

**SCUDDER'S POND  
SEDIMENT SAMPLING ANALYSIS for:  
HEMPSTEAD HARBOR PROTECTION COMMITTEE**

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## **EXECUTIVE SUMMARY**

EEA, Inc. performed a sediment sampling and analysis program at Scudder's Pond in Sea Cliff, New York at the request of the Hempstead Harbor Protection Committee.

Four sediment samples were collected on April 4, 2005 at predetermined locations in Scudder's Pond for a proposed dredging project following an NYSDEC approved sampling plan. The sediment samples were collected within the proposed dredge limits of Scudder's Pond. The samples were submitted to EcoTest Laboratories, Inc. a New York State certified laboratory (Certification No. 10320) for analysis. Each individual sediment sample was characterized according to the NYSDEC guidelines for physical grain size, percent moisture and total organic carbon. In addition, each sediment sample was tested for BTEX volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides, polychlorinated biphenyls (PCBs), and RCRA metals. One composite sample from the four cores was tested for dioxins, furans, and their congeners.

All of the analytical results are presented in tabular form in this report. All appropriate Guidance Values from the recently released NYSDEC Technical & Operational Guidance series (TOGS) 5.1.9 were included in the tables for comparison to their sediment classification scheme. Almost all analytes and compounds from all the core samples fell within the Class A category "no appreciable contamination". Five analytical results were found to lie within the Class B category "moderate contamination". One result from one core was within the Class C category "high contamination". All sediments exceeding the Class A category would be removed during the proposed dredging operation.

The analytical testing revealed low level contamination from motor oil or fuel oil and pesticides in several of the core samples. All sediments exceeding the Class A would be removed.

The complete results of the testing program are included in the Appendix of this report.

## **1.0 INTRODUCTION**

This report presents the findings of the sediment-sampling program conducted for the Hempstead Harbor Protection Committee at Scudder's Pond, in Sea Cliff, New York (see Figure 1). The site is currently a storm water detention pond along Prospect Avenue between Sea Cliff and Glenwood Landing, New York, and immediately adjacent to the North Shore Country Club. Fresh water is discharged to Hempstead Harbor near Tappen Beach

## **1.1 Purpose and Scope**

The purpose of this investigation was to provide supplemental chemical analytical data of the pond sediments, and to use the analytical data for compliance with a proposed dredge permit application. The Scope of Work included the collection of four sediment core samples from representative areas within the proposed dredge limit and analysis of each sample according to the site specific Sampling Plan written for this project.

As the dredge spoils are being considered for use as upland disposal, NYSDEC had requested that the sediment samples be collected and that they be analyzed as part of a Beneficial Use Determination (BUD) application. The bottom six inches of each sample was retained as an archive in case additional testing was warranted.

## **1.2 Site Location**

The site of the Scudder's Pond sediment sampling is located at Latitude N40° 50' 14.4", Longitude W73° 39' 01.1" adjacent to Prospect Avenue and Hempstead Harbor. The site sampling locations are shown on Figure 2 along with the latitude and longitude of each sampling location.

## **2.0 METHODS OF INVESTIGATION**

On April 4, 2005, EEA constructed and launched a portable modular raft at the pond's edge. The sampling raft was constructed so that a 3 foot x 3 foot opening was located in the center of the raft beneath a 16 foot aluminum tripod with gasoline powered winch. A mechanical vibratory corer with a 10-foot long 3 inch diameter stainless steel core barrel and core catcher with disposal single use high density polyethylene (HDPE) liners were used to collect each sample.

During the sample collection phase, penetration was accomplished to a proposed dredge depth at Sediment Core Locations Nos. SP-1, SP-2, SP-3 and SP-4. The penetration was determined by measuring the total water depth at the time of sampling, and then coring to a proposed depth plus one foot of over dredge. The mechanical corer was slowly lowered through an opening in the center of the raft and vibrated into the sediment until dredge depth or refusal was encountered. The corer was raised back on board, then the core liner was removed for inspection and processing.

During the sediment sampling, each sample was visually inspected and field logged on the core sampling sheets included in Appendix B. Four discrete cores were collected in the pond and were labeled SP-1 through SP-4. The latitude and longitude of each sample location was collected using a WAAS enabled GPS system.

Upon recovery of each core, the HDPE liner was cut open to visually classify (log) the sample and to collect discrete portions of the core for chemical analysis. Each core was divided into two sections. The top section of each core was comprised of the surface to the proposed dredging depth. The bottom one foot section represented the first six inches of material that would be exposed after dredging was completed and the bottom-most six inches were frozen in case further analysis was necessary.

The top portion of each core representing the material to be dredged was analyzed for VOC compounds (BTEX), metals, semi-volatile organic compounds (SVOCs), pesticides and PCBs and total organic carbon (TOC) and grain size. One composite sample was collected from the top section of each core and analyzed for dioxins. The top six inches of the bottom section was analyzed for the same parameters as the top sections

The bottom six inches of each core was collected and frozen in case further analysis was necessary, as requested by the NYSDEC.

All sampling was completed on April 4, 2005, and samples were submitted under chain-of-custody to the laboratory for analysis on April 4, 2005.

### **3.0 RESULTS**

Four pond sediment samples were collected at the predetermined locations shown on Figure 2. All samples were submitted for analyses of the following NYSDEC specified parameters:

    Volatile Organic Compounds (BTEX) (Table 1)

    RCRA List Metals (Table 2)

    Semi-Volatile Organic Compounds (PAHs) (Table 3)

    Pesticides and PCBs and Dioxin (Table 4)

    Grain Size and Total organic Carbon (Table 5)

The laboratory results of the sediment testing performed at this site are presented in Appendix A. Tables 1 through 5 present the physical and chemical analytical results for each core sample. The newly published NYSDEC Technical and Operational Guidance Series (TOGS) 5.1.9 Threshold Values are used for comparison of the existing sediment data to the regulatory criteria. The field sampling logs are presented in Appendix B.

## **4.0 DISCUSSION**

### **4.1 Analytical Rationale**

Analytes were selected to provide an overview of pond bottom sediment characteristics and to allow comparison to DEC regulatory guidance for potential dredge material from fresh water systems. Analytes included BTEX (benzene, toluene, xylene) as a general indicator of petroleum (gasoline) contamination and benzene specifically which is a known human carcinogen. RCRA Metals were included as many heavy metals are widely distributed in the environment and are toxic to aquatic organisms. SVOC (semi volatile organic compounds or PAH's) are toxic to fish and bivalves and which are an indicator of fossil fuel, motor oils and runoff from asphalt pavement. Pesticides and Herbicides indicate runoff contamination and are toxic to fish and wildlife. PCBs (polychlorinated biphenyls) were used in electric telephone pole transformers. Grain Size and Total Organic Carbon (TOC) were included for basic sediment characterization to determine the disposal and management options.

### **4.2 Discussion of Analytical Results**

Tables 1 through 5 presents the results of the laboratory analyses and compares them to NYSDEC TOGS 5.1.9 Guidelines, which are applicable to fresh water lake sediments. Class A sediments show no appreciable contamination (no toxicity to aquatic life) and dredging can generally proceed. Class B sediments show moderate contamination (chronic toxicity to aquatic life) and some dredging restrictions may apply. Class C sediments show high contamination, may be acutely toxic to aquatic biota and dredging and disposal requirements may be stringent. If the contaminant exceeds Class C, the dredged material may be considered a regulated hazardous material or hazardous waste and other guidelines will apply.

Many of the analytes and compounds were present in relatively low concentrations, although there were some exceedances of the TOGS 5.1.9 Class A guidelines. As shown in Table 1, the BTEX results were nearly all below detection limits, or within the Class A threshold. Benzene was below the detection limit in all the sediments collected in Scudder's Pond.

For the metals, (Table 2), most results were within the Class A guidelines, however two cores had one analyte each, in the Class B category.

Review of the Semi-Volatile Organics (SVOCs, see Table 3) showed one core sample with Total PAH's in the Class B category. All other cores were within the Class A.

Table 4 reported the results for Pesticides, PCB's and the Dioxin composite. No individual Aroclor (PCB) congeners were detected in any of the sediment samples, so the total PCB's were shown as ND (none detected). Chlordane, Mirex and Dieldrin were not detected in any of the analyses. DDD, (a metabolite of the pesticide DDT) was detected in two core

samples. One result placed the sample in the Class B and one result was in the Class C category. Both of these samples were within the sediments that would be removed during dredging. The Total Dioxin composite result fell within the Class B category.

Table 5 presents the results of the Grain Size analysis and Total Organic Carbon. The results show that the Scudder's Pond bottom sediments are nearly entirely clayey silt with high organic carbon resulting from roots and leaf litter on the pond bottom. This finding is consistent with pond bottom compositions for most lakes and ponds on Long Island.

## **5.0 RECOMMENDATIONS**

Overall, Scudder's Pond bottom sediments do not appear to have any significant contamination that would cause problems for the dredging or use of the dredge spoils for upland disposal. However, this decision can only be made by the DEC who, as a part of the permitting process, may grant a beneficial use determination (BUD) for the dredge material. The next step is to present the results of the sampling program to the appropriate DEC staff as supporting documentation for the permit application.