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NAS SOUTH WEYMOUTH
5090.3a

SEWAGE TREATMENT PLAN SITE 7 TEST PIT REPORT FORMER NAS SOUTH
WEYMOUTH MA
10/06/2014
TETRA TECH EC INC



TETRA TECH EC, INC.

October 6, 2014

File #: 4659-WE02-14-0491

Brian Helland
BRAC PMO East
4911 South Broad Street
Philadelphia, PA 19112-1303

**SUBJECT: N62470-13-D-8007, CONTRACT TASK ORDER WE02
CERCLA and MCP SUPPORT
FORMER NAVAL AIR STATION, SOUTH WEYMOUTH, MA
SEWAGE TREATMENT PLANT SITE 7 TEST PIT REPORT**

Dear Mr. Helland:

Attached for your review is the STP Site 7 Test Pit Report.

Test pits were excavated at location across the STP site targeting connections and tanks of the former sewage treatment system as agreed during the BCT meeting on September 11, 2014.

Test Pit 1 is located within the secondary settling tanks. The north wall was identified along with a wall that separates the secondary tank from the chlorine mixing and detention tank. The structure was previously demolished to two feet below the existing surface. The floor was four feet below the existing surface and a broken floor was felt with the excavator. Groundwater was present above the floor. A soil sample was collected from the broken tank bottom at approximately four feet below existing surface.

Test Pit 2 is adjacent to Test Pit 1 to the east of the separation wall. Again the north wall was identified and a broken floor was felt with the excavator at approximately eight feet below existing surface. A soil sample was collected from the broken tank bottom at approximately eight feet below existing surface.

Test Pit 3 is Manhole B in the secondary tank bypass system. The structure was previously demolished to two feet below existing surface, with a 12" diameter cast iron (CI) pipe entering the east wall and exiting the west wall. A soil sample was collected from the chamber floor at approximately three feet below existing surface, and another soil sample was collected from the incoming pipe on the eastern side of the manhole.

Test Pit 4 is a chamber in the center of the site with a 12" diameter CI pipe from Manhole A (bypass for trickling filters) entering from the east, two 8" diameter CI pipes from each trickling filter on the north and south sides along with a 12" diameter CI pipe to Manhole B (bypass for secondary tanks) and a 12" diameter CI pipe to the secondary tanks. The structure was

previously demolished to two feet below existing surface and the floor and piping were intact. A soil sample was collected from the chamber floor at approximately three feet below existing surface. Soil samples were also collected from the incoming pipes and the outgoing pipe to Manhole B.

Test Pit 5 is located in a chamber adjacent to the northern trickling filter. The east side contains a gate valve to the trickling filter and the south side has an 8" CI pipe to the TP-4 chamber and 6" CI pipe that appeared to connect to the other trickling filter but was broken to less than two feet in length. The structure was previously demolished to two feet below existing surface and the floor was solid. A soil sample was collected from the floor of the structure at approximately three and a half feet below existing surface.

Test Pit 6 is located at the same location as sample A2-B-04-B in the southern trickling filter. The filter was previously demolished to the existing grade and filled with 3" crushed stone that appears to have been removed and replaced in the structure during demolition as broken pieces of the underdrain tiles were intermixed with the stone and the underdrain was not present directly above the floor. The floor was intact. Most of the material in the filter was 3" crushed rock with only a small layer of soil less than one inch directly on the concrete floor. A soil sample was collected from the floor of the structure at approximately four feet below existing surface.

Test Pit 7 is located adjacent to Test Pit 5 in the northern trickling filter. The filter was previously demolished to the existing grade and filled with 3" crushed stone that that appears to have been removed and replaced in the structure during demolition as broken pieces of the underdrain tiles were intermixed with the stone and the underdrain was not present directly above the floor. The floor was intact. Most of the material in the filter was 3" crushed rock with only a small layer of soil less than one inch directly on the concrete floor. A soil sample was collected from the floor of the structure at approximately four feet below existing surface.

Test Pit 8 is located in Manhole A in the Trickling Filter bypass system with a 12" diameter CI pipe from the primary tank in the north wall and a 12" diameter CI pipe to the TP-4 chamber in the west wall. The west wall was previously demolished to two feet below existing surface and the east was demolished to the base with the north and south walls tapering to meet the floor, which was intact. A soil sample was collected from the manhole floor at approximately eight feet below existing surface and a soil sample was collected from the incoming pipe on the northern side of the manhole.

Test Pit 9 is located in the primary tanks. The north wall was identified. The structure was previously demolished to two feet below existing surface and an intact floor was found about 10 feet below existing surface. This tank was filled with material that resembled the 3" crushed stone and broken underdrain tile as in the northern trickling filter (Test Pit 7). A soil sample was collected from the floor of the structure at approximately 10 feet below existing surface.

Test Pit 10 is located in the primary tank of the original treatment system. The south and east walls were identified. The structure was previously demolished to existing grade and the floor was solid at about eight feet below existing grade. The material encountered within one foot of the floor was black and exhibited a petroleum odor along with an 86.2 ppm reading on a PID. A

soil sample was collected from the floor of the structure at approximately 10 feet below existing surface. The primary tank is 22' long by 19' wide by 8' deep and contains an approximate volume of 124 cubic yards of material.

Test Pit 11 was the stilling basin. No structure was located east of the primary tanks, indicating it had previously been removed. No sample was collected.

The next proposed action is to remove the pipes and clean or remove the chambers that contain elevated levels of Arsenic, along with the material in the Former Primary Settling Tanks (TP-10). A second sample has been collected from the location of TP-10 and will be analyzed for the constituents of a waste characterization sample. In addition, holes will be broken in any tank floors that were found to be intact.

Please do not hesitate to contact me at 617-443-7517 (w) or 617-470-8651 (c) if you have any questions concerning this submittal.

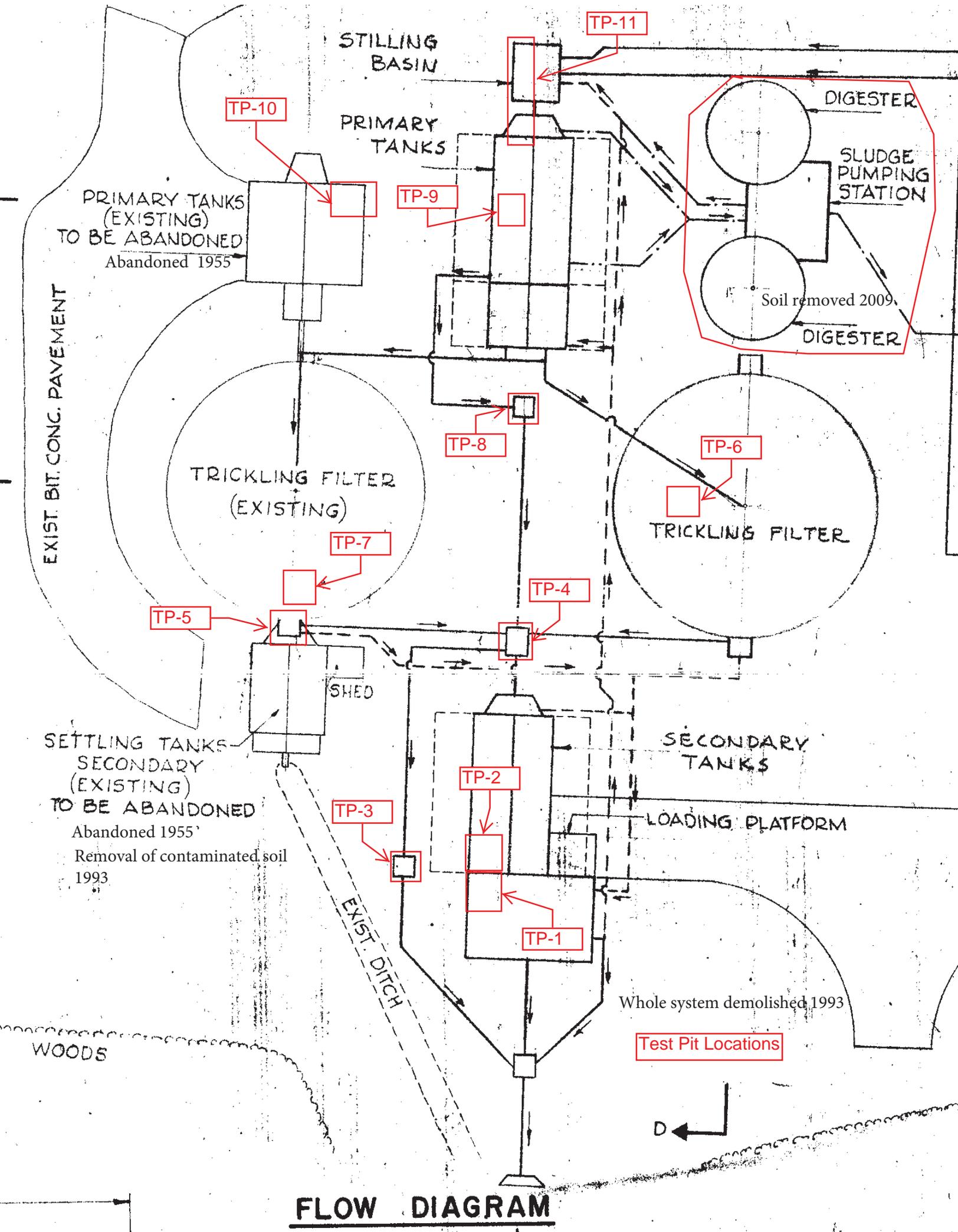
Sincerely,



Brian Corbett
Project Manager

Attachments

- cc: D. Barney, BRAC PMO NE (1 CD and 1 copy)
R. Krivinskas, NAVFAC Midlant (1 CD)
C. Keating, USEPA (1 CD and 1copy)
D. Chaffin, MADEP (1 CD and 1copy)
P. Steinberg, M&A (1 CD and 1 copy)
S. Parker, TTNUS (1 CD)
Executive Director, SSTTDC (1 CD and 1copy)
P. Sortin, ABINGTON (1 CD)
Public Library, ABINGTON (1 CD)
Public Library, HINGHAM (1 CD)
Public Library, ROCKLAND (1 CD)
Tufts Library, WEYMOUTH (1 CD)
M. Brennan, WEYMOUTH (1copy)
R. Daniels, LNR (1 CD and 1copy)
M. Parsons, ROCKLAND (1 CD)
M. Marrow, ADMINISTRATIVE RECORD (1 CD and 1copy)



WE02 Weymouth STP Site 7
Analytical Results for Test Pits

Method	Parameter	Units	Screening Criteria	C-SITE7-TP-1	C-SITE7-TP-2	C-SITE7-TP-3-MHB	C-SITE7-TP-3-MHB-E-12	C-SITE7-TP-4	C-SITE7-TP-4-E-1	C-SITE7-TP-4-S-1	C-SITE7-TP-4-N-1	C-SITE7-TP-4-N-2
6010C	ARSENIC	MG/KG	9.08 *	2.09	3.61	2.39	4.14	28.4	14.4	13.2	27.8	84.7
8082A	AROCLOR-1016	UG/KG	3900 ^a	9.9U	9.7U	10U	15U	9.4U	15U	18U	10U	19U
8082A	AROCLOR-1221	UG/KG	NE	9.9U	9.7U	10U	15U	9.4U	15U	18U	10U	19U
8082A	AROCLOR-1232	UG/KG	NE	12U	11U	12U	17U	11U	18U	21U	12U	22U
8082A	AROCLOR-1242	UG/KG	NE	9.9U	9.7U	10U	15U	9.4U	15U	18U	10U	19U
8082A	AROCLOR-1248	UG/KG	NE	9.9U	9.7U	10U	15U	9.4U	15U	18U	10U	19U
8082A	AROCLOR-1254	UG/KG	NE	9.9U	9.7U	10U	15U	9.4U	15U	18U	10U	19U
8082A	AROCLOR-1260	UG/KG	2200 ^a	330	220	35	210	9.4U	220	350	85	170
8081B	4,4'-DDD	UG/KG	20000 ^a	60	97	40	190	92	1200	990	300	780
8081B	4,4'-DDE	UG/KG	1600 ^b	52	27	22	140	47	640	630	180	210
8081B	4,4'-DDT	UG/KG	2800 *	26J	22	11	26JJ	50	140	130	42	53J
8081B	DIELDRIN	UG/KG	876 *	38J	26J	6.2J	89	48	300	840	240	420J
8270D	BENZO(A)ANTHRACENE	UG/KG	14500 *	2700	3200	510	900	930	520	620	200	490
8270D	BENZO(A)PYRENE	UG/KG	1829 *	2100	2600	320	530	900	470	580	160	530
8270D	BENZO(B)FLUORANTHENE	UG/KG	14500 *	3300	3800	580	1100	1500	830	1000	260	860
8270D	DIBENZO(A,H)ANTHRACENE	UG/KG	150 ^a	420	400	73	170	190	120	150	43	120
8270D	INDENO(1,2,3-CD)PYRENE	UG/KG	1500 ^a	1400	1900	360	410J	570	430	590	260	540

Notes:

Screening criteria listed are based on the SAP (TtEC 2014) as follows:

* Soil ROD criteria

^a These values are from the TtNUS Supplemental PDI report in September 2012. These values are the target cancer risk levels of 1E-05 (except for aroclor 1016 which is 1E-06) for hypothetical lifelong residents with target hazard index of 1.0. These analytes/values are not identified in the ROD but are contaminants of potential concern based on investigations performed post-ROD.

^b This value is from the residential EPA Regional Screening Levels table from May 2014 for hazard index of 1.0 with a cancer risk level of 1E-06.

Results highlighted in yellow are above listed screening criteria.

Results are dry-weight corrected. Some results reported above from dilution runs.

FD - field duplicate

MG/KG - milligrams per kilogram

UG/KG - micrograms per kilogram

J - estimated value

JJ - > 40% difference for detected concentrations between the two GC columns when there was a detection between the DL and LOQ.

MM - MS/MSD is outside of limits

U - not detected above stated value

WE02 Weymouth STP Site 7
Analytical Results for Test Pits

Method	Parameter	Units	Screening Criteria	C-SITE7-TP-5	C-SITE7-TP-6	C-SITE7-TP-7	C-SITE7-TP-8-N-1	C-SITE7-TP-8	C-SITE7-TP-9	C-SITE7-TP-9-FD	C-SITE7-TP-10
6010C	ARSENIC	MG/KG	9.08 *	78.4	2.49	25.5	1.92	1.73	19.3	22.8	1.53
8082A	AROCLOR-1016	UG/KG	3900 ^a	9.0U	9.4U	9.8U	8.9U	8.6U	9.2U	9.6U	10U
8082A	AROCLOR-1221	UG/KG	NE	9.0U	9.4U	9.8U	8.9U	8.6U	9.2U	9.6U	10U
8082A	AROCLOR-1232	UG/KG	NE	10U	11U	12U	10U	10U	11U	11U	12U
8082A	AROCLOR-1242	UG/KG	NE	9.0U	9.4U	9.8U	8.9U	8.6U	9.2U	9.6U	10U
8082A	AROCLOR-1248	UG/KG	NE	9.0U	9.4U	9.8U	8.9U	8.6U	9.2U	9.6U	10U
8082A	AROCLOR-1254	UG/KG	NE	9.0U	9.4U	9.8U	8.9U	8.6U	9.2U	9.6U	10U
8082A	AROCLOR-1260	UG/KG	2200 ^a	81	190	9.8U	8.5J	8.6U	54	40	420
8081B	4,4'-DDD	UG/KG	20000 ^a	430MM	30	400	3.6	13J	5.4J	4.0J	120J
8081B	4,4'-DDE	UG/KG	1600 ^b	45JMM	21	140	36	270	11	11	51J
8081B	4,4'-DDT	UG/KG	2800 *	280MM	39	390	38	540	14J	11	9.9U
8081B	DIELDRIN	UG/KG	876 *	33JMM	30J	180J	42	98	7.2	7.6	9.9U
8270D	BENZO(A)ANTHRACENE	UG/KG	14500 *	830	4500	770	33	49	200	820	1200
8270D	BENZO(A)PYRENE	UG/KG	1829 *	730	3900	530	30	39	150	500	850
8270D	BENZO(B)FLUORANTHENE	UG/KG	14500 *	1200	5600	770	61	73	240	890	1200
8270D	DIBENZO(A,H)ANTHRACENE	UG/KG	150 ^a	160MM	740	130	4.9J	6.8J	41	110	200
8270D	INDENO(1,2,3-CD)PYRENE	UG/KG	1500 ^a	470	2800	310J	43	55	230	210J	720

Notes:

Screening criteria listed are based on the SAP (TtEC 2014) as follows:

* Soil ROD criteria

^a These values are from the TtNUS Supplemental PDI report in September 2012. These values are the target cancer risk levels of 1E-05 (except for aroclor 1016 which is 1E-06) for hypothetical lifelong residents with target hazard index of 1.0. These analytes/values are not identified in the ROD but are contaminants of potential concern based on investigations performed post-ROD.

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Results are dry-weight corrected. Some results reported above from dilution runs.

FD - field duplicate

MG/KG - milligrams per kilogram

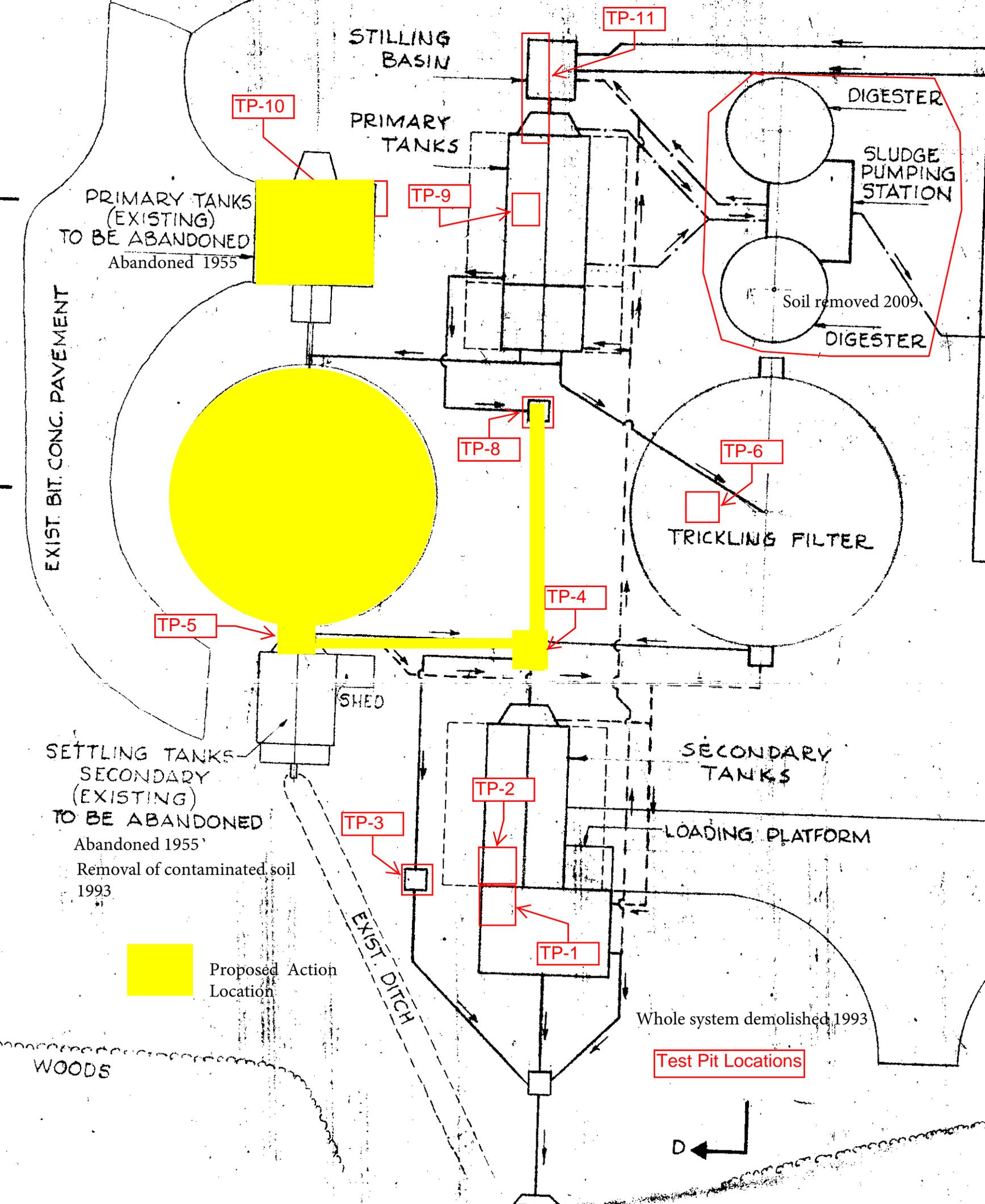
UG/KG - micrograms per kilogram

J - estimated value

JJ - > 40% difference for detected concentrations between the two GC columns when there was a detection between the DL and LOQ.

MM - MS/MSD is outside of limits

U - not detected above stated value



FLOW DIAGRAM

Test Pit Description Summary

Test Pit #	Sample ID	Sample Media	Sample Depth	Comments
TP-1	C-SITE 7-TP-1	Soil	4'	Floor Broken
TP-2	C-SITE 7-TP-2	Soil	8'	Floor Broken
TP-3	C-SITE 7-TP-3-MHB	Soil	3'	
	C-SITE 7-TP-3-MHB-E-12	Soil	3'	12" CI from Chamber
TP-4	C-SITE 7-TP-4-B	Soil	3'	
	C-SITE 7-TP-4-E-1	Soil	3'	12" CI from Manhole A
	C-SITE 7-TP-4-S-1	Soil	3'	8" CI from south Trickling Filter
	C-SITE 7-TP-4-N-1	Soil	3'	12" CI to Manhole B
	C-SITE 7-TP-4-N-2	Soil	3'	8' CI from north Trickling Filter
TP-5	C-SITE 7-TP-5	Soil	3.5'	No connection for Former Secondary Tank solid floor
TP-6	C-SITE 7-TP-6	Soil	4'	<1" sediment solid floor
TP-7	C-SITE 7-TP-7	Soil	4'	<1" sediment solid floor
TP-8	C-SITE 7-TP-8-B	Soil	8'	
	C-SITE 7-TP-8-N	Soil	8'	12" CI from Primary Tanks
TP-9	C-SITE 7-TP-9	Soil	10'	Solid floor filter with material similar to TP-7
TP-10	C-SITE 7-TP-10	Soil	8'	Solid floor black petroleum odor to material from base of test pit
TP-11	N/A	N/A	N/A	No structure found

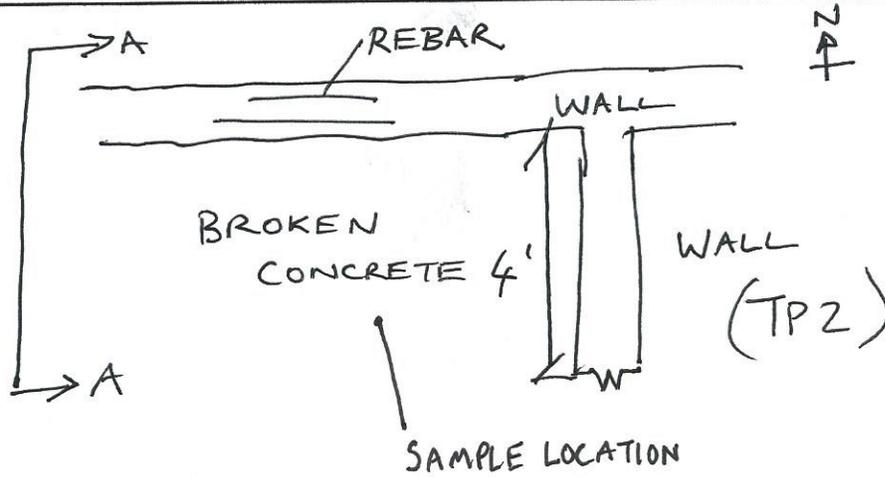
FINAL ADDENDUM TO REMEDIAL ACTION WORK PLAN SOIL EXCAVATION AT SITE 7 FORMER STP LOCATION
FORMER NAVAL AIR STATION SOUTH WEYMOUTH, MASSACHUSETTS

Test Pit Log

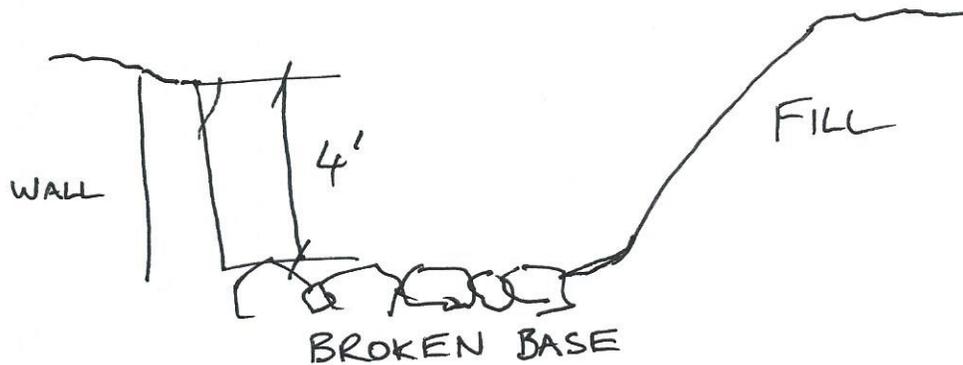
Test Pit Number: TP1

Description: SECONDARY TANK CHLORINE MIXING AND DETENTION CHAMBER

Plan:



Profile: A-A



Notes: WALL OF SECONDARY SETTLING TANK FOUND TO EAST
DEMOED TO GRADE (2' BELOW EXISTING SURFACE)
BASE BROKEN.
WATER ABOVE BASE @ 2' BELOW GRADE

Samples: C-SITE 7-TP-1 FROM BASE

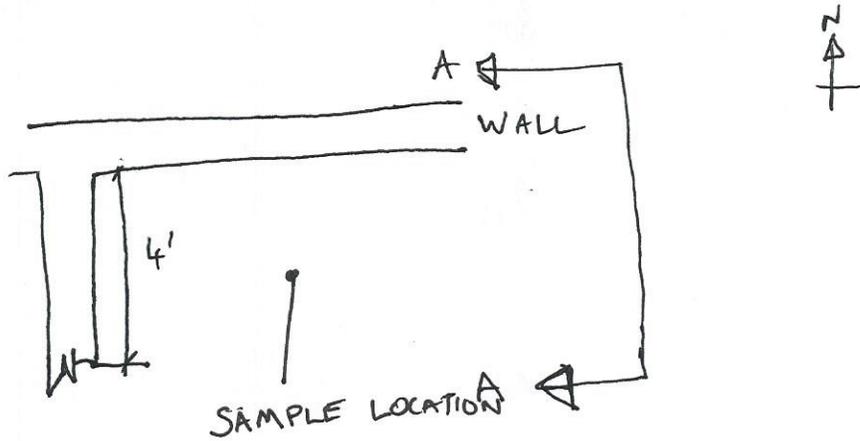
FINAL ADDENDUM TO REMEDIAL ACTION WORK PLAN SOIL EXCAVATION AT SITE 7 FORMER STP LOCATION
FORMER NAVAL AIR STATION SOUTH WEYMOUTH, MASSACHUSETTS

Test Pit Log

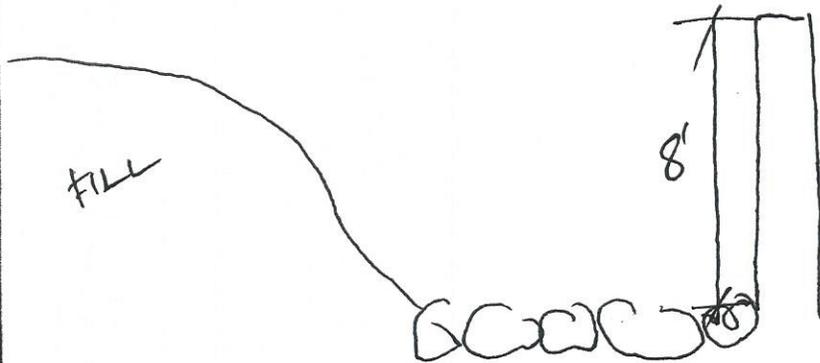
Test Pit Number: TP2

Description: SECONDARY SETTLING TANK

Plan:



Profile:



Notes: EAST OF TP-1
DEMOED TO GRADE (2' BELOW EXISTING SURFACE)
BASE BROKEN
WATER AT 2' BELOW GRADE

Samples: C-SITE7-TP2

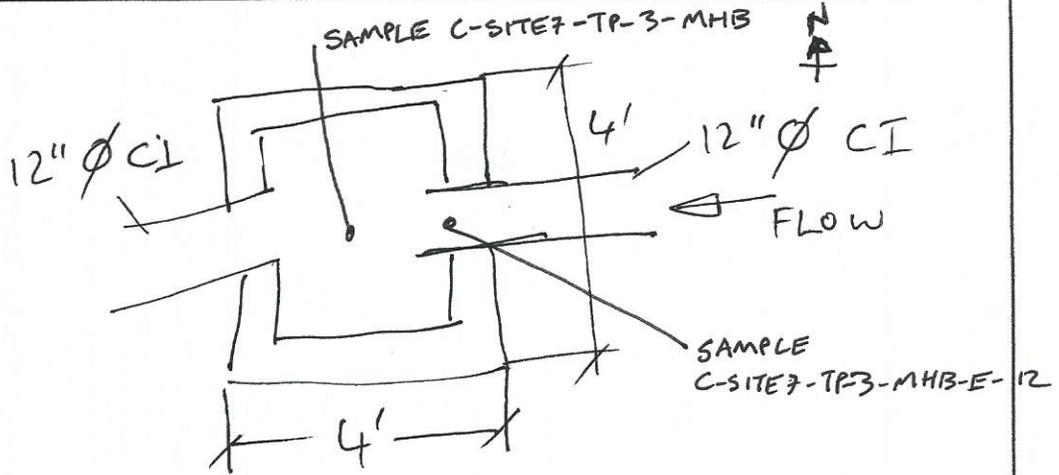
FINAL ADDENDUM TO REMEDIAL ACTION WORK PLAN SOIL EXCAVATION AT SITE 7 FORMER STP LOCATION
FORMER NAVAL AIR STATION SOUTH WEYMOUTH, MASSACHUSETTS

Test Pit Log

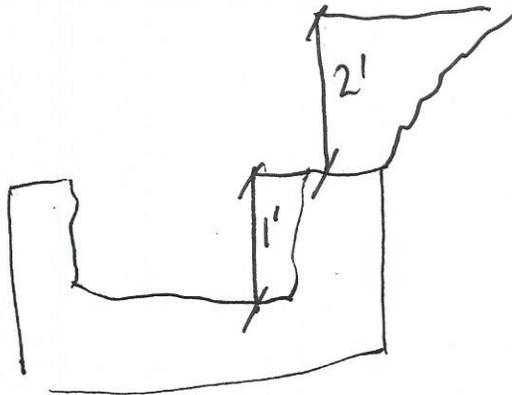
Test Pit Number: TP-3

Description: MANHOLE B

Plan:



Profile:



Notes:

DEMOED TO 2' BELOW GRADE

Samples:

C-SITE7-TP-3-MHB
C-SITE7-TP-3-MHB-E-12

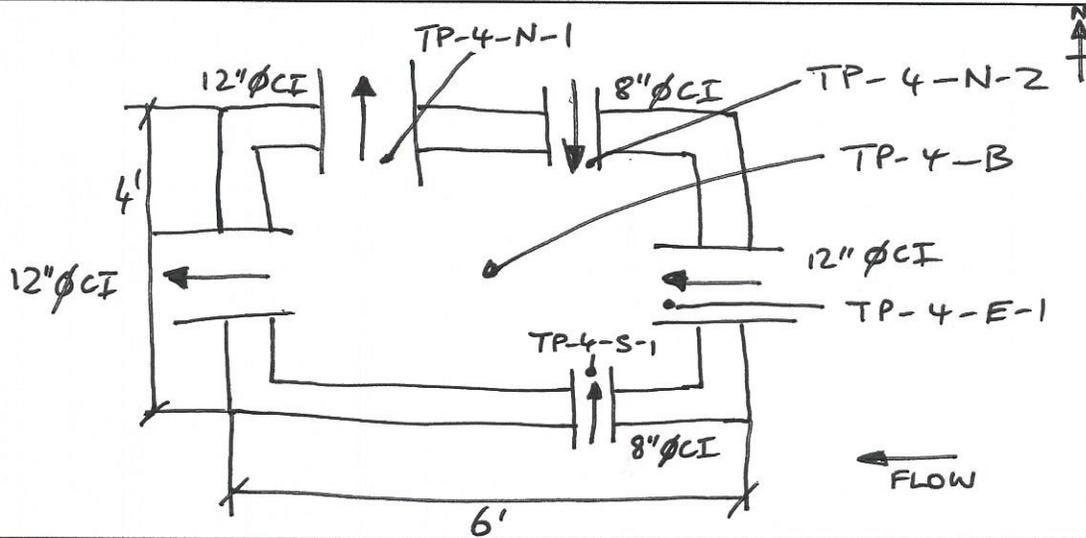
FINAL ADDENDUM TO REMEDIAL ACTION WORK PLAN SOIL EXCAVATION AT SITE 7 FORMER STP LOCATION
FORMER NAVAL AIR STATION SOUTH WEYMOUTH, MASSACHUSETTS

Test Pit Log

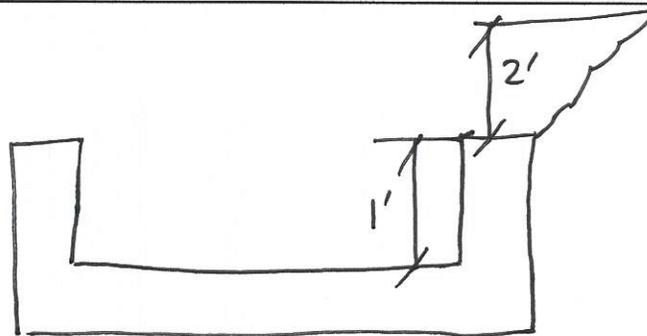
Test Pit Number: TP-4

Description: CONNECTION CHAMBER.

Plan:



Profile:



Notes:

PIPE FROM MANHOLE A 12" CI EAST
 PIPE FROM TRICKLING FILTER (SOUTH) 8" CI
 PIPE FROM TRICKLING FILTER (NORTH) 8" CI
 PIPE TO MANHOLE B 12" CI NORTH
 PIPE TO SECONDARY TANKS 12" CI WEST

Samples:

C-SITE 7-TP-4-B
 C-SITE 7-TP-4-E-1
 C-SITE 7-TP-4-S-1
 C-SITE 7-TP-4-N-1
 C-SITE 7-TP-4-N-2

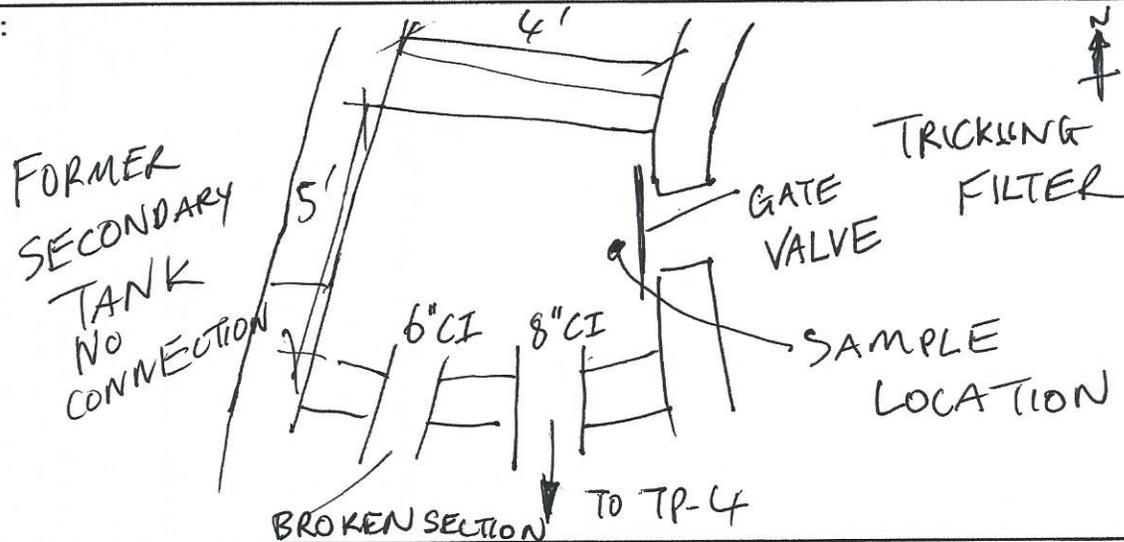
FINAL ADDENDUM TO REMEDIAL ACTION WORK PLAN SOIL EXCAVATION AT SITE 7 FORMER STP LOCATION
FORMER NAVAL AIR STATION SOUTH WEYMOUTH, MASSACHUSETTS

Test Pit Log

Test Pit Number: TP 5

Description: BOX BETWEEN NORTH TRICKLING FILTER AND
FORMER SECONDARY TANK.

Plan:



Profile:



Notes: 6" ϕ CI PIPE SECTION BROKEN OFF 1.5' LONG
DEMOED TO 2" BELOW GRADE

Samples: C-SITE 7 - TP-5

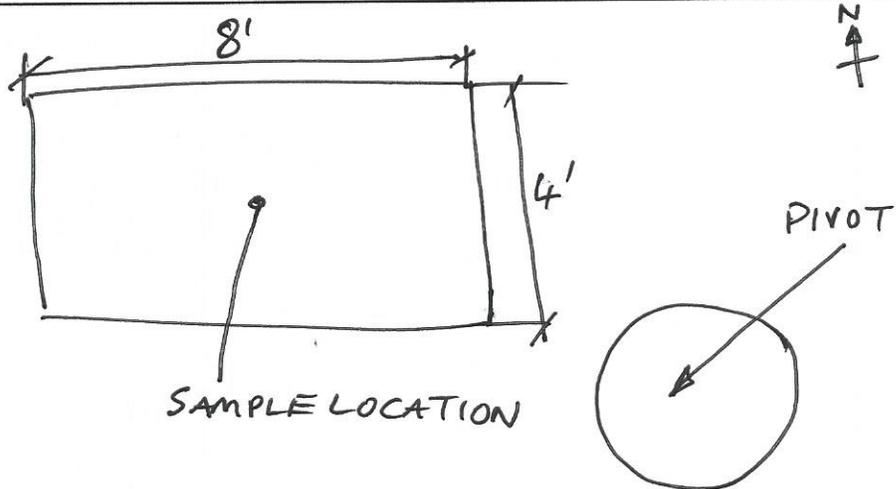
FINAL ADDENDUM TO REMEDIAL ACTION WORK PLAN SOIL EXCAVATION AT SITE 7 FORMER STP LOCATION
FORMER NAVAL AIR STATION SOUTH WEYMOUTH, MASSACHUSETTS

Test Pit Log

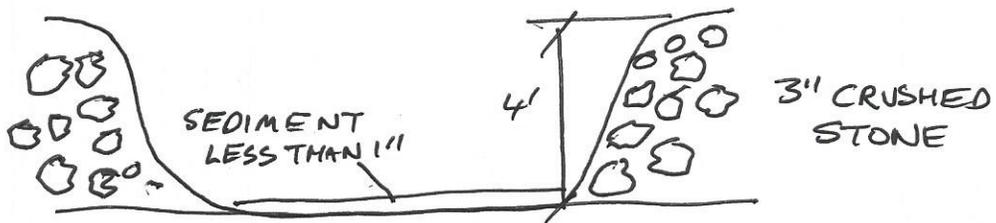
Test Pit Number: TP-6

Description: SOUTH TRICKLING FILTER

Plan:



Profile:



Notes:

DEMOED TO 2" BELOW GRADE (AT CURRENT GRADE)
SOLID FLOOR

Samples:

C-SITE7-TP-6

FINAL ADDENDUM TO REMEDIAL ACTION WORK PLAN SOIL EXCAVATION AT SITE 7 FORMER STP LOCATION
FORMER NAVAL AIR STATION SOUTH WEYMOUTH, MASSACHUSETTS

Test Pit Log

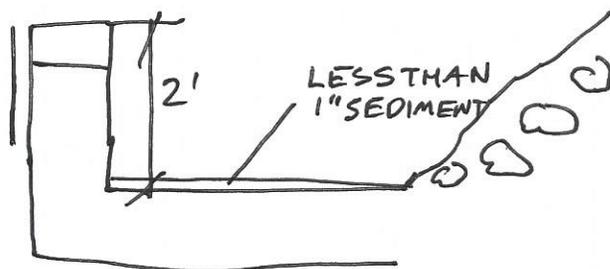
Test Pit Number: TP-7

Description: NORTH TRICKLING FILTER

Plan:



Profile:



Notes: DEMOED TO 2' BELOW GRADE
SOME BASE TILES MIXED IN WITH 3" CRUSHED
STONE AND FILL
SOLID FLOOR

Samples: C-SITE7-TP-7

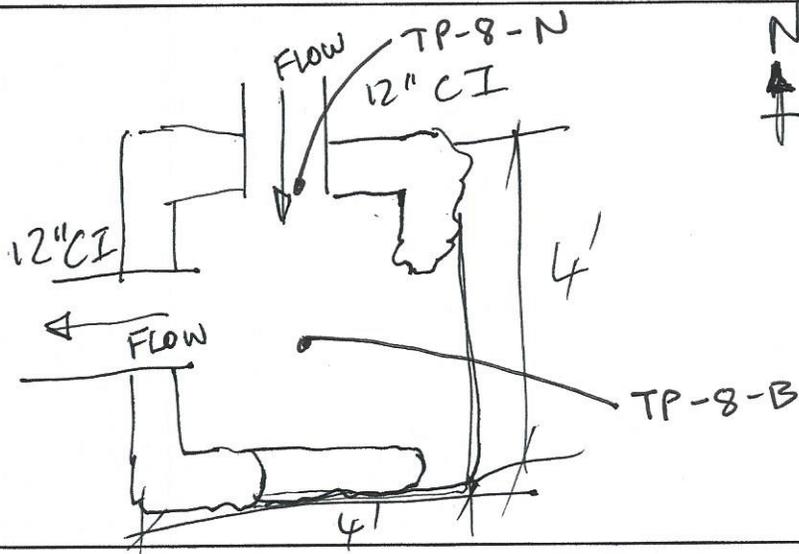
FINAL ADDENDUM TO REMEDIAL ACTION WORK PLAN SOIL EXCAVATION AT SITE 7 FORMER STP LOCATION
FORMER NAVAL AIR STATION SOUTH WEYMOUTH, MASSACHUSETTS

Test Pit Log

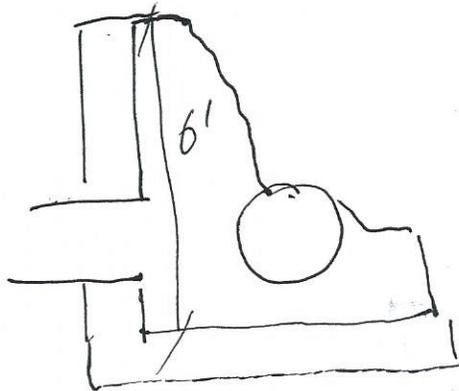
Test Pit Number: TP-8

Description: MANHOLE A

Plan:



Profile:



Notes: DEMO'ED TO 2' BELOW GRADE
12" CI FROM PRIMARY TANKS
12" CI TO COLLECTION CHAMBER TP4

Samples: C-SITE 7 - TP-8-B
C-SITE 7 - TP-8-N

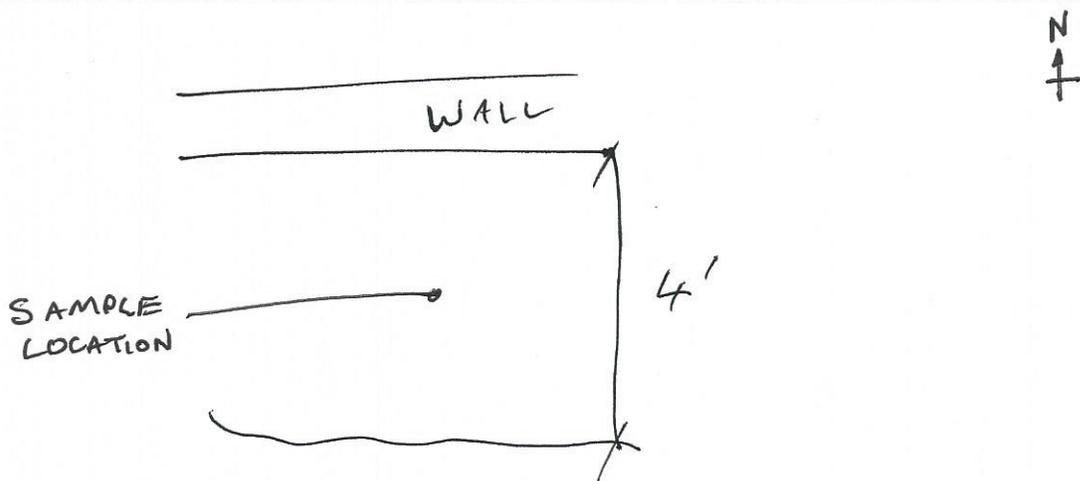
FINAL ADDENDUM TO REMEDIAL ACTION WORK PLAN SOIL EXCAVATION AT SITE 7 FORMER STP LOCATION
FORMER NAVAL AIR STATION SOUTH WEYMOUTH, MASSACHUSETTS

Test Pit Log

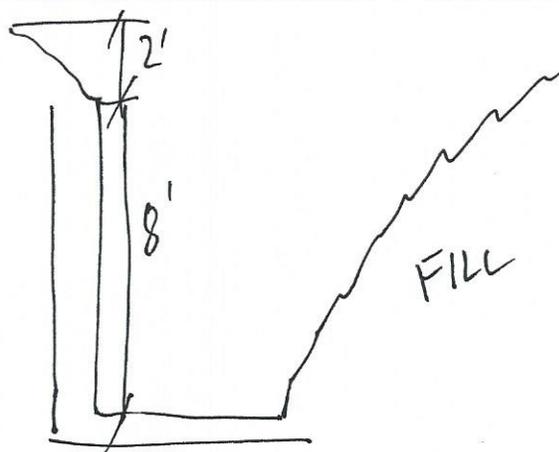
Test Pit Number: TP9

Description: PRIMARY TANKS

Plan:



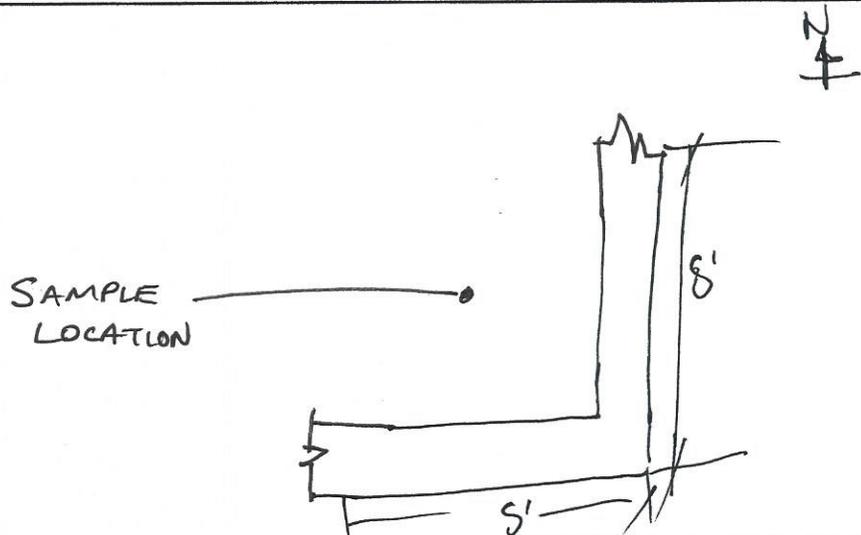
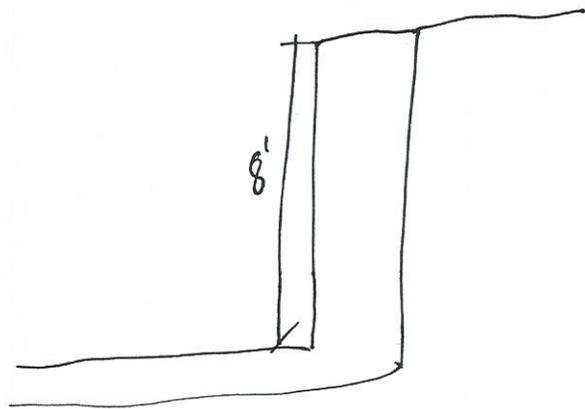
Profile:



Notes: FILLED WITH TRICKLING FILTER STONE
SOLID FLOOR
REMOVED TO 2' BELOW GRADE

Samples: C-SITE7-TP-9

FINAL ADDENDUM TO REMEDIAL ACTION WORK PLAN SOIL EXCAVATION AT SITE 7 FORMER STP LOCATION
FORMER NAVAL AIR STATION SOUTH WEYMOUTH, MASSACHUSETTS

Test Pit Log	
Test Pit Number:	TP 10
Description:	FORMER PRIMARY TANK
Plan:	
Profile:	
Notes:	PID READING 86.2 PPM BLACK SMELLY MATERIAL ON FLOOR SOLID FLOOR. DEMOLISHED TO GRADE
Samples:	C-SITE 7 - TP - 10

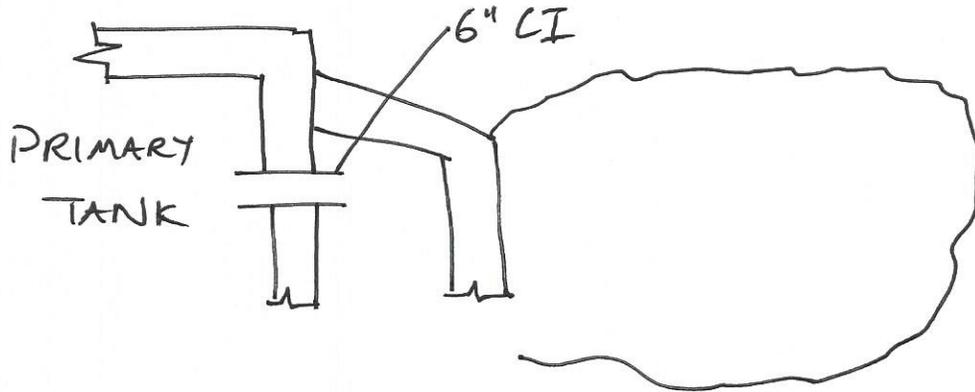
FINAL ADDENDUM TO REMEDIAL ACTION WORK PLAN SOIL EXCAVATION AT SITE 7 FORMER STP LOCATION
FORMER NAVAL AIR STATION SOUTH WEYMOUTH, MASSACHUSETTS

Test Pit Log

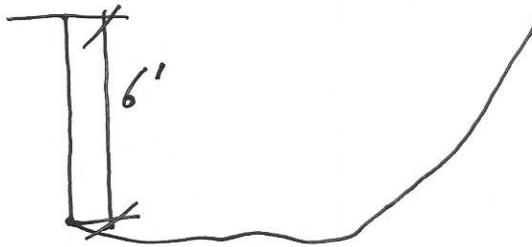
Test Pit Number: TP-11

Description: STILLING BASIN

Plan:



Profile:



Notes: NOTHING LOCATED NO STRUCTURE

Samples:

Test Pit 1



Test Pit 2



Test Pit 3



Test Pit 4



Test Pit 5



Test Pit 8



Test Pit 9



Test Pit 10



Test Pit 11

