PRE-1941 SANITARY TREATMENT PLANT (FTMM-20)

United States Army
Directorate of Public Works
Fort Monmouth, New Jersey

Field Sampling Plan for Pre-1941 Sanitary Treatment Plant (STP) Sediments

DSERTS SITE # FTMM-20

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SITE INVESTIGATION PLAN

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Site:
Pre-1941 Sanitary Treatment Plant,
Main Post, U.S. Army Fort Monmouth, NJ

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1.0 SAMPLING ACTIVITIES

1.1 OVERVIEW

This report provides details for a proposed sediment sampling plan to be conducted by TECOM-Vinnell Services, (TVS) in support of the Directorate of Public Works, U.S. Army Fort Monmouth, New Jersey. The area of concern is a pre-1941 sanitary treatment plant (STP) located on the Main Post of Fort Monmouth. Sampling activities shall be conducted in accordance with the specifications required for collecting sediment samples as determined in the New Jersey Department of Environmental Protection (NJDEP) Field Sampling Procedures Manual (May 1992) and the NJDEP Guidance For Sediment Quality Evaluations (November 1998).

1.2 SITE DESCRIPTION

The pre-1941 sanitary treatment plant (STP) was located on Parkers Creek in an area north of Allen Avenue, in approximately the same area as present Building 259 (Weston, 4.2-17 1). Please refer to Figure 4.2-34. The STP was presumably operated until the Main Post STP (AOC-3) came on line in 1941. One sediment sample was collected in December of 1994 during the Site Investigation phase for this project. The sediment sample was collected adjacent to the former outfall and subsequently tested for Target Analyte List (TAL) Metals. Four metals (arsenic, cadmium, chromium, and zinc) exceeded both the NJDEP Marine/Estuarine Biological Effects Level Criteria and their respective maximum background concentrations. Sample data can be viewed in Table 4.2-21.

1.3 HEALTH AND SAFETY

Before sampling activities commence, potential site hazards (physical, chemical and biological) will be evaluated by the TVS Health and Safety Office. A site specific Health and Safety Plan shall be prepared accordingly.

2.0 SITE INVESTIGATION ACTIVITIES

2.1 CONTACTS AND PERSONNEL

The following is a listing of all contacts and personnel involved in this investigation. All analyses are to be performed and reported by U.S. Army Fort Monmouth Environmental Laboratory, NJDEP Certification # 13461. All sampling will be performed under the direct supervision of a NJDEP trained sample technician according to the methods described in the NJDEP Field Sampling Procedures Manual (1992).

The following parties are participants in this investigation:

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2.2 SAMPLING PROCEDURES AND PROTOCOL

During the investigation, all samples will be collected with proper attention to quality assurance protocols and in accordance with the guidelines set forth by the New Jersey Department of Environmental Protection (NJDEP) Field Sampling Procedures Manual (May, 1992), the Technical Requirements for Site Remediation (NJAC 7:26E, June, 1993) and the NJDEP Guidance for Sediment Quality Evaluations (November 1998).

2.2.1 SITE ACTIVITES

Site activities shall include sampling sediments, identification and quantification of contaminants of concern, horizontal and vertical delineation of contaminants of concern, confirmation of results from a previous sampling event and further determination of background levels for site specific metals.

2.2.2 SEDIMENT SAMPLING

- Sampling will be conducted using a hand core sediment sampler.
- TAL Metals samples will be collected into new, pre-cleaned, 4oz clear glass bottles with Teflon lined caps. All samples will be stored in a cooler at 4 º Celsius.
- After each sampling event, equipment shall be decontaminated as stated in section 2.3.
- Determination of sample locations will be as follows:
  1. Sampling will be conducted using a hand core sediment sampler.
  2. A sample boring will be collected at the former outfall area.
  3. Moving from the outfall area, sample borings will then be taken at 5' intervals upstream along bank, downstream along bank, and directly out into Parkers Creek.
  4. Sample borings will then also be taken at a further 5' intervals from the previous group, in likewise upstream, downstream, and out into creek patterns.

5. In addition, three sample borings will be collected along the north bank of Parkers Creek (opposing stream bank, upstream from the former STP outfall). Sample data will be used to provide additional background level data for site specific metals.
6. The depth at which samples will be taken are 0-6", 6-12"' and 24-30" for each sample boring.
7. Sampling will commence from downstream, working upstream. Care will be taken to minimize disturbance of sediments and washing of samples as collected.
8. Physical measurements will include pH, salinity and temperature of the water above the sampling point.
9. A boring log shall be created to note any layers or defining aspects to the borings. The tide will be recorded as well.

In all, 3 samples per boring will be done over the 10 borings; giving a total of 30 sediment samples that will be taken with the addition of QA/QC samples as mentioned in section 2.2.3.

2.2.3 QA/QC

Quality control samples are required to verify that the sample collection and handling process has not affected the quality of the sediment samples. All field quality control samples will be prepared exactly as regular investigation samples with regard to volume, and containers. The following quality control samples will be collected for each batch of samples:

- Field duplicate daily, homogenized before splitting.

2.3 EQUIPMENT DECONTAMINATION

Decontamination will be done after every sampling event by the following procedure:

1. **Alconox and water wash**
2. **Water rinse**
3. **Deionized water rinse**
4. **Air dry**

Table 4.2-21
Fort Monmouth - Main Post
Summary of Detected Compounds in Sediments
Site - Pre-1941 Sanitary Treatment Plant

COMPOUND	METHOD DETECTION LIMIT (mg/kg)	MARINE/ESTUARINE BIOLOGICAL EFFECTS LEVEL (ERL)[a] (mg/kg)	MAXIMUM DETECTED BACKGROUND CONCENTRATION	ANALYTICAL RESULTS STPSD-1 12/1/94
METALS TOTAL (mg/kg)				
Aluminum	18.1	NLE	9060	9240
Arsenic	2.5	8.2	14.5	**24.2**
Barium	1.4	NLE	87.6	27.6
Beryllium	1.0	NLE	3.2	1.3
Cadmium	2.3	1.2	ND	**4.2**
Calcium	8.1	NLE	3180	1010
Chromium	4.3	81	88.1	**93.5**
Cobalt	1.9	NLE	119	13.5
Copper	1.6	34	48.4	**35.2**
Iron	3.2	NLE	61900	49200
Lead	9.9	46.7	64.1	**59**
Magnesium	25.8	NLE	3280	3390
Manganese	1.4	NLE	70.2	39.5
Mercury	0.32	0.15	1.7	**0.57**
Nickel	8.7	20.9	131	**26.5**
Potassium	555	NLE	10200	6760
Selenium	0.56	NLE	1.7	0.88
Silver	2.1	1	ND	**5.2**
Sodium	10.4	NLE	189	2330
Vanadium	2.0	NLE	49.1	49.5
Zinc	1.9	150	162	**386**

Compounds detected above NJDEP Sediment Guidance are noted by bold numbers.

[a] - Value from Long et al. (1995).

ND - Compound was not detected at or above the quantification limit.

NLE - No Level Established

PARKERS CREEK

CONTAMINANTS LEGEND

CONTAMINANTS

Metals

As Arsenic
Cd Cadmium
Cr Chromium
Zn Zinc

Metal	
As	24.2

← Contaminant Group
← Concentration (mg/kg)
↑ Contaminant

NOTE: Compounds included on figure represent contaminants that exceeded NJDEP criteria and both site-specific and established maximum background.

Metal	
As	24.2
Cd	4.2
Cr	93.5
Zn	386

Location of Sediment Sample STPSD-1

TENNIS COURTS
BRUSH
364
HYD
Pre-1941 STP
LAMP
MH
259
363
271
LOCKWOOD AVENUE
319
318
317
317
315
228
227
226
225
ALLEN AVENUE
ALLEN AVENUE
213
214
215
305
216
306
304

M_19.DGN

4.2-175

LEGEND

- Sediment Sampling Location
- Road (paved)
- Road/Trails (unpaved)
- Fence
- Building
- Wooded Area
- Tree/Bush
- Light Pole
- Utility Pole
- Site
- Brook/Creek
- Base Boundary
- Marshy Area

0 80 160
SCALE IN FEET

2017-0585

Fort Monmouth, Main Post

FIGURE 4.2-34
PRE-1941 SANITARY TREATMENT PLANT
(Distribution of Contaminants In Site Sediment)