A for complete sample summary). Assessment samples from structures previously backfilled were acquired utilizing direct push sampling equipment and dedicated acetate liners. The balance of the assessment samples were collected, utilizing a hand auger. Targeted analytical parameters for the preliminary assessment samples were determined by the SCDHS and are summarized in Table A.

Based on the results of: (i) investigative activities; and (ii) laboratory analysis of acquired preliminary assessment samples (see Table A and #1), the SCDHS determined that structures IP-1, GT-1, ST-1, ST-2, CP-3, DB-2, DW-6, DW-7, DW-8, DW-9, and DW-10 would require remediation because they had been adversely impacted by one or more of the targeted analytical parameters at concentrations exceeding SCDHD SOP 9-95 action levels (see SCDHS letter dated 5/29/09 appended). Further, supplemental TCLP analysis of samples from structures DW-7, 9, and 10 indicted that they had been adversely impacted by lead at concentrations exceeding hazardous waste regulatory levels.

During remediation of structures DW-6, DW-7, and DW-9 overflow structures DW-6A, DW-7A, and DW-9A, were identified. Per the request of the SCDHS, these structures were uncovered for investigation (see SCDHS letter dated 5/29/09 appended). Visual/olfactory inspection of sediment from these structures revealed evidence of unnatural dark staining and odors. Based on the aforementioned and available laboratory data for structures DW-6, DW-7, and DW-9, overflow structures DW-6A, DW-7A, and DW-9A were determined to be compromised above action levels and also slated for cleanup.

IV Results of Remedial Efforts - Structures IP-1, GT-1, ST-1, ST-2, CP-3, DB-2

Remedial efforts commenced via removal of residual liquid phase waste from structures IP-1, GT-1, ST-1, ST-2, CP-3, DB-2 (total 1,200 gallons – see disposal manifest appended) and disposal of same at a regulated facility. Sludge phase was subsequently removed from these structures, until a condition of visually clean was achieved, utilizing a vactor. Sludge phase waste (total 1.74 tons - see disposal manifest appended) was immediately removed from the site and transported to the final disposal facility, utilizing the vactor truck. Structures IP-1, GT-1, ST-1, ST-2, CP-3, DB-2 were all confirmed to be of solid non-leaching type construction. Accordingly, no post remediation confirmation samples were required.

Subsequent to completion of cleanup efforts structures GT-1 and IP-1 were physically removed from the ground. No evidence of any obvious sign of contamination, unnatural staining, or unusual odors were observed in the resulting excavations and same backfilled with imported clean fill material upon receipt of authorization from the SCDHS.

V Results of Remedial Efforts - Structures DW-6, 6A, 7, 7A, 8, 9, 9A, 10

Storm water run-off drywell structures located on the subject property were all confirmed to be of leaching type construction, i.e., structures were slotted and had no bottom slab. Sediments in these structures could not be removed, utilizing a pump truck and vactor because of the high groundwater and the use of offset manholes covers on the 12' diameter precast structures. These structures were remediated via removal of their covers and excavation of contaminated sediment and soils, utilizing a backhoe.

Each of the structures was excavated until a condition of visually clean was achieved. All removed materials were placed into lined roll-off containers (estimated total 6,000 gallons liquid phase waste and 90 tons of sludge phase waste – disposal manifests pending) for transportation to a regulated facility for final disposal. Post remediation confirmation samples were collected for laboratory analysis from each structure upon completion of remedial efforts (see Table A for targeted suite of analytical parameters).

The results of laboratory testing of post remediation confirmation samples indicated that remedial efforts associated with structures DW-6, 6A, 7, 7A, 8, 9, and 9A, had been successful and that no further investigative or remedial effort was warranted (see Table #2). Accordingly, these structures were replenished with imported clean fill material upon receipt of authorization from the SCDHS.

The results of laboratory testing of post remediation confirmation sample from structure DW-10, however, indicated that remedial efforts had not been successful. Accordingly, additional material was removed and a supplemental post remediation confirmation sample (DW-10/EP-2) was collected for laboratory analysis (see Table #2). The results of laboratory analysis of this sample indicated that the additional excavation was successful and that no further investigative or remedial effort was warranted. Accordingly, this structure was replenished with imported clean fill material upon receipt of authorization from the SCDHS.

V Conclusions

Based on the results of laboratory analysis of preliminary assessment and post remediation confirmation samples, it is our opinion that cleanup efforts in association with sub-grade septic system and storm water run-off drywell structures has been successfully completed and that no further action is required with the exception of the following:

- Backfilling of inactive septic leaching pool structures LP-1, 2, 3 with imported clean fill material.

Wastes removed from storm water run-off drywell structures DW-6, 6A, 7, 7A, 8, 9, 9A, 10 were containerized into lined roll-off containers because they were confirmed to be significantly impacted by volatile and semi volatile organic compounds and hazardous levels of lead. The roll-offs will be transported to a regulated facility for final disposal shortly. Disposal manifest associated with these structures will be distributed to all concerned parties as they become available.

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Should you have any questions regarding the contents of this letter, please don't hesitate to contact our office.

Very truly yours,

Soil Mechanics Environmental Services

Altan Gulum, P.G.
Project Manger

Robert J. Cardinale, M.S., C.P.G, P.G.
Director of Environmental Services

Carl Vernick, P.E.
President

cc: Mr. Chris Whiteman – Stop & Shop

Site Plans

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Stop & Shop
Union Avenue
West Islip, N.Y.
SMES Project # 09-282

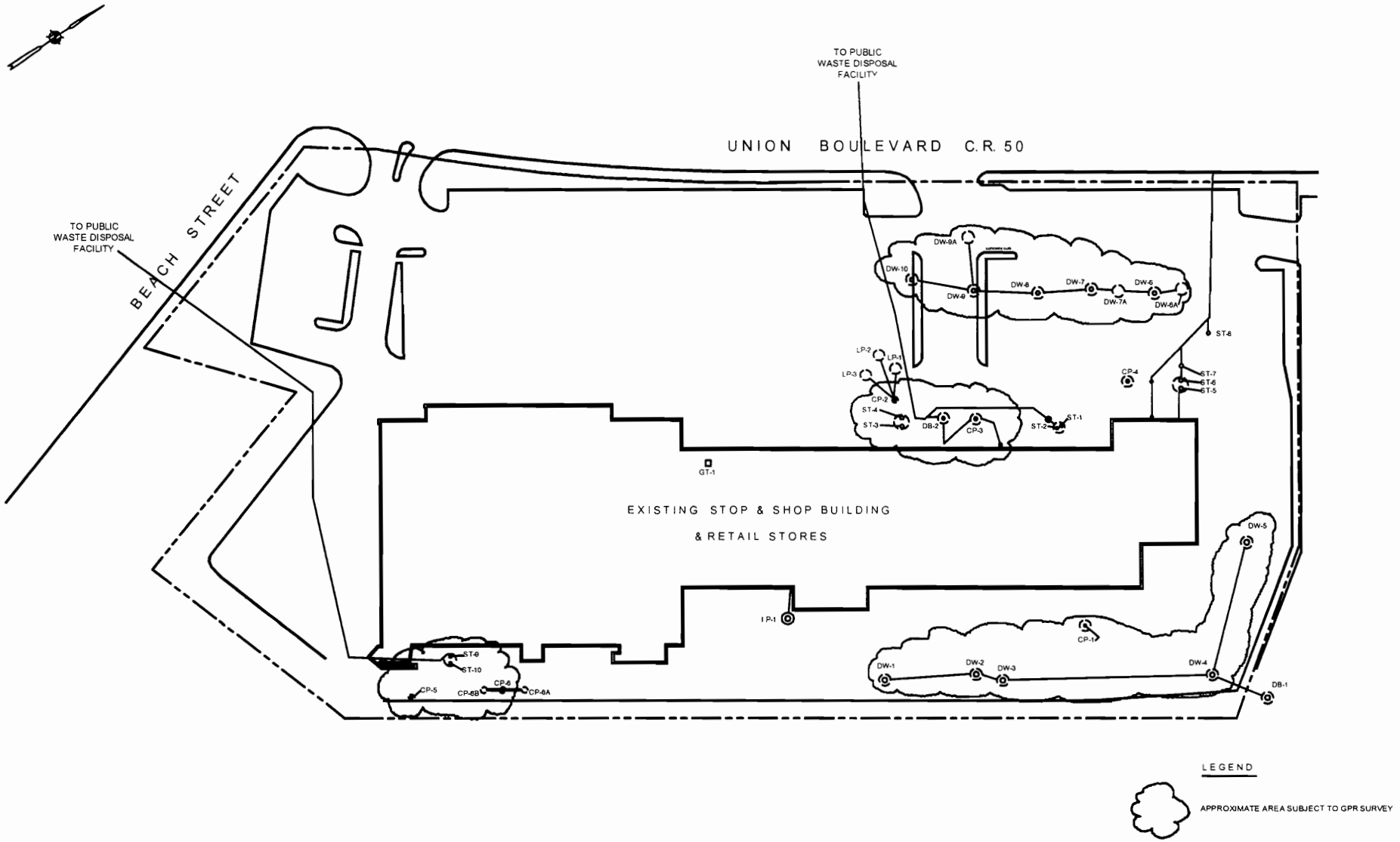

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FIGURE NO. 1

STOP & SHOP

WEST ISLIP, NEW YORK

SCALE	DATE	JOB NO
SCHEMATIC	JULY 28, 2009	08S282
	REVISED N.A.R.	

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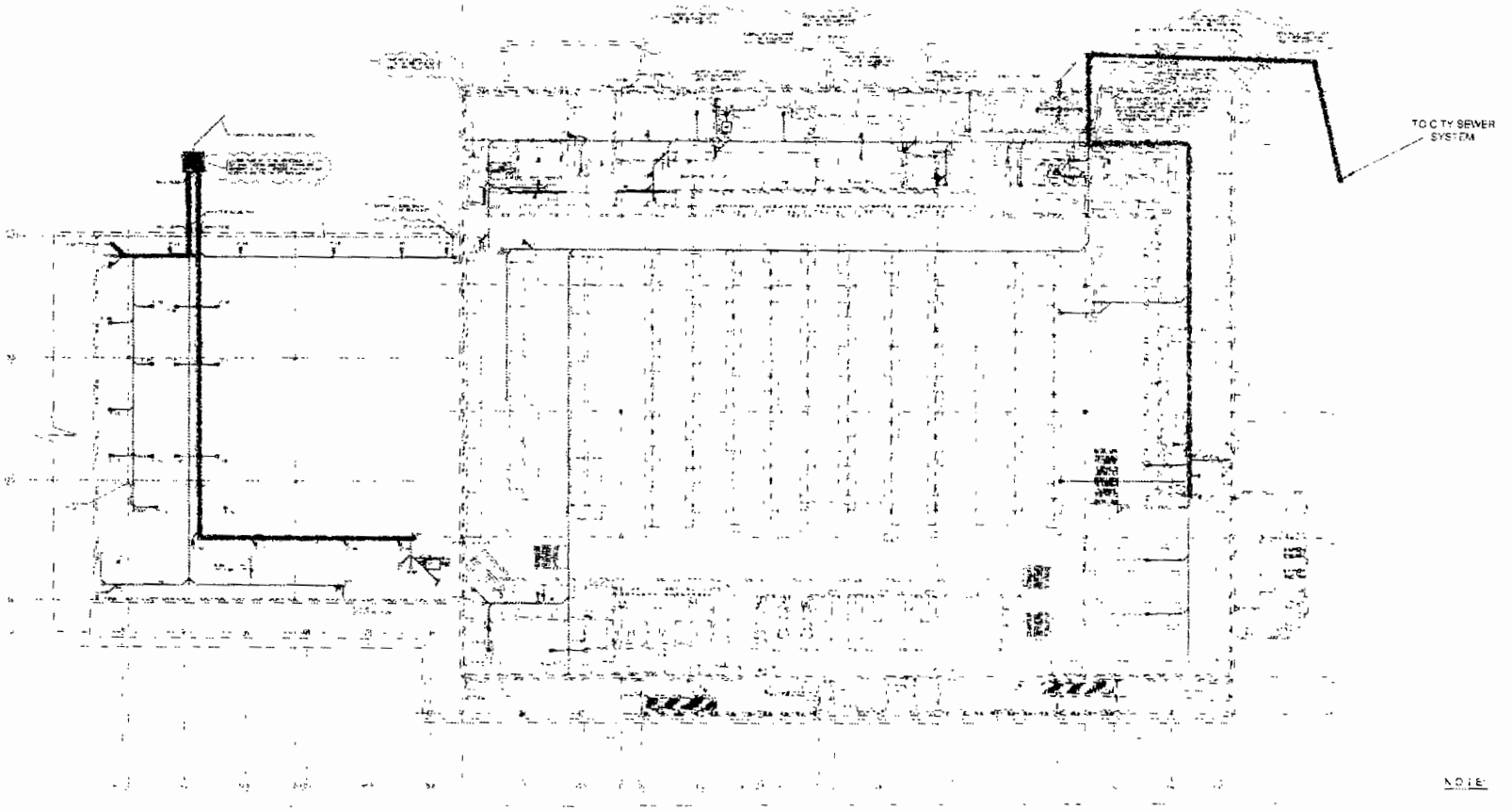

N O T E:

PLUMBING LINE SUBJECT TO TRACE DYE ANALYSIS

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FIGURE # 2
STOP & SHOP
UNION BOULEVARD
WEST ISLIP, NEW YORK

SCHEMATIC | MAY 20, 2009 | 09R282

Tables

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Stop & Shop
Union Avenue
West Islip, N.Y.
SMES Project # 09-282

Table A - Summary Table

Unit #	Structure ID#	Preliminary Assessment Sample ID# (ref. table)	Structure Remediated	Post Remediation Confirmation Sample ID# (ref. table)	Structure Active	Structure Removed	Structure Previously Abandoned (backfilled)	Further Action Required
1	IP-1	IP-1 (na)	yes	*	no	yes	no	none
2	GT-1	GT-1 (Table #1) ①	yes	*	no	yes	no	none
3	ST-1	**	yes	*	yes	no	no	none
4	ST-2	**	yes	*	yes	no	no	none
5	ST-3	*	no	*	no	no	yes	none
6	ST-4	*	no	*	no	no	yes	none
7	ST-5	*	no	*	yes	no	no	none
8	ST-6	*	no	*	yes	no	no	none
9	ST-7	*	no	*	yes	no	no	none
10	ST-8	*	no	*	yes	no	no	none
11	ST-9	*	no	*	no	no	yes	none
12	ST-10	*	no	*	no	no	yes	none
13	CP-1	**	no	*	yes	no	no	none
14	CP-2	CP-2 (Table #1) ②	no	*	no	no	yes	none
15	CP-3	CP-3 (Table #1) ④	yes	*	yes	no	no	none
16	CP-4	*	no	*	yes	no	no	none
17	CP-5	CP-5 (Table #1) ②	no	*	no	no	yes	none
18	CP-6	CP-6 (Table #1) ②	no	*	no	no	yes	none
19	CP-6A	CP-6A (Table #1) ②	no	*	no	no	yes	none
20	CP-6B	CP-6B (Table #1) ②	no	*	no	no	yes	none
21	DB-1	*	no	*	yes	no	no	none
22	DB-2	*	yes	*	yes	no	no	none
23	DW-1	DW-1 (Table #1) ②	no	*	yes	no	no	none
24	DW-2	*	no	*	yes	no	no	none
25	DW-3	*	no	*	yes	no	no	none
26	DW-4	DW-4 (Table #1) ②	no	*	yes	no	no	none
27	DW-5	*	no	*	yes	no	no	none
28	DW-6	DW-6 (Table #1) ①	yes	DW-6/EP (Table #2) ③	yes	no	no	none
29	DW-6A	***	yes	DW-6A/EP (Table #2) ③	yes	no	no	none
30	DW-7	DW-7 (Table #1) ④	yes	DW-7/EP (Table #2) ③	yes	no	no	none
31	DW-7A	***	yes	DW-7A/EP (Table #2) ③	yes	no	no	none
32	DW-8	DW-8 (Table #1) ①	yes	DW-8/EP (Table #2) ③	yes	no	no	none
33	DW-9	DW-9 (Table #1) ⑤	yes	DW-9/EP (Table #2) ③	yes	no	no	none
34	DW-9A	***	yes	DW-9A/EP (Table #2) ③	yes	no	no	none
35	DW-10	DW-10 (Table #1) ⑤	yes	DW-10/EP DW-10/EP2 (Table #2) ③	yes	no	no	none
36	LP-1	LP-1 (Table #1) ②	no	*	no	no	no	backfill
37	LP-2	LP-2 (Table #1) ②	no	*	no	no	no	backfill
38	LP-3	LP-3 (Table #1) ②	no	*	no	no	no	backfill

IP sewer ejector pit
GT grease trap
DW drywell
LP leaching pool
CP cesspool
DB distribution box
ST septic tank
na not applicable only aqueous sample collected as part of preliminary assessment activities
* no sample required by SCDHS
** structure subject to assessment by SCDHS
*** no preliminary assessment sample acquired; structures presumed to be impaired based on available laboratory data
① laboratory analytical parameters included testing for VOCs, SVOCs, and metals
② laboratory analytical parameters included testing for VOCs and metals
③ laboratory analytical parameters included testing for SVOCs and lead
④ laboratory analytical parameters included testing for VOCs, lead, and TCLp selected metals
⑤ laboratory analytical parameters included testing for VOCs, SVOCs, metals, and TCLP selected metals

Table #1 – Preliminary Assessment Soil/Sludge Samples*

Parameters	GT-1	DW-1	DW-4	DW-6	DW-7	DW-8	DW-9	DW-10	CP-2	CP-3	CP-5	CP-6	CP-6A	CP-6B	LP-1	LP-2	LP-3	Action Level
Sample Depth (ft.)	0.33'	4'-5'	4'-5'	5'-6'	5'-6'	5'6'	4'-5'	4'-5'	10'	7.5'	10'-11'	6'-7'	7'-8'	7'-8'	8'	8'	8'	-
VOCs (ug/kg)	***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2-butanone (MEK)	**5408.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	600.0
acetone	**10149.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**
1,2,4-trimethylbenzene	-	-	-	-	-	-	-	7.67	-	-	-	-	-	-	-	-	-	4800.0
naphthalene	-	-	-	-	-	-	166.0	25.5	-	-	-	-	-	-	-	-	-	15000.0
SVOCs (ug/kg)	na	na	na	-	na	-	-	-	na	na	na	na	na	na	na	na	na	-
anthracene	-	-	-	26545.0	-	7978.0	11973.0	37699.0	-	-	-	-	-	-	-	-	-	75000.0
fluorene	-	-	-	14561.0	-	5886.0	11406.0	24389.0	-	-	-	-	-	-	-	-	-	75000.0
phenanthrene	-	-	-	**177569.0**	-	55087.0	48944.0	**240518.0**	-	-	-	-	-	-	-	-	-	75000.0
pyrene	-	-	-	**251664.0**	-	67693.0	40736.0	**212761.0**	-	-	-	-	-	-	-	-	-	75000.0
acenaphthene	-	-	-	6443.0	-	3599.0	9282.0	9942.0	-	-	-	-	-	-	-	-	-	75000.0
benzo(a)anthracene	-	-	-	**93359.0**	-	**26347.0**	**15063.0**	**90128.0**	-	-	-	-	-	-	-	-	-	6000.0
flouranthene	-	-	-	**351337.0**	-	**94199.0**	55039.0	**248019.0**	-	-	-	-	-	-	-	-	-	75000.0
benzo(b)flouranthene	-	-	-	**170420.0**	-	**44626.0**	**24502.0**	**111311.0**	-	-	-	-	-	-	-	-	-	2200.0
benzo(k)flouranthene	-	-	-	**123061.0**	-	**26400.0**	**9125.0**	**41838.0**	-	-	-	-	-	-	-	-	-	2200.0
chrysene	-	-	-	**172415.0**	-	**45974.0**	**22366.0**	**111676.0**	-	-	-	-	-	-	-	-	-	800.0
benzo(a)pyrene	-	-	-	**120549.0**	-	**31613.0**	14919.0	**75966.0**	-	-	-	-	-	-	-	-	-	22000.0
benzo(ghi) perylene	-	-	-	**113655.0**	-	27074.0	9909.0	37780.0	-	-	-	-	-	-	-	-	-	75000.0
indeno(1,2,3,-cd)pyrene)	-	-	-	**129504.0**	-	**32570.0**	**10223.0**	**45855.0**	-	-	-	-	-	-	-	-	-	6400.0
dibenzo(a,h)anthracene	-	-	-	26932.0	-	6879.0	2004.0	9820.0	-	-	-	-	-	-	-	-	-	75000.0
Metals (mg/kg)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Arsenic as As	-	-	-	-	4.29	-	4.71	3.53	-	4.25	-		-	-	-	-	-	25.0
Cadmium as Cd	-	-	-	2.57	6.27	1.85	9.03	4.46	-	1.9	-		-	-	-	-	-	10.0
Chromium as Cr	-	3.59	16.1	42.4	5.58	27.2	**125.0**	90.4	1.73	**208.0**	-	2.16	-	-	2.6	3.96	2.37	100.0
Copper as Cu	63.1	4.54	18.1	67.7	89.1	34.4	163.0	139.0	5.58	421.0	4.73	9.36	-	12.1	17.1	14.0	11.2	500.0
Mercury as Hg	-	-	0.096	0.3	0.107	0.047	0.278	0.115	0.022	0.047	-	0.02	-	0.023	0.202	0.084	0.042	2.0
Nickel as Ni	-	2.73	7.46	28.1	41.8	14.1	70.0	32.3	-	31.88	-	-	-	-	-	2.42	-	1000.0
Lead as Pb	-	4.21	102.0	**614.0**	**2733.0**	**627.0**	**1375.0**	**1633.0**	3.74	44.8	-	3.14	-	-	4.14	4.63	2.56	400.0
TCLP Metals (mg/L)	na	na	na	na	-	na	-	-	na	-	na	na	na	na	na	na	na	-
Chromium as Cr	-	-	-	-	**16.7**	-	**27.5**	**17.9**	-	-	-	-	-	-	-	-	-	****
Lead as Pb	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	****

1) * Only targeted parameters with concentrations in excess of laboratory minimum detection limits are tabulated; Action Levels from SCDHS Art. 12 - SOP-9-95
2) ** The requirement to perform a remediation is determined on a case by case basis by the SCDHS
3) *** Minimum detection limit raised due to target compound interference
4) na not analyzed
5) - not applicable or targeted parameter not detected in excess of laboratory minimum detection limit
6) Matrix for sample IP-1 was aqueous, therefore, laboratory results for same are not tabulated above (see complete laboratory reports); SCDHS to determined the requirement to perform a remediation.
7) GT grease trap
8) DW drywell
9) CP cesspool
10) LP leaching pool
11) **** TCLP Hazardous Waste Regulatory Levels for Toxticity Characteristic for chromium and lead is 5.0 mg/L