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New York District

Norton Basin/Little Bay Restoration Project

Baseline Data Collection at Project and Reference Sites - 2001

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by

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EXECUTIVE SUMMARY

The purpose of the Norton Basin/Little Bay Restoration Project is to investigate the feasibility of shallow estuarine habitat restoration by means of bathymetric recontouring, using dredged material. This alternative is included in the U.S. Army Corps of Engineers, New York District's (USACE-NYD) Dredged Material Management Plan (DMMP) for the Port of New York/New Jersey (USACE 1999). The beneficial use of dredged material is a significant component of the DMMP, which presents a variety of placement alternatives to be considered as potential solutions to the ongoing dredging crisis in the Port. This technical report is a compilation and summary of the data collected during the baseline assessment phase of the Norton Basin/Little Bay study in 2001.

The Norton Basin and Little Bay study areas are located on the north shore of the eastern Rockaway Peninsula, in the Borough of Queens, NY. These embayments are located southeast and south of the Edgemere Landfill, respectively. There are several 45 to 65 ft deep borrow pits in the Norton Basin/Little Bay complex. Norton Basin and Little Bay were surveyed with comparison to two reference areas in Jamaica Bay (Grass Hassock Channel and the Raunt). Grass Hassock Channel is a wide, deep tidal channel, which is bounded by Jo-Co Marsh and Silver Hole Marsh to the west and by Conchs Hole Point, the Edgemere Landfill, Norton Basin, and Motts Point to the east. The Raunt is a shallow tidal gut, which passes in a northeasterly direction through Little Egg Marsh, Big Egg Marsh, and Yellow Bar Hassock before it terminates at Goose Pond Marsh, in Broad Channel, Queens, NY.

Benthic macroinvertebrate surveys were conducted during June and October 2001. Three stations were located in each of the following areas: Little Bay, the entrance to Norton Basin, Norton Basin borrow pits, Grass Hassock Channel, and the Raunt. Benthic macroinvertebrate density, biomass, and taxonomic composition were measured and statistical comparisons were conducted among stations.

Fish and macrocrustacean assemblages were sampled by deployments of 8 ft. x 125 ft. experimental monofilament gill nets within borrow pits and reference areas during June and October 2001. Bottom trawl sampling, using a 16 ft. otter trawl, was conducted in Norton Basin, the Raunt and Grass Hassock Channel. Trawling was not conducted in Little Bay because of numerous submerged wrecks and other debris present in the basin, as documented in bathymetric surveys conducted by USACE-NYD in 2000.

Sediment profile image (SPI) photographs were taken at 101 stations with a Hulcher sediment profile camera during June and October 2001. A total of 272 SPI images were analyzed and digitized during this study. A range of sediment and biotic parameters were measured/estimated and recorded for each station.

Benthic macroinvertebrates were virtually absent from the fine, organic, highly aqueous sediments in the Little Bay borrow pit. Total abundance of benthic organisms was significantly lower in the borrow pits of Norton Basin relative to Grass Hassock Channel or the Raunt. Benthic assemblages from shallow areas of Norton Basin were similar to benthic assemblages

from reference areas. Arthropods dominated the benthos of Grass Hassock Channel and the Norton Basin borrow pits during June and October. Annelids were the dominant major taxa in the shallow areas of Norton Basin during June and October. Arthropods and annelids were co-dominant major taxa in the Raunt during June; however, arthropods were numerically dominant at this site during October. Molluscs and other invertebrates represented a minor component of the macroinvertebrate community among all sites during both seasons.

June gill net collections in Norton Basin were dominated by striped searobin and herrings. Most individuals were collected within the deeper strata of the Norton Basin borrow pits. Species composition and richness within Norton Basin was comparable to that of Grass Hassock Channel; however, samples from the Raunt were dominated by decapod crustaceans. Catch per unit effort (CPUE) in Norton Basin was twice that of either of the reference areas during June. Very few fish were collected in surface and mid-water locations in Little Bay during June, and none were collected in the deeper strata of the Little Bay pit. October gill net collections were dominated by striped searobin and herrings, with the exception of the Raunt, where collections were dominated by decapod crustaceans. A comparison of CPUE among sites during October indicated reduced utilization of the Norton Basin pit by fish, relative to the two reference areas, although species composition/richness was similar. A greater degree of fish utilization was observed within surface waters of Little Bay during October relative to June. CPUE was markedly greater at reference areas relative to the Norton Basin and Little Bay borrow pits during October.

Trawl surveys from Norton Basin, the Raunt, and Grass Hassock Channel yielded few individuals during June. Trawl samples during October were dominated by scup in Grass Hassock Channel and by decapod crustaceans in the Raunt. Few individuals (primarily blue crabs) were collected in trawls from Norton Basin during both months.

SPI images from Norton Basin exhibited a range of sediment characteristics, depending on depth. Borrow pit sediments were organic fines, while intermediate-depth and entrance channel sediments ranged from silt to fine sand. Entrance channel sediments were primarily sand and shell hash. Extensive chemolithotrophic bacteria mats were observed within the Norton Basin borrow pits during October. SPI samples from Little Bay over-penetrated the soft aqueous sediments present therein and did not yield satisfactory images of the sediment-water interface. Gas voids and bacteria mats were characteristic features of SPI images from Little Bay. Grass Hassock Channel sediments ranged from silt to fine sand, and *Ampelisca* mats were present in a large number of SPI images from this area. The dominant sediment type in the Raunt was silt, with fine sand present at stations located near the confluence of the Raunt and Runway channel. Approximately 50% of the SPI images from the Raunt included *Ampelisca* mats.

In general, Norton Basin appears to support a more abundant and diverse biota and exhibits greater substrate/habitat heterogeneity in comparison to Little Bay. The borrow pits located in Norton Basin exhibit substrate/habitat characteristics which resemble those of Little Bay; however, sampling locations of intermediate and shallow depths in Norton Basin are comparable to reference areas.

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ACRONYMS USED IN THIS REPORT

ANOVA – Analysis of Variance

CD-ROM – compact disk- read only memory

CPUE – catch per unit effort

DMMP – Dredged Material Management Plan

HTML – hypertext markup language

LPIL – lowest practical identification level

mcy – million cubic yards

MLW – mean low water

NPS-GNRA – National Park Service, Gateway National Recreation Area

NYC – New York City

RPD – redox potential discontinuity

SNK – Student-Newman-Keuls

SPI – sediment profile imagery

TL – total length

TOC – total organic carbon

USACE-NYD – U.S. Army Corps of Engineers, New York District

USAE-WES – U.S. Army Engineer Waterways Experiment Station

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1.0 INTRODUCTION

The U.S. Army Corps of Engineers, New York District (USACE-NYD) has developed a Dredged Material Management Plan (DMMP) for the Port of New York/New Jersey (USACE, 1999). The beneficial use of dredged materials is a significant component of the DMMP, which presents a variety of placement alternatives to be considered as potential solutions to the ongoing dredging crisis in the Port. One such alternative is bathymetric recontouring of artificially deepened habitats (navigation channels, sub-aqueous borrow pits).

This alternative has particular application to borrow pits located within dead-end basins, as these areas are often severely degraded due to hydrodynamic isolation, potentially resulting in poor water quality and accumulation of contaminants. Norton Basin and Little Bay are two dead-end basins located on the north shore of the eastern Rockaway Peninsula, in the Borough of Queens, New York City (NYC) (**Fig. 2.1**). The basins are drained by a common channel leading into the southeastern edge of Jamaica Bay. They have been subjected to nearly four centuries of anthropogenic impacts. Land use of the surrounding area is predominantly residential. Deep borrow pits are present within each basin. These borrow pits were excavated in 1938 during the development of Edgemere Landfill, which constitutes the northwest boundary of Little Bay. Historically, this area was characterized by extensive intertidal salt marshes and mudflats.

The goal of the Norton Basin/Little Bay Project is to investigate the feasibility of habitat restoration via bathymetric recontouring of the Norton Basin/Little Bay complex. This would be accomplished by filling several borrow pits (45-65 ft. deep) located within Norton Basin/Little Bay to an average depth of approximately 15 ft. below mean low water (MLW).

Preliminary biological and hydrographic sampling, conducted by the USACE-NYD in 1998-1999, indicated degraded conditions within the study area, particularly in Little Bay. Side slopes of the borrow pits in both basins are nearly vertical, and hydrodynamic isolation has apparently resulted in low mixing rates within deeper waters.

Preliminary benthic grab and sediment profile imagery (SPI) samples from both pits indicated an impoverished benthic community (USACE-NYD, unpublished data). Sediments within the borrow pits are a fine, aqueous black mud with a strong sulfide odor indicative of reduced conditions. Borrow pit sediments are often covered with white flocculent material believed to be colonies of the chemolithotrophic bacteria *Beggiatoa* (Rosenberg and Diaz 1993).

Preliminary fisheries hydro-acoustic surveys conducted by the U.S. Army Engineer Waterways Experiment Station (USAE-WES) indicated limited utilization of the Norton Basin/Little Bay borrow pits by fishes. The fishes detected in preliminary hydro-acoustic surveys were apparently small, schooling forage species [e.g. anchovies (*Anchoa spp.*) or silversides (*Menidia spp.*)] (D. Clarke, USAE-WES, pers. comm.), which do not associate strongly with structures, such as pits, as essential habitat.

In September 2000, a pilot study was conducted in Norton Basin, Little Bay, and two reference areas located in Jamaica Bay (the Raunt and Grass Hassock Channel). This study included

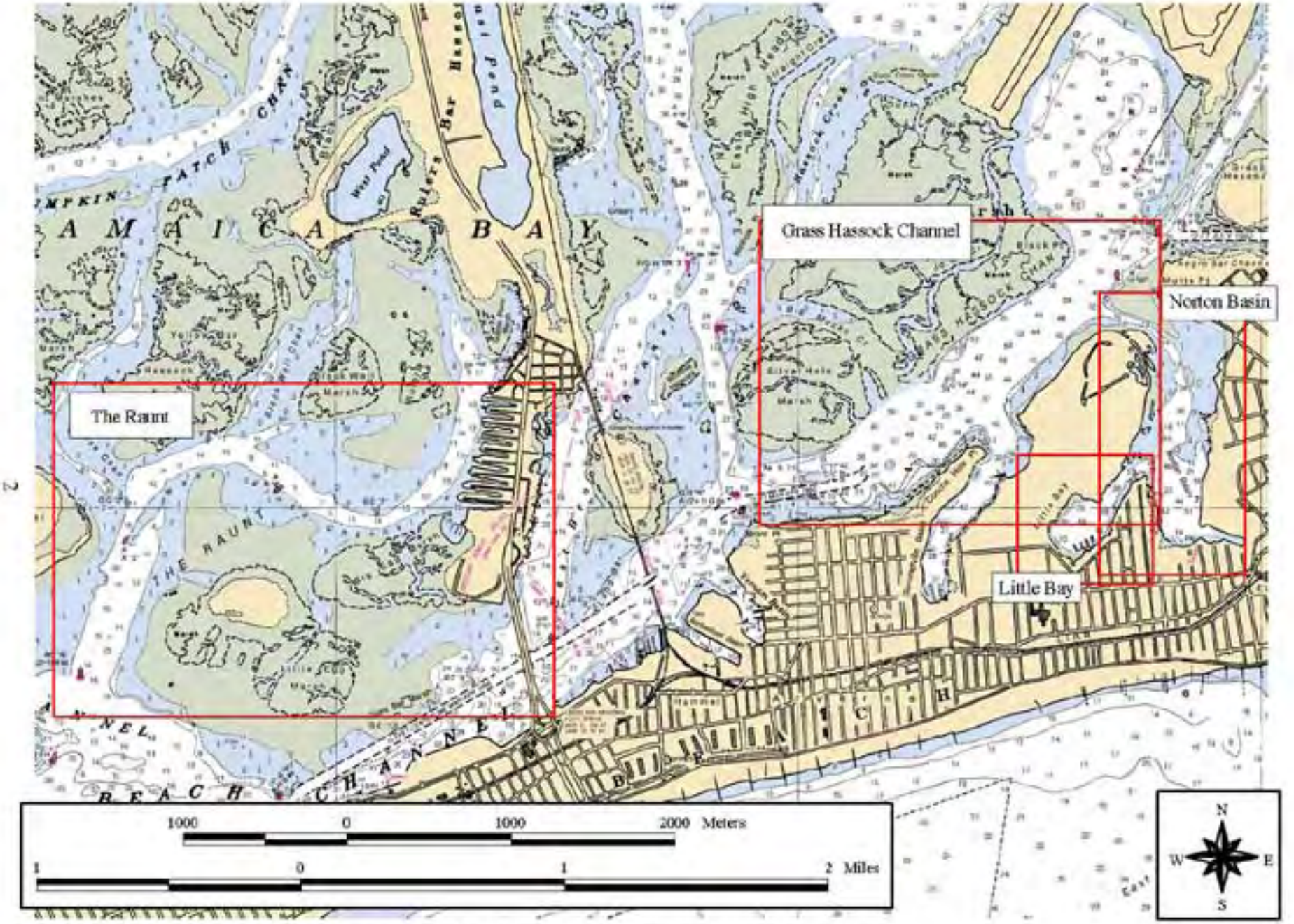

Figure 2.1 Locations of the Raunt, Grass Hassock Channel, Norton Basin, and Little Bay study areas.

preliminary sediment characterization [grain size, total organic carbon (TOC), % solids], water quality profiles, and a preliminary survey of living resources (fish, macrocrustaceans) using gill nets and trawls. These data were intended to provide information on biological and physico-chemical attributes of Norton Basin/Little Bay, to allow comparison to shallow and deep reference locations within nearby areas of Jamaica Bay, and to guide the data collection efforts to be conducted during Phase I (Baseline Environmental Studies) of the Norton Basin/Little Bay project.

The Phase I Baseline Environmental Study of the Norton Basin/Little Bay project was initiated in 2001. Data were gathered to further characterize conditions within the study and reference areas identified in the pilot study. The present study includes water quality monitoring, hydrodynamic monitoring, characterization of benthic macroinvertebrate communities, SPI surveys, and fish surveys (hydro-acoustics, gill nets, trawl surveys). This report summarizes the results of benthic macroinvertebrate, SPI, and fish sampling (gill nets, trawl surveys) conducted during June and October 2001.

2.0 STUDY AREA

2.1 Norton Basin

Norton Basin is located east of the Edgemere Landfill. With its three 45 to 50 ft deep (MLW) borrow pits, the basin has a planar surface area of approximately 55.5 acres, a bottom surface area of approximately 56.9 acres, and a total volume of approximately 2.3 million cubic yards (mcy). The borrow pits have soft, mud substrates, while shallower areas of the basin are characterized by sandy substrates. Side-scan sonar surveys conducted in 2000 have revealed at least two 30 - 40 ft wrecks and extensive debris (i.e. tires, pilings, other structures) on the floor of the basin. There are several small submerged structures along the eastern shore of the basin, which are thought to be smaller boats or automobiles (CR Environmental, Inc. 2001).

2.2 Little Bay

Little Bay is located southeast of the Edgemere Landfill. With its three 60 to 65 ft deep (MLW) borrow pits, the basin has a planar surface of approximately 24.5 acres, a bottom surface area of approximately 25.2 acres, and a total volume of approximately 1.2 mcy. The borrow pits have soft, mud substrates, while shallower areas of the inlet tend to have sandy substrates. Side-scan sonar surveys detected several 30 - 40 ft wrecks and extensive debris (i.e. tires, pilings, other structures) on the floor of the basin (CR Environmental, Inc. 2001).

2.3 Reference Areas

Two reference areas (The Raunt and Grass Hassock Channel) located within the National Park Service Gateway National Recreation Area (NPS-GNRA) were selected for comparison to Norton Basin/Little Bay. These reference areas were intended to provide information on biotic

and physico-chemical conditions from both shallow and deep estuarine habitats within Jamaica Bay.

2.3.1 The Raunt

The Raunt is a shallow (7 – 25 ft. deep) tidal gut, which originates at the confluence of Runway Channel and Beach Channel, northeast of Rockaway Inlet. The Raunt passes in a northeasterly direction through Little Egg Marsh, Big Egg Marsh, and Yellow Bar Hassock and terminates at Goose Pond Marsh, in the community of Broad Channel, Queens, NY. Bottom sediments in the Raunt are predominantly sands and silts, with seasonally dense mats of sea lettuce (*Ulva lactuca*) and extensive beds of tube-dwelling amphipods (*Ampelisca spp.*) in the upper reaches. The *Ampelisca* mats gradually diminish and the substrate becomes hard sand bottom in the lower reaches of the Raunt (CR Environmental, Inc. 2001).

2.3.2 Grass Hassock Channel

Grass Hassock Channel is a wide, 20 – 50 ft. deep tidal channel, which originates at the confluence of Winhole Channel and Beach Channel, northeast of the Cross Bay Boulevard Bridge, and terminates at the Jo-Co Marsh Pit, east of Runway 4L at JFK Airport. The Channel is bounded by Jo-Co Marsh and Silver Hole Marsh to the west and by Conchs Hole Point, the Edgemere Landfill, Norton Basin, and Motts Point to the east. The substrate of Grass Hassock Channel is very patchy, and includes sand/silt, shell/gravel, extensive *Ampelisca* mats, and dense sponge colonies (CR Environmental, Inc. 2001).

3.0 METHODS

3.1 Benthic Grab Sampling

A total of 90 samples (three samples from each station) were collected at 15 stations within the study and reference areas (**Fig. 3.1.1**) using a 0.04m^2 Ted Young modified Van Veen grab on June 29, 2001 and on October 1, 2001. Three sampling sites were located in the Grass Hassock Channel reference area (GH1, GH2, and GH3), three in the Raunt reference area (R1, R2, and R3), three in the Little Bay study area (LB1, LB2, and LB3), three in the entrance to Norton Basin (NB1, NB2, and NB3), and three in the Norton Basin study area (NB4, NB5, and NB6). Samples were sieved through a 0.5-mm mesh screen and preserved with a 10% buffered formalin/Rose Bengal solution in the field. Benthic samples were shipped to Barry Vittor & Associates, Inc.'s taxonomic laboratory in Mobile, Alabama for analysis.

In the laboratory, macroinvertebrates were identified to the lowest practical identification level (LPIL), which in most cases was to species unless the specimen was unidentifiable (a juvenile, damaged, or unknown). The number of individuals of each taxon, excluding fragments, was recorded. A voucher collection was prepared, composed of representative individuals of each species not previously encountered in samples from this region.

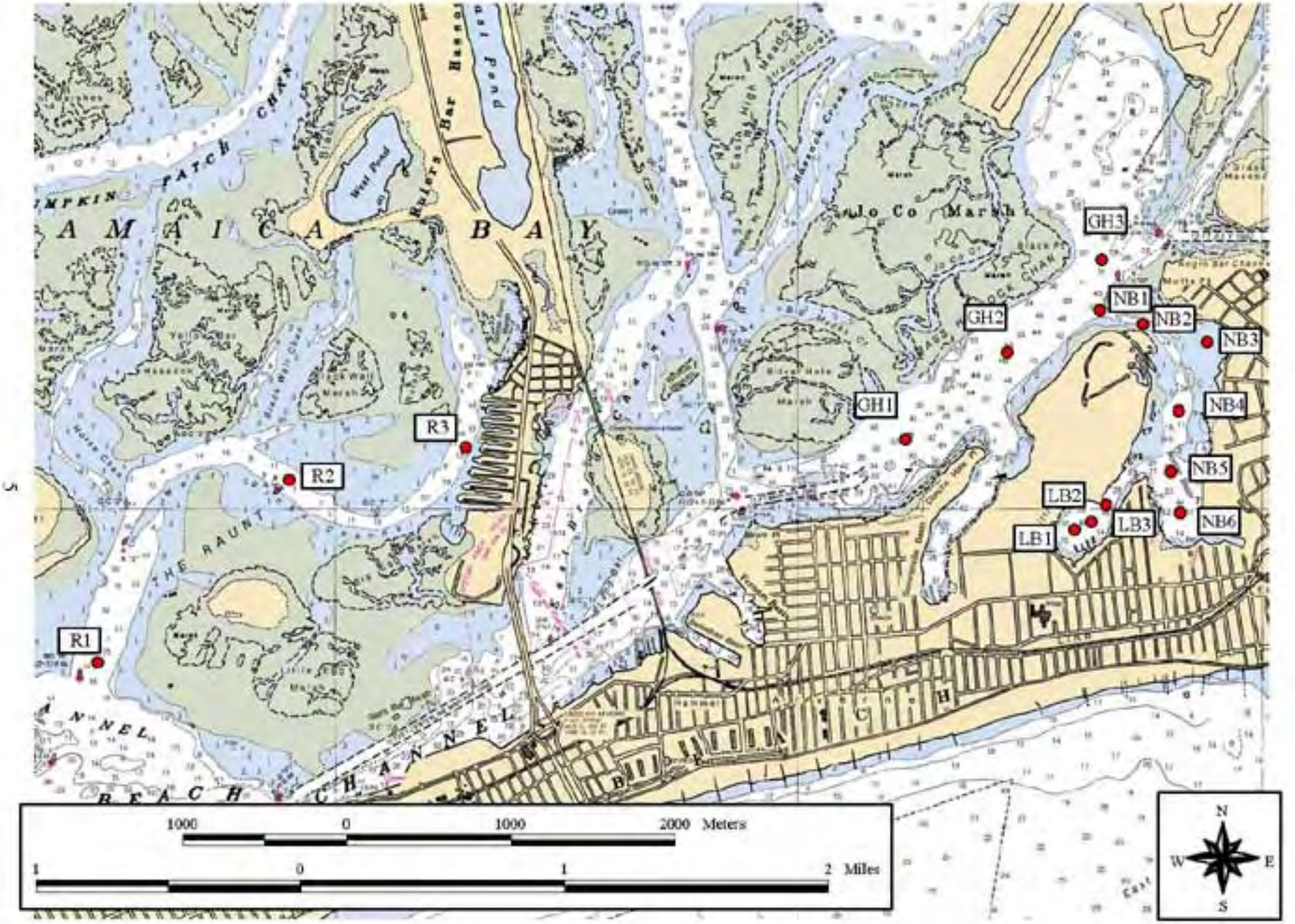

Figure 3.1.1 Locations of benthic macroinvertebrate sampling stations.

Macroinvertebrate density and biomass was calculated per unit area for each station. Species diversity and community "evenness" were also determined and compared among sampling stations. The data were graphically and statistically analyzed to identify differences in macroinvertebrate density among the study and reference areas. Data were log(y+1) transformed to meet normality assumptions. Transformed abundance data were analyzed using a one-way Analysis of Variance (ANOVA), and post-hoc comparisons were conducted using the Student-Newman-Keuls (SNK) test. Statistical analyses were conducted using the SuperANOVA General Linear Modeling Program for the Macintosh PC (Version 1.11).

3.2 Gill Net Sampling

Fish and macrocrustacean assemblages were sampled during June and October 2001 by daytime and overnight deployments of 8 ft. x 125 ft. experimental monofilament gill nets (1 - 4 in. stretched mesh). Gill nets were deployed over a range of tidal conditions to characterize fish and macrocrustacean use of the study and reference areas. During June 27-29, eight gill nets were fished in the Norton Basin pits (5 bottom, 3 mid-water); six nets were fished in the Little Bay pit (3 bottom, 3 mid-water); five nets were fished in the Raunt (4 bottom, 1 mid-water); and four nets were fished in Grass Hassock Channel (1 bottom, 3 mid-water). Soak times ranged from 24-48 hrs. (**Fig. 3.2.1**).

For the October sampling event, soak times were reduced, but the number of sets was increased. During October 1-3, twelve gill nets were fished in the Norton Basin pits (6 bottom, 6 mid-water); twelve nets were fished in the Little Bay pit (6 bottom, 6 mid-water); seven nets were fished in the Raunt (5 bottom, 2 mid-water); and 12 nets were deployed in Grass Hassock Channel (6 bottom, 6 mid-water). Soak times ranged from 6-21 hrs (**Fig. 3.2.2**).

All fishes and macrocrustaceans collected in gill nets were processed in the field. Captured organisms were identified to species, enumerated, weighed, measured [total length (TL) or carapace width], and released alive, if possible. Catch per unit effort (CPUE) was calculated by dividing fish and macrocrustacean biomass by the number of hours that gill nets were deployed.

3.3 Bottom Trawling

Bottom trawl sampling, using a 16 ft. otter trawl (1 3/8 in. mesh walls; 1 in. mesh cod end), was conducted in Norton Basin, the Raunt and Grass Hassock Channel. Four trawls were pulled for a duration of 5 minutes in Norton Basin and five trawls were pulled for a duration of 5 minutes in each reference area on June 27, 2001 (**Fig. 3.3.1**). On October 1, 2001, five trawls were pulled for a duration of 3 to 8 minutes in Norton Basin and four trawls were pulled for a duration of 4 to 10 minutes in each reference area (**Fig. 3.3.2**). All fishes and macrocrustaceans captured in trawls were processed in the field. Captured organisms were identified to species, enumerated, weighed, measured (TL or carapace width), and released alive, if possible. CPUE was calculated by dividing fish and macrocrustacean biomass by trawl duration (in minutes). Trawling was not conducted in Little Bay because of numerous submerged wrecks and other debris present in the basin, as documented in bathymetric surveys conducted by USACE-NYD in 2000 (CR Environmental, Inc. 2001).

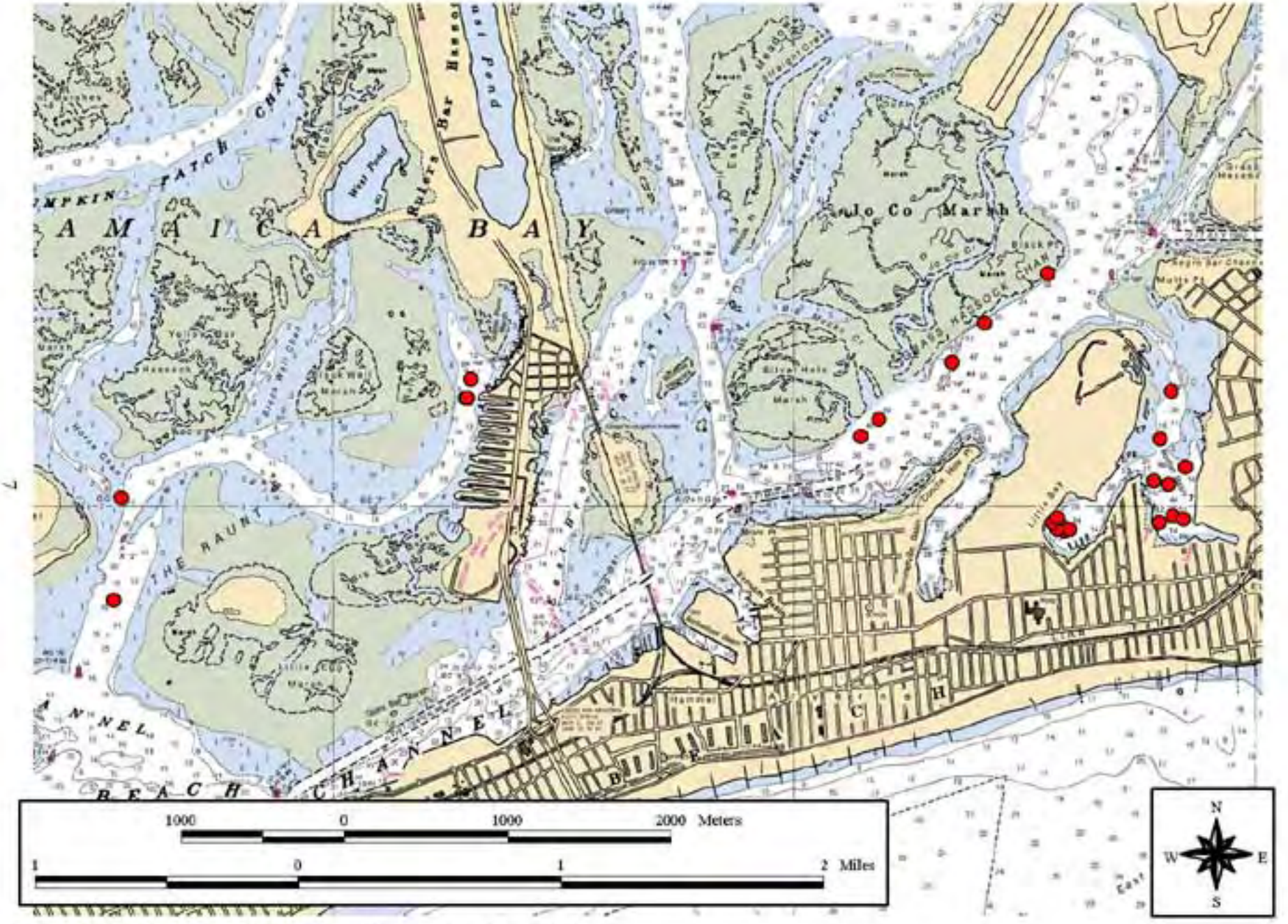

Figure 3.2.1 Locations of gill net sampling stations, June 2001.

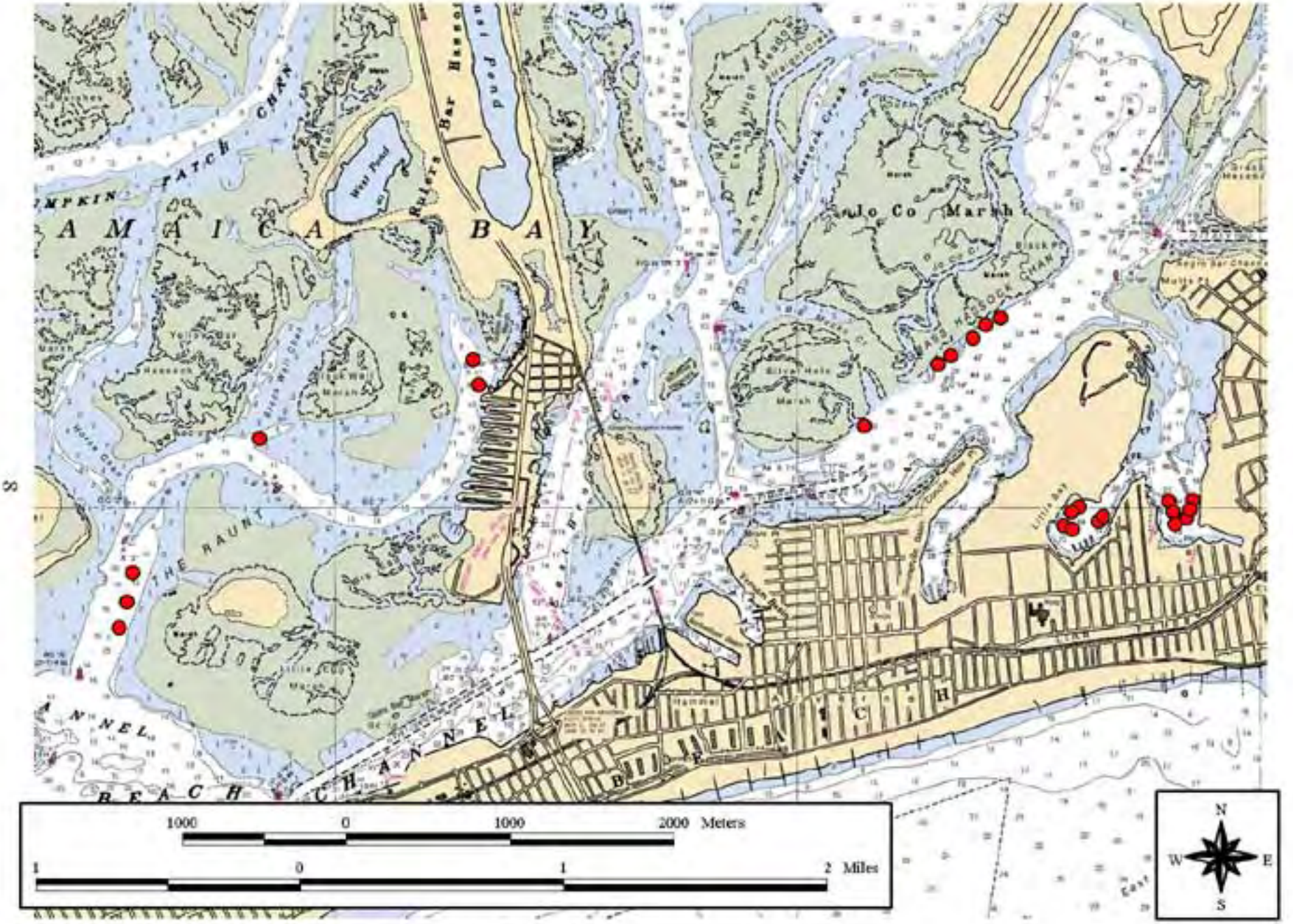

Figure 3.2.2 Locations of gill net sampling stations, October 2001.

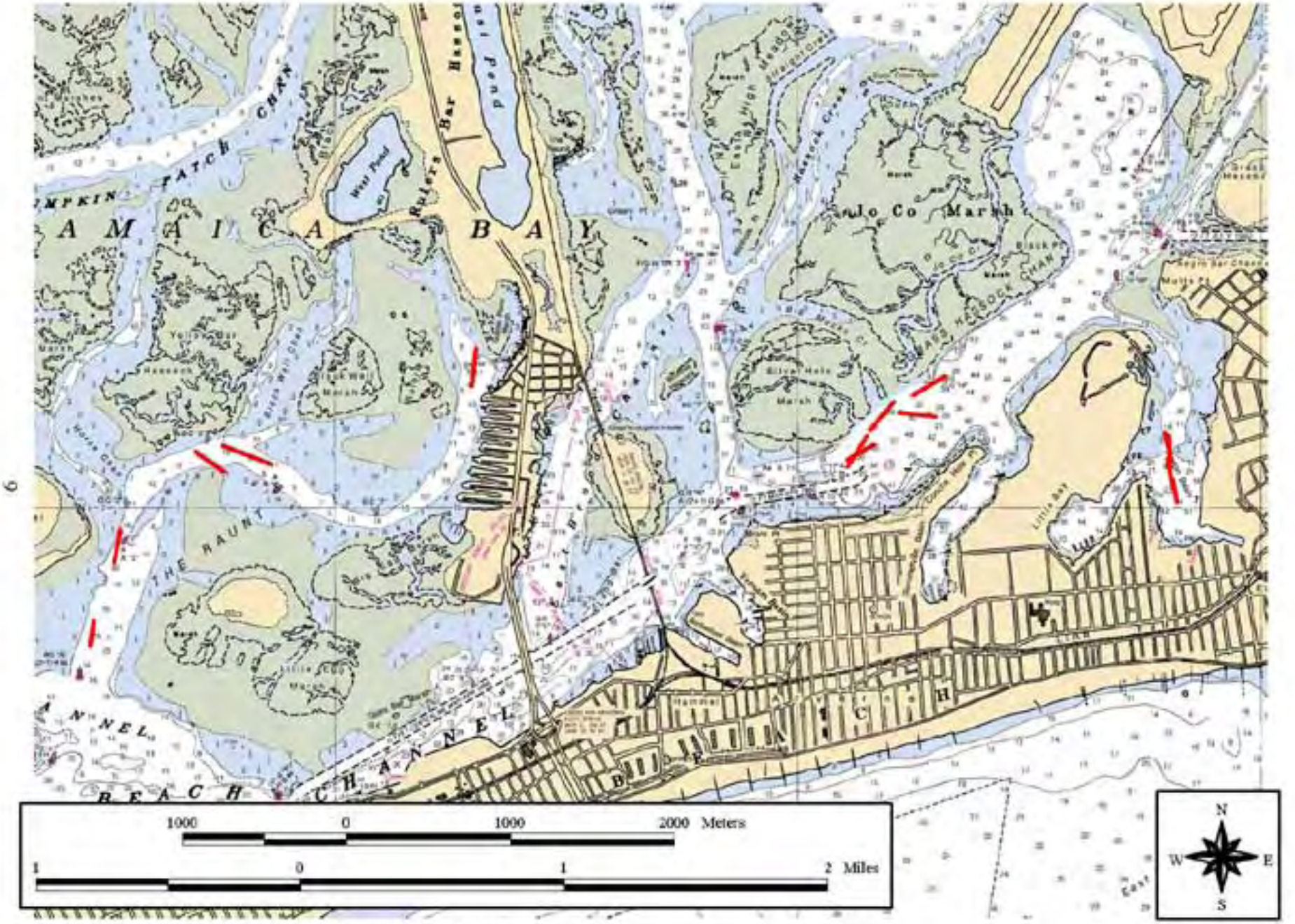

Figure 3.3.1 Locations of otter trawl lanes, June 2001.

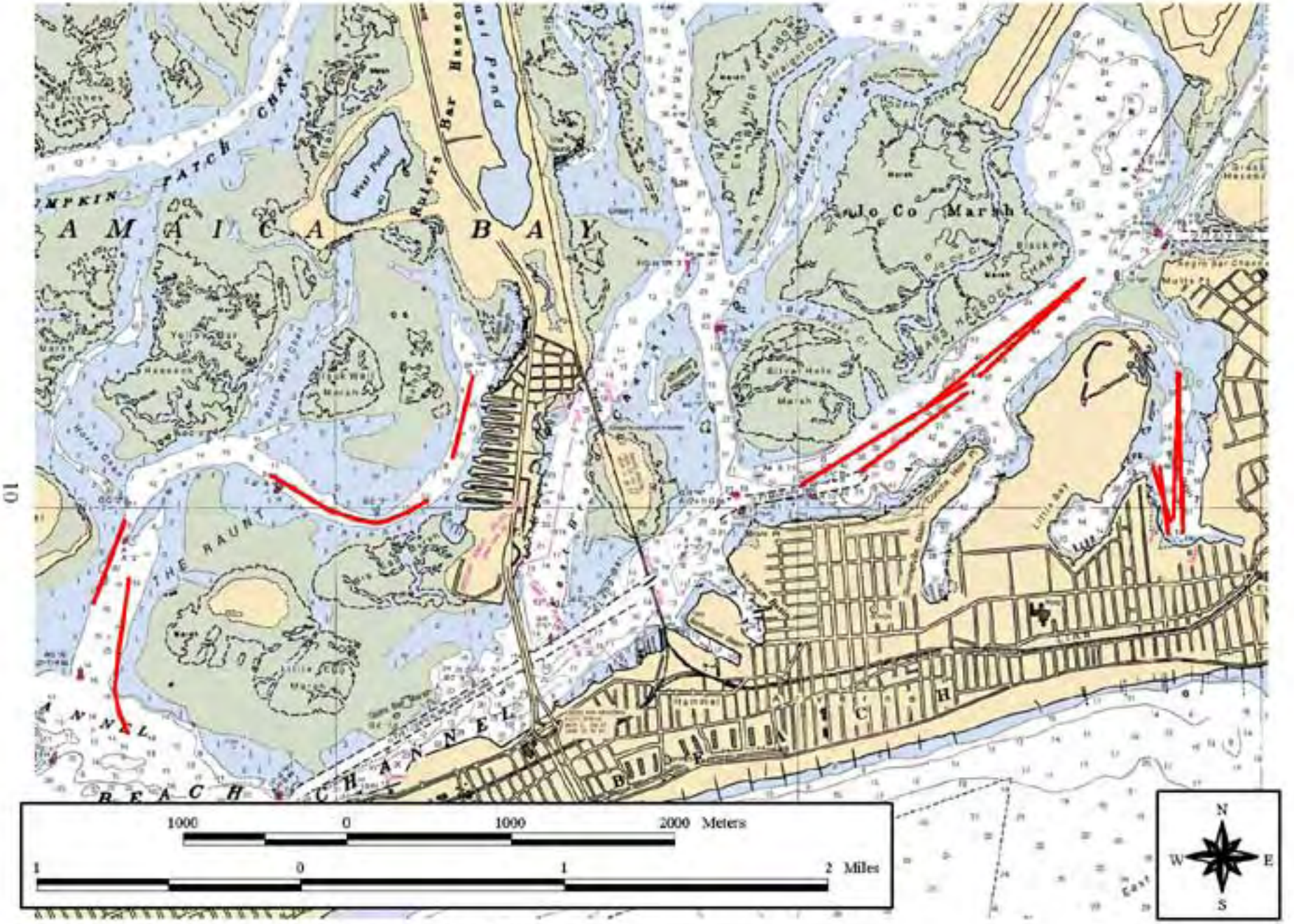

Figure 3.3.2 Locations of otter trawl lanes, October 2001.

3.4 Sediment Profile Imaging

3.4.1 Field Collection

SPI images were obtained from 101 stations during June and October in the Norton Basin/Little Bay study area and throughout the reference areas (**Fig. 3.4.1**). SPI images were taken with a Hulcher Model Minnie sediment profile camera equipped with a UW-Nikkor 35 mm lens (F/3.5, water-corrected) and loaded with Fujichrome 100P slide film. The profile camera was set to take two photographs at each station at 6 and 12 seconds after bottom contact. The weight of the camera was adjusted using detachable iron weights to account for differences in sediment type at various locations throughout the study and reference areas.

3.4.2 Image Analysis

The sediment profile photographs were analyzed visually by projecting the images and recording all features seen into a preformatted, standardized spreadsheet file. The images were then digitized using a Nikon Coolscan 2000 scanner and analyzed using Adobe PhotoShop and NTIS Image programs. Steps in the computer analysis of each image were standardized and followed the basic procedures in Viles and Diaz (1991). Data from each image were sequentially saved to a spreadsheet file for later analysis. Details of these analytical methods can be found in Diaz and Schaffner (1988) and Rhoads and Germano (1986), and in the standardized image analysis procedures of Viles and Diaz (1991).

3.4.3 SPI Parameters

3.4.3.1 Prism Penetration

This parameter provides a geotechnical estimate of sediment compaction with the profile camera prism acting as a dead weight penetrometer. Camera penetration is positively correlated with soft sediments, high water content for fine sediments, and poorer sorting coefficients for sandy sediments. Penetration is measured as the distance (in cm) which the sediment moved up the 23-cm height of the camera faceplate.

3.4.3.2 Surface Relief

Small scale surface relief or boundary roughness measured across the 15-cm width of the prism is the difference between the maximum and minimum distance sediment extends up the prism face plate. It is possible, by careful examination of the images, to determine the dominant processes responsible for surface relief, which assists in assessing benthic habitat characteristics.

3.4.3.3 Apparent Color Redox Potential Discontinuity (RPD) Layer

This parameter has been determined to be an important indicator of benthic habitat quality (Rhoads and Germano 1986, Diaz and Schaffner 1988) and provides an estimate of the depth to

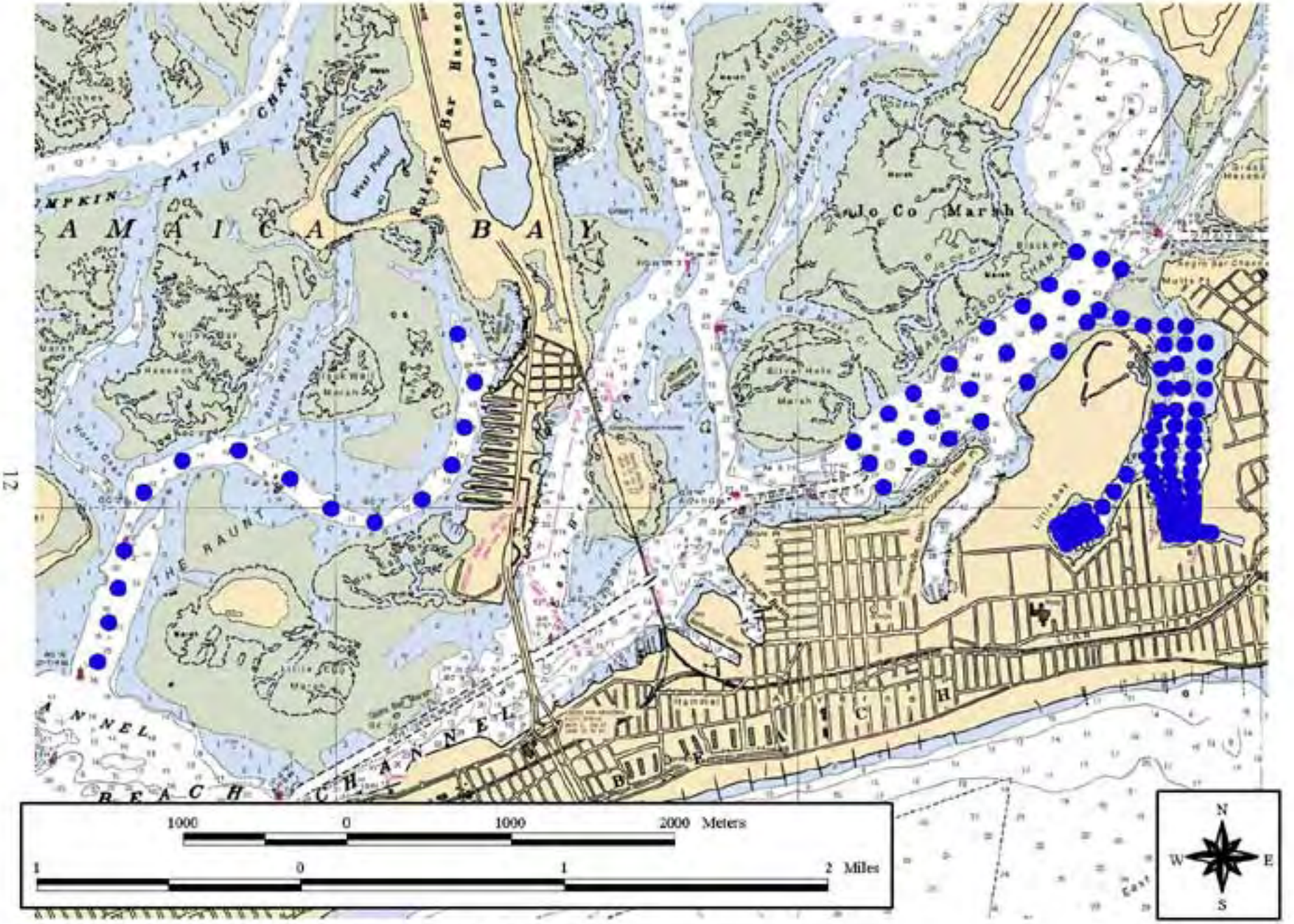

Figure 3.4.1 Locations of Sediment Profile Image (SPI) stations.

which sediments appear to be oxidized. The term “apparent” is used in describing this parameter because no actual measurement is made of the redox potential. An assumption is made that, given the complexities of iron and sulfate reduction-oxidation chemistry, reddish-brown sediment color tones, (or in black and white images whiter or lighter areas of the image) are indications that the sediments are oxidized, or at least are not intensely reducing (Rhoads and Germano 1986, Diaz and Schaffner 1988). This is in accordance with the classical concept of RPD depth, which associates it with sediment color (Fenchel 1969, Vismann 1991). The depth of the apparent color RPD is defined as the area of all the pixels in the image discerned as being oxidized divided by the width of the digitized image. The area of the image with oxidized sediment is obtained by digitally manipulating the image to enhance characteristics associated with oxidized sediment (greenish-brown color tones). The enhanced area is then determined from a density slice of the image.

The apparent color RPD has been very useful in assessing the habitat quality for epifauna and infauna from both physical and biological points of view. Rhoads and Germano (1986), Revelas et al. (1987), Day et al. (1988), Diaz and Schaffner (1988), Valente et al. (1992) and Bonsdorff et al. (1996) all found that the RPD depth from profile images were directly correlated to benthic habitat quality in polyhaline and mesohaline estuarine zones. Controlling for differences in sediment type, habitats with thinner RPD's (mm scale) tend to be associated with some type of environmental stress. Habitats with deeper RPD's (cm scale) usually have healthy epibenthic and infaunal communities.

3.4.3.4 Sediment Grain Size

Grain size is an important parameter for determining the nature of the physical forces acting on a habitat and is a major factor in determining benthic community structure (Rhoads 1974). The sediment type descriptors used for image analysis follow the Wentworth classification as described in Folk (1980), and represent the major modal class for each image. Grain size is determined by comparison of collected images with a set of standard images for which mean grain size has been determined in the laboratory.

3.4.3.5 Surface Features

These parameters include a wide variety of features, each of which provides information on the type of habitat and its quality for supporting benthic species. The presence of certain surface features is indicative of the overall nature of a habitat. For example, bedforms are always associated with physically dominated habitats, whereas the presence of worm tubes or feeding pits is indicative of a more biologically accommodating habitat (Rhoads and Germano 1986, Diaz and Schaffner 1988). Surface features are visually evaluated from each image and compiled by type and frequency of occurrence.

3.4.3.6 Subsurface Features

These parameters include a wide variety of features and are used to characterize the physical and biological processes influencing the bottom. For example, the presence of methane gas voids has

been found to be an indication of anaerobic metabolism associated with high rates of bacterial activity (Rhoads and Germano 1986). Muddy habitats with large amounts of methane gas are generally associated with areas of oxygen stress or high organic loading. Habitats with burrows, infaunal feeding voids, and/or actual infauna visible are generally considered "healthy" (Rhoads and Germano 1986, Diaz and Schaffner 1988, Valente et al. 1992). Surface features are visually evaluated from each slide and compiled by type and frequency of occurrence.

4.0 RESULTS

4.1 Benthic Macroinvertebrates

4.1.1 June, 2001 Community Composition

A total of 32,604 individuals, representing 103 taxa, were identified from the 45 grab samples collected at 15 stations within the Norton Basin/Little Bay study areas and reference areas on June 29, 2001. Arthropods were the most abundant taxa, representing 65.0% of the total assemblage. Annelids (marine worms) represented 32.9% of the total organisms. A list of all taxa is provided in **Appendix 1-A.** Biomass data is provided in **Appendix I-B**.

Polychaetes dominated the annelid community. The ubiquitous estuarine spionid polychaete *Streblospio benedicti* was well-represented among samples, as was *Mediomastis* spp. Tubificid oligochaetes represented nearly six percent of the annelid community.

The arthropod community was dominated by amphipods, primarily *Ampelisca vadorum*, which accounted for more than half of the total benthic macroinvertebrate community in June. Other amphipods present included *Monocorophium turberculatum*, *Microdeutopus gryllotalpa*, and *Elasmopus levis*. Mud crabs (*Xanthidae*) and the ostracod *Parasterope pollex* were collected but represented only a minor component of the arthropod community.

Molluscs were a very minor component of the benthic community (< 2%). The mollusc community included various bivalves and gastropods, most notably the mud snail *Ilyanassa obsoleta.* Proboscis worms, flatworms, and hydrozoans were present in some samples but accounted for <0.5% of the total benthic community. The total number of macroinvertebrate taxa ranged from 0 at LB1 and LB2 to 54 at R1 (**Fig. 4.1.1.1; Appendix I-C**). The total number of individuals per station (composite of 3 grabs) ranged from 0 (LB1 and LB2) to 10,267 (GH1).

In the Norton Basin borrow pit, arthropods represented 70.5 % of the total assemblage, annelids represented 25.1 %, molluscs represented 3.6 %, and proboscis worms represented < 1 %. The dominant species was *A. vadorum*, representing 70.1 % of the total assemblage (**Fig. 4.1.1.2**).

A single individual was recovered in Little Bay, a gastropod mollusc.

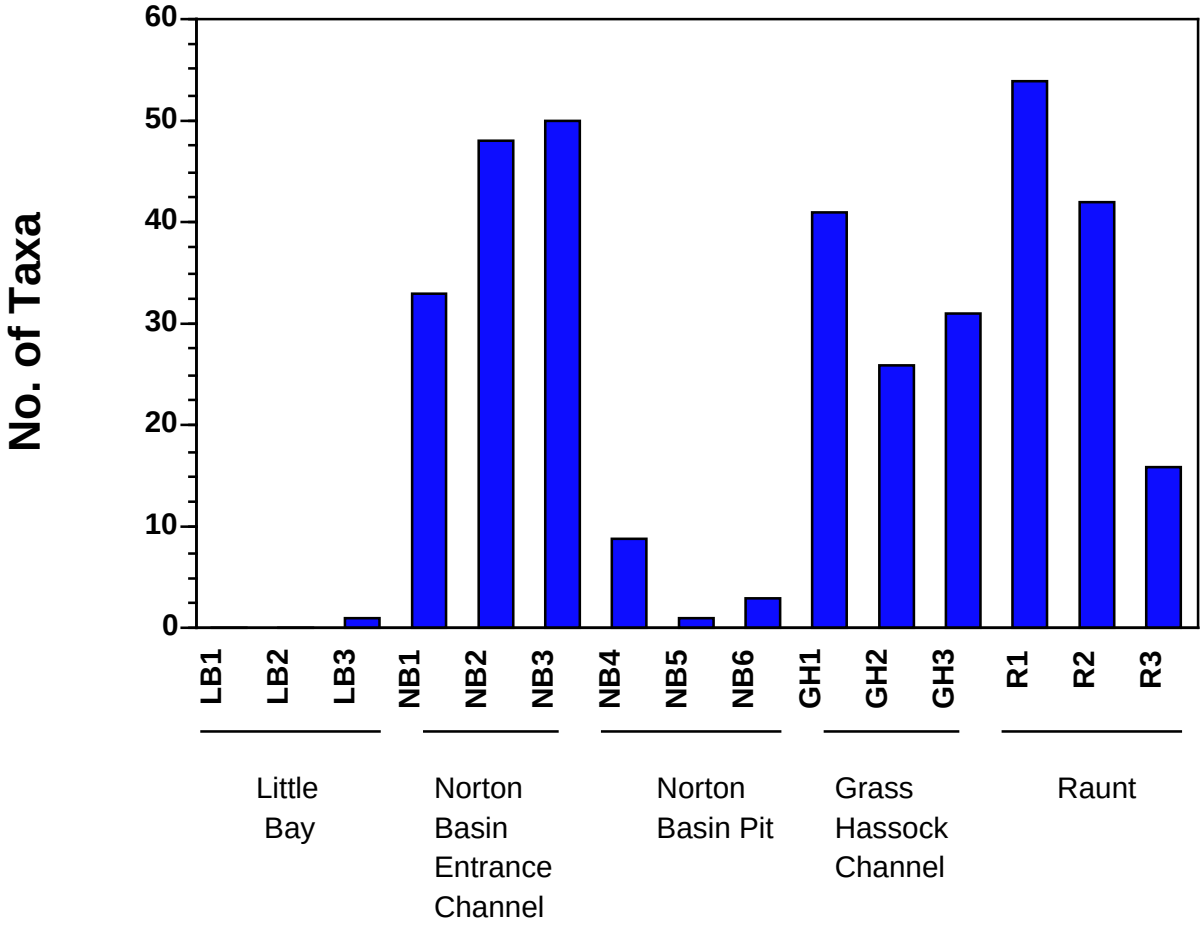

Figure 4.1.1.1 Total number of benthic macroinvertebrate taxa, June 2001.

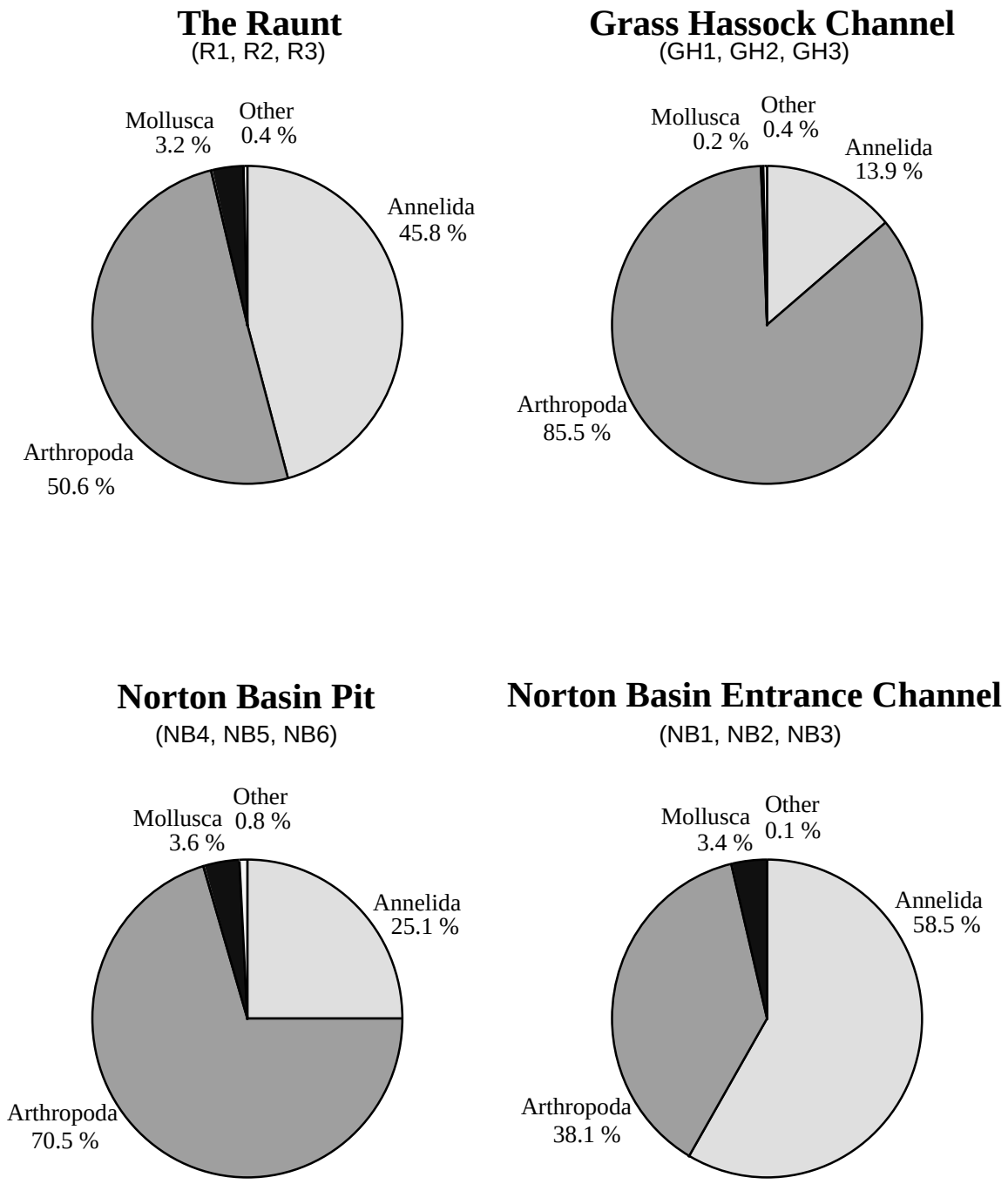

Figure 4.1.1.2 Benthic community composition, Norton Basin and reference areas, June 2001.

At the Norton Basin entrance channel, arthropods represented 38.1 % of the total assemblage, annelids represented 58.5 %, and molluscs represented 3.4 %. Proboscis worms and flatworms represented < 1 %. The dominant species was *S. benedicti*, representing 40.1 % of the total assemblage (**Fig. 4.1.1.2**).

At the Grass Hassock Channel reference area, arthropods represented 85.5 % of the total assemblage, while annelids represented 13.9 %. Molluscs, proboscis worms, and flatworms represented < 1 % of the total assemblage. The dominant species was *A. vadorum*, representing 76.5 % of the total assemblage (**Fig. 4.1.1.2**).

At the Raunt reference area, arthropods represented 50.6 % of the total, annelids represented 45.8 %, and molluscs represented 3.2 %. Proboscis worms and hydrozoans represented < 1 % of the total assemblage. The dominant species was *A. vadorum*, representing 35.7 % of the total assemblage (**Fig. 4.1.1.2**).

4.1.2 October, 2001 Community Composition

A total of 38,178 individuals, representing 98 taxa, were identified from the 45 grab samples collected at 15 stations within the Norton Basin/Little Bay study areas and reference areas on October 1, 2001. Arthropods were the most abundant taxa, representing 69.7 % of the total assemblage. Annelids (marine worms) represented 27.9 % of total organisms. A list of all taxa is provided in **Appendix I-D.** Biomass data is provided in **Appendix I-E**.

Polychaetes dominated the worm community. The ubiquitous estuarine spionid polychaete *S. benedicti* was well-represented among samples, as was the terebellid *Sabellaria vulgaris.* Tubificid oligochaetes represented 7.4 % of the annelid community.

The arthropod community was dominated by amphipods, primarily *A. vadorum*, which accounted for more than half of the total benthic macroinvertebrate community during October. Other amphipods present included *M. turberculatum*, *Lysianopsis alba*, *M. gryllotalpa*, and *E. levis*. The decapods *Panopeus herbstii* and *Pagurus* spp. were collected but represented only a minor component of the arthropod community.

Molluscs were a very minor component of the benthic community (< 2%). The mollusc community included various bivalves and gastropods, including *I. obsoleta* and *Mercenaria mercenaria.* Proboscis worms, flatworms, and hydrozoans were present in some samples but only accounted for less than one-half of one percent of the total benthic community in October. The total number of macroinvertebrate taxa ranged from 0 at LB2 and NB5 to 58 at NB2 (**Fig. 4.1.2.1**). The total number of individuals per station (sum of 3 grabs) ranged from 0 (LB2 and NB5) to 6,973 (GH3) (**Appendix I-F**).

In the Norton Basin borrow pit, arthropods represented 83.6 % of the total assemblage, annelids represented 7.5 %, and molluscs represented 8.8 %. The dominant species was *A. vadorum*, representing 83.2 % of the total assemblage (**Fig. 4.1.2.2**).

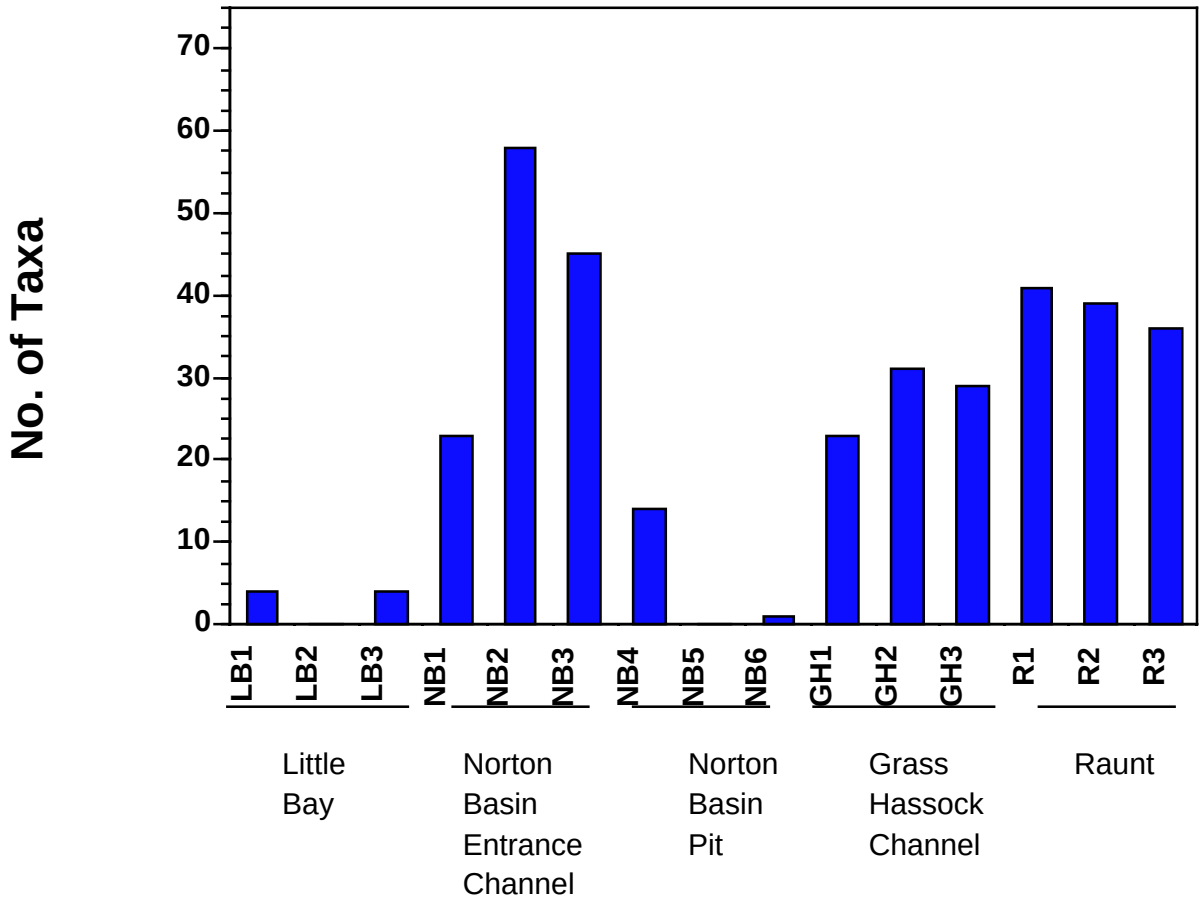

Figure 4.1.2.1 Total number of benthic macroinvertebrate taxa, October 2001.

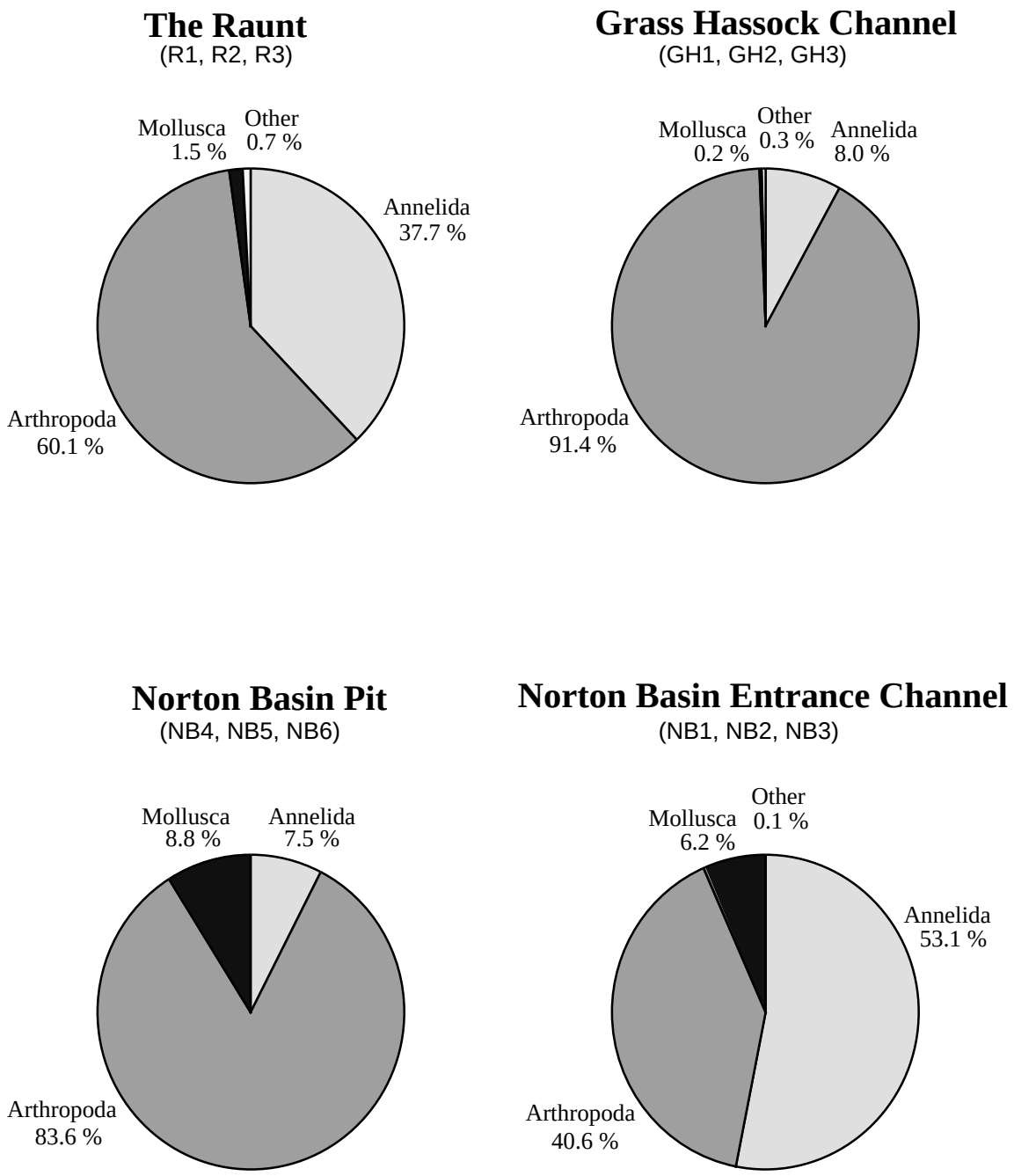

Figure 4.1.2.2 Benthic community composition, Norton Basin and reference areas, October 2001.

In Little Bay, a total of nine individuals were recovered; three arthropods, two annelids, and four molluscs.

At the Norton Basin entrance channel, arthropods represented 40.6 % of the total assemblage, annelids represented 53.1 %, and molluscs represented 6.2 %. Flatworms, hydrozoans and proboscis worms represented < 1 % of the total. The dominant species was *A. vadorum*, representing 38.0 % of the total assemblage (**Fig. 4.1.2.2**).

At the Grass Hassock Channel reference area, arthropods represented 91.4 % of the total assemblage, while annelids represented 8.0 %. Molluscs, proboscis worms, and flatworms represented < 1 % of the total assemblage. The dominant species was *A. vadorum*, representing 88.1 % of the total assemblage (**Fig. 4.1.2.2**).

At the Raunt reference area, arthropods represented 60.1 % of the total, annelids represented 37.7 %, and molluscs represented 1.5 %. Proboscis worms, flatworms, and hydrozoans represented < 1 % of the total assemblage. The dominant species was *A. vadorum*, representing 56.8 % of the total assemblage (**Fig. 4.1.2.2**).

4.1.3 Abundance and Distribution

4.1.3.1 Total Macroinvertebrates

In June, 2001 mean density of total macroinvertebrates ranged from 0.0 ind. m^{-2} at LB1 and LB2 to 85,558.3 ind. m^{-2} at GH1 (**Appendix I-G**). In October 2001, mean density of total macroinvertebrates ranged from 0.0 ind. m^{-2} at LB2 and NB5 to 58,108.3 ind. m^{-2} at GH3 (**Appendix I-H**). Total macroinvertebrate density at the deep water stations within the study area (LB1, LB2, LB3, NB4, NB5, and NB6) was significantly lower compared to the deep water reference stations (GH1, GH2, and GH3) for both June (ANOVA, $p = 0.0001$)(**Figure 4.1.3.1.1; Appendix I-I**) and October (ANOVA, $p = 0.0001$)(**Figure 4.1.3.1.2; Appendix I-J**). One of the three shallow water reference stations (R3) had significantly lower total macroinvertebrate density compared to the shallow water stations within the study areas (NB1, NB2, and NB3) during June (ANOVA, $p = 0.0072$). This distribution pattern was not observed in October, when all shallow water stations exhibited comparable macroinvertebrate densities.

4.1.3.2 Annelids

In June 2001, mean density of annelids ranged from 0.0 ind. m^{-2} at LB1, LB2, LB3, NB5, and NB6 to 7,077.8 ind. m^{-2} at NB2. In October 2001, mean density of annelids ranged from 0.0 ind. m^{-2} at LB2, NB5, and NB6 to 8,097.2 ind. m^{-2} at NB2. Annelid densities at the deep water stations within the study areas (LB1, LB2, LB3, NB4, NB5, and NB6) were significantly lower compared to the deep water reference stations (GH1, GH2, and GH3) during both June (ANOVA, $p = 0.0001$) and October (ANOVA, $p = 0.0001$)(**Figs. 4.1.3.2.1, 4.1.3.2.2**). One of the three shallow water reference stations (R3) had significantly lower annelid density compared to the shallow water stations within the study areas (NB1, NB2, and NB3) during the June

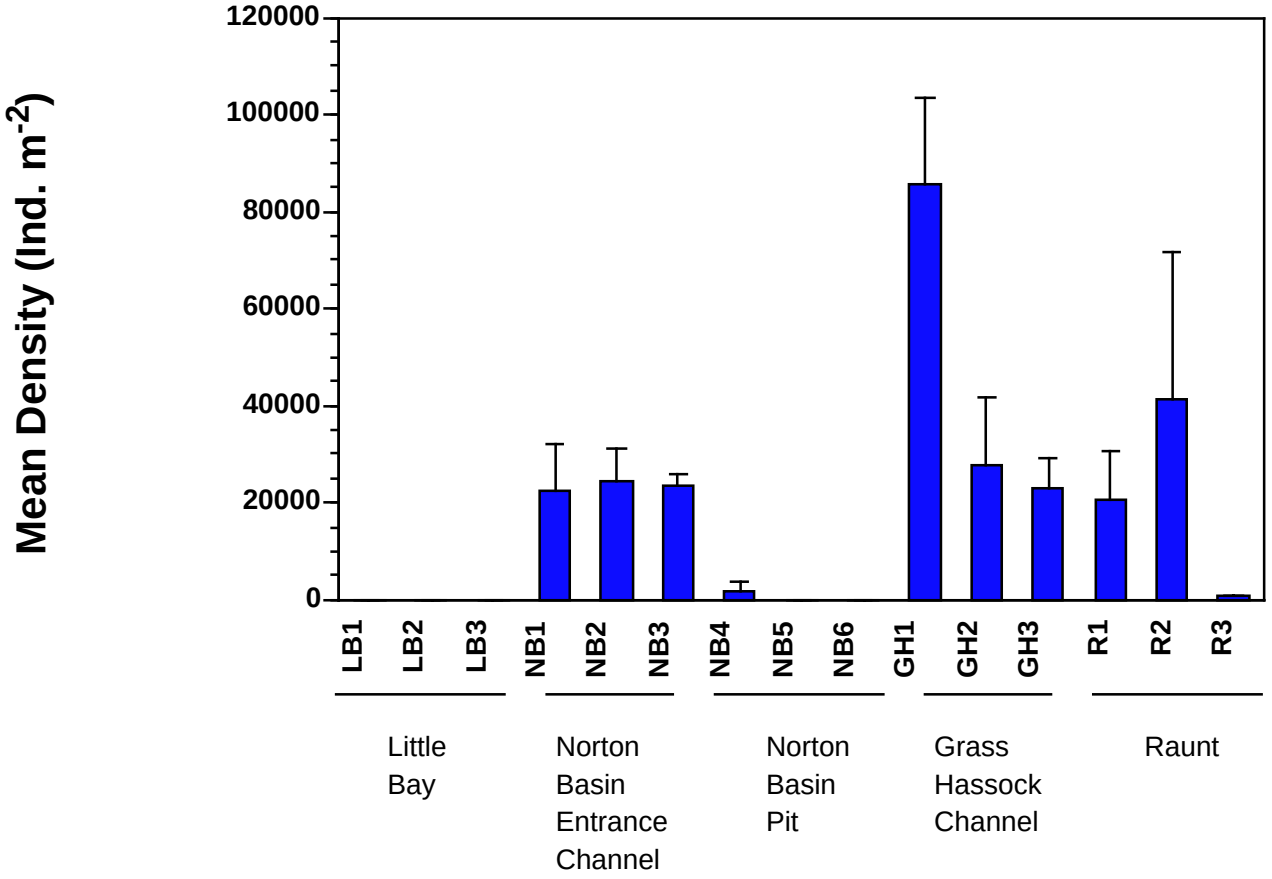

Figure 4.1.3.1.1 Mean density (ind. m^{-2}) of total macroinvertebrates, June 2001.

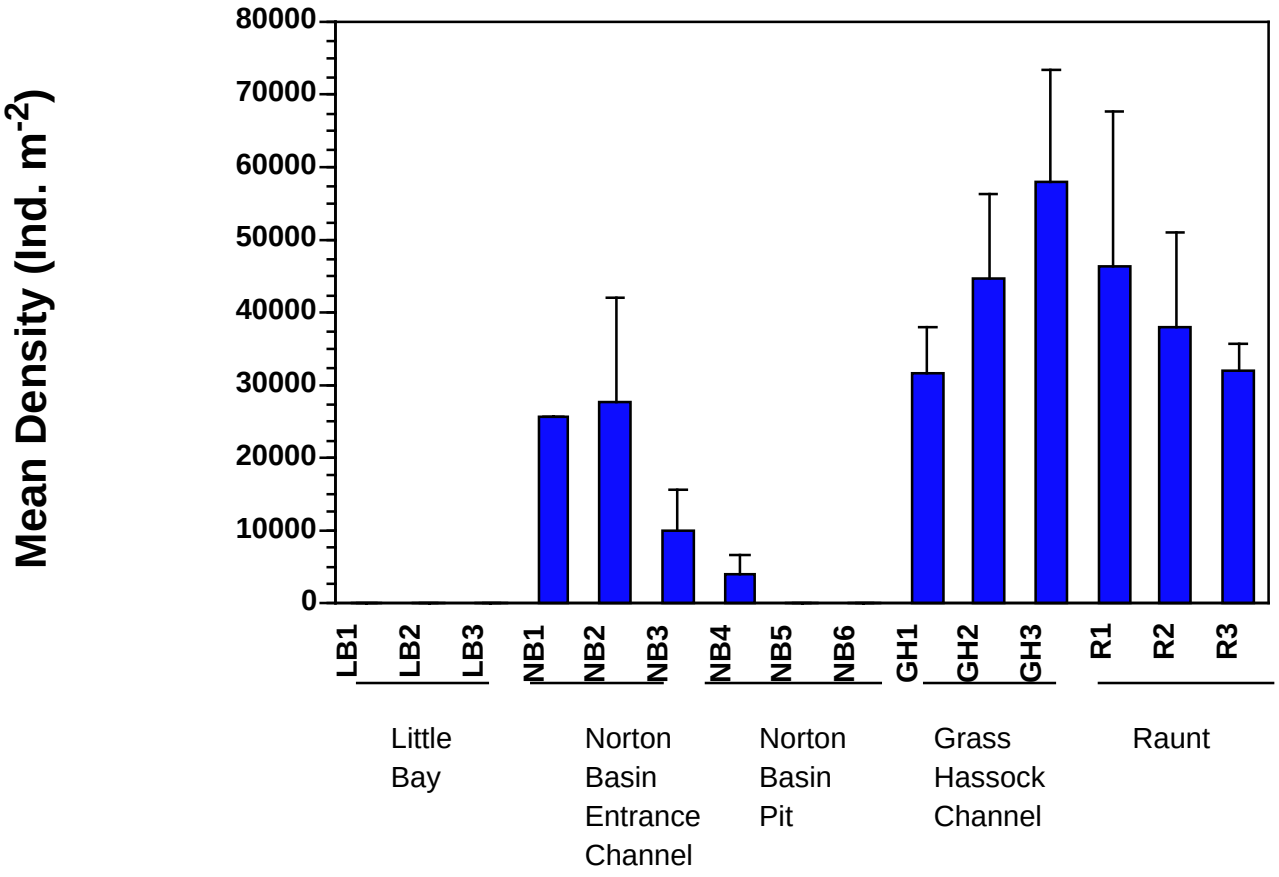

Figure 4.1.3.1.2 Mean density (ind. m^{-2}) of total macroinvertebrates, October 2001.

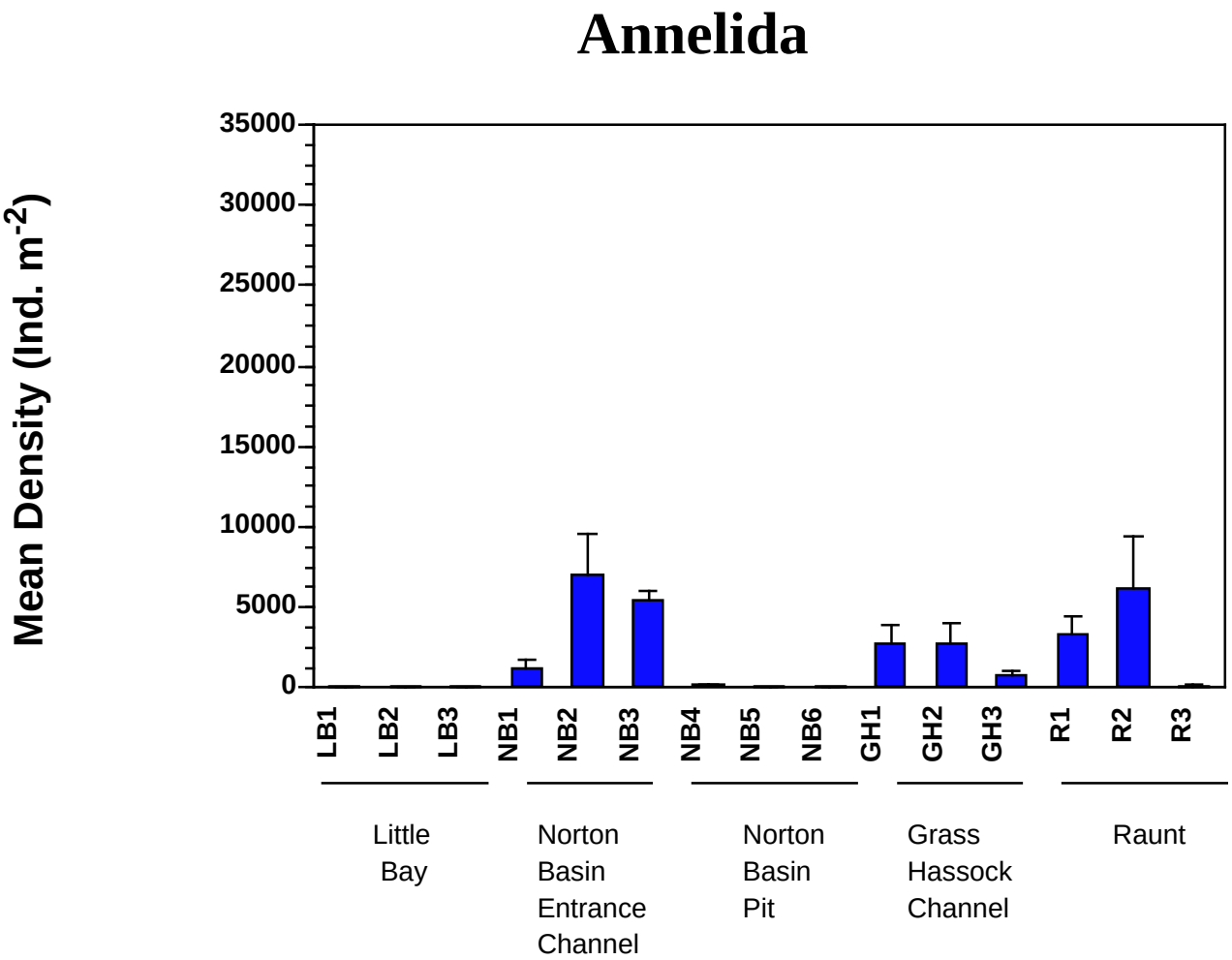

Figure 4.1.3.2.1 Mean density (ind. m^{-2}) of Annelida, June 2001.

Annelida

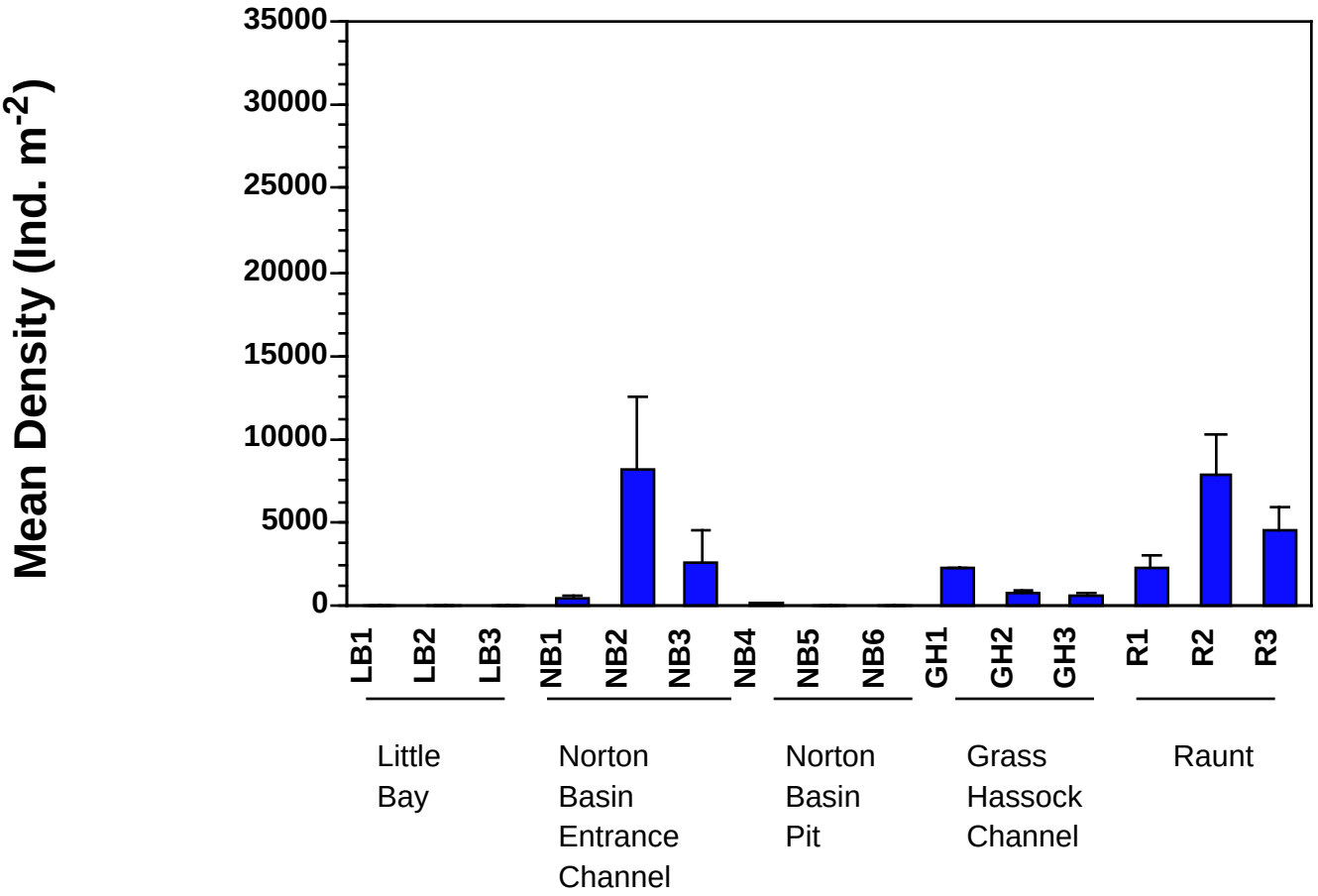

Figure 4.1.3.2.2 Mean density (ind. m^{-2}) of Annelida, October 2001.

sampling effort (ANOVA, p = 0.0006). This distribution pattern was not observed in October, when NB1 was found to have a significantly lower density of annelids compared to R2 (ANOVA, p =0.0399), but comparison with all other shallow water stations revealed no significant differences.

4.1.3.3 Arthropods

In June 2001, mean density of arthropods ranged from 0.0 ind. m^{-2} at LB1, LB2, and LB3 to 25,502.8 ind. m^{-2} at GH1. In October 2001, mean density of arthropods ranged from 0.0 ind. m^{-2} at LB2, and NB5 to 4466.3 ind. m^{-2} at NB2. Arthropod density at the deep water stations within the study areas (LB1, LB2, LB3, NB4, NB5, and NB6) was significantly lower in comparison to the deep water reference stations (GH1, GH2, and GH3) during both June (ANOVA, p = 0.0001) and October (ANOVA, p = 0.0001)(**Figs. 4.1.3.3.1, 4.1.3.3.2**). There were no significant differences in arthropod densities among the shallow water stations in June; however, stations NB2 and NB3 had significantly lower arthropod densities in comparison to the shallow water reference stations in October (ANOVA, p = 0.0002).

4.2 Gill Net Sampling

4.2.1 June, 2001

Gill net collections from the bottom of Norton Basin during June (48 hrs duration, n=5) yielded 439 individuals representing 11 species (**Table 4.2.1.1**). The dominant species were striped searobin (*Prionotus evolans*) and herrings (Clupeidae). [Note: Predation on fish captured in gill nets (presumably by blue crabs) prevented identification of herrings to species level]. Gill nets deployed at mid-depth in Norton Basin (48 hrs duration, n=3) yielded 61 individuals representing 5 species (**Table 4.2.1.1**). The dominant species were herrings (Clupeidae) and weakfish (*Cynoscion regalis*) Gill net collections from the bottom of Little Bay (48 hrs duration, n=3) yielded a total of one bluefish (*Pomatomus saltatrix*) (**Table 4.2.1.1**). Gill net collections at mid-depth in Little Bay (48 hrs duration, n=3) yielded a total of one striped searobin (*P. evolans*) (**Table 4.2.1.1; Appendix II-A**).

Gill net collections from the bottom of the Grass Hassock Channel during June (24 hrs duration, n=1) yielded 147 individuals representing 9 species (**Table 4.2.1.2**). The dominant species was striped searobin (*P. evolans*). Mean CPUE at the bottom of Grass Hassock Channel (2017.92 g/hr) was markedly greater than at the bottom of Norton Basin (755.58 g/hr) or the bottom of Little Bay (11.46 g/hr). Gill net collections at mid-depth in Grass Hassock Channel (48 hrs duration, n=3) yielded 157 individuals representing 8 species (**Table 4.2.1.2**). The dominant species were herrings (Clupeidae), striped searobin (*P. evolans*), and weakfish (*C. regalis*). Mean CPUE at mid-depth in Grass Hassock Channel (416.28 g/hr) was greater than at mid-depth in Norton Basin (173.75 g/hr) or at mid-depth in Little Bay (14.58 g/hr).

Gill net collections from the bottom of the Raunt (24 hrs duration, n=4) yielded 217 individuals representing 14 species (**Table 4.2.1.3**). The dominant species in the Raunt were mostly crabs, including the common spider crab (*Libinia emarginata*), blue crab (*Callinectes sapidus*), and lady

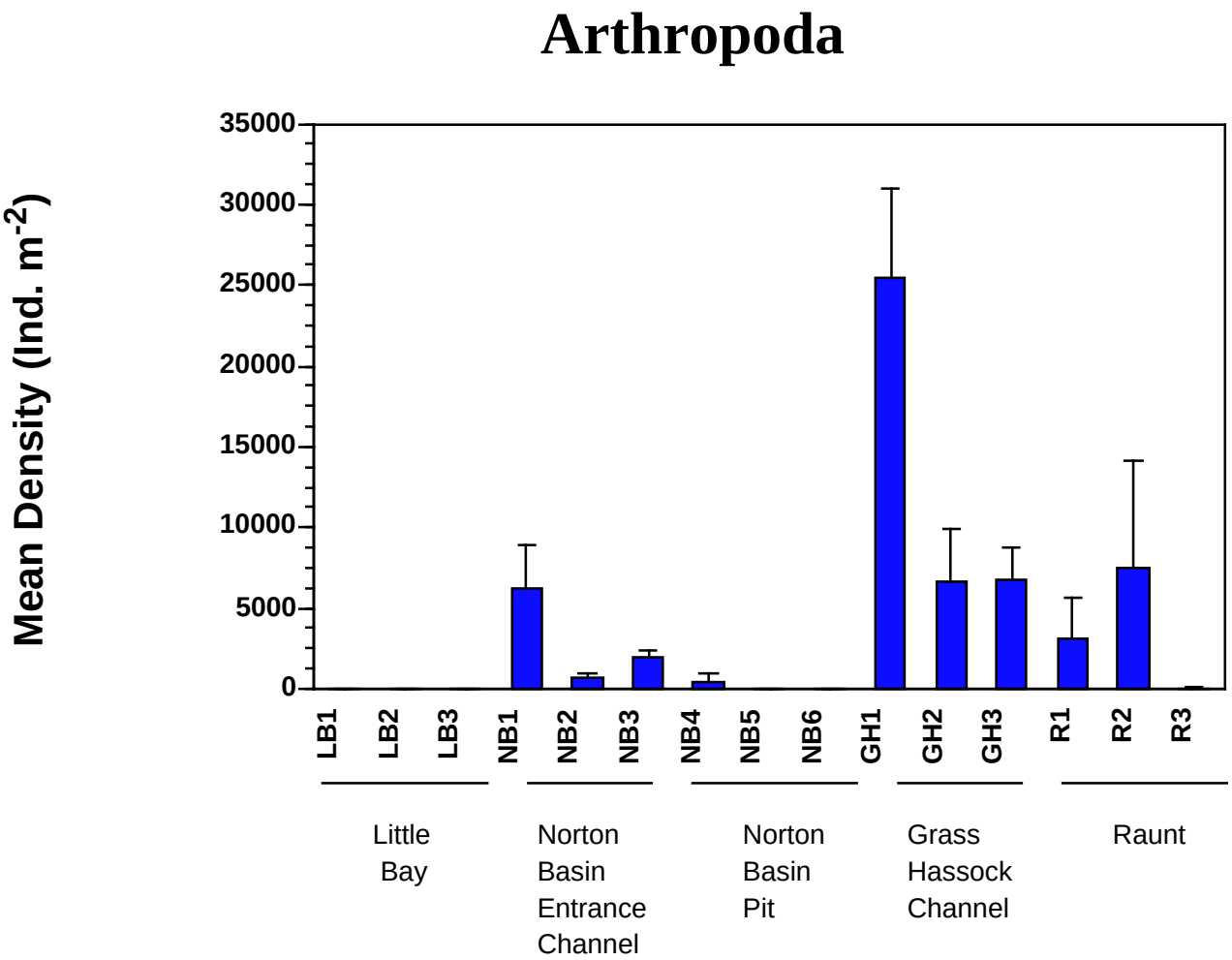

Figure 4.1.3.3.1 Mean density (ind. m^{-2}) of Arthropoda, June 2001.

Arthropoda

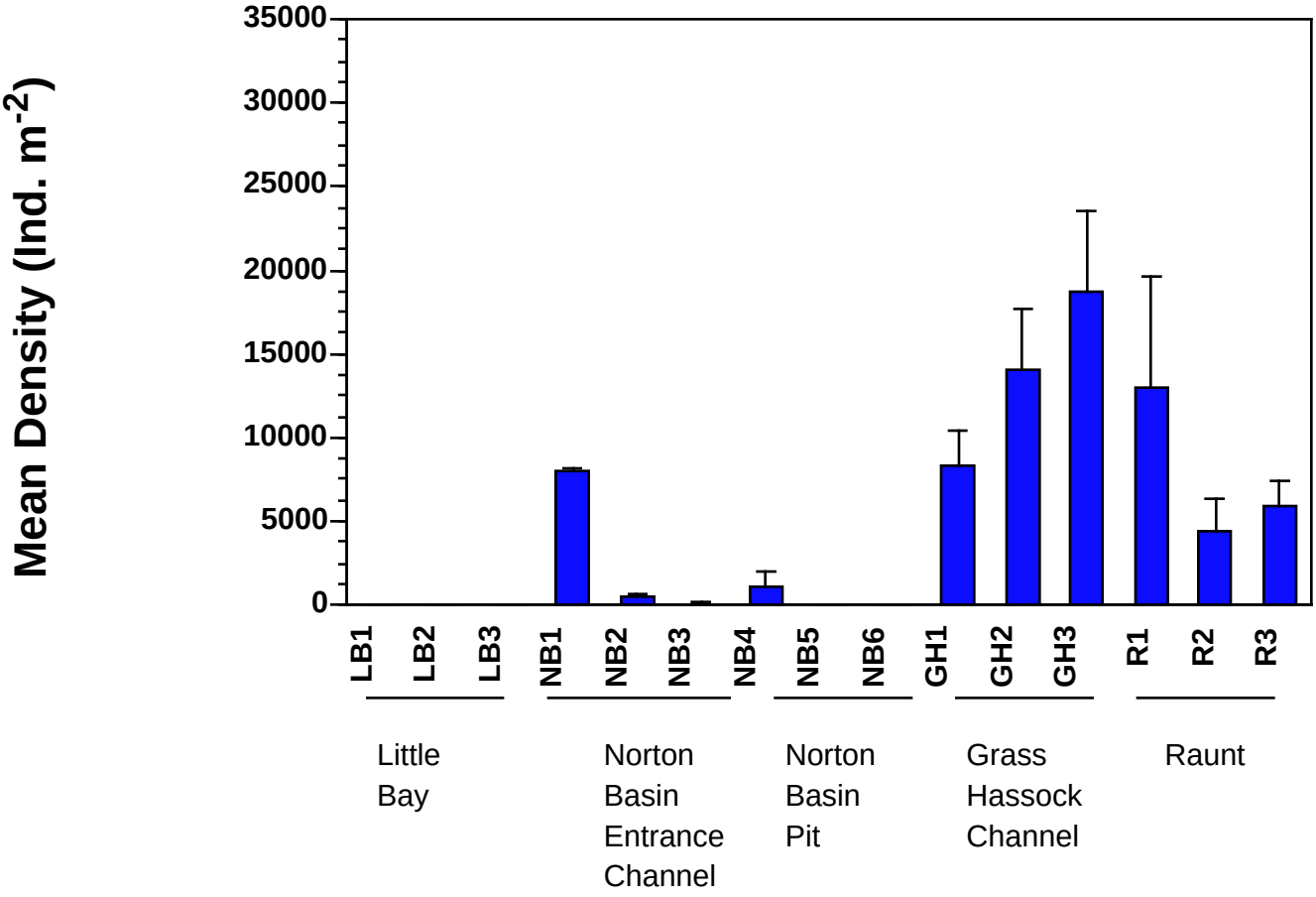

Figure 4.1.3.3.2 Mean density (ind. m^{-2}) of Arthropoda, October 2001.

Table 4.2.1.1 Total abundance, mean CPUE (biomass in g/hr), and total length range of fish and macrocrustaceans collected in gill nets from Norton Basin and Little Bay, June 27, 2001.

Norton Basin, Bottom (n=5)
Duration of set: 48 hrs

Scientific Name	Common Name	Total Abund.	Mean CPUE (g/hr)	TL Range (mm)
Prionotus evolans	Striped Searobin	312	497.92	155-420
Clupeidae	Herrings*	92	186.88	90-390
Callinectes sapidus	Blue Crab	11	6.46	125-145
Cynoscion regalis	Weakfish	11	9.17	230-330
Pomatomus saltatrix	Bluefish	3	18.54	400-545
Limulus polyphemus	Atlantic Horseshoe Crab	3	38.54	200-250
Morone saxatilis	Striped Bass	3	16.88	290-555
Squalus acanthias	Spiny Dogfish	1	89.58	1080
Urophycis regia	Spotted Hake	1	0.63	185
Paralichthys dentatus	Summer Flounder	1	7.08	320
Pleuronectes americanus	Winter Flounder	1	2.29	210
Total:		439	755.58	90-1080

Norton Basin, Mid-Depth (n=3)
Duration of set: 48 hrs

Scientific Name	Common Name	Total Abund.	Mean CPUE (g/hr)	TL Range (mm)
Clupeidae	Herrings*	31	104.17	320-395
Cynoscion regalis	Weakfish	19	39.58	260-420
Prionotus evolans	Striped Searobin	7	23.96	275-335
Callinectes sapidus	Blue Crab	2	2.29	125-135
Limulus polyphemus	Atlantic Horseshoe Crab	2	37.50	200-220
Total:		61	173.75	125-420

Little Bay, Bottom (n=3)
Duration of set: 48 hrs

Scientific Name	Common Name	Total Abund.	Mean CPUE (g/hr)	TL Range (mm)
Pomatomus saltatrix	Bluefish	1	11.46	395
Total:		1	11.46	395

Little Bay, Mid-Depth (n=3)
Duration of set: 48 hrs

Scientific Name	Common Name	Total Abund.	Mean CPUE (g/hr)	TL Range (mm)
Prionotus evolans	Striped Searobin	1	14.58	320
Total:		1	14.58	320

* includes Alewife, Blueback Herring, Atlantic Menhaden, and other unidentified clupeids

Table 4.2.1.2 Total abundance, mean CPUE (biomass in g/hr), and total length range of fish and macrocrustaceans collected in gill nets from Grass Hassock Channel, June 27, 2001.

Grass Hassock Channel, Bottom (n=1)
Duration of set: 24 hrs

Scientific Name	Common Name	Total Abund.	Mean CPUE (g/hr)	TL Range (mm)
Prionotus evolans	Striped Searobin	121	1537.50	230-360
Clupeidae	Herrings*	9	183.33	340-400
Callinectes sapidus	Blue Crab	4	16.67	120-140
Limulus polyphemus	Atlantic Horseshoe Crab	3	154.17	190-240
Cynoscion regalis	Weakfish	3	20.83	280-310
Squalus acanthias	Spiny Dogfish	2	8.33	340-390
Libinia emarginata	Common Spider Crab	2	12.50	70-70
Paralichthys dentatus	Summer Flounder	2	83.33	310-550
Pleuronectes americanus	Winter Flounder	1	1.25	140
Total:		147	2017.92	70-550

Grass Hassock Channel, Mid-Depth (n=3)
Duration of set: 48 hrs

Scientific Name	Common Name	Total Abund.	MeanCPUE (g/hr)	TL Range (mm)
Clupeidae	Herrings*	62	222.22	330-400
Prionotus evolans	Striped Searobin	59	139.58	250-400
Cynoscion regalis	Weakfish	20	33.33	240-350
Libinia emarginata	Common Spider Crab	8	7.19	55-85
Callinectes sapidus	Blue Crab	3	6.25	105-140
Pomatomus saltatrix	Bluefish	2	31.25	440-450
Pleuronectes americanus	Winter Flounder	2	0.94	140-165
Peprilus triacanthus	Butterfish	1	2.50	215
Total:		157	416.28	55-450

* includes Alewife, Blueback Herring, Atlantic Menhaden, and other unidentified clupeids

Table 4.2.1.3 Total abundance, mean CPUE (biomass in g/hr), and total length range of fish and macrocrustaceans collected in gill nets from the Raunt, June 27, 2001.

The Raunt, Bottom (n=4)
Duration of set: 24 hrs

Scientific Name	Common Name	Total Abund.	MeanCPUE (g/hr)	TL Range (mm)
Libinia emarginata	Common Spider Crab	52	85.64	50-95
Callinectes sapidus	Blue Crab	38	50.63	100-160
Ovalipes ocellatus	Lady Crab	33	62.50	40-85
Clupeidae	Herrings*	33	662.50	340-400
Cynoscion regalis	Weakfish	20	59.72	260-380
Prionotus carolinus	Northern Searobin	12	125.00	220-330
Limulus polyphemus	Atlantic Horseshoe Crab	10	177.78	135-290
Paralichthys dentatus	Summer Flounder	7	30.00	275-365
Prionotus evolans	Striped Searobin	6	4.17	145-160
Pleuronectes americanus	Winter Flounder	2	2.04	170-190
Pomatomus saltatrix	Bluefish	1	20.83	410
Sparidae	Porgy (LPIL)	1	1.67	120
Cancer irroratus	Rock Crab	1	1.46	70
Raja eglanteria	Clearnose Skate	1	66.67	700
Total:		217	574.10	40-700

The Raunt, Mid-Depth (n=1)
Duration of set: 24 hrs

Scientific Name	Common Name	Total Abund.	MeanCPUE (g/hr)	TL Range (mm)
Callinectes sapidus	Blue Crab	13	79.17	110-160
Clupeidae	Herrings*	13	241.67	340-400
Cynoscion regalis	Weakfish	12	108.33	255-350
Limulus polyphemus	Atlantic Horseshoe Crab	4	225.00	180-260
Peprilus triacanthus	Butterfish	2	8.33	170-200
Total:		44	662.50	110-400

* includes Alewife, Blueback Herring, Atlantic Menhaden, and other unidentified clupeids

crab (*Ovalipes ocellatus*), as well as herrings (Clupeidae) and weakfish (*C. egalis*). Mean CPUE at the bottom of the Raunt (574.10 g/hr) was slightly lower than at the bottom of Norton Basin but greater than at the bottom of Little Bay. Gill net collections at mid-depth in the Raunt (24 hrs duration, n=1) yielded 44 individuals representing 5 species (**Table 4.2.1.3**). The dominant species were blue crab (*C. sapidus*), herrings (Clupeidae), and weakfish (*C. regalis*). Mean CPUE at mid-depth in the Raunt (662.50 g/hr) was greater than at mid-depth in Norton Basin or at mid-depth in Little Bay.

4.2.2 October, 2001

Gill net collections from the bottom of Norton Basin during October (6-16 hrs duration, n=6) yielded 54 individuals representing 11 species (**Table 4.2.2.1**). The dominant species were herrings (Clupeidae) and striped searobin (*P. evolans*). Gill net collections at mid-depth in Norton Basin (6-16 hrs duration, n=6) yielded 29 individuals representing 6 species (**Table 4.2.2.1**). The dominant species were bluefish (*P. saltatrix*) and herrings (Clupeidae). Gill net collections from the bottom of Little Bay (6-16 hrs duration, n=6) yielded 41 individuals representing 9 species (**Table 4.2.2.2**). The dominant species were herrings (Clupeidae) and Atlantic horseshoe crab (*Limulus polyphemus*). Gill net collections at mid-depth in Little Bay (6-16 hrs duration, n=6) yielded 10 individuals representing 5 species (**Table 4.2.2.2; Appendix II-B**). The dominant species was herrings (Clupeidae).

Gill net collections from the bottom of the Grass Hassock Channel (7-20 hrs duration, n=6) yielded 158 individuals representing 15 species (**Table 4.2.2.3**). The dominant species were blue crab (*C. sapidus*) and herrings (Clupeidae). Mean CPUE at the bottom of the Grass Hassock Channel (530.13 g/hr) was greater than at the bottom of Norton Basin (270.72 g/hr) or the bottom of Little Bay (344.81 g/hr). Gill net collections at mid-depth in Grass Hassock Channel (7-20 hrs duration, n=6) yielded 162 individuals representing 14 species (**Table 4.2.2.3**). The dominant species were blue crab (*C. sapidus*), striped searobin (*P. evolans*), and herrings (Clupeidae). Mean CPUE at mid-depth in Grass Hassock Channel (611.95 g/hr) was markedly greater than that observed at mid-depth in Norton Basin (85.30 g/hr) or at mid-depth in Little Bay (108.53 g/hr).

Gill net collections at the bottom of the Raunt (7-20 hrs duration, n=5) yielded 176 individuals representing 12 species (**Table 4.2.2.4**). The dominant species in the Raunt were herrings (Clupeidae), lady crab (*O. ocellatus*), and Atlantic horseshoe crab (*L. polyphemus*). Observed mean CPUE at the bottom of the Raunt (704.89 g/hr) was slightly greater than at the bottom of Norton Basin and at the bottom of Little Bay. Gill net collections at mid-depth in the Raunt (21 hrs duration, n=2) yielded 124 individuals representing 6 species (**Table 4.2.2.4**). The dominant species were crabs, including lady crab (*O. ocellatus*), common spider crab (*Libinia emarginata*), and Atlantic horseshoe crab (*L. polyphemus*). Mean CPUE at mid-depth in the Raunt (361.20 g/hr) was greater than that observed at mid-depth in Norton Basin or at mid-depth in Little Bay.

Table 4.2.2.1 Total abundance, mean CPUE (biomass in g/hr), and total length range of fish and macrocrustaceans collected in gill nets from Norton Basin, October 1, 2001.

Norton Basin, Bottom (n=6)
Duration of set: 6 to 16 hrs

Scientific Name	Common Name	Total Abund.	Mean CPUE (g/hr)	TL Range (mm)
Clupeidae	Herrings*	15	108.81	85-392
Prionotus evolans	Striped Searobin	8	48.09	300-342
Callinectes sapidus	Blue Crab	5	9.04	133-152
Limulus polyphemus	Atlantic Horseshoe Crab	5	46.71	190-280
Cynoscion regalis	Weakfish	5	13.89	155-440
Menticirrhus saxatilis	Northern Kingfish	4	3.02	171-182
Morone saxatilis	Striped Bass	4	14.01	180-334
Centropristis ocyurus	Black Sea Bass	3	20.06	254-325
Synodus foetens	Inshore Lizardfish	2	1.19	170-198
Stenotomus chrysops	Scup	2	2.54	97-202
Pomatomus saltatrix	Bluefish	1	3.37	275
Total:		54	270.72	85-440

Norton Basin, Mid-Depth (n=6)
Duration of set: 6 to 16 hrs

Scientific Name	Common Name	Total Abund.	Mean CPUE (g/hr)	TL Range (mm)
Pomatomus saltatrix	Bluefish	11	17.54	163-281
Clupeidae	Herrings*	9	47.02	110-372
Callinectes sapidus	Blue Crab	5	16.22	137-155
Cynoscion regalis	Weakfish	2	0.92	175
Stenotomus chrysops	Scup	1	2.60	200
Prionotus evolans	Striped Searobin	1	1.00	148
Total:		29	85.30	110-372

* includes Alewife, Blueback Herring, Atlantic Menhaden, and other unidentified clupeids

Table 4.2.2.2 Total abundance, mean CPUE (biomass in g/hr), and total length range of fish and macrocrustaceans collected in gill nets from Little Bay, October 1, 2001.

Little Bay, Bottom (n=6)
Duration of set: 6 to 16 hrs

Scientific Name	Common Name	Total Abund.	Mean CPUE (g/hr)	TL Range (mm)
Clupeidae	Herrings*	9	92.21	353-395
Limulus polyphemus	Atlantic Horseshoe Crab	8	132.89	123-273
Prionotus evolans	Striped Searobin	5	3.53	125-188
Centropristis ocyurus	Black Sea Bass	4	12.82	146-283
Pomatomus saltatrix	Bluefish	4	21.60	194-265
Morone saxatilis	Striped Bass	4	42.75	315-465
Tautoga onitis	Tautog	3	14.73	245-265
Cynoscion regalis	Weakfish	3	13.59	166-730
Paralichthys dentatus	Summer Flounder	1	10.69	391
Total:		41	344.81	123-730

Little Bay, Mid-Depth (n=6)
Duration of set: 6 to 16 hrs

Scientific Name	Common Name	Total Abund.	Mean CPUE (g/hr)	TL Range (mm)
Clupeidae	Herrings*	5	46.98	356-405
Cynoscion regalis	Weakfish	2	17.98	386-404
Centropristis ocyurus	Black Sea Bass	1	3.78	230
Callinectes sapidus	Blue Crab	1	2.04	125
Limulus polyphemus	Atlantic Horseshoe Crab	1	37.76	266
Total:		10	108.53	125-405

* includes Alewife, Blueback Herring, Atlantic Menhaden, and other unidentified clupeids

Table 4.2.2.3 Total abundance, mean CPUE (biomass in g/hr), and total length range of fish and macrocrustaceans collected in gill nets from Grass Hassock Channel, October 1, 2001.

Grass Hassock Channel, Bottom (n=6)
Duration of set: 7 to 20 hrs

Scientific Name	Common Name	Total Abund.	Mean CPUE (g/hr)	TL Range (mm)
Callinectes sapidus	Blue Crab	42	102.79	116-175
Clupeidae	Herrings*	32	240.61	345-420
Prionotus evolans	Striped Searobin	16	14.85	130-235
Ovalipes ocellatus	Lady Crab	14	4.44	35-75
Pomatomus saltatrix	Bluefish	13	20.61	165-264
Stenotomus chrysops	Scup	12	13.58	102-206
Menticirrhus saxatilis	Northern Kingfish	9	5.71	164-187
Limulus polyphemus	Atlantic Horseshoe Crab	6	63.45	185-202
Libinia emarginata	Common Spider Crab	4	10.79	70-760
Paralichthys dentatus	Summer Flounder	3	13.96	132-310
Centropristis ocyurus	Black Sea Bass	2	12.44	280-294
Morone saxatilis	Striped Bass	2	15.23	355-450
Peprilus triacanthus	Butterfish	1	3.30	270
Synodus foetens	Inshore Lizardfish	1	0.76	201
Cynoscion regalis	Weakfish	1	7.61	405
Total:		158	530.13	35-760

Grass Hassock Channel, Mid-Depth (n=6)
Duration of set: 7 to 20 hrs

Scientific Name	Common Name	Total Abund.	MeanCPUE (g/hr)	TL Range (mm)
Callinectes sapidus	Blue Crab	47	101.92	120-195
Prionotus evolans	Striped Searobin	44	41.92	100-325
Clupeidae	Herrings*	29	225.64	315-394
Pomatomus saltatrix	Bluefish	11	93.72	200-345
Cynoscion regalis	Weakfish	5	18.97	170-420
Ovalipes ocellatus	Lady Crab	4	2.17	50-70
Stenotomus chrysops	Scup	4	4.15	110-190
Paralichthys dentatus	Summer Flounder	4	12.10	158-330
Limulus polyphemus	Atlantic Horseshoe Crab	3	65.38	235-255
Synodus foetens	Inshore Lizardfish	3	1.28	240-240
Morone saxatilis	Striped Bass	3	37.82	405-555
Centropristis ocyurus	Black Sea Bass	2	5.19	90-235
Menticirrhus saxatilis	Northern Kingfish	2	1.67	165-173
Syngnathus fuscus	Northern Pipefish	1	0.00	150
Total:		162	611.95	50-555

* includes Alewife, Blueback Herring, Atlantic Menhaden, and other unidentified clupeids

Table 4.2.2.4 Total abundance, mean CPUE (biomass in g/hr), and total length range of fish and macrocrustaceans collected in gill nets from the Raunt, October 1, 2001.

The Raunt, Bottom (n=5)
Duration of set: 7 to 20 hrs

Scientific Name	Common Name	Total Abund.	MeanCPUE (g/hr)	TL Range (mm)
Clupeidae	Herrings*	65	287.70	90-410
Ovalipes ocellatus	Lady Crab	31	16.98	35-82
Limulus polyphemus	Atlantic Horseshoe Crab	20	245.06	115-250
Libinia emarginata	Common Spider Crab	19	50.93	60-100
Callinectes sapidus	Blue Crab	13	39.66	134-175
Cynoscion regalis	Weakfish	8	5.48	135-205
Prionotus evolans	Striped Searobin	6	3.09	75-150
Prionotus carolinus	Northern Searobin	5	10.80	182-255
Centropristis ocyurus	Black Sea Bass	3	8.32	90-220
Morone saxatilis	Striped Bass	3	6.79	166-352
Paralichthys dentatus	Summer Flounder	2	29.32	405-455
Pomatomus saltatrix	Bluefish	1	0.77	194
Total:		176	704.89	35-455

The Raunt, Mid-Depth (n=2)
Duration of set: 21 hrs

Scientific Name	Common Name	Total Abund.	MeanCPUE (g/hr)	TL Range (mm)
Ovalipes ocellatus	Lady Crab	53	40.96	40-81
Libinia emarginata	Common Spider Crab	44	106.02	50-110
Limulus polyphemus	Atlantic Horseshoe Crab	16	142.17	115-220
Callinectes sapidus	Blue Crab	7	31.33	112-190
Paralichthys dentatus	Summer Flounder	3	26.27	270-310
Centropristis ocyurus	Black Sea Bass	1	14.46	340
Total:		124	361.20	40-340

* includes Alewife, Blueback Herring, Atlantic Menhaden, and other unidentified clupeids

4.3 Bottom Trawling

Trawls conducted in Norton Basin during June (5 min duration, n=4) yielded a total of 2 blue crabs (*C. sapidus*) (**Table 4.3.1**). Trawls conducted in Grass Hassock Channel during June (5 min duration, n=5) yielded 5 individuals representing 3 species (**Table 4.3.1**). Trawls conducted in the Raunt during June (5 min duration, n=5) yielded a total of 1 winter flounder (*Pseudopleuronectes americanus*) (**Table 4.3.1**).

Trawls conducted in Norton Basin during October (3-8 min duration, n=5) yielded a total of 5 individuals representing 3 species (**Table 4.3.2**). Trawls conducted in Grass Hassock Channel in October 2001 (10 min duration, n=4) yielded 35 individuals representing 4 species (**Table 4.3.2**). Scup (*Stenotomus chrysops*) was the numerically dominant species, while blue crab (*C. sapidus*) dominated in terms of biomass. Trawls conducted in the Raunt during October (4-10 min duration, n=4) yielded 35 individuals representing 12 species (**Table 4.3.2**). Rock crab (*Cancer irroratis*) was the numerically dominant species, while blue crab (*C. sapidus*) dominated in terms of biomass. Mean CPUE for Norton Basin during October (16.6 g/min.) was less than that for Grass Hassock Channel (61.6g/min.) or the Raunt (86.3g/min.) (**Table 4.3.2**).

4.4 Sediment Profile Imaging

A total of 272 SPI images were obtained during June and October, from 101 stations located throughout Norton Basin/Little Bay study area and the reference areas. Detailed station summaries of the June and October SPI surveys are presented in **Tables 4.4.1** and **Table 4.4.2**. The summaries present information on camera (prism) penetration depth, surface/near-surface features, RPD depth, grain size, and observations of benthic fauna. All SPI images have been catalogued in a hypertext markup language (HTML) database and are included on a compact disk – read only memory (CD-ROM) (**Appendix III-A**). A data dictionary is also included (**Appendix III-B**).

4.4.1 Norton Basin

The dominant sediment types present throughout Norton Basin were silt and fine sand. Within the two borrow pits, sediments were highly aqueous organic fines and the SPI camera often over-penetrated, precluding the collection of satisfactory images at the water/sediment interface. Sandy sediments overlain by shell hash were encountered in the vicinity of the entrance channel to Norton Basin.

A large number of stations throughout Norton Basin were covered with dense mats of green algae (*Ulva lactuca*). These mats were probably 2-4 ft thick in some areas, as evidenced by the volume of algae that had to be removed from the camera frame between deployments (**Fig. 4.4.1.1**). In October, extensive chemolithotrophic bacterial mats were observed within the Norton Basin borrow pits (**Fig. 4.4.1.2**).

Table 4.3.1 Total abundance, mean CPUE (biomass in g/min), and total length range of fish and macrocrustaceans collected in otter trawls from Norton Basin, the Raunt, and Grass Hassock Channel, June 27, 2001.

Grass Hassock Channel (n=5)
Trawl duration: 5 min.

Scientific Name	Common Name	Total Abund.	Mean CPUE (g/min.)	TL Range (mm)
Paralichthys dentatus	Summer Flounder	2	28.00	320-375
Pleuronectes americanus	Winter Flounder	2	5.20	155-175
Syngnathus fuscus	Northern Pipefish	1	<1	180
Total:		5	33.20	155-375

The Raunt (n=5)
Trawl duration: 5 min.

Scientific Name	Common Name	Total Abund.	Mean CPUE (g/min.)	TL Range (mm)
Pleuronectes americanus	Winter Flounder	1	0.40	100
Total:		1	0.40	100

Norton Basin (n=4)
Trawl duration: 5 min.

Scientific Name	Common Name	Total Abund.	Mean CPUE (g/min.)	TL Range (mm)
Callinectes sapidus	Blue Crab	2	22.00	130-175
Total:		2	22.00	130-175

Table 4.3.2 Total abundance, mean CPUE (biomass in g/min), and total length range of fish and macrocrustaceans collected in otter trawls from Norton Basin, the Raunt, and Grass Hassock Channel, October 1, 2001.

Grass Hassock Channel (n=4)
Trawl duration: 10 min.

Scientific Name	Common Name	Total Abund.	Mean CPUE (g/min.)	TL Range (mm)
Stenotomus chrysops	Scup	23	8.00	90-120
Callinectes sapidus	Blue Crab	9	30.00	120-154
Ambloplites rupestris	Rock Bass	2	0.55	90-95
Paralichthys dentatus	Summer Flounder	1	23.00	207
Total:		35	61.55	90-207

The Raunt (n=4)
Trawl duration: 4-10 min.

Scientific Name	Common Name	Total Abund.	Mean CPUE (g/min.)	TL Range (mm)
Cancer irroratis	Rock Crab	13	10.67	40-59
Callinectes sapidus	Blue Crab	9	49.77	90-165
Fundulus heteroclitus	Mummichog	3	0.17	42-55
Tautogolabrus adspersus	Cunner (juvenile)	2	0.13	51-54
Menidia menidia	Atlantic Silverside	1	0.17	94
Limulus polyphemus	Atlantic Horseshoe Crab	1	21.67	170
Opsanus tau	Oyster Toadfish	1	0.30	80
Sygnathus fuscus	Northern Pipefish	1	n/a	182
Menticirrhus saxatilus	Kingfish	1	1.83	170
Libinia emaginata	Common Spider Crab	1	0.87	36
Hippocampus erectus	Lined Sea Horse	1	n/a	
Pleuronectes americanus	Winter Flounder	1	0.73	120
Total:		35	86.30	36-17000

Norton Basin (n=5)
Trawl duration: 3-8 min.

Scientific Name	Common Name	Total Abund.	Mean CPUE (g/min.)	TL Range (mm)
Callinectes sapidus	Blue Crab	3	6.24	92-130
Stenotomus chrysops	Scup	1	0.88	114
Paralichthys dentatus	Summer Flounder	1	9.48	284
Total:		5	16.60	92-284

Table 4.4.1 Sediment Profile Imagery (SPI) station summary from Norton Basin, Little Bay, the Raunt, and Grass Hassock Channel, June 27, 2001.

STATION	REP	Date	Depth	pen min	pen max	pen ave	Surf. Relief	RPD Ave	Algae	Snail	Hermit Crabs	Crabs	Shell	Detritus	Bedforms	GRAIN SIZE	SURFACE FEATURES	AMPHIPOD TUBES	WORM TUBES	INFAUNA	BURROWS	OXIC VOIDS	ANAEROBIC VOIDS	GAS VOIDS	OTHER
LB01	2	Jun-01	25	10.6	12.3	11.5	1.7	0.0	x							SI	PHY	NONE	NONE	0	0	0	0	0	Low DO?
LB02	1	Jun-01	49	IND	IND	>23	IND	IND								SI	IND	IND	IND	0	0	0	0	0	Low DO?, very soft
LB03	1	Jun-01	40	IND	IND	>23	IND	IND								SI	IND	IND	IND	0	0	0	0	0	Low DO?, very soft
LB04	1	Jun-01	43	IND	IND	>23	IND	IND								SI	IND	IND	IND	0	0	0	0	0	Low DO?, very soft
LB05	1	Jun-01	55	IND	IND	>23	IND	IND								SI	IND	IND	IND	0	0	0	0	0	Low DO?, very soft
LB05	2	Jun-01	55	IND	IND	>23	IND	IND								SI	IND	IND	IND	0	0	0	0	0	Low DO?, very soft
LB06	1	Jun-01	40	21.6	22.8	22.2	1.2	0.1								SI	PHY	NONE	NONE	0	0	0	0	0	Low DO?, very soft
LB07	1	Jun-01	44	IND	IND	>23	IND	IND								SI	IND	IND	IND	0	0	0	0	0	Low DO?, very soft
LB08	1	Jun-01	65	IND	IND	>23	IND	IND								SI	IND	IND	IND	0	0	0	0	0	Low DO?, very soft
LB09	1	Jun-01	38	IND	IND	>23	IND	IND								SI	IND	IND	IND	0	0	0	0	0	Low DO?, very soft
LB10	1	Jun-01	45	IND	IND	>23	IND	IND								SI	IND	IND	IND	0	0	0	0	0	Low DO?, very soft
LB11	1	Jun-01	60	IND	IND	>23	IND	IND								SI	IND	IND	IND	0	0	0	0	0	Low DO?, very soft
LB12	1	Jun-01	38	IND	IND	>23	IND	IND								SI	IND	IND	IND	0	0	0	0	0	Low DO?, very soft
LB12	2	Jun-01	38	6.5	14.0	10.3	7.5	0.0								SI	PHY	NONE	NONE	0	0	0	0	0	Low DO, very soft
LB13	1	Jun-01	40	IND	IND	>23	IND	IND								SI	IND	IND	IND	0	0	0	0	0	Low DO?, very soft
LB14	1	Jun-01	27	10.4	11.3	10.8	0.9	0.0								SI	PHY	NONE	NONE	0	0	0	0	0	Low DO, very soft
LB15	1	Jun-01	25	7.4	7.9	7.7	0.5	0.0					x			SI	PHY	Dead MAT	NONE	0	0	0	0	0	Low DO, very soft
NB16	1	Jun-01	20	2.6	3.0	2.8	0.4	0.6			1		x		x	MS	PHY	NONE	NONE	0	0	0	0	0	
NB16	2	Jun-01	20	3.1	4.5	3.8	1.3	0.0	x							SIMS	PHY	NONE	NONE	0	0	0	0	0	Low DO
NB16	3	Jun-01	20	2.3	4.7	3.5	2.5	0.1	x	4						SIMS	PHY	SOME	NONE	0	0	0	0	0	
NB16	4	Jun-01	20	14.8	16.7	15.8	1.9	0.8	x							SI	BIOG	MAT	NONE	0	0	0	0	0	
NB17	1	Jun-01	14	IND	IND	>23	IND	IND								SI/CL	IND	IND	IND	0	0	0	0	0	Low DO?, very soft
NB17	2	Jun-01	14	IND	IND	>23	IND	IND								SI/CL	IND	IND	IND	0	0	0	0	0	Low DO?, very soft
NB18	1	Jun-01	34	IND	IND	>23	IND	IND								SI	IND	IND	IND	0	0	0	0	0	Low DO?, very soft
NB18	2	Jun-01	34	14.8	16.4	15.6	1.5	0.0	x	1						SI	PHY	NONE	SOME	0	0	0	0	0	Low DO
NB19	1	Jun-01	24	1.3	5.3	3.3	3.9	0.4	x	3			x			SI	PHY	MANY	SOME	0	0	0	0	0	
NB20	1	Jun-01	26	9.8	10.9	10.4	1.0	0.0	x							SI	PHY	NONE	NONE	0	0	0	0	0	
NB21	1	Jun-01	14	15.8	16.1	15.9	0.2	0.4		1						SL	BIOG	MAT	NONE	0	0	0	0	0	
NB22	1	Jun-01	20	0.8	2.4	1.6	1.5	0.7	x				x			FSMS	PHY	FEW	NONE	0	0	0	0	0	
NB23	1	Jun-01	21	7.3	9.5	8.4	2.2	2.3	x				x			FSMS	PHY	NONE	NONE	0	1	0	0	0	
NB23	2	Jun-01	21	18.6	19.6	19.1	1.0	0.8								SI	BIOG	MAT	SOME	0	0	0	0	0	
NB24	1	Jun-01	20	5.7	8.9	7.3	3.3	1.5	x	3			x			SIFS	PHY	FEW	MANY	1	1	0	0	0	
NB25	1	Jun-01	40	IND	IND	>23	IND	IND								SI	IND	IND	IND	0	0	0	0	4	Low DO?, very soft
NB25	2	Jun-01	40	IND	IND	>23	IND	IND								SI	IND	IND	IND	0	0	0	0	3	Low DO?, very soft
NB26	1	Jun-01	44	IND	IND	>23	IND	IND								SI	IND	IND	IND	0	0	0	0	10	Low DO?, very soft
NB26	2	Jun-01	44	IND	IND	>23	IND	IND								SI	IND	IND	IND	0	0	0	0	2	Low DO?, very soft
NB27	1	Jun-01	40	IND	IND	>23	IND	IND								SI	IND	IND	IND	0	0	0	0	0	Low DO?, very soft
NB28	1	Jun-01	32	IND	IND	>23	IND	IND								SI	IND	IND	IND	0	0	0	0	0	Low DO?, very soft
NB29	1	Jun-01	45	IND	IND	>23	IND	IND								SI	IND	IND	IND	0	0	0	0	6	Low DO?, very soft
NB29	2	Jun-01	45	IND	IND	>23	IND	IND								SI	IND	IND	IND	0	0	0	0	0	Low DO?, very soft
NB30	1	Jun-01	8*	IND	IND	>23	IND	IND	x					x		SI	PHY	FEW	NONE	0	0	0	0	1	Low DO?
NB31	1	Jun-01	26	2.9	3.4	3.1	0.5	0.8					x			SIFS	BIOG	MAT	NONE	0	0	0	0	0	
NB31	2	Jun-01	26	8.6	12.1	10.3	3.5	1.2					x			FSMS/SIFS	PHY	NONE	NONE	0	0	0	0	0	
NB32	1	Jun-01	20	16.6	17.0	16.8	0.4	0.0								SI	PHY	NONE	SOME	5	0	0	0	0	Low DO, Bacterial Mat
NB33	1	Jun-01	16	1.3	5.0	3.1	3.7	0.1	x					x		SASI	PHY	NONE	NONE	0	0	0	0	0	
NB33	2	Jun-01	16	5.5	6.2	5.8	0.6	0.7					x	x		SASI	PHY	NONE	NONE	0	0	0	0	0	
NB34	1	Jun-01	14	18.3	19.9	19.1	1.6	0.0					x			SI	PHY	NONE	MANY	0	0	0	0	0	Low DO
NB35	1	Jun-01	14	9.3	9.8	9.6	0.5	0.2	x	1			x			SI	BIOG	NONE	MANY	0	0	0	0	0	
NB36	1	Jun-01	19	19.4	20.9	20.1	1.5	0.9		1						SI/CL	EVEN	NONE	SOME	0	0	0	0	0	
NB37	1	Jun-01	15	IND	IND	>23	IND	IND	x							SI	IND	IND	IND	0	0	0	0	0	Low DO?, very soft
NB38	1	Jun-01	15	IND	IND	>23	IND	IND								SI	IND	IND	IND	16	0	0	0	0	Low DO?, very soft
NB39	1	Jun-01	42	IND	IND	>23	IND	IND								SI	IND	MAT?	IND	0	0	0	0	0	
NB39	2	Jun-01	42	11.4	12.0	11.7	0.6	0.0	x	1						SI	PHY	NONE	SOME	0	0	0	0	0	Low DO

Table 4.4.1 Sediment Profile Imagery (SPI) station summary from Norton Basin, Little Bay, the Raunt, and Grass Hassock Channel, June 27, 2001.

STATION	REP	Date	Depth	pen min	pen max	pen ave	Surf. Relief	RPD Ave	Algae	Snail	Hermit Crabs	Crabs	Shell	Detritus	Bedforms	GRAIN SIZE	SURFACE FEATURES	AMPHIPOD TUBES	WORM TUBES	INFAUNA	BURROWS	OXIC VOIDS	ANAEROBIC VOIDS	GAS VOIDS	OTHER
NB40	2	Jun-01	10	1.2	1.6	1.4	0.4	0.6	x			1	x	x		MSFS	PHY	NONE	NONE	0	0	0	0	0	
NB41	1	Jun-01	13	2.6	3.3	3.0	0.7	2.0	x				x			FSMS	PHY	NONE	NONE	0	0	0	0	0	Ribbed Mussels
NB42	1	Jun-01	14	0.0	2.2	1.1	2.2	IND					x			SH	PHY	NONE	NONE	IND	IND	IND	IND	IND	Shell bed
NB43	1	Jun-01	11	0.0	3.9	2.0	3.9	IND	x	5	1					SH	PHY	NONE	SOME	IND	IND	IND	IND	IND	Shell bed
NB44	1	Jun-01	40	14.8	15.9	15.3	1.0	0.2	x	5						SI	BIOG	MAT	NONE	0	0	0	0	0	Low DO?, Snails with siphons up
NB45	1	Jun-01	37	IND	IND	>23	IND	IND	x							SI	IND	IND	IND	0	0	0	0	40	Low DO?, very soft
NB45	2	Jun-01	37	IND	IND	>23	IND	IND								SI	IND	FEW	IND	0	0	0	0	0	Low DO?, very soft, few amphipod tubes dragged do
NB46	1	Jun-01	16	5.3	8.2	6.8	2.8	1.2							x	MS	BIOG	MAT	NONE	0	0	0	0	0	
NB46	2	Jun-01	16	1.9	2.6	2.3	0.7	1.6		4			x		x	MS	PHY	MANY	NONE	0	0	0	0	0	
NB47	1	Jun-01	28	0.0	1.0	0.5	1.0	IND								MS?	BIOG	MAT	NONE	IND	IND	IND	IND	IND	
NB48	1	Jun-01	10*	2.5	3.3	2.9	0.8	1.3	x				x		x	MS	PHY	FEW	SOME	0	0	0	0	0	
NB48	2	Jun-01	10*	0.8	2.5	1.7	1.7	0.6	x	1					x	MS	PHY	NONE	NONE	0	0	0	0	0	
NB49	1	Jun-01	10	2.6	3.6	3.1	1.0	0.8	x	1					x	FSMS	PHY	NONE	MANY	0	0	0	0	0	
NB49	2	Jun-01	10	2.8	5.6	4.2	2.8	IND	x	2						IND	PHY	IND	IND	IND	IND	IND	IND	IND	All algae
NB50	1	Jun-01	3	2.4	3.4	2.9	1.1	0.8	x	5						FSMS	PHY	NONE	NONE	0	0	0	0	0	
NB50	2	Jun-01	3	4.3	4.6	4.4	0.3	IND	x	2						IND	PHY	IND	IND	IND	IND	IND	IND	IND	All algae
NB51	1	Jun-01	40	IND	IND	>23	IND	IND	x							SI	IND	IND	IND	2	0	0	0	2	
NB51	2	Jun-01	40	IND	IND	>23	IND	IND	x	1						SI	IND	IND	IND	0	0	0	0	1	
NB52	1	Jun-01	3	3.6	4.6	4.1	1.0	IND	x	2						MS	PHY	IND	IND	IND	IND	IND	IND	IND	All algae
NB53	1	Jun-01	8*	5.0	6.0	5.5	1.0	0.0	x				x			SIFS	PHY	NONE	NONE	0	0	0	0	0	Low DO
NB54	2	Jun-01	8	3.1	4.9	4.0	1.9	0.3	x	1					x	FS	PHY	NONE	NONE	0	0	0	0	0	
NB55	2	Jun-01	3	2.8	5.4	4.1	2.7	IND	x	2						IND	PHY	IND	IND	IND	IND	IND	IND	IND	All algae
NB55	3	Jun-01	3	7.4	10.3	8.8	2.9	IND	x	7						FSMS	PHY	IND	IND	IND	IND	IND	IND	IND	All algae
NB56	1	Jun-01	2	7.5	11.1	9.3	3.6	IND	x	2						IND	PHY	IND	IND	IND	IND	IND	IND	IND	All algae, Amphipod on algae
NB57	1	Jun-01	3	9.5	14.5	12.0	5.0	IND	x	1		1				SIFS?	PHY	IND	IND	IND	IND	IND	IND	IND	All algae
NB57	2	Jun-01	3	6.6	8.8	7.7	2.2	IND	x	8						SIFS	PHY	IND	IND	IND	IND	IND	IND	IND	All algae
NB58	1	Jun-01	3	0.0	1.3	0.7	1.3	IND	x	1						IND	PHY	IND	IND	IND	IND	IND	IND	IND	All algae
NB59	1	Jun-01	3	4.3	6.6	5.4	2.3	1.9	x	22					x	FS	PHY	NONE	FEW	0	0	0	0	0	Spiochaetopterus tubes
NB59	2	Jun-01	3	0.0	0.7	0.4	0.7	>0.4	x	30					x	FS	PHY	NONE	NONE	IND	IND	IND	IND	IND	
NB60	1	Jun-01	3	1.9	2.4	2.1	0.5	1.3	x	5					x	FS	PHY	NONE	NONE	0	0	0	0	0	
NB61	1	Jun-01	10	2.7	4.4	3.6	1.7	0.7		11			x		x	FS	PHY	NONE	NONE	0	0	0	0	0	
NB61	2	Jun-01	10	2.6	3.6	3.1	0.9	1.1	x	25			x		x	FS	PHY	NONE	NONE	0	0	0	0	0	
R62	1	Jun-01	9	IND	IND	>23	IND	IND								SICL	IND	MAT?	IND	0	0	0	0	0	Tubes in drag down
R62	2	Jun-01	9	IND	IND	>23	IND	IND								SICL	IND	MAT?	IND	0	0	0	0	0	Tubes in drag down
R63	1	Jun-01	41	12.9	17.7	15.3	4.9	IND					x			SICL	PHY	NONE	NONE	0	0	0	0	0	Disturbed surface
R63	2	Jun-01	41	IND	IND	>23	IND	IND	x							SICL	IND	IND	IND	0	0	0	0	2	
R64	1	Jun-01	12	16.9	18.8	17.8	1.8	0.2	x	3						SL	PHY	NONE	NONE	0	0	0	0	0	
R65	1	Jun-01	8	19.4	20.0	19.7	0.6	0.8		2						SI	PHY	NONE	SOME	0	0	0	0	10	
R66	1	Jun-01	12	16.9	19.6	18.3	2.6	0.4								SI	PHY	SOME	NONE	0	1	0	0	0	
R66	2	Jun-01	12	18.1	18.9	18.5	0.8	0.4								SI	PHY	FEW	SOME	0	3	0	0	0	
R67	1	Jun-01	16	17.4	18.7	18.0	1.3	0.6								SI	PHY	FEW	MANY	0	2	0	0	2	
R68	1	Jun-01	11	16.3	17.0	16.6	0.7	0.5								SI	PHY	SOME	MANY	0	2	0	0	0	Low DO?
R69	1	Jun-01	8	8.6	9.1	8.9	0.4	0.0	x	5						SI	PHY	NONE	MANY	0	0	0	0	0	Low DO?
R70	1	Jun-01	9	1.9	2.9	2.4	1.0	1.4					x		x	FSMS	PHY	NONE	NONE	0	0	0	0	0	
R70	2	Jun-01	9	4.1	6.9	5.5	2.8	0.0						x		SIFS	PHY	NONE	MANY	0	0	0	0	0	Low DO?
R70	3	Jun-01	9	4.2	4.4	4.3	0.2	0.9		7			x			FSMS	BIOG	MAT	NONE	0	0	0	0	0	
R71	1	Jun-01	15	18.0	19.3	18.6	1.3	1.6								SI	BIOG	MAT	NONE	0	0	0	0	0	
R72	1	Jun-01	13	5.1	13.6	9.4	8.5	2.1		3						SI	BIOG	MAT	FEW	0	0	0	0	0	
R73	1	Jun-01	20	2.9	4.4	3.7	1.5	2.7							x	FS	PHY	NONE	NONE	0	1	0	0	0	
R73	2	Jun-01	20	3.3	4.0	3.7	0.7	3.2			2		x		x	FS	PHY	NONE	NONE	0	0	0	0	0	
R73	3	Jun-01	20	2.0	4.9	3.4	2.9	1.3					x	1		FS	PHY	NONE	NONE	0	0	0	0	0	
R73	4	Jun-01	20	3.6	4.4	4.0	0.8	2.6					x			FS	PHY	NONE	NONE	0	1	0	0	0	

Table 4.4.1 Sediment Profile Imagery (SPI) station summary from Norton Basin, Little Bay, the Raunt, and Grass Hassock Channel, June 27, 2001.

STATION	REP	Date	Depth	pen min	pen max	pen ave	Surf. Relief	RPD Ave	Algae	Snail	Hermit Crabs	Crabs	Shell	Detritus	Bedforms	GRAIN SIZE	SURFACE FEATURES	AMPHIPOD TUBES	WORM TUBES	INFAUNA	BURROWS	OXIC VOIDS	ANAEROBIC VOIDS	GAS VOIDS	OTHER
R74	1	Jun-01	19	2.7	3.0	2.9	0.3	>2.9		2			x		x	FSMS	PHY	NONE	NONE	0	0	0	0	0	
R74	2	Jun-01	19	4.8	5.6	5.2	0.8	1.5					x		x	FSMS	PHY	NONE	SOME	0	0	0	0	0	
R75	1	Jun-01	16	1.3	3.5	2.4	2.2	1.2		6	1		x		x	FS	PHY	NONE	SOME	0	0	0	0	0	
R75	2	Jun-01	16	14.0	15.7	14.8	1.7	0.5		2						SI	BIOG	MANY	MAT	0	0	0	0	0	
R76	1	Jun-01	25	3.0	4.1	3.5	1.1	1.4		1	2		x		x	FSMS	PHY	NONE	SOME	0	0	0	0	0	
R76	2	Jun-01	25	4.5	6.2	5.4	1.7	2.1							x	FSMS	PHY	NONE	FEW	0	0	0	0	0	
R77	1	Jun-01	16	12.6	13.4	13.0	0.8	0.9						x		SI	PHY	NONE	NONE	0	0	0	0	0	
GH78	1	Jun-01	30	17.7	19.4	18.5	1.7	0.3								SI	BIOG	MAT	FEW	0	0	0	0	0	
GH79	1	Jun-01	48	21.3	22.6	21.9	1.3	0.3								SI	BIOG	MAT	NONE	0	0	0	0	0	
GH79	2	Jun-01	48	22.1	22.5	22.3	0.4	1.7								SI	BIOG	MAT	NONE	0	0	0	0	0	
GH80	1	Jun-01	44	22.1	22.8	22.4	0.7	0.4								SI	BIOG	MAT	NONE	0	0	0	0	2	
GH80	2	Jun-01	44	22.0	22.8	22.4	0.8	0.2								SI	BIOG	MAT	NONE	0	0	0	0	0	
GH81	1	Jun-01	44	21.9	22.8	22.3	0.8	0.4		1						SI	BIOG	MAT	NONE	0	0	0	0	0	
GH82	1	Jun-01	50	20.4	22.1	21.2	1.7	0.3								SI	BIOG	MAT	NONE	0	0	0	0	6	
GH82	2	Jun-01	50	IND	IND	>23	IND	IND								SI	IND	IND	IND	0	0	0	0	0	
GH83	1	Jun-01	44	21.2	22.8	22.0	1.5	0.2	x							SI	PHY	NONE	NONE	0	0	0	0	0	
GH84	1	Jun-01	39	18.3	19.3	18.8	1.0	0.0								SI	PHY	NONE	MANY	0	0	0	0	0	Bacterial Mat, Low DO
GH85	1	Jun-01	18	17.2	18.6	17.9	1.3	0.4					x			SI	BIOG	MAT	NONE	1	0	0	0	0	
GH86	1	Jun-01	22	18.7	19.8	19.2	1.1	0.4								SI	BIOG	MAT	NONE	0	0	0	0	0	
GH87	1	Jun-01	38	16.3	19.8	18.0	3.5	0.2								SI	BIOG	MAT	NONE	1	0	0	0	0	
GH88	1	Jun-01	35	1.7	2.7	2.2	1.0	1.4	x	3?	1		x		x	FS	PHY	NONE	SOME	0	0	0	0	0	Bedforms?
GH88	2	Jun-01	35	20.6	22.8	21.7	2.2	0.1								SI	BIOG	MAT	NONE	0	0	0	0	1	
GH89	1	Jun-01	42	22.6	22.8	22.7	0.1	0.1								SI	BIOG	MAT	NONE	0	0	0	0	2	
GH90	1	Jun-01	29	20.4	21.8	21.1	1.4	0.0								SI	PHY	NONE	SOME	0	0	0	0	0	Bacterial Mat, Low DO
GH91	1	Jun-01	32	IND	IND	>23	IND	IND	x							SI	IND	IND	IND	0	0	0	0	0	
GH91	2	Jun-01	32	3.6	5.2	4.4	1.6	0.0	x							SI	PHY	NONE	SOME	0	0	0	0	0	Bacterial Mat, Low DO
GH92	1	Jun-01	39	22.7	22.8	22.7	0.1	0.2								SI	BIOG	MAT	NONE	0	0	0	0	1	
GH93	1	Jun-01	35	14.8	16.2	15.5	1.4	2.5								SI	BIOG	MAT	SOME	0	0	0	0	3	
GH94	1	Jun-01	41	17.4	17.9	17.6	0.6	1.7								SI	BIOG	MAT	FEW	0	0	0	0	2	
GH95	1	Jun-01	30	15.7	16.3	16.0	0.6	1.9				1				SI	BIOG	MAT	NONE	0	0	0	0	0	
GH96	1	Jun-01	26	13.7	15.7	14.7	2.0	0.9				1				SI	BIOG	MAT	NONE	0	0	0	0	0	
GH97	1	Jun-01	43	13.3	14.4	13.9	1.2	0.8								SI	BIOG	MAT	NONE	0	0	0	0	0	
GH98	1	Jun-01	46	19.4	20.6	20.0	1.2	1.0			1					SI	BIOG	MAT	NONE	0	0	0	0	0	
GH99	1	Jun-01	44	20.4	21.1	20.7	0.7	0.0	x	1						SI	PHY	NONE	NONE	0	0	0	0	0	Low DO
GH100	1	Jun-01	42	17.4	18.2	17.8	0.8	0.1								SI	BIOG	MAT	SOME	0	0	0	0	3	
GH101	1	Jun-01	26	0.0	1.6	0.8	1.6	IND					x			SH	PHY	NONE	FEW	IND	IND	IND	IND	IND	Shell bed
GH101	2	Jun-01	26	3.8	5.6	4.7	1.8	0.1		3	1		x			SI	BIOG	MAT	NONE	0	0	0	0	0	
GH101	3	Jun-01	26	0.0	1.9	0.9	1.9	IND	x		1		x			SH	BIOG	MAT	NONE	IND	IND	IND	IND	IND	Shell bed

Table 4.4.2 Sediment Profile Imagery (SPI) station summary from Norton Basin, Little Bay, the Raunt, and Grass Hassock Channel, October 1, 2001.

STATION	REP	Date	pen min	pen max	pen ave	Surf. Relief	RPD ave	Algae	Snail	Hermit Crabs	Crabs	Shell	Detritus	Bedforms	GRAIN SIZE	SURFACE FEATURES	AMPHIPOD TUBES	WORM TUBES	INFAUNA	BURROWS	OXIC VOIDS	ANAEROBIC VOIDS	GAS VOIDS	OTHER
LB01	1	Oct-01	9.7	10.9	10.3	1.2	0.0								SI	PHY	NONE	NONE	0	0	0	0	0	Low DO?, Bacterial mat
LB04	1	Oct-01	IND	IND	>23	IND	IND								SI	IND	IND	IND	0	0	0	0	0	
LB05	1	Oct-01	IND	IND	>23	IND	IND								SI	IND	IND	IND	0	0	0	0	2	
LB06	1	Oct-01	IND	IND	>23	IND	IND								SI	IND	IND	IND	0	0	0	0	4	
LB06	2	Oct-01	IND	IND	>23	IND	IND								SI	IND	IND	IND	0	0	0	0	0	
NB16	1	Oct-01	5.1	8.2	6.6	3.1	1.5			3		x			SIFS	PHY	NONE	SOME	0	0	0	0	0	
NB16	2	Oct-01	6.4	8.8	7.6	2.4	1.9			2		x			SI	PHY	NONE	MANY	0	0	0	0	0	
NB17	1	Oct-01	3.7	4.6	4.1	0.9	IND		12			x		x	MS	PHY	NONE	NONE	0	0	0	0	0	Poor lighting
NB17	2	Oct-01	3.2	4.7	3.9	1.5	3.0		10			x		x	MS	PHY	NONE	NONE	0	0	0	0	0	
NB18	1	Oct-01	20.5	21.6	21.0	1.1	0.8								SI	BIOG	MAT	NONE	0	0	0	0	0	
NB18	1	Oct-01	IND	IND	>23	IND	IND								SI	IND	IND	IND	0	0	0	0	0	
NB19	1	Oct-01	3.8	4.2	4.0	0.5	1.3	x				x		x	MS	PHY	NONE	NONE	0	0	0	0	0	
NB20	1	Oct-01	6.8	8.2	7.5	1.4	2.2					x		x	MS	PHY	NONE	FEW	0	0	0	0	0	
NB21	1	Oct-01	5.5	5.9	5.7	0.4	IND	x				x			SIFS	PHY	NONE	FEW	0	0	0	0	0	
NB22	1	Oct-01	IND	IND	>23	IND	IND								SI	IND	IND	IND	0	0	0	0	20	
NB22	2	Oct-01	IND	IND	>23	IND	IND								SI	IND	IND	IND	0	0	0	0	1	
NB23	1	Oct-01	14.5	16.4	15.4	1.9	0.0								SI	PHY	NONE	NONE	0	0	0	0	0	Low DO?, Bacterial mat
NB24	1	Oct-01	0.0	0.0	0.0	IND	IND	x							IND	IND	IND	IND	IND	IND	IND	IND	IND	All algae
NB25	1	Oct-01	IND	IND	>23	IND	IND								SI	IND	IND	IND	0	0	0	0	0	
NB25	2	Oct-01	IND	IND	>23	IND	IND								SI	IND	IND	IND	0	0	0	0	20	
NB26	1	Oct-01	7.9	11.7	9.8	3.8	0.0					x			SI	PHY	FEW	FEW	0	0	0	0	0	Low DO?
NB26	2	Oct-01	IND	IND	>23	IND	IND								SI	IND	IND	IND	0	0	0	0	0	
NB27	1	Oct-01	7.3	9.1	8.2	1.7	0.2	x				x			SI	BIOG	MAT	NONE	0	0	0	0	0	Low DO?
NB30	1	Oct-01	IND	IND	>23	IND	IND	x							SI	IND	IND	IND	0	0	0	0	1	
NB30	2	Oct-01	IND	IND	>23	IND	IND								SI	IND	IND	IND	0	0	0	0	0	
NB40	1	Oct-01	1.1	1.8	1.5	0.6	0.9	x	15			x		x	FS	PHY	NONE	NONE	0	0	0	0	0	
NB40	2	Oct-01	0.0	0.0	0.0	IND	IND	x	13			x		x	FS	PHY	NONE	NONE	IND	IND	IND	IND	IND	
NB40	3	Oct-01	2.8	4.3	3.5	1.5	1.5		18	1		x		x	FS	PHY	NONE	NONE	0	0	0	0	0	
NB41	1	Oct-01	1.9	3.0	2.4	1.1	1.2	x		1		x			FSMSSH	PHY	NONE	NONE	IND	IND	IND	IND	IND	
NB41	2	Oct-01	0.0	1.6	0.8	1.6	IND					x			FSMSSH	PHY	NONE	SOME	0	0	0	0	0	
NB42	1	Oct-01	0.0	0.0	0.0	IND	IND	x		2		x			FSMS?	PHY	NONE	NONE	IND	IND	IND	IND	IND	
NB42	2	Oct-01	0.0	0.0	0.0	IND	IND	x				x			SH	PHY	NONE	NONE	IND	IND	IND	IND	IND	
NB43	2	Oct-01	0.5	1.4	0.9	0.9	>0.9					x		x	FSMS	PHY	NONE	NONE	0	0	0	0	0	
NB44	1	Oct-01	6.9	9.7	8.3	2.9	0.7	x							SI	BIOG	MAT	NONE	0	0	0	0	0	
NB45	1	Oct-01	IND	IND	>23	IND	IND	x							SI	IND	IND	IND	0	0	0	0	0	
NB45	2	Oct-01	20.7	21.7	21.2	1.0	0.1					x			SI	PHY	SOME	MANY	0	0	0	0	0	Low DO?
NB46	1	Oct-01	2.6	4.6	3.6	2.0	IND					x			SI	BIOG	MAT	NONE	0	0	0	0	0	Disturbed surface
NB46	2	Oct-01	17.0	19.1	18.1	2.1	IND								SI	BIOG	MAT	NONE	0	0	0	0	0	Disturbed surface
NB48	1	Oct-01	3.0	3.4	3.2	0.4	1.4		9			x			FS	PHY	NONE	SOME	0	0	0	0	0	
NB49	1	Oct-01	4.2	5.1	4.6	0.9	2.4		4			x		x	FS	PHY	NONE	FEW	0	0	0	0	0	
NB49	2	Oct-01	1.2	2.6	1.9	1.4	1.3	x	7			x		x	FS	PHY	NONE	NONE	0	0	0	0	0	

Table 4.4.2 Sediment Profile Imagery (SPI) station summary from Norton Basin, Little Bay, the Raunt, and Grass Hassock Channel, October 1, 2001.

STATION	REP	Date	pen min	pen max	pen ave	Surf. Relief	RPD ave	Algae	Snail	Hermit Crabs	Crabs	Shell	Detritus	Bedforms	GRAIN SIZE	SURFACE FEATURES	AMPHIPOD TUBES	WORM TUBES	INFAUNA	BURROWS	OXIC VOIDS	ANAEROBIC VOIDS	GAS VOIDS	OTHER
NB50	1	Oct-01	2.0	3.4	2.7	1.5	1.6		12			x		x	FS	PHY	NONE	NONE	0	0	0	0	0	
NB52	1	Oct-01	4.9	8.5	6.7	3.6	IND	x	2						SIFS	PHY	NONE	NONE	0	0	0	0	0	
NB52	2	Oct-01	7.6	9.8	8.7	2.2	IND	x	1						SIFS	PHY	NONE	NONE	0	0	0	0	0	
NB53	1	Oct-01	4.7	5.9	5.3	1.2	2.8	x	2			x		x	FS	PHY	NONE	SOME	0	0	0	0	0	
NB53	2	Oct-01	0.0	1.7	0.8	1.7	1.0		1			x			FSMS	PHY	NONE	SOME	0	0	0	0	0	
NB54	1	Oct-01	IND	IND	>23	IND	IND	x	1	1					SIFS	IND	IND	IND	IND	IND	IND	IND	IND	
NB54	2	Oct-01	2.6	4.0	3.3	1.4	2.3	x	3			x			SIFS	PHY	NONE	NONE	0	1	0	0	0	
NB55	1	Oct-01	0.8	2.0	1.4	1.2	1.2		3	4		x		x	FS	PHY	NONE	NONE	0	0	0	0	0	
NB55	2	Oct-01	1.4	2.5	1.9	1.1	1.2		2	2		x		x	FS	PHY	NONE	NONE	0	0	0	0	0	
NB56	1	Oct-01	6.5	9.9	8.2	3.4	IND	x	2						IND	IND	IND	IND	IND	IND	IND	IND	IND	All algae
NB57	1	Oct-01	6.0	6.9	6.5	0.9	1.2	x	4			x		x	FSMS	PHY	NONE	NONE	0	0	0	0	0	
NB57	2	Oct-01	6.1	7.8	6.9	1.7	IND	x							IND	IND	IND	IND	IND	IND	IND	IND	IND	All algae
NB58	1	Oct-01	2.0	2.9	2.4	0.9	2.3	x	13	4		x		x	FS	PHY	NONE	NONE	0	0	0	0	0	
NB58	2	Oct-01	1.4	2.4	1.9	1.0	1.6	x	1			x		x	FS	PHY	NONE	NONE	0	0	0	0	0	
NB58	3	Oct-01	3.6	8.1	5.9	4.4	IND	x	9			x			FS	PHY	NONE	NONE	0	0	0	0	0	
NB59	1	Oct-01	1.9	4.4	3.2	2.5	1.5	x				x		x	FS	PHY	NONE	NONE	0	0	0	0	0	
NB60	1	Oct-01	3.1	4.3	3.7	1.2	2.6	x	7			x		x	FS	PHY	NONE	NONE	0	0	0	0	0	
NB60	2	Oct-01	3.6	4.8	4.2	1.2	IND	x	6			x			ALGAE	IND	IND	IND	IND	IND	IND	IND	IND	Shrimp on algae
NB60	3	Oct-01	IND	IND	>23	IND	IND	x	5	2	1	x			FSMS	PHY	NONE	NONE	0	0	0	0	0	
NB61	1	Oct-01	0.0	0.7	0.3	0.7	>0.3	x				x		x	FS	PHY	NONE	NONE	0	0	0	0	0	
NB61	2	Oct-01	1.7	2.5	2.1	0.8	1.5	x		1		x		x	FS	PHY	NONE	NONE	0	0	0	0	0	
NB61	3	Oct-01	1.5	3.4	2.5	1.8	0.0	x		15				x	FS	PHY	NONE	NONE	0	0	0	0	0	
NB61	4	Oct-01	3.5	4.2	3.9	0.8	3.0					x		x	FS	PHY	NONE	NONE	0	0	0	0	0	
R62	1	Oct-01	17.2	17.9	17.5	0.6	0.6					x			SICL	PHY	SOME	MANY	0	0	0	0	0	
R62	2	Oct-01	13.8	15.4	14.6	1.6	1.0		1						SICL	BIOG	MAT	SOME	0	0	0	0	0	
R63	1	Oct-01	10.1	11.5	10.8	1.5	2.3								SIFS	BIOG	MANY	MAT	0	0	1	0	0	
R64	1	Oct-01	10.7	13.3	12.0	2.6	0.8					x			SICL	PHY	SOME	MANY	0	0	0	0	0	
R65	1	Oct-01	0.0	10.8	5.4	IND	IND								SI	PHY	MANY	MANY	0	0	0	0	0	Disturbed surface
R65	2	Oct-01	11.2	12.4	11.8	1.2	1.2	x							SI	BIOG	MANY	MANY	0	0	0	0	0	
R66	2	Oct-01	8.8	10.0	9.4	1.2	0.9					x			SI	BIOG	MAT	NONE	0	0	0	0	0	
R67	1	Oct-01	7.4	14.2	10.8	6.8	0.2								SI	BIOG	MAT	NONE	0	0	0	0	0	
R68	1	Oct-01	12.2	14.3	13.2	2.2	0.8								SI	BIOG	MAT	SOME	0	0	0	0	0	
R69	1	Oct-01	2.0	2.8	2.4	0.8	1.4					x		x	FSMS	BIOG	MAT	NONE	0	0	0	0	0	
R69	2	Oct-01	1.7	2.2	2.0	0.6	1.6		2			x		x	FS	PHY	SOME	SOME	0	0	0	0	0	
R69	3	Oct-01	1.8	2.9	2.3	1.1	1.5					x		x	FS	BIOG	MAT	SOME	0	0	0	0	0	
R69	4	Oct-01	4.7	10.6	7.6	5.9	IND								SI	PHY	NONE	NONE	0	0	0	0	0	Disturbed surface
R69	5	Oct-01	1.4	2.2	1.8	0.8	1.7		11			x			FSMS	PHY	NONE	NONE	0	0	0	0	0	
R70	1	Oct-01	1.4	2.4	1.9	1.0	1.8		3	2		x		x	FS	PHY	NONE	NONE	0	0	0	0	0	
R70	2	Oct-01	2.3	4.1	3.2	1.7	2.5					x		x	FS	PHY	FEW	FEW	0	0	0	0	0	

Table 4.4.2 Sediment Profile Imagery (SPI) station summary from Norton Basin, Little Bay, the Raunt, and Grass Hassock Channel, October 1, 2001.

STATION	REP	Date	pen min	pen max	pen ave	Surf. Relief	RPD ave	Algae	Snail	Hermit Crabs	Crabs	Shell	Detritus	Bedforms	GRAIN SIZE	SURFACE FEATURES	AMPHIPOD TUBES	WORM TUBES	INFAUNA	BURROWS	OXIC VOIDS	ANAEROBIC VOIDS	GAS VOIDS	OTHER
R71	1	Oct-01	13.5	15.3	14.4	1.8	0.6								SI	BIOG	MAT	NONE	0	0	0	0	0	
R72	1	Oct-01	9.8	13.5	11.6	3.8	0.4								SI	BIOG	MAT	NONE	0	0	0	0	0	
R73	1	Oct-01	7.1	7.9	7.5	0.8	1.6					x		x	FSMS	PHY	NONE	NONE	0	0	0	0	0	
R73	2	Oct-01	2.8	3.1	2.9	0.4	2.3					x		x	FSMS	PHY	NONE	NONE	0	0	0	0	0	
R74	1	Oct-01	1.9	3.4	2.7	1.5	0.8					x		x	FSMS	PHY	NONE	MANY	0	0	0	0	0	
R74	2	Oct-01	2.4	3.1	2.7	0.7	2.0					x		x	FSMS	PHY	NONE	MAT	0	0	0	0	0	
R75	1	Oct-01	15.1	15.5	15.3	0.4	0.8								SI	BIOG	MAT	NONE	0	0	0	0	0	
R76	1	Oct-01	10.5	11.6	11.1	1.0	0.5								SI	BIOG	MAT	NONE	0	0	0	0	0	
R77	1	Oct-01	8.2	9.2	8.7	1.0	2.9								SI	BIOG	MAT	NONE	0	0	0	0	0	
R77	2	Oct-01	10.6	12.9	11.8	2.2	0.5								SI	BIOG	MAT	NONE	0	0	0	0	0	
GH78	1	Oct-01	15.7	19.2	17.4	3.5	1.4								SI	BIOG	MAT	SOME	0	0	0	0	0	
GH79	1	Oct-01	24.0	24.7	24.4	0.7	0.9								SI	BIOG	MAT	NONE	0	0	0	0	2	
GH79	2	Oct-01	24.5	25.9	25.2	1.4	0.9								SI	BIOG	MAT	NONE	0	0	0	0	0	
GH79	3	Oct-01	22.0	22.6	22.3	0.6	1.7								SI	BIOG	MAT	NONE	0	0	0	0	0	
GH80	1	Oct-01	IND	IND	>23	IND	IND								SI	BIOG	MAT?	IND	0	0	0	0	0	Tubes in drag down
GH80	2	Oct-01	21.9	24.0	23.0	2.1	0.8								SI	BIOG	MAT	NONE	0	0	0	0	4	
GH81	1	Oct-01	24.2	26.7	25.5	2.4	0.8								SI	BIOG	MAT	NONE	0	0	0	0	0	
GH81	2	Oct-01	IND	IND	>23	IND	IND								SI	BIOG	MAT?	IND	0	0	0	0	5	Tubes in drag down
GH82	1	Oct-01	20.8	21.7	21.3	0.9	1.0		1						SI	BIOG	MAT	NONE	0	0	0	0	0	
GH83	1	Oct-01	12.5	15.4	13.9	2.9	0.8								SI	BIOG	MAT	NONE	0	0	0	0	0	
GH84	1	Oct-01	14.9	16.5	15.7	1.6	1.1								SI	BIOG	MAT	NONE	0	0	0	1	0	
GH85	1	Oct-01	15.5	17.7	16.6	2.2	1.0								SI	BIOG	MAT	SOME	0	0	0	0	0	
GH86	2	Oct-01	11.9	13.3	12.6	1.4	1.6								SI	BIOG	MAT	SOME	0	0	0	0	0	
GH87	1	Oct-01	17.1	19.2	18.2	2.1	0.8								SI	BIOG	MAT	NONE	0	0	0	0	0	
GH88	1	Oct-01	22.3	23.5	22.9	1.2	0.6								SI	BIOG	MAT	NONE	0	0	0	0	0	
GH88	2	Oct-01	15.0	19.1	17.1	4.1	0.8		1				x		SI	BIOG	MAT	NONE	0	0	0	0	0	
GH89	1	Oct-01	21.2	22.4	21.8	1.2	0.9		2						SI	BIOG	MAT	NONE	0	0	0	0	0	
GH90	1	Oct-01	14.6	15.9	15.2	1.4	1.0								SI	BIOG	MAT	NONE	0	0	0	0	0	
GH91	1	Oct-01	24.9	27.7	26.3	2.9	1.2								SI	BIOG	MAT	NONE	0	0	0	0	2	
GH91	2	Oct-01	22.0	24.4	23.2	2.4	1.1								SI	BIOG	MAT	NONE	0	0	0	0	6	
GH92	1	Oct-01	IND	IND	>23	IND	IND								SI	BIOG	MAT?	IND	0	0	0	0	1	Tubes in drag down
GH92	2	Oct-01	19.2	20.4	19.8	1.2	3.0								SI	BIOG	MAT	SOME	0	0	0	0	0	
GH93	1	Oct-01	13.9	18.4	16.2	4.5	1.3		1		1				SI	BIOG	MAT	SOME	0	0	0	0	0	
GH94	1	Oct-01	22.1	23.1	22.6	1.0	0.7								SI	BIOG	MAT	NONE	0	0	0	0	0	
GH95	1	Oct-01	19.9	21.1	20.5	1.2	1.2								SI	BIOG	MAT	NONE	0	0	0	2	0	
GH96	2	Oct-01	19.3	21.2	20.2	1.9	1.3								SI	BIOG	MAT	NONE	0	0	0	0	0	
GH97	1	Oct-01	23.3	23.8	23.5	0.4	0.7		1						SI	BIOG	MAT	NONE	0	0	0	0	0	
GH98	1	Oct-01	19.7	21.0	20.3	1.3	0.9		1						SI	BIOG	MAT	NONE	0	0	0	0	0	
GH99	1	Oct-01	IND	IND	>23	IND	IND								SI	IND	IND	IND	0	0	0	0	1	
GH99	2	Oct-01	IND	IND	>23	IND	IND								SI	BIOG	MAT?	NONE	0	0	0	0	20	Tubes in drag down
GH100	1	Oct-01	13.8	15.0	14.4	1.2	0.9								SI	BIOG	MAT	NONE	0	0	0	0	0	
GH101	1	Oct-01	4.3	6.5	5.4	2.2	0.7								SI	BIOG	MAT	NONE	0	0	0	0	0	
GH101	2	Oct-01	3.6	6.5	5.0	2.9	1.6			1					SI	BIOG	MAT	NONE	0	0	0	0	0	

Figure 4.4.1.1 SPI camera frame with sea lettuce (*Ulva lactuca*).

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Figure 4.4.1.2 SPI images for Norton Basin: chemolithotropic bacterial mats.

4.4.2 Little Bay

Nearly all of the SPI samples collected in Little Bay during both seasonal surveys over-penetrated in the soft, black, highly aqueous sediments and did not yield satisfactory images of the sediment-water interface. Gas voids and white flocculent material, presumed to be fragments of chemolithotrophic bacterial mats, were evident in the photographs from Little Bay.

4.4.3 Grass Hassock Channel

The dominant sediment type present within Grass Hassock Channel was silt and fine sand. *Ampelisca* mats were apparent in a large number of sample images from this area. The bottom of Grass Hassock Channel is evidently a spatially complex mosaic of dense *Ampelisca* mats and areas of bare sand/silt, indicating complex hydrodynamic patterns in this deep channel (**Fig. 4.4.3.1**). These results corroborate the spatial distribution of habitats determined by the seabed classification study conducted during October 2000 (C&R Environmental 2001).

4.4.4 The Raunt

The dominant sediment type throughout the Raunt was silt, with fine sand present at the stations located near the confluence with Runway Channel. This is indicative of higher wave/current energy in the area, relative to conditions in Grass Hassock Channel or Norton Basin/Little Bay.

During both seasonal surveys, approximately 50% of all samples from the Raunt (n=53) included images of dense *Ampelisca* mats. Shell hash and hermit crabs were also characteristic features of sample images from the lower reaches of the Raunt (**Fig. 4.4.4.1**). Sample images from the upper, lower-energy reaches of this waterway were characterized by finer, darker, sediments, with fewer occurrences of macrofauna and *Ampelisca* mats.

5.0 SUMMARY

These baseline investigations have improved our understanding of the physico-chemical and biological attributes of Norton Basin and Little Bay, as there is little data previously available on the ecology of this area. The baseline data may be used to develop restoration targets and to establish monitoring protocols and success criteria, should future restoration activities be undertaken in the study area.

Benthic macroinvertebrates were virtually absent from the fine, organic, highly aqueous sediments in the Little Bay borrow pit. Total abundance of benthic organisms was significantly lower in the borrow pits of Norton Basin relative to Grass Hassock Channel or the Raunt. Benthic assemblages from shallow areas of Norton Basin were similar to benthic assemblages from reference areas.

A

B

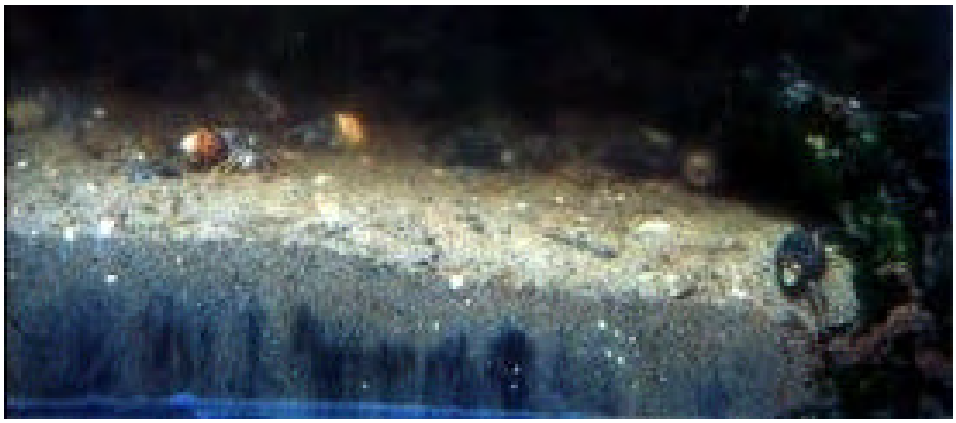

Figure 4.4.3.1 SPI image from Grass Hassock Channel: *Ampelisca* mats (A), sand bottom (B).

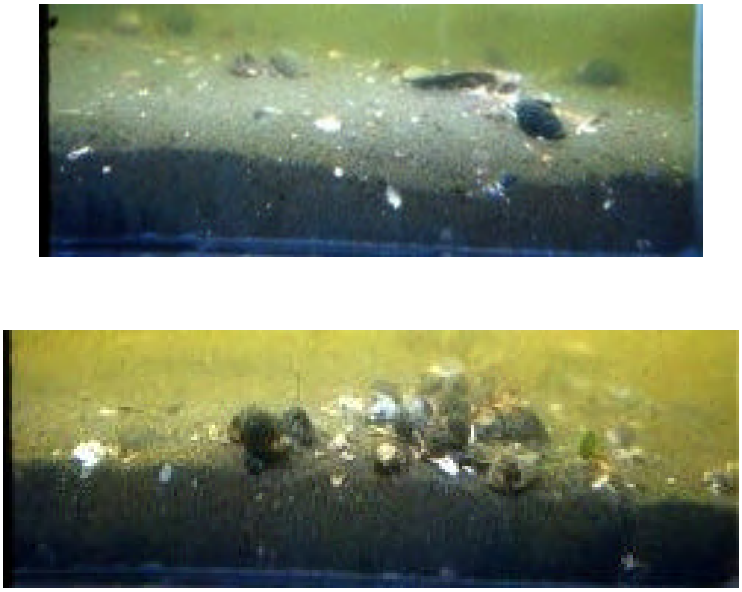

Figure 4.4.4.1 SPI image from the Raunt: Shell hash/hermit crabs.

Arthropods dominated the benthic macroinvertebrate communities of Grass Hassock Channel and the Norton Basin borrow pits during June and October. Annelids were the dominant major taxa in the shallow areas of Norton Basin. Arthropods and annelids were co-dominant major taxa in the Raunt during June; however, arthropods were numerically dominant at this site during October. Molluscs and other invertebrates represented a minor component of the macroinvertebrate community among all sites during both seasons.

June gill net collections in Norton Basin were dominated by striped searobin and herrings. Most individuals were collected within the deeper strata of the Norton Basin borrow pits. Species composition and richness within Norton Basin was comparable to that of Grass Hassock Channel; however, samples from the Raunt were dominated by decapod crustaceans. CPUE in Norton Basin was twice that of either of the reference areas during June. Very few fish were collected in surface and mid-water locations in Little Bay during June and none were collected in the deeper strata of the Little Bay borrow pit.

October gill net collections were dominated by striped searobin and herrings, with the exception of the Raunt, where collections were dominated by decapod crustaceans. A comparison of CPUE among sites during October indicated reduced utilization of the Norton Basin pit by fish, relative to the two reference areas, although species composition/richness was similar. A greater degree of fish utilization was observed in Little Bay during October relative to June. CPUE was markedly greater at reference areas relative to the Norton Basin and Little Bay borrow pits during October.

Trawl surveys from Norton Basin, the Raunt, and Grass Hassock Channel yielded few individuals during June. Trawl samples from October were dominated by scup in Grass Hassock Channel and by decapod crustaceans in the Raunt. Few individuals (primarily blue crabs) were collected in trawls from Norton Basin.

SPI images from Norton Basin exhibited a range of sediment characteristics, depending on depth. Borrow pit sediments were organic fines, while intermediate-depth and entrance channel sediments ranged from silt to fine sand. Entrance channel sediments were primarily sand and shell hash. Extensive chemolithotrophic bacteria mats were observed within the Norton Basin borrow pits during October. SPI samples from Little Bay over-penetrated the soft aqueous sediments present therein and did not yield satisfactory images of the sediment-water interface. Gas voids and bacteria mats were characteristic features of SPI images from Little Bay. Grass Hassock Channel sediments ranged from silt to fine sand, and *Ampelisca* mats were present in a large number of SPI images from this area. The dominant sediment type in the Raunt was silt, with fine sand present at stations located near the confluence of the Raunt and Runway Channel. Approximately 50% of the SPI images from the Raunt included *Ampelisca* mats.

In general, Norton Basin appears to support a more abundant and diverse biota and exhibits greater substrate/habitat heterogeneity in comparison to Little Bay. The borrow pits located in Norton Basin exhibit substrate/habitat characteristics which resemble those of Little Bay; however, sampling locations of intermediate and shallow depth in Norton Basin are comparable to reference areas.

6.0 LITERATURE CITED

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Appendix I-A

Taxonomic Species List, June 2001

TAXONOMIC SPECIES LIST

Client: New York COE
Project: DO58 Norton Basin
Location:

Project Date: 06/29/2001

Total Number of Taxa: 103

ANNELIDA
- CLASS OLIGOCHAETA
  - Order TUBIFICIDA
    - FAMILY TUBIFICIDAE
      - Tubificidae (LPIL)

- CLASS POLYCHAETA
  - Order CAPITELLIDA
    - FAMILY CAPITELLIDAE
      - Capitellidae (LPIL)
      - Capitella capitata
      - Heteromastus filiformis
      - Mediomastus (LPIL)
      - Mediomastus ambiseta
    - FAMILY MALDANIDAE
      - Maldanidae (LPIL)
      - Clymenella torquata
  - Order EUNICIDA
    - FAMILY DORVILLEIDAE
      - Schistomeringos pectinata
    - FAMILY OENONIDAE
      - Arabella multidentata
  - Order ORBINIIDA
    - FAMILY ORBINIIDAE
      - Leitoscoloplos (LPIL)
      - Leitoscoloplos robustus
    - FAMILY PARAONIDAE
      - Paraonidae (LPIL)
      - Aricidea (LPIL)
      - Aricidea catherinae
      - Aricidea cerrutii
  - Order PHYLLODOCIDA
    - FAMILY GLYCERIDAE
      - Glycera americana
    - FAMILY GONIADIDAE
      - Glycinde solitaria
    - FAMILY HESIONIDAE
      - Hesionidae (LPIL)
      - Podarke obscura
      - Podarkeopsis levifuscina

FAMILY NEREIDAE
Nereididae (LPIL)
Nereis acuminata
Nereis succinea
FAMILY PHYLLODOCIDAE
Phyllodocidae (LPIL)
Eumida sanguinea
Hypereteone heteropoda
Paranaitis speciosa
FAMILY POLYNOIDAE
Polynoidae (LPIL)
Harmothoe imbricata
FAMILY SYLLIDAE
Syllidae (LPIL)
Exogone dispar
Exogone rolani
Order SABELLIDA
FAMILY SERPULIDAE
Serpulidae (LPIL)
Hydroides dianthus
Order SPIONIDA
FAMILY CIRRATULIDAE
Cirratulidae (LPIL)
Caulleriella sp. J
Tharyx acutus
FAMILY SPIONIDAE
Spionidae (LPIL)
Polydora cornuta
Pygospio elegans
Spio pettiboneae
Streblospio benedicti
Order TEREBELLIDA
FAMILY PECTINARIIDAE
Pectinaria gouldii
FAMILY SABELLARIIDAE
Sabellaria vulgaris
FAMILY TEREBELLIDAE
Terebellidae (LPIL)
Eupolymnia nebulosa
Polycirrus (LPIL)
Polycirrus sp. G

ARTHROPODA
CLASS MALACOSTRACA
Order AMPHIPODA
FAMILY AEGINELLIDAE
Paracaprella tenuis
FAMILY AMPELISCIDAE
Ampelisca (LPIL)
Ampelisca vadorum
FAMILY AMPITHOIDAE
Ampithoe longimana

FAMILY AORIDAE
Microdeutopus (LPIL)
Microdeutopus gryllotalpa
Unciola irrorata
Unciola serrata
FAMILY COROPHIIDAE
Corophium (LPIL)
Monocorophium tuberculatum
FAMILY GAMMARIDAE
Gammarus (LPIL)
Gammarus annulatus
Gammarus mucronatus
FAMILY ISCHYROCERIDAE
Erichthonius (LPIL)
Jassa falcata
FAMILY LYSIANASSIDAE
Lysianopsis alba
FAMILY MELITIDAE
Melitidae (LPIL)
Elasmopus levis
Melita nitida
FAMILY PHOXOCEPHALIDAE
Eobrolgus spinosus
Order DECAPODA
Decapoda (LPIL)
FAMILY CRANGONIDAE
Crangon septemspinosa
FAMILY PAGURIDAE
Pagurus (LPIL)
Pagurus longicarpus
Pagurus politus
FAMILY PALAEMONIDAE
Palaemonidae (LPIL)
FAMILY XANTHIDAE
Xanthidae (LPIL)
Neopanope sayi
Order ISOPODA
FAMILY ANTHURIDAE
Cyathura burbancki
FAMILY IDOTEIDAE
Edotea triloba
Order MYSIDACEA
FAMILY MYSIDAE
Neomysis americana

CLASS OSTRACODA
Order MYODOCOPINA
FAMILY CYLINDROLEBERIDIDAE
Parasterope pollex
FAMILY SARSIELLIDAE
Eusarsiella zostericola

CNIDARIA
- CLASS HYDROZOA
  - Hydrozoa (LPIL)

MOLLUSCA
- CLASS BIVALVIA
  - Bivalvia (LPIL)
  - Order MYOIDA
    - FAMILY MYIDAE
      - Mya arenaria
  - Order MYTILOIDA
    - FAMILY MYTILIDAE
      - Mytilus edulis
  - Order NUCULOIDA
    - FAMILY NUCULIDAE
      - Nucula proxima
  - Order VENEROIDA
    - FAMILY TELLINIDAE
      - Tellinidae (LPIL)
      - Tellina (LPIL)
      - Tellina agilis
    - FAMILY VENERIDAE
      - Chione cancellata
      - Gemma gemma
      - Mercenaria mercenaria

- CLASS GASTROPODA
  - Gastropoda (LPIL)
  - Order MESOGASTROPODA
    - FAMILY CALYPTRAEIDAE
      - Calyptraeidae (LPIL)
      - Crepidula fornicata
  - Order NEOGASTROPODA
    - FAMILY COLUMBELLIDAE
      - Mitrella lunata
    - FAMILY NASSARIIDAE
      - Ilyanassa obsoleta
  - Order PYRAMIDELLOIDA
    - FAMILY PYRAMIDELLIDAE
      - Odostomia (LPIL)
      - Odostomia trifida

PLATYHELMINTHES
- CLASS TURBELLARIA
  - Turbellaria (LPIL)

RHYNCHOCOELA
- Rhynchocoela (LPIL)

- CLASS ANOPLA
  - Order PALEONEMERTEA
    - FAMILY TUBULANIDAE
      - Tubulanus (LPIL)

Appendix I-B

Biomass Data, June 2001

Biomass Data Report

Project: D058 Norton Basin
Client: NY COE
Project Date: Jun-01
Biomass = gm wet weight

Station:	**LB 1**	**Rep A**	**Rep B**	**Rep C**	**Mean**	**SE**
Annelida		0.00	0.00	0.00	0.00	0.00
Mollusca		0.00	0.00	0.00	0.00	0.00
Arthropoda		0.00	0.00	0.00	0.00	0.00
Echinodermata		0.00	0.00	0.00	0.00	0.00
Other Taxa		0.00	0.00	0.00	0.00	0.00
Total		0.00	0.00	0.00	0.00	0.00

Station:	**LB 2**	**Rep A**	**Rep B**	**Rep C**	**Mean**	**SE**
Annelida		0.00	0.00	0.00	0.00	0.00
Mollusca		0.00	0.00	0.00	0.00	0.00
Arthropoda		0.00	0.00	0.00	0.00	0.00
Echinodermata		0.00	0.00	0.00	0.00	0.00
Other Taxa		0.00	0.00	0.00	0.00	0.00
Total		0.00	0.00	0.00	0.00	0.00

Station:	**LB 3**	**Rep A**	**Rep B**	**Rep C**	**Mean**	**SE**
Annelida		0.00	0.00	0.00	0.00	0.00
Mollusca		0.00	0.00	0.00	0.00	0.00
Arthropoda		0.00	0.00	0.00	0.00	0.00
Echinodermata		0.00	0.00	0.00	0.00	0.00
Other Taxa		0.00	0.00	0.00	0.00	0.00
Total		0.00	0.00	0.00	0.00	0.00

Station:	**NB 1**	**Rep A**	**Rep B**	**Rep C**	**Mean**	**SE**
Annelida		0.06	0.11	0.00	0.06	0.03
Mollusca		1.63	0.00	1.53	1.05	0.52
Arthropoda		0.79	0.77	0.04	0.54	0.25
Echinodermata		0.00	0.00	0.00	0.00	0.00
Other Taxa		0.00	0.00	0.00	0.00	0.00
Total		2.48	0.89	1.57	1.65	0.46

Station:	**NB 2**	**Rep A**	**Rep B**	**Rep C**	**Mean**	**SE**
Annelida		0.15	0.30	0.40	0.29	0.07
Mollusca		5.22	12.12	16.22	11.19	3.21
Arthropoda		0.79	0.56	0.21	0.52	0.17
Echinodermata		0.00	0.00	0.00	0.00	0.00
Other Taxa		0.00	0.00	0.00	0.00	0.00
Total		6.16	12.98	16.84	11.99	3.12

Biomass Data Report

Project: DO58 Norton Basin
Client: NY COE
Project Date: Jun-01
Biomass = gm wet weight

Station:	**NB 3**	**Rep A**	**Rep B**	**Rep C**	**Mean**	**SE**
Annelida		0.25	0.70	0.27	0.41	0.15
Mollusca		11.73	20.39	17.73	16.62	2.56
Arthropoda		0.37	0.25	1.37	0.66	0.35
Echinodermata		0.00	0.00	0.00	0.00	0.00
Other Taxa		0.00	0.00	0.00	0.00	0.00
Total		12.35	21.35	19.37		

Station:	**NB 4**	**Rep A**	**Rep B**	**Rep C**	**Mean**	**SE**
Annelida		0.02	0.01	0.01	0.01	0.00
Mollusca		0.98	0.38	0.00	0.45	0.28
Arthropoda		0.00	0.00	0.06	0.02	0.02
Echinodermata		0.00	0.00	0.00	0.00	0.00
Other Taxa		0.00	0.00	0.00	0.00	0.00
Total		1.00	0.39	0.08	0.49	0.27

Station:	**NB 5**	**Rep A**	**Rep B**	**Rep C**	**Mean**	**SE**
Annelida		0.00	0.00	0.00	0.00	0.00
Mollusca		0.00	0.00	0.00	0.00	0.00
Arthropoda		0.00	0.00	0.00	0.00	0.00
Echinodermata		0.00	0.00	0.00	0.00	0.00
Other Taxa		0.00	0.00	0.00	0.00	0.00
Total		0.00	0.00	0.00	0.00	0.00

Station:	**NB 6**	**Rep A**	**Rep B**	**Rep C**	**Mean**	**SE**
Annelida		0.00	0.00	0.00	0.00	0.00
Mollusca		0.00	0.57	0.56	0.38	0.19
Arthropoda		0.00	0.00	0.00	0.00	0.00
Echinodermata		0.00	0.00	0.00	0.00	0.00
Other Taxa		0.00	0.00	0.00	0.00	0.00
Total		0.00	0.57	0.56	0.38	0.19

Station:	**GH 1**	**Rep A**	**Rep B**	**Rep C**	**Mean**	**SE**
Annelida		0.40	0.43	0.08	0.30	0.11
Mollusca		118.67	113.82	25.82	86.10	30.17
Arthropoda		5.86	3.42	1.50	3.59	1.26
Echinodermata		0.00	0.00	0.00	0.00	0.00
Other Taxa		0.05	0.04	0.00	0.03	0.01
Total		124.98	117.70	27.41	90.03	31.38

Biomass Data Report

Project: DO58 Norton Basin
Client: NY COE
Project Date: Jun-01
Biomass = gm wet weight

Station:	**GH 2**	**Rep A**	**Rep B**	**Rep C**	**Mean**	**SE**
Annelida		0.76	0.42	0.56	0.58	0.10
Mollusca		1.06	1.35	1.62	1.35	0.16
Arthropoda		0.59	0.83	0.01	0.47	0.24
Echinodermata		0.00	0.00	0.00	0.00	0.00
Other Taxa		0.00	0.00	0.00	0.00	0.00
Total		2.41	2.59	2.19	2.40	0.12

Station:	**GH 3**	**Rep A**	**Rep B**	**Rep C**	**Mean**	**SE**
Annelida		0.06	0.05	0.56	0.22	0.17
Mollusca		3.78	0.61	2.09	2.16	0.92
Arthropoda		0.29	0.68	0.74	0.57	0.14
Echinodermata		0.00	0.00	0.00	0.00	0.00
Other Taxa		0.00	0.00	0.00	0.00	0.00
Total		4.13	1.34	3.39	2.95	0.83

Station:	**R 1**	**Rep A**	**Rep B**	**Rep C**	**Mean**	**SE**
Annelida		0.25	0.13	0.07	0.15	0.05
Mollusca		6.35	3.67	2.10	4.04	1.24
Arthropoda		0.84	0.07	0.10	0.34	0.25
Echinodermata		0.00	0.00	0.00	0.00	0.00
Other Taxa		0.02	0.01	0.00	0.01	0.01
Total		7.46	3.88	2.27	4.53	1.53

Station:	**R 2**	**Rep A**	**Rep B**	**Rep C**	**Mean**	**SE**
Annelida		0.35	0.08	0.06	0.16	0.09
Mollusca		16.91	228.17	1.82	82.30	73.07
Arthropoda		4.11	0.09	0.45	1.55	1.28
Echinodermata		0.00	0.00	0.00	0.00	0.00
Other Taxa		0.01	0.00	0.00	0.00	0.00
Total		21.38	228.34	2.34	84.02	72.37

Station:	**R 3**	**Rep A**	**Rep B**	**Rep C**	**Mean**	**SE**
Annelida		0.01	0.01	0.02	0.01	0.00
Mollusca		0.77	17.41	10.59	9.59	4.83
Arthropoda		0.01	0.10	0.11	0.07	0.03
Echinodermata		0.00	0.00	0.00	0.00	0.00
Other Taxa		0.00	0.00	0.00	0.00	0.00
Total		0.78	17.52	10.72	9.67	4.86

Appendix I-C

Summary of Community Parameters, June 2001

SUMMARY OF COMMUNITY PARAMETERS

Station	Date (m/d/y)	Total No. Taxa	Mean No. of Taxa per Repl.	No. of Taxa per Repl. (Std Dev)	Total No. Individuals	Mean Density (nos/m2)	Density (Std Dev)	H' Shannon (log e)	d Diversity (log 2)	1/S Simpson Diversity	J' Pielou Evenness	D Margalef Richness	e Equitability
LB1	6/29/01	0	N/A	0.0	0	N/A	0.0	0.00	0.00	N/A	0.00	0.00	N/A
LB2	6/29/01	0	N/A	0.0	0	N/A	0.0	0.00	0.00	N/A	0.00	0.00	N/A
LB3	6/29/01	1	0.3	0.6	1	8.3	14.4	0.00	0.00	N/A	N/A	N/A	1.29
NB1	6/29/01	33	19.0	6.6	2698	22483.3	16913.8	1.01	1.45	1.63	0.29	4.05	0.11
NB2	6/29/01	48	33.3	5.5	2908	24233.3	12327.7	1.67	2.41	2.26	0.43	5.89	0.15
NB3	6/29/01	50	32.3	1.5	2845	23708.3	3400.0	2.22	3.20	3.94	0.57	6.16	0.26
NB4	6/29/01	9	4.0	1.0	241	2008.3	2765.4	0.98	1.41	1.91	0.44	1.46	0.40
NB5	6/29/01	1	0.7	0.6	4	33.3	28.9	0.00	0.00	1.00	N/A	0.00	1.29
NB6	6/29/01	3	1.7	0.6	6	50.0	0.0	1.01	1.46	3.75	0.92	1.12	1.23
GH1	6/29/01	41	30.0	4.6	10267	85558.3	31017.5	1.07	1.55	1.64	0.29	4.33	0.10
GH2	6/29/01	26	14.3	3.8	3345	27875.0	24227.3	0.95	1.37	1.87	0.29	3.08	0.13
GH3	6/29/01	31	17.3	4.9	2742	22850.0	11332.4	0.89	1.28	1.51	0.26	3.79	0.11
R1	6/29/01	54	29.7	13.1	2493	20775.0	17217.6	2.58	3.72	8.41	0.65	6.78	0.35
R2	6/29/01	42	26.3	9.2	4946	41216.7	52562.7	1.78	2.57	3.73	0.48	4.82	0.20
R3	6/29/01	16	7.7	1.2	108	900.0	241.1	1.78	2.57	3.59	0.64	3.20	0.52

N/A = not applicable

Appendix I-D

Taxonomic Species List, October 2001

TAXONOMIC SPECIES LIST

Client: New York COE
Project: DO 58 - Norton Basin 10/01
Location:

Project Date: 10/01/2001

Total Number of Taxa: 98

- ANNELIDA
  - CLASS OLIGOCHAETA
    - Order TUBIFICIDA
      - FAMILY ENCHYTRAEIDAE
        - Enchytraeidae (LPIL)
      - FAMILY TUBIFICIDAE
        - Tubificidae (LPIL)

  - CLASS POLYCHAETA
    - Order CAPITELLIDA
      - FAMILY CAPITELLIDAE
        - Capitellidae (LPIL)
        - Capitella capitata
        - Mediomastus ambiseta
    - Order EUNICIDA
      - FAMILY DORVILLEIDAE
        - Schistomeringos rudolphi
      - FAMILY ONUPHIDAE
        - Onuphidae (LPIL)
        - Diopatra cuprea
    - Order ORBINIIDA
      - FAMILY ORBINIIDAE
        - Leitoscoloplos robustus
    - Order PHYLLODOCIDA
      - FAMILY GLYCERIDAE
        - Glycera (LPIL)
        - Glycera americana
        - Glycera dibranchiata
      - FAMILY HESIONIDAE
        - Hesionidae (LPIL)
        - Podarke obscura
        - Podarkeopsis levifuscina
      - FAMILY NEREIDAE
        - Nereididae (LPIL)
        - Nereis (LPIL)
        - Nereis acuminata
        - Nereis succinea
      - FAMILY PHYLLODOCIDAE
        - Eumida sanguinea
        - Hypereteone lighti
        - Phyllodoce arenae
      - FAMILY POLYNOIDAE
        - Polynoidae (LPIL)
        - Lepidonotus sublevis
      - FAMILY SYLLIDAE
        - Syllidae (LPIL)
        - Autolytus (LPIL)

Exogone rolani
Streptosyllis pettiboneae
Order SABELLIDA
FAMILY SABELLIDAE
Sabellidae (LPIL)
Demonax microphthalmus
FAMILY SERPULIDAE
Hydroides dianthus
Order SPIONIDA
FAMILY CHAETOPTERIDAE
Spiochaetopterus oculatus
FAMILY CIRRATULIDAE
Cirratulidae (LPIL)
Tharyx acutus
FAMILY SPIONIDAE
Spionidae (LPIL)
Polydora cornuta
Spio (LPIL)
Spio pettiboneae
Streblospio benedicti
Order TEREBELLIDA
FAMILY PECTINARIIDAE
Pectinaria gouldii
FAMILY SABELLARIIDAE
Sabellaria vulgaris
FAMILY TEREBELLIDAE
Terebellidae (LPIL)
Eupolymnia nebulosa
Neoamphitrite sp. C
Polycirrus (LPIL)
Polycirrus sp. G

ARTHROPODA
CLASS INSECTA
Order DIPTERA
FAMILY MUSCIDAE
Muscidae (LPIL)

CLASS MALACOSTRACA
Order AMPHIPODA
FAMILY AEGINELLIDAE
Paracaprella tenuis
FAMILY AMPELISCIDAE
Ampelisca (LPIL)
Ampelisca vadorum
FAMILY AORIDAE
Aoridae (LPIL)
Leptocheirus pinguis
Microdeutopus gryllotalpa
Unciola irrorata
Unciola serrata
FAMILY COROPHIIDAE
Monocorophium tuberculatum
FAMILY ISCHYROCERIDAE
Erichthonius brasiliensis

FAMILY LYSIANASSIDAE
Lysianopsis alba
FAMILY MELITIDAE
Elasmopus (LPIL)
Elasmopus levis
Melita nitida
FAMILY PHOXOCEPHALIDAE
Eobrolgus spinosus
Order DECAPODA
Decapoda (LPIL)
FAMILY CRANGONIDAE
Crangon septemspinosa
FAMILY PAGURIDAE
Pagurus (LPIL)
FAMILY PALAEMONIDAE
Palaemonetes vulgaris
FAMILY PORTUNIDAE
Portunidae (LPIL)
FAMILY XANTHIDAE
Xanthidae (LPIL)
Panopeus herbstii
Order ISOPODA
FAMILY ANTHURIDAE
Cyathura burbancki
Order MYSIDACEA
FAMILY MYSIDAE
Mysidae (LPIL)

CLASS MEROSTOMATA
Order XIPHOSURA
FAMILY LIMULIDAE
Limulus polyphemus

CLASS OSTRACODA
Order MYODOCOPINA
FAMILY CYLINDROLEBERIDIDAE
Parasterope pollex

CNIDARIA
CLASS ANTHOZOA
Order ACTINIARIA
Actiniaria (LPIL)

CLASS HYDROZOA
Hydrozoa (LPIL)

MOLLUSCA
- CLASS BIVALVIA
  - Bivalvia (LPIL)
  - Order ARCOIDA
    - FAMILY ARCIDAE
      - Anadara transversa
  - Order MYOIDA
    - FAMILY MYIDAE
      - Mya arenaria
  - Order NUCULOIDA
    - FAMILY NUCULIDAE
      - Nucula proxima
  - Order VENEROIDA
    - FAMILY MACTRIDAE
      - Mulinia lateralis
    - FAMILY PETRICOLIDAE
      - Petricola pholadiformis
    - FAMILY TELLINIDAE
      - Tellina (LPIL)
      - Tellina agilis
    - FAMILY VENERIDAE
      - Veneridae (LPIL)
      - Gemma gemma
      - Mercenaria mercenaria

- CLASS GASTROPODA
  - Gastropoda (LPIL)
  - Order CEPHALASPIDEA
    - FAMILY ACTEONIDAE
      - Rictaxis punctostriatus
    - FAMILY SCAPHANDRIDAE
      - Acteocina canaliculata
  - Order MESOGASTROPODA
    - FAMILY CALYPTRAEIDAE
      - Calyptraeidae (LPIL)
      - Crepidula (LPIL)
      - Crepidula fornicata
      - Crepidula plana
  - Order NEOGASTROPODA
    - FAMILY NASSARIIDAE
      - Ilyanassa obsoleta
  - Order NUDIBRANCHIA
    - FAMILY CORAMBIDAE
      - Doridella obscura
  - Order PYRAMIDELLOIDA
    - FAMILY PYRAMIDELLIDAE
      - Odostomia trifida

PLATYHELMINTHES
- CLASS TURBELLARIA
  - Turbellaria (LPIL)

RHYNCHOCOELA
- Rhynchocoela (LPIL)

Appendix I-E

Biomass Data, October 2001

Biomass Data Report

Project: DO58 Norton Basin
Client: NY COE
Project Date: Oct-01
Biomass = gm wet weight

Station:	**NB-1**	**Rep A**	**Rep B**	**Rep C**	**Mean**	**SE**
Annelida		0.10	0.10	0.02	0.07	0.03
Mollusca		1.52	1.47	5.41	2.80	1.30
Arthropoda		0.51	0.50	0.63	0.54	0.04
Echinodermata		0.00	0.00	0.00	0.00	0.00
Other Taxa		0.00	0.00	0.00	0.00	0.00
Total		2.14	2.06	6.06	3.42	1.32

Station:	**NB-2**	**Rep A**	**Rep B**	**Rep C**	**Mean**	**SE**
Annelida		1.10	2.52	1.56	1.73	0.42
Mollusca		125.82	512.69	128.63	255.71	128.49
Arthropoda		1.18	0.82	0.73	0.91	0.14
Echinodermata		0.00	0.00	0.00	0.00	0.00
Other Taxa		0.00	0.11	0.00	0.04	0.04
Total		128.09	516.15	130.93	258.39	128.88

Station:	**NB-3**	**Rep A**	**Rep B**	**Rep C**	**Mean**	**SE**
Annelida		0.68	0.09	0.02	0.26	0.21
Mollusca		117.86	0.42	123.62	80.63	40.14
Arthropoda		0.15	0.00	0.10	0.08	0.04
Echinodermata		0.00	0.00	0.00	0.00	0.00
Other Taxa		0.00	0.00	0.00	0.00	0.00
Total		118.69	0.51	123.73	80.98	40.26

Station:	**NB-4**	**Rep A**	**Rep B**	**Rep C**	**Mean**	**SE**
Annelida		0.14	0.08	0.04	0.09	0.03
Mollusca		11.90	6.46	0.42	6.26	3.32
Arthropoda		0.16	0.00	0.12	0.10	0.05
Echinodermata		0.00	0.00	0.00	0.00	0.00
Other Taxa		0.00	0.00	0.00	0.00	0.00
Total		12.21	6.55	0.57	6.44	3.36

Station:	**NB-5**	**Rep A**	**Rep B**	**Rep C**	**Mean**	**SE**
Annelida		0.00	0.00	0.00	0.00	0.00
Mollusca		0.00	0.00	0.00	0.00	0.00
Arthropoda		0.00	0.00	0.00	0.00	0.00
Echinodermata		0.00	0.00	0.00	0.00	0.00
Other Taxa		0.00	0.00	0.00	0.00	0.00
Total		0.00	0.00	0.00	0.00	0.00

Biomass Data Report

Project: DO58 Norton Basin
Client: NY COE
Project Date: Oct-01
Biomass = gm wet weight

Station:	**NB-6**	**Rep A**	**Rep B**	**Rep C**	**Mean**	**SE**
Annelida		0.00	0.00	0.00	0.00	0.00
Mollusca		0.00	0.00	0.00	0.00	0.00
Arthropoda		0.00	0.00	0.00	0.00	0.00
Echinodermata		0.00	0.00	0.00	0.00	0.00
Other Taxa		0.00	0.00	0.00	0.00	0.00
Total		0.00	0.00	0.00	0.00	0.00

Station:	**LB-1**	**Rep A**	**Rep B**	**Rep C**	**Mean**	**SE**
Annelida		0.00	0.00	0.00	0.00	0.00
Mollusca		0.02	0.08	0.00	0.03	0.03
Arthropoda		0.00	0.00	0.00	0.00	0.00
Echinodermata		0.00	0.00	0.00	0.00	0.00
Other Taxa		0.00	0.00	0.00	0.00	0.00
Total		0.02	0.08	0.00	0.03	0.03

Station:	**LB-2**	**Rep A**	**Rep B**	**Rep C**	**Mean**	**SE**
Annelida		0.00	0.00	0.00	0.00	0.00
Mollusca		0.00	0.00	0.00	0.00	0.00
Arthropoda		0.00	0.00	0.00	0.00	0.00
Echinodermata		0.00	0.00	0.00	0.00	0.00
Other Taxa		0.00	0.00	0.00	0.00	0.00
Total		0.00	0.00	0.00	0.00	0.00

Station:	**LB-3**	**Rep A**	**Rep B**	**Rep C**	**Mean**	**SE**
Annelida		0.00	0.00	0.00	0.00	0.00
Mollusca		0.00	0.71	0.00	0.24	0.24
Arthropoda		0.00	0.04	0.00	0.01	0.01
Echinodermata		0.00	0.00	0.00	0.00	0.00
Other Taxa		0.00	0.00	0.00	0.00	0.00
Total		0.00	0.75	0.00	0.25	0.25

Station:	**GH-1**	**Rep A**	**Rep B**	**Rep C**	**Mean**	**SE**
Annelida		0.04	1.48	0.16	0.56	0.46
Mollusca		108.62	2.11	0.00	36.91	35.86
Arthropoda		1.66	3.37	3.57	2.87	0.61
Echinodermata		0.00	0.00	0.00	0.00	0.00
Other Taxa		0.00	0.00	0.00	0.00	0.00
Total		110.32	6.96	3.73	40.34	35.00

Biomass Data Report

Project: DO58 Norton Basin
Client: NY COE
Project Date: Oct-01
Biomass = gm wet weight

Station:	**GH-2**	**Rep A**	**Rep B**	**Rep C**	**Mean**	**SE**
Annelida		0.07	0.10	0.16	0.11	0.02
Mollusca		0.59	3.65	0.00	1.41	1.13
Arthropoda		1.03	2.32	1.75	1.70	0.37
Echinodermata		0.00	0.00	0.00	0.00	0.00
Other Taxa		0.01	0.00	0.02	0.01	0.01
Total		1.70	6.07	1.92	3.23	1.42

Station:	**GH-3**	**Rep A**	**Rep B**	**Rep C**	**Mean**	**SE**
Annelida		0.19	0.21	0.08	0.16	0.04
Mollusca		0.01	0.06	0.03	0.03	0.02
Arthropoda		1.48	1.37	0.69	1.18	0.25
Echinodermata		0.00	0.00	0.00	0.00	0.00
Other Taxa		0.00	0.01	0.00	0.00	0.00
Total		1.68	1.64	0.80	1.37	0.29

Station:	**R-1**	**Rep A**	**Rep B**	**Rep C**	**Mean**	**SE**
Annelida		0.13	0.19	0.05	0.12	0.04
Mollusca		1.23	200.16	1.66	67.68	66.24
Arthropoda		0.60	0.84	0.33	0.59	0.15
Echinodermata		0.00	0.00	0.00	0.00	0.00
Other Taxa		0.02	0.03	0.01	0.02	0.01
Total		1.98	201.22	2.05	68.42	66.40

Station:	**R-2**	**Rep A**	**Rep B**	**Rep C**	**Mean**	**SE**
Annelida		0.76	0.25	0.65	0.55	0.16
Mollusca		6.12	205.94	9.70	73.92	66.02
Arthropoda		0.74	0.15	1.92	0.94	0.52
Echinodermata		0.00	0.00	0.00	0.00	0.00
Other Taxa		0.09	0.14	0.12	0.12	0.01
Total		7.71	206.48	12.39	75.53	65.49

Station:	**R-3**	**Rep A**	**Rep B**	**Rep C**	**Mean**	**SE**
Annelida		0.82	1.04	1.29	1.05	0.14
Mollusca		6.12	4.25	4.17	4.85	0.64
Arthropoda		0.60	0.73	0.81	0.71	0.06
Echinodermata		0.00	0.00	0.00	0.00	0.00
Other Taxa		0.07	0.05	0.06	0.06	0.01
Total		7.61	6.06	6.34	6.67	0.48

Appendix I-F

Summary of Community Parameters, October 2001

SUMMARY OF COMMUNITY PARAMETERS

Station	Date (m/d/y)	Total No. Taxa	Mean No. of Taxa per Repl.	No. of Taxa per Repl. (Std Dev)	Total No. Individuals	Mean Density (nos/m2)	Density (Std Dev)	H' Shannon (log e)	d Diversity (log 2)	1/S Simpson Diversity	J' Pielou Evenness	D Margalef Richness	e Equitability
NB-1	10/1/01	23	12.3	2.5	3086	25716.7	142.2	0.38	0.55	1.15	0.12	2.74	0.08
NB-2	10/1/01	58	33.0	12.5	3334	27783.3	24894.2	2.07	2.98	3.50	0.51	7.03	0.19
NB-3	10/1/01	45	21.7	13.4	1181	9841.7	10227.5	2.21	3.18	4.76	0.58	6.22	0.29
NB-4	10/1/01	14	7.0	3.6	463	3858.3	4818.3	0.73	1.06	1.42	0.28	2.12	0.20
NB-5	10/1/01	0	N/A	0.0	0	N/A	0.0	0.00	0.00	N/A	0.00	0.00	N/A
NB-6	10/1/01	1	0.3	0.6	1	8.3	14.4	0.00	0.00	N/A	N/A	N/A	1.29
LB-1	10/1/01	4	1.3	0.6	5	41.7	14.4	1.33	1.92	10.00	0.96	1.86	1.29
LB-2	10/1/01	0	N/A	0.0	0	N/A	0.0	0.00	0.00	N/A	0.00	0.00	N/A
LB-3	10/1/01	4	1.3	1.2	4	33.3	28.9	1.39	2.00	N/A	1.00	2.16	1.37
GH-1	10/1/01	23	18.7	0.6	3810	31750.0	11093.3	1.07	1.54	1.80	0.34	2.67	0.17
GH-2	10/1/01	31	20.0	3.0	5357	44641.7	20058.7	0.45	0.65	1.17	0.13	3.49	0.07
GH-3	10/1/01	29	18.3	2.5	6973	58108.3	26661.1	0.38	0.55	1.16	0.11	3.16	0.07
R-1	10/1/01	41	28.7	4.2	5566	46383.3	36770.3	1.02	1.47	1.63	0.27	4.64	0.09
R-2	10/1/01	39	24.0	6.2	4570	38083.3	22356.9	1.76	2.54	4.07	0.48	4.51	0.21
R-3	10/1/01	36	26.3	4.2	3828	31900.0	6690.3	1.50	2.16	2.77	0.42	4.24	0.17

N/A = not applicable

Appendix I-G

Station Summary Reports, June 2001

Station Data Summary Report
Station GH1

Client: New York COE
Project: DO58 Norton Basin
Location:
Sample Date: 6/29/01

BVA Station: 010
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Annelida									
Oligochaeta									
Tubificida									
Tubificidae									
Tubificidae (LPIL)	47	1175	57	1425	15	375	119	1.2	992
Polychaeta									
Capitellida									
Capitellidae									
Capitella capitata	0	0	2	50	0	0	2	0	17
Capitellidae (LPIL)	0	0	2	50	0	0	2	0	17
Mediomastus (LPIL)	129	3225	203	5075	42	1050	374	3.6	3117
Mediomastus ambiseta	8	200	32	800	9	225	49	0.5	408
Eunicida									
Dorvilleidae									
Schistomeringos pectinata	1	25	0	0	0	0	1	0	8
Phyllodocida									
Glyceridae									
Glycera americana	3	75	2	50	0	0	5	0	42
Hesionidae									
Hesionidae (LPIL)	1	25	3	75	0	0	4	0	33
Podarke obscura	57	1425	13	325	3	75	73	0.7	608
Podarkeopsis levifuscina	14	350	2	50	1	25	17	0.2	142
Nereidae									
Nereididae (LPIL)	0	0	0	0	1	25	1	0	8
Nereis succinea	1	25	1	25	0	0	2	0	17

Station Data Summary Report
Station GH1

Client: New York COE
Project: DO58 Norton Basin
Location:
Sample Date: 6/29/01

BVA Station: 010
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Phyllodocidae									
Eumida sanguinea	1	25	0	0	1	25	2	0	17
Phyllodocidae (LPIL)	0	0	4	100	1	25	5	0	42
Polynoidae									
Harmothoe imbricata	4	100	6	150	1	25	11	0.1	92
Polynoidae (LPIL)	0	0	1	25	0	0	1	0	8
Spionida									
Cirratulidae									
Cirratulidae (LPIL)	20	500	10	250	4	100	34	0.3	283
Tharyx acutus	18	450	24	600	5	125	47	0.5	392
Spionidae									
Polydora cornuta	0	0	5	125	3	75	8	0.1	67
Streblospio benedicti	4	100	199	4975	45	1125	248	2.4	2067
Terebellida									
Terebellidae									
Eupolymnia nebulosa	0	0	1	25	0	0	1	0	8
Polycirrus (LPIL)	0	0	1	25	0	0	1	0	8
Polycirrus sp. G	3	75	3	75	0	0	6	0.1	50
Terebellidae (LPIL)	0	0	2	50	0	0	2	0	17
Arthropoda									
Malacostraca									
Amphipoda									
Ampeliscidae									
Ampelisca vadorum	3606	90150	2610	65250	1774	44350	7990	77.8	66583

Station Data Summary Report
Station GH1

Client: New York COE
Project: DO58 Norton Basin
Location:
Sample Date: 6/29/01

BVA Station: 010
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Aoridae									
Microdeutopus gryllotalpa	225	5625	154	3850	79	1975	458	4.5	3817
Unciola irrorata	1	25	0	0	0	0	1	0	8
Corophiidae									
Monocorophium tuberculatum	198	4950	85	2125	49	1225	332	3.2	2767
Gammaridae									
Gammarus annulatus	1	25	0	0	0	0	1	0	8
Ischyroceridae									
Erichthonius (LPIL)	0	0	1	25	1	25	2	0	17
Lysianassidae									
Lysianopsis alba	24	600	13	325	1	25	38	0.4	317
Melitidae									
Elasmopus levis	135	3375	71	1775	60	1500	266	2.6	2217
Decapoda									
Xanthidae									
Neopanope sayi	7	175	4	100	2	50	13	0.1	108
Xanthidae (LPIL)	16	400	11	275	5	125	32	0.3	267
Isopoda									
Anthuridae									
Cyathura burbancki	31	775	9	225	7	175	47	0.5	392
Mysidacea									
Mysidae									
Neomysis americana	0	0	1	25	0	0	1	0	8

Station Data Summary Report
Station GH1

Client: New York COE
Project: DO58 Norton Basin
Location:
Sample Date: 6/29/01

BVA Station: 010
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Mollusca									
Bivalvia									
Veneroida									
Veneridae									
Mercenaria mercenaria	4	100	1	25	1	25	6	0.1	50
Gastropoda									
Neogastropoda									
Nassariidae									
Ilyanassa obsoleta	2	50	1	25	0	0	3	0	25
Platyhelminthes									
Turbellaria									
Turbellaria (LPIL)	0	0	0	0	1	25	1	0	8
Rhynchocoela									
Rhynchocoela (LPIL)	14	350	32	800	2	50	48	0.5	400
Anopla									
Paleonemertea									
Tubulanidae									
Tubulanus (LPIL)	7	175	5	125	1	25	13	0.1	108

Note: LPIL designates the LOWEST PRACTICAL IDENTIFICATION LEVEL

Station Data Summary Report
Station GH2

Client: New York COE
Project: DO58 Norton Basin
Location:
Sample Date: 6/29/01

BVA Station: 011
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Annelida									
Oligochaeta									
Tubificida									
Tubificidae									
Tubificidae (LPIL)	1	25	0	0	0	0	1	0	8
Polychaeta									
Capitellida									
Capitellidae									
Heteromastus filiformis	1	25	0	0	0	0	1	0	8
Mediomastus (LPIL)	30	750	40	1000	4	100	74	2.2	617
Mediomastus ambiseta	6	150	19	475	0	0	25	0.7	208
Phyllodocida									
Goniadidae									
Glycinde solitaria	1	25	0	0	0	0	1	0	8
Nereidae									
Nereis succinea	2	50	3	75	2	50	7	0.2	58
Phyllodocidae									
Hypereteone heteropoda	0	0	3	75	0	0	3	0.1	25
Phyllodocidae (LPIL)	1	25	6	150	0	0	7	0.2	58
Spionida									
Cirratulidae									
Cirratulidae (LPIL)	0	0	1	25	0	0	1	0	8
Tharyx acutus	0	0	1	25	0	0	1	0	8
Spionidae									
Polydora cornuta	21	525	42	1050	1	25	64	1.9	533
Streblospio benedicti	286	7150	464	11600	33	825	783	23.4	6525

Station Data Summary Report
Station GH2

Client: New York COE
Project: DO58 Norton Basin
Location:
Sample Date: 6/29/01

BVA Station: 011
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Terebellida									
Pectinariidae									
Pectinaria gouldii	1	25	0	0	0	0	1	0	8
Arthropoda									
Malacostraca									
Amphipoda									
Ampeliscidae									
Ampelisca vadorum	916	22900	1371	34275	26	650	2313	69.1	19275
Aoridae									
Microdeutopus (LPIL)	1	25	0	0	1	25	2	0.1	17
Microdeutopus gryllotalpa	0	0	5	125	0	0	5	0.1	42
Unciola serrata	1	25	0	0	0	0	1	0	8
Corophiidae									
Monocorophium tuberculatum	5	125	25	625	0	0	30	0.9	250
Gammaridae									
Gammarus annulatus	1	25	0	0	0	0	1	0	8
Ischyroceridae									
Erichthonius (LPIL)	0	0	0	0	1	25	1	0	8
Melitidae									
Elasmopus levis	0	0	4	100	0	0	4	0.1	33
Decapoda									
Crangonidae									
Crangon septemspinosa	4	100	2	50	0	0	6	0.2	50
Xanthidae									
Xanthidae (LPIL)	0	0	3	75	0	0	3	0.1	25

Station Data Summary Report
Station GH2

Client: New York COE
Project: DO58 Norton Basin
Location:
Sample Date: 6/29/01

BVA Station: 011
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Mysidacea									
Mysidae									
Neomysis americana	0	0	0	0	1	25	1	0	8
Mollusca									
Bivalvia									
Veneroida									
Tellinidae									
Tellinidae (LPIL)	0	0	0	0	1	25	1	0	8
Gastropoda									
Neogastropoda									
Nassariidae									
Ilyanassa obsoleta	2	50	2	50	4	100	8	0.2	67

Note: LPIL designates the LOWEST PRACTICAL IDENTIFICATION LEVEL

Station Data Summary Report
Station GH3

Client: New York COE
Project: DO58 Norton Basin
Location:
Sample Date: 6/29/01

BVA Station: 012
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Annelida									
Oligochaeta									
Tubificida									
Tubificidae									
Tubificidae (LPIL)	0	0	1	25	0	0	1	0	8
Polychaeta									
Capitellida									
Capitellidae									
Capitellidae (LPIL)	0	0	1	25	0	0	1	0	8
Mediomastus (LPIL)	6	150	66	1650	13	325	85	3.1	708
Mediomastus ambiseta	1	25	2	50	4	100	7	0.3	58
Phyllodocida									
Glyceridae									
Glycera americana	1	25	0	0	0	0	1	0	8
Hesionidae									
Hesionidae (LPIL)	0	0	1	25	0	0	1	0	8
Podarke obscura	0	0	3	75	0	0	3	0.1	25
Podarkeopsis levifuscina	0	0	0	0	1	25	1	0	8
Nereidae									
Nereis succinea	0	0	0	0	2	50	2	0.1	17
Phyllodocidae									
Eumida sanguinea	0	0	5	125	0	0	5	0.2	42
Hypereteone heteropoda	0	0	1	25	0	0	1	0	8
Phyllodocidae (LPIL)	1	25	1	25	2	50	4	0.1	33
Polynoidae									
Harmothoe imbricata	0	0	1	25	0	0	1	0	8

Station Data Summary Report
Station GH3

Client: New York COE
Project: DO58 Norton Basin
Location:
Sample Date: 6/29/01

BVA Station: 012
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Spionida									
Cirratulidae									
Tharyx acutus	1	25	0	0	0	0	1	0	8
Spionidae									
Polydora cornuta	20	500	17	425	52	1300	89	3.2	742
Streblospio benedicti	17	425	47	1175	29	725	93	3.4	775
Arthropoda									
Malacostraca									
Amphipoda									
Ampeliscidae									
Ampelisca vadorum	403	10075	602	15050	1213	30325	2218	80.9	18483
Aoridae									
Microdeutopus (LPIL)	1	25	0	0	0	0	1	0	8
Unciola irrorata	0	0	0	0	3	75	3	0.1	25
Unciola serrata	0	0	8	200	0	0	8	0.3	67
Corophiidae									
Monocorophium tuberculatum	7	175	101	2525	51	1275	159	5.8	1325
Gammaridae									
Gammarus (LPIL)	2	50	0	0	0	0	2	0.1	17
Melitidae									
Elasmopus levis	0	0	9	225	3	75	12	0.4	100
Melitidae (LPIL)	0	0	4	100	0	0	4	0.1	33
Phoxocephalidae									
Eobrolgus spinosus	1	25	0	0	0	0	1	0	8

Station Data Summary Report
Station GH3

Client: New York COE
Project: DO58 Norton Basin
Location:
Sample Date: 6/29/01

BVA Station: 012
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Decapoda									
Crangonidae									
Crangon septemspinosa	8	200	3	75	3	75	14	0.5	117
Xanthidae									
Xanthidae (LPIL)	1	25	4	100	0	0	5	0.2	42
Isopoda									
Anthuridae									
Cyathura burbancki	0	0	3	75	1	25	4	0.1	33
Mollusca									
Bivalvia									
Veneroida									
Tellinidae									
Tellinidae (LPIL)	0	0	1	25	0	0	1	0	8
Gastropoda									
Neogastropoda									
Nassariidae									
Ilyanassa obsoleta	7	175	1	25	5	125	13	0.5	108
Platyhelminthes									
Turbellaria									
Turbellaria (LPIL)	0	0	1	25	0	0	1	0	8

Note: LPIL designates the LOWEST PRACTICAL IDENTIFICATION LEVEL

Station Data Summary Report
Station LB1

Client: New York COE
Project: DO58 Norton Basin
Location:
Sample Date: 6/29/01

BVA Station: 001
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density

** No Taxa Found **

Note: LPIL designates the LOWEST PRACTICAL IDENTIFICATION LEVEL

Station Data Summary Report
Station LB2

Client: New York COE
Project: DO58 Norton Basin
Location:
Sample Date: 6/29/01

BVA Station: 002
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density

** No Taxa Found **

Note: LPIL designates the LOWEST PRACTICAL IDENTIFICATION LEVEL

Station Data Summary Report
Station LB3

Client: New York COE
Project: DO58 Norton Basin
Location:
Sample Date: 6/29/01

BVA Station: 003
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Mollusca									
Gastropoda									
Gastropoda (LPIL)	0	0	1	25	0	0	1	100	8

Note: LPIL designates the LOWEST PRACTICAL IDENTIFICATION LEVEL

Station Data Summary Report
Station NB1

Client: New York COE
Project: DO58 Norton Basin
Location:
Sample Date: 6/29/01

BVA Station: 004
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Annelida									
Oligochaeta									
Tubificida									
Tubificidae									
Tubificidae (LPIL)	0	0	16	400	1	25	17	0.6	142
Polychaeta									
Capitellida									
Capitellidae									
Capitella capitata	0	0	1	25	3	75	4	0.1	33
Capitellidae (LPIL)	1	25	0	0	1	25	2	0.1	17
Mediomastus (LPIL)	3	75	69	1725	4	100	76	2.8	633
Mediomastus ambiseta	0	0	14	350	1	25	15	0.6	125
Orbiniida									
Orbiniidae									
Leitoscoloplos robustus	0	0	1	25	0	0	1	0	8
Paraonidae									
Paraonidae (LPIL)	0	0	1	25	0	0	1	0	8
Phyllodocida									
Hesionidae									
Hesionidae (LPIL)	0	0	1	25	0	0	1	0	8
Nereidae									
Nereis succinea	0	0	1	25	0	0	1	0	8
Phyllodocidae									
Hypereteone heteropoda	3	75	5	125	0	0	8	0.3	67
Paranaitis speciosa	2	50	3	75	0	0	5	0.2	42
Phyllodocidae (LPIL)	1	25	6	150	0	0	7	0.3	58

Station Data Summary Report
Station NB1

Client: New York COE
Project: DO58 Norton Basin
Location:
Sample Date: 6/29/01

BVA Station: 004
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Spionida									
Cirratulidae									
Cirratulidae (LPIL)	2	50	1	25	0	0	3	0.1	25
Tharyx acutus	3	75	3	75	0	0	6	0.2	50
Spionidae									
Polydora cornuta	139	3475	55	1375	5	125	199	7.4	1658
Streblospio benedicti	30	750	58	1450	5	125	93	3.4	775
Arthropoda									
Malacostraca									
Amphipoda									
Ampeliscidae									
Ampelisca vadorum	876	21900	1112	27800	109	2725	2097	77.7	17475
Aoridae									
Microdeutopus gryllotalpa	4	100	10	250	0	0	14	0.5	117
Corophiidae									
Monocorophium tuberculatum	34	850	72	1800	4	100	110	4.1	917
Gammaridae									
Gammarus annulatus	1	25	0	0	1	25	2	0.1	17
Gammarus mucronatus	0	0	0	0	1	25	1	0	8
Ischyroceridae									
Erichthonius (LPIL)	0	0	1	25	0	0	1	0	8
Lysianassidae									
Lysianopsis alba	1	25	0	0	0	0	1	0	8
Melitidae									
Elasmopus levis	0	0	5	125	0	0	5	0.2	42
Melita nitida	1	25	0	0	0	0	1	0	8
Melitidae (LPIL)	0	0	3	75	0	0	3	0.1	25

Station Data Summary Report
Station NB1

Client: New York COE
Project: DO58 Norton Basin
Location:
Sample Date: 6/29/01

BVA Station: 004
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Phoxocephalidae									
Eobrolgus spinosus	1	25	0	0	0	0	1	0	8
Decapoda									
Xanthidae									
Neopanope sayi	1	25	0	0	0	0	1	0	8
Xanthidae (LPIL)	1	25	1	25	0	0	2	0.1	17
Isopoda									
Anthuridae									
Cyathura burbancki	2	50	3	75	0	0	5	0.2	42
Mysidacea									
Mysidae									
Neomysis americana	0	0	1	25	0	0	1	0	8
Mollusca									
Bivalvia									
Veneroida									
Tellinidae									
Tellina agilis	0	0	1	25	0	0	1	0	8
Gastropoda									
Neogastropoda									
Nassariidae									
Ilyanassa obsoleta	6	150	0	0	7	175	13	0.5	108

Note: LPIL designates the LOWEST PRACTICAL IDENTIFICATION LEVEL

Station Data Summary Report
Station NB2

Client: New York COE
Project: DO58 Norton Basin
Location:
Sample Date: 6/29/01

BVA Station: 005
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Annelida									
Oligochaeta									
Tubificida									
Tubificidae									
Tubificidae (LPIL)	14	350	56	1400	72	1800	142	4.9	1183
Polychaeta									
Capitellida									
Capitellidae									
Capitella capitata	5	125	6	150	9	225	20	0.7	167
Mediomastus (LPIL)	7	175	11	275	5	125	23	0.8	192
Mediomastus ambiseta	4	100	10	250	7	175	21	0.7	175
Orbiniida									
Orbiniidae									
Leitoscoloplos (LPIL)	5	125	0	0	0	0	5	0.2	42
Paraonidae									
Aricidea (LPIL)	0	0	2	50	0	0	2	0.1	17
Aricidea catherinae	0	0	1	25	0	0	1	0	8
Aricidea cerrutii	0	0	0	0	1	25	1	0	8
Phyllodocida									
Hesionidae									
Podarke obscura	0	0	0	0	1	25	1	0	8
Podarkeopsis levifuscina	1	25	0	0	0	0	1	0	8
Nereidae									
Nereididae (LPIL)	4	100	8	200	5	125	17	0.6	142
Phyllodocidae									
Eumida sanguinea	0	0	0	0	5	125	5	0.2	42
Hypereteone heteropoda	2	50	8	200	15	375	25	0.9	208
Phyllodocidae (LPIL)	6	150	7	175	14	350	27	0.9	225

Station Data Summary Report
Station NB2

Client: New York COE
Project: DO58 Norton Basin
Location:
Sample Date: 6/29/01

BVA Station: 005
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Syllidae									
Syllidae (LPIL)	0	0	1	25	2	50	3	0.1	25
Sabellida									
Serpulidae									
Hydroides dianthus	0	0	0	0	1	25	1	0	8
Spionida									
Cirratulidae									
Caulleriella sp. J	0	0	46	1150	13	325	59	2	492
Cirratulidae (LPIL)	2	50	104	2600	19	475	125	4.3	1042
Tharyx acutus	4	100	62	1550	26	650	92	3.2	767
Spionidae									
Polydora cornuta	7	175	5	125	11	275	23	0.8	192
Pygospio elegans	0	0	1	25	0	0	1	0	8
Spio pettiboneae	8	200	3	75	5	125	16	0.6	133
Streblospio benedicti	180	4500	871	21775	865	21625	1916	65.9	15967
Terebellida									
Pectinariidae									
Pectinaria gouldii	0	0	0	0	1	25	1	0	8
Sabellariidae									
Sabellaria vulgaris	1	25	0	0	19	475	20	0.7	167
Arthropoda									
Malacostraca									
Amphipoda									
Ampeliscidae									
Ampelisca vadorum	8	200	0	0	2	50	10	0.3	83
Aoridae									
Microdeutopus gryllotalpa	25	625	2	50	7	175	34	1.2	283
Unciola irrorata	37	925	14	350	57	1425	108	3.7	900

Station Data Summary Report
Station NB2

Client: New York COE
Project: DO58 Norton Basin
Location:
Sample Date: 6/29/01

BVA Station: 005
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Corophiidae									
Monocorophium tuberculatum	10	250	2	50	9	225	21	0.7	175
Gammaridae									
Gammarus mucronatus	1	25	0	0	0	0	1	0	8
Lysianassidae									
Lysianopsis alba	2	50	0	0	1	25	3	0.1	25
Melitidae									
Elasmopus levis	1	25	0	0	5	125	6	0.2	50
Melita nitida	11	275	0	0	0	0	11	0.4	92
Phoxocephalidae									
Eobrolgus spinosus	2	50	3	75	18	450	23	0.8	192
Decapoda									
Decapoda (LPIL)	1	25	0	0	0	0	1	0	8
Paguridae									
Pagurus (LPIL)	7	175	2	50	4	100	13	0.4	108
Pagurus longicarpus	3	75	3	75	2	50	8	0.3	67
Xanthidae									
Neopanope sayi	1	25	0	0	0	0	1	0	8
Xanthidae (LPIL)	8	200	1	25	1	25	10	0.3	83
Isopoda									
Anthuridae									
Cyathura burbancki	0	0	0	0	1	25	1	0	8
Mysidacea									
Mysidae									
Neomysis americana	0	0	0	0	2	50	2	0.1	17

Station Data Summary Report
Station NB2

Client: New York COE
Project: DO58 Norton Basin
Location:
Sample Date: 6/29/01

BVA Station: 005
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Mollusca									
Bivalvia									
Veneroida									
Veneridae									
Gemma gemma	1	25	2	50	2	50	5	0.2	42
Mercenaria mercenaria	2	50	0	0	1	25	3	0.1	25
Gastropoda									
Mesogastropoda									
Calyptraeidae									
Crepidula fornicata	17	425	3	75	3	75	23	0.8	192
Neogastropoda									
Nassariidae									
Ilyanassa obsoleta	13	325	24	600	31	775	68	2.3	567
Pyramidelloida									
Pyramidellidae									
Odostomia trifida	0	0	3	75	2	50	5	0.2	42
Platyhelminthes									
Turbellaria									
Turbellaria (LPIL)	0	0	0	0	1	25	1	0	8
Rhynchocoela									
Rhynchocoela (LPIL)	0	0	0	0	2	50	2	0.1	17

Note: LPIL designates the LOWEST PRACTICAL IDENTIFICATION LEVEL

Station Data Summary Report
Station NB3

Client: New York COE
Project: DO58 Norton Basin
Location:
Sample Date: 6/29/01

BVA Station: 006
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Annelida									
Oligochaeta									
Tubificida									
Tubificidae									
Tubificidae (LPIL)	48	1200	18	450	24	600	90	3.2	750
Polychaeta									
Capitellida									
Capitellidae									
Capitella capitata	16	400	3	75	46	1150	65	2.3	542
Capitellidae (LPIL)	0	0	1	25	1	25	2	0.1	17
Mediomastus (LPIL)	19	475	15	375	5	125	39	1.4	325
Mediomastus ambiseta	19	475	11	275	8	200	38	1.3	317
Maldanidae									
Clymenella torquata	1	25	0	0	0	0	1	0	8
Orbiniida									
Orbiniidae									
Leitoscoloplos (LPIL)	3	75	2	50	0	0	5	0.2	42
Phyllodocida									
Hesionidae									
Podarkeopsis levifuscina	0	0	3	75	0	0	3	0.1	25
Nereidae									
Nereididae (LPIL)	0	0	1	25	0	0	1	0	8
Nereis acuminata	3	75	0	0	0	0	3	0.1	25
Nereis succinea	0	0	0	0	2	50	2	0.1	17
Phyllodocidae									
Eumida sanguinea	8	200	9	225	3	75	20	0.7	167
Hypereteone heteropoda	9	225	8	200	9	225	26	0.9	217
Phyllodocidae (LPIL)	10	250	9	225	7	175	26	0.9	217

Station Data Summary Report
Station NB3

Client: New York COE
Project: DO58 Norton Basin
Location:
Sample Date: 6/29/01

BVA Station: 006
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Polynoidae									
Harmothoe imbricata	0	0	0	0	2	50	2	0.1	17
Sabellida									
Serpulidae									
Hydroides dianthus	0	0	10	250	1	25	11	0.4	92
Serpulidae (LPIL)	0	0	1	25	0	0	1	0	8
Spionida									
Cirratulidae									
Cirratulidae (LPIL)	43	1075	20	500	14	350	77	2.7	642
Tharyx acutus	70	1750	7	175	9	225	86	3	717
Spionidae									
Polydora cornuta	1	25	3	75	0	0	4	0.1	33
Spio pettiboneae	5	125	2	50	1	25	8	0.3	67
Spionidae (LPIL)	1	25	0	0	0	0	1	0	8
Streblospio benedicti	533	13325	431	10775	413	10325	1377	48.4	11475
Terebellida									
Sabellariidae									
Sabellaria vulgaris	0	0	66	1650	0	0	66	2.3	550
Arthropoda									
Malacostraca									
Amphipoda									
Ampeliscidae									
Ampelisca vadorum	3	75	95	2375	6	150	104	3.7	867
Ampithoidae									
Ampithoe longimana	0	0	0	0	4	100	4	0.1	33
Aoridae									
Microdeutopus gryllotalpa	82	2050	8	200	131	3275	221	7.8	1842
Unciola irrorata	0	0	10	250	0	0	10	0.4	83

Station Data Summary Report
Station NB3

Client: New York COE
Project: DO58 Norton Basin
Location:
Sample Date: 6/29/01

BVA Station: 006
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Corophiidae									
Monocorophium tuberculatum	0	0	13	325	4	100	17	0.6	142
Gammaridae									
Gammarus mucronatus	22	550	0	0	26	650	48	1.7	400
Ischyroceridae									
Jassa falcata	1	25	0	0	0	0	1	0	8
Lysianassidae									
Lysianopsis alba	4	100	0	0	3	75	7	0.2	58
Melitidae									
Elasmopus levis	8	200	3	75	15	375	26	0.9	217
Melita nitida	95	2375	6	150	111	2775	212	7.5	1767
Phoxocephalidae									
Eobrolgus spinosus	0	0	2	50	0	0	2	0.1	17
Decapoda									
Paguridae									
Pagurus (LPIL)	0	0	1	25	0	0	1	0	8
Pagurus longicarpus	0	0	1	25	0	0	1	0	8
Palaemonidae									
Palaemonidae (LPIL)	0	0	0	0	1	25	1	0	8
Xanthidae									
Neopanope sayi	0	0	0	0	2	50	2	0.1	17
Xanthidae (LPIL)	25	625	2	50	24	600	51	1.8	425
Isopoda									
Anthuridae									
Cyathura burbancki	1	25	0	0	0	0	1	0	8
Mysidacea									
Mysidae									
Neomysis americana	0	0	2	50	7	175	9	0.3	75

Station Data Summary Report
Station NB3

Client: New York COE
Project: DO58 Norton Basin
Location:
Sample Date: 6/29/01

BVA Station: 006
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Mollusca									
Bivalvia									
Bivalvia (LPIL)	0	0	0	0	1	25	1	0	8
Veneroida									
Tellinidae									
Tellinidae (LPIL)	1	25	0	0	0	0	1	0	8
Veneridae									
Gemma gemma	0	0	0	0	2	50	2	0.1	17
Gastropoda									
Mesogastropoda									
Calyptraeidae									
Crepidula fornicata	15	375	0	0	19	475	34	1.2	283
Neogastropoda									
Nassariidae									
Ilyanassa obsoleta	32	800	45	1125	45	1125	122	4.3	1017
Pyramidelloida									
Pyramidellidae									
Odostomia trifida	2	50	1	25	3	75	6	0.2	50
Platyhelminthes									
Turbellaria									
Turbellaria (LPIL)	3	75	1	25	0	0	4	0.1	33
Rhynchocoela									
Rhynchocoela (LPIL)	1	25	2	50	0	0	3	0.1	25

Note: LPIL designates the LOWEST PRACTICAL IDENTIFICATION LEVEL

Station Data Summary Report
Station NB4

Client: New York COE
Project: DO58 Norton Basin
Location:
Sample Date: 6/29/01

BVA Station: 007
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Annelida									
Polychaeta									
Capitellida									
Capitellidae									
Capitella capitata	14	350	10	250	3	75	27	11.2	225
Phyllodocida									
Phyllodocidae									
Hypereteone heteropoda	0	0	0	0	1	25	1	0.4	8
Spionida									
Spionidae									
Streblospio benedicti	0	0	0	0	35	875	35	14.5	292
Arthropoda									
Malacostraca									
Amphipoda									
Ampeliscidae									
Ampelisca (LPIL)	1	25	0	0	0	0	1	0.4	8
Ampelisca vadorum	0	0	0	0	169	4225	169	70.1	1408
Mollusca									
Gastropoda									
Mesogastropoda									
Calyptraeidae									
Crepidula fornicata	1	25	0	0	0	0	1	0.4	8
Neogastropoda									
Nassariidae									
Ilyanassa obsoleta	2	50	1	25	0	0	3	1.2	25

Station Data Summary Report
Station NB4

Client: New York COE
Project: DO58 Norton Basin
Location:
Sample Date: 6/29/01

BVA Station: 007
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Pyramidelloida									
Pyramidellidae									
Odostomia trifida	2	50	0	0	0	0	2	0.8	17
Rhynchocoela									
Rhynchocoela (LPIL)	0	0	2	50	0	0	2	0.8	17

Note: LPIL designates the LOWEST PRACTICAL IDENTIFICATION LEVEL

Station Data Summary Report
Station NB5

Client: New York COE
Project: DO58 Norton Basin
Location:
Sample Date: 6/29/01

BVA Station: 008
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Arthropoda									
Malacostraca									
Amphipoda									
Ampeliscidae									
Ampelisca vadorum	0	0	2	50	2	50	4	100	33

Note: LPIL designates the LOWEST PRACTICAL IDENTIFICATION LEVEL

Station Data Summary Report
Station NB6

Client: New York COE
Project: DO58 Norton Basin
Location:
Sample Date: 6/29/01

BVA Station: 009
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Arthropoda									
Malacostraca									
Amphipoda									
Ampeliscidae									
Ampelisca vadorum	2	50	1	25	0	0	3	50	25
Mollusca									
Bivalvia									
Veneroida									
Tellinidae									
Tellina (LPIL)	0	0	0	0	1	25	1	16.7	8
Gastropoda									
Neogastropoda									
Nassariidae									
Ilyanassa obsoleta	0	0	1	25	1	25	2	33.3	17

Note: LPIL designates the LOWEST PRACTICAL IDENTIFICATION LEVEL

Station Data Summary Report
Station R1

Client: New York COE
Project: DO58 Norton Basin
Location:
Sample Date: 6/29/01

BVA Station: 013
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Annelida									
Oligochaeta									
Tubificida									
Tubificidae									
Tubificidae (LPIL)	67	1675	164	4100	2	50	233	9.3	1942
Polychaeta									
Capitellida									
Capitellidae									
Capitella capitata	0	0	2	50	0	0	2	0.1	17
Capitellidae (LPIL)	1	25	0	0	0	0	1	0	8
Mediomastus (LPIL)	61	1525	27	675	12	300	100	4	833
Mediomastus ambiseta	13	325	10	250	9	225	32	1.3	267
Maldanidae									
Clymenella torquata	0	0	3	75	0	0	3	0.1	25
Maldanidae (LPIL)	0	0	1	25	0	0	1	0	8
Eunicida									
Oenonidae									
Arabella multidentata	3	75	0	0	0	0	3	0.1	25
Orbiniida									
Orbiniidae									
Leitoscoloplos (LPIL)	0	0	2	50	1	25	3	0.1	25
Leitoscoloplos robustus	2	50	1	25	0	0	3	0.1	25
Phyllodocida									
Glyceridae									
Glycera americana	0	0	0	0	1	25	1	0	8

Station Data Summary Report
Station R1

Client: New York COE
Project: DO58 Norton Basin
Location:
Sample Date: 6/29/01

BVA Station: 013
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Hesionidae									
Podarke obscura	2	50	0	0	0	0	2	0.1	17
Podarkeopsis levifuscina	1	25	0	0	0	0	1	0	8
Phyllodocidae									
Eumida sanguinea	0	0	1	25	0	0	1	0	8
Hypereteone heteropoda	1	25	1	25	0	0	2	0.1	17
Paranaitis speciosa	2	50	0	0	0	0	2	0.1	17
Phyllodocidae (LPIL)	9	225	4	100	0	0	13	0.5	108
Polynoidae									
Harmothoe imbricata	7	175	1	25	0	0	8	0.3	67
Syllidae									
Exogone rolani	155	3875	58	1450	2	50	215	8.6	1792
Spionida									
Cirratulidae									
Cirratulidae (LPIL)	0	0	5	125	1	25	6	0.2	50
Tharyx acutus	0	0	5	125	1	25	6	0.2	50
Spionidae									
Polydora cornuta	162	4050	44	1100	5	125	211	8.5	1758
Streblospio benedicti	38	950	230	5750	91	2275	359	14.4	2992
Terebellida									
Terebellidae									
Terebellidae (LPIL)	0	0	1	25	0	0	1	0	8
Arthropoda									
Malacostraca									
Amphipoda									
Aeginellidae									
Paracaprella tenuis	0	0	1	25	0	0	1	0	8

Station Data Summary Report
Station R1

Client: New York COE
Project: DO58 Norton Basin
Location:
Sample Date: 6/29/01

BVA Station: 013
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Ampeliscidae									
Ampelisca vadorum	571	14275	63	1575	0	0	634	25.4	5283
Aoridae									
Microdeutopus (LPIL)	0	0	2	50	0	0	2	0.1	17
Microdeutopus gryllotalpa	41	1025	0	0	0	0	41	1.6	342
Unciola irrorata	1	25	2	50	0	0	3	0.1	25
Corophiidae									
Corophium (LPIL)	0	0	9	225	0	0	9	0.4	75
Monocorophium tuberculatum	115	2875	0	0	0	0	115	4.6	958
Ischyroceridae									
Erichthonius (LPIL)	0	0	1	25	0	0	1	0	8
Lysianassidae									
Lysianopsis alba	109	2725	19	475	0	0	128	5.1	1067
Melitidae									
Elasmopus levis	26	650	6	150	0	0	32	1.3	267
Melita nitida	0	0	1	25	0	0	1	0	8
Melitidae (LPIL)	0	0	1	25	0	0	1	0	8
Phoxocephalidae									
Eobrolgus spinosus	5	125	15	375	0	0	20	0.8	167
Decapoda									
Crangonidae									
Crangon septemspinosa	1	25	0	0	0	0	1	0	8
Paguridae									
Pagurus (LPIL)	0	0	1	25	0	0	1	0	8
Xanthidae									
Xanthidae (LPIL)	7	175	2	50	0	0	9	0.4	75
Isopoda									
Idoteidae									
Edotea triloba	0	0	1	25	0	0	1	0	8

Station Data Summary Report
Station R1

Client: New York COE
Project: DO58 Norton Basin
Location:
Sample Date: 6/29/01

BVA Station: 013
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Mysidacea									
Mysidae									
Neomysis americana	1	25	0	0	0	0	1	0	8
Ostracoda									
Myodocopina									
Cylindroleberididae									
Parasterope pollex	92	2300	38	950	0	0	130	5.2	1083
Mollusca									
Bivalvia									
Nuculoida									
Nuculidae									
Nucula proxima	9	225	16	400	9	225	34	1.4	283
Veneroida									
Tellinidae									
Tellina agilis	9	225	25	625	2	50	36	1.4	300
Tellinidae (LPIL)	0	0	7	175	26	650	33	1.3	275
Veneridae									
Chione cancellata	1	25	0	0	0	0	1	0	8
Mercenaria mercenaria	0	0	0	0	1	25	1	0	8
Gastropoda									
Mesogastropoda									
Calyptraeidae									
Calyptraeidae (LPIL)	1	25	1	25	0	0	2	0.1	17
Neogastropoda									
Columbellidae									
Mitrella lunata	1	25	0	0	0	0	1	0	8
Nassariidae									
Ilyanassa obsoleta	10	250	6	150	4	100	20	0.8	167

Station Data Summary Report
Station R1

Client: New York COE
Project: DO58 Norton Basin
Location:
Sample Date: 6/29/01

BVA Station: 013
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Pyramidelloida									
Pyramidellidae									
Odostomia (LPIL)	2	50	0	0	0	0	2	0.1	17
Rhynchocoela									
Rhynchocoela (LPIL)	16	400	5	125	0	0	21	0.8	175
Anopla									
Paleonemertea									
Tubulanidae									
Tubulanus (LPIL)	0	0	2	50	0	0	2	0.1	17

Note: LPIL designates the LOWEST PRACTICAL IDENTIFICATION LEVEL

Station Data Summary Report
Station R2

Client: New York COE
Project: DO58 Norton Basin
Location:
Sample Date: 6/29/01

BVA Station: 014
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Annelida									
Oligochaeta									
Tubificida									
Tubificidae									
Tubificidae (LPIL)	13	325	20	500	1	25	34	0.7	283
Polychaeta									
Capitellida									
Capitellidae									
Capitella capitata	20	500	2	50	12	300	34	0.7	283
Mediomastus (LPIL)	375	9375	108	2700	41	1025	524	10.6	4367
Mediomastus ambiseta	39	975	39	975	22	550	100	2	833
Orbiniida									
Orbiniidae									
Leitoscoloplos robustus	3	75	0	0	0	0	3	0.1	25
Phyllodocida									
Nereidae									
Nereis succinea	0	0	1	25	0	0	1	0	8
Phyllodocidae									
Eumida sanguinea	2	50	0	0	0	0	2	0	17
Hypereteone heteropoda	16	400	1	25	0	0	17	0.3	142
Phyllodocidae (LPIL)	18	450	2	50	2	50	22	0.4	183
Syllidae									
Exogone dispar	4	100	0	0	0	0	4	0.1	33
Spionida									
Cirratulidae									
Cirratulidae (LPIL)	2	50	4	100	1	25	7	0.1	58
Tharyx acutus	4	100	4	100	0	0	8	0.2	67

Station Data Summary Report
Station R2

Client: New York COE
Project: DO58 Norton Basin
Location:
Sample Date: 6/29/01

BVA Station: 014
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Spionidae									
Polydora cornuta	41	1025	5	125	3	75	49	1	408
Streblospio benedicti	968	24200	259	6475	168	4200	1395	28.2	11625
Terebellida									
Pectinariidae									
Pectinaria gouldii	7	175	0	0	0	0	7	0.1	58
Arthropoda									
Malacostraca									
Amphipoda									
Aeginellidae									
Paracaprella tenuis	1	25	0	0	1	25	2	0	17
Ampeliscidae									
Ampelisca vadorum	1953	48825	102	2550	1	25	2056	41.6	17133
Aoridae									
Microdeutopus gryllotalpa	72	1800	1	25	2	50	75	1.5	625
Unciola irrorata	6	150	0	0	0	0	6	0.1	50
Corophiidae									
Monocorophium tuberculatum	114	2850	1	25	0	0	115	2.3	958
Lysianassidae									
Lysianopsis alba	58	1450	7	175	15	375	80	1.6	667
Melitidae									
Elasmopus levis	259	6475	1	25	19	475	279	5.6	2325
Melita nitida	0	0	0	0	2	50	2	0	17
Phoxocephalidae									
Eobrolgus spinosus	7	175	1	25	0	0	8	0.2	67

Station Data Summary Report
Station R2

Client: New York COE
Project: DO58 Norton Basin
Location:
Sample Date: 6/29/01

BVA Station: 014
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Decapoda									
Crangonidae									
Crangon septemspinosa	1	25	0	0	1	25	2	0	17
Xanthidae									
Neopanope sayi	4	100	0	0	0	0	4	0.1	33
Xanthidae (LPIL)	18	450	0	0	10	250	28	0.6	233
Mysidacea									
Mysidae									
Neomysis americana	0	0	0	0	2	50	2	0	17
Ostracoda									
Myodocopina									
Cylindroleberididae									
Parasterope pollex	10	250	1	25	0	0	11	0.2	92
Sarsiellidae									
Eusarsiella zostericola	2	50	0	0	0	0	2	0	17
Mollusca									
Bivalvia									
Bivalvia (LPIL)	2	50	0	0	0	0	2	0	17
Myoida									
Myidae									
Mya arenaria	3	75	0	0	0	0	3	0.1	25
Mytiloida									
Mytilidae									
Mytilus edulis	0	0	0	0	1	25	1	0	8
Nuculoida									
Nuculidae									
Nucula proxima	1	25	0	0	0	0	1	0	8

Station Data Summary Report
Station R2

Client: New York COE
Project: DO58 Norton Basin
Location:
Sample Date: 6/29/01

BVA Station: 014
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Veneroida									
Tellinidae									
Tellina agilis	2	50	2	50	2	50	6	0.1	50
Tellinidae (LPIL)	6	150	0	0	0	0	6	0.1	50
Veneridae									
Mercenaria mercenaria	0	0	1	25	0	0	1	0	8
Gastropoda									
Gastropoda (LPIL)	1	25	0	0	0	0	1	0	8
Mesogastropoda									
Calyptraeidae									
Calyptraeidae (LPIL)	2	50	0	0	0	0	2	0	17
Crepidula fornicata	1	25	0	0	0	0	1	0	8
Neogastropoda									
Nassariidae									
Ilyanassa obsoleta	32	800	2	50	3	75	37	0.7	308
Rhynchocoela									
Rhynchocoela (LPIL)	5	125	0	0	1	25	6	0.1	50

Note: LPIL designates the LOWEST PRACTICAL IDENTIFICATION LEVEL

Station Data Summary Report
Station R3

Client: New York COE
Project: DO58 Norton Basin
Location:
Sample Date: 6/29/01

BVA Station: 015
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Annelida									
Polychaeta									
Capitellida									
Capitellidae									
Capitella capitata	14	350	11	275	0	0	25	23.1	208
Capitellidae (LPIL)	5	125	0	0	0	0	5	4.6	42
Mediomastus (LPIL)	0	0	0	0	1	25	1	0.9	8
Orbiniida									
Orbiniidae									
Leitoscoloplos (LPIL)	0	0	0	0	1	25	1	0.9	8
Spionida									
Spionidae									
Polydora cornuta	1	25	0	0	1	25	2	1.9	17
Streblospio benedicti	0	0	1	25	3	75	4	3.7	33
Arthropoda									
Malacostraca									
Amphipoda									
Ampeliscidae									
Ampelisca vadorum	0	0	0	0	5	125	5	4.6	42
Decapoda									
Crangonidae									
Crangon septemspinosa	1	25	0	0	2	50	3	2.8	25
Paguridae									
Pagurus (LPIL)	2	50	0	0	0	0	2	1.9	17
Pagurus politus	0	0	1	25	2	50	3	2.8	25

Station Data Summary Report
Station R3

Client: New York COE
Project: DO58 Norton Basin
Location:
Sample Date: 6/29/01

BVA Station: 015
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Xanthidae									
Xanthidae (LPIL)	0	0	1	25	0	0	1	0.9	8
Mysidacea									
Mysidae									
Neomysis americana	0	0	0	0	2	50	2	1.9	17
Ostracoda									
Myodocopina									
Cylindroleberididae									
Parasterope pollex	0	0	1	25	0	0	1	0.9	8
Cnidaria									
Hydrozoa									
Hydrozoa (LPIL)	0	0	1	25	0	0	1	0.9	8
Mollusca									
Gastropoda									
Mesogastropoda									
Calyptraeidae									
Crepidula fornicata	1	25	0	0	0	0	1	0.9	8
Neogastropoda									
Nassariidae									
Ilyanassa obsoleta	1	25	27	675	23	575	51	47.2	425

Note: LPIL designates the LOWEST PRACTICAL IDENTIFICATION LEVEL

Appendix I-H

Station Summary Reports, October 2001

Station Data Summary Report
Station GH-1

Client: New York COE
Project: DO 58 - Norton Basin 10/01
Location:
Sample Date: 10/1/01

BVA Station: 010
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Annelida									
Oligochaeta									
Tubificida									
Tubificidae									
Tubificidae (LPIL)	79	1975	102	2550	32	800	213	5.6	1775
Polychaeta									
Capitellida									
Capitellidae									
Mediomastus ambiseta	2	50	3	75	7	175	12	0.3	100
Orbiniida									
Orbiniidae									
Leitoscoloplos robustus	0	0	0	0	1	25	1	0	8
Phyllodocida									
Glyceridae									
Glycera americana	0	0	0	0	2	50	2	0.1	17
Hesionidae									
Hesionidae (LPIL)	0	0	1	25	0	0	1	0	8
Podarke obscura	8	200	12	300	15	375	35	0.9	292
Podarkeopsis levifuscina	3	75	3	75	1	25	7	0.2	58
Nereidae									
Nereis succinea	0	0	0	0	4	100	4	0.1	33
Phyllodocidae									
Eumida sanguinea	5	125	2	50	1	25	8	0.2	67
Hypereteone lighti	10	250	7	175	31	775	48	1.3	400
Spionida									
Spionidae									
Polydora cornuta	2	50	6	150	11	275	19	0.5	158
Streblospio benedicti	153	3825	147	3675	164	4100	464	12.2	3867

Station Data Summary Report
Station GH-1

Client: New York COE
Project: DO 58 - Norton Basin 10/01
Location:
Sample Date: 10/1/01

BVA Station: 010
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Arthropoda									
Malacostraca									
Amphipoda									
Ampeliscidae									
Ampelisca vadorum	654	16350	688	17200	1452	36300	2794	73.3	23283
Aoridae									
Microdeutopus gryllotalpa	3	75	5	125	3	75	11	0.3	92
Corophiidae									
Monocorophium tuberculatum	8	200	5	125	8	200	21	0.6	175
Lysianassidae									
Lysianopsis alba	31	775	35	875	24	600	90	2.4	750
Melitidae									
Elasmopus levis	14	350	22	550	15	375	51	1.3	425
Melita nitida	0	0	1	25	3	75	4	0.1	33
Decapoda									
Xanthidae									
Panopeus herbstii	2	50	4	100	6	150	12	0.3	100
Isopoda									
Anthuridae									
Cyathura burbancki	2	50	2	50	1	25	5	0.1	42
Mollusca									
Bivalvia									
Veneroida									
Tellinidae									
Tellina agilis	1	25	1	25	0	0	2	0.1	17
Veneridae									
Mercenaria mercenaria	1	25	0	0	0	0	1	0	8

Station Data Summary Report
Station GH-1

Client: New York COE
Project: DO 58 - Norton Basin 10/01
Location:
Sample Date: 10/1/01

BVA Station: 010
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Gastropoda									
Neogastropoda									
Nassariidae									
Ilyanassa obsoleta	4	100	1	25	0	0	5	0.1	42

Note: LPIL designates the LOWEST PRACTICAL IDENTIFICATION LEVEL

Station Data Summary Report
Station GH-2

Client: New York COE
Project: DO 58 - Norton Basin 10/01
Location:
Sample Date: 10/1/01

BVA Station: 011
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Annelida									
Polychaeta									
Capitellida									
Capitellidae									
Capitella capitata	0	0	0	0	1	25	1	0	8
Mediomastus ambiseta	0	0	0	0	1	25	1	0	8
Eunicida									
Dorvilleidae									
Schistomeringos rudolphi	0	0	1	25	0	0	1	0	8
Phyllodocida									
Glyceridae									
Glycera americana	0	0	0	0	1	25	1	0	8
Glycera dibranchiata	1	25	0	0	0	0	1	0	8
Hesionidae									
Hesionidae (LPIL)	2	50	0	0	0	0	2	0	17
Podarke obscura	11	275	11	275	9	225	31	0.6	258
Podarkeopsis levifuscina	5	125	15	375	9	225	29	0.5	242
Nereidae									
Nereididae (LPIL)	1	25	0	0	1	25	2	0	17
Nereis succinea	5	125	5	125	16	400	26	0.5	217
Phyllodocidae									
Eumida sanguinea	2	50	2	50	2	50	6	0.1	50
Hypereteone lighti	3	75	7	175	5	125	15	0.3	125
Spionida									
Spionidae									
Polydora cornuta	0	0	4	100	4	100	8	0.1	67
Streblospio benedicti	24	600	50	1250	69	1725	143	2.7	1192

Station Data Summary Report
Station GH-2

Client: New York COE
Project: DO 58 - Norton Basin 10/01
Location:
Sample Date: 10/1/01

BVA Station: 011
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Terebellida									
Pectinariidae									
Pectinaria gouldii	1	25	2	50	2	50	5	0.1	42
Arthropoda									
Malacostraca									
Amphipoda									
Aeginellidae									
Paracaprella tenuis	0	0	0	0	1	25	1	0	8
Ampeliscidae									
Ampelisca vadorum	876	21900	1681	42025	2388	59700	4945	92.3	41208
Aoridae									
Microdeutopus gryllotalpa	4	100	0	0	3	75	7	0.1	58
Corophiidae									
Monocorophium tuberculatum	17	425	24	600	28	700	69	1.3	575
Ischyroceridae									
Erichthonius brasiliensis	1	25	0	0	1	25	2	0	17
Lysianassidae									
Lysianopsis alba	1	25	0	0	0	0	1	0	8
Melitidae									
Elasmopus levis	0	0	3	75	5	125	8	0.1	67
Melita nitida	6	150	0	0	0	0	6	0.1	50
Decapoda									
Crangonidae									
Crangon septemspinosa	0	0	1	25	2	50	3	0.1	25
Portunidae									
Portunidae (LPIL)	0	0	0	0	1	25	1	0	8

Station Data Summary Report
Station GH-2

Client: New York COE
Project: DO 58 - Norton Basin 10/01
Location:
Sample Date: 10/1/01

BVA Station: 011
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Xanthidae									
Panopeus herbstii	2	50	1	25	0	0	3	0.1	25
Xanthidae (LPIL)	0	0	0	0	1	25	1	0	8
Mollusca									
Bivalvia									
Veneroida									
Tellinidae									
Tellina (LPIL)	0	0	1	25	0	0	1	0	8
Gastropoda									
Neogastropoda									
Nassariidae									
Ilyanassa obsoleta	1	25	4	100	0	0	5	0.1	42
Platyhelminthes									
Turbellaria									
Turbellaria (LPIL)	5	125	0	0	22	550	27	0.5	225
Rhynchocoela									
Rhynchocoela (LPIL)	2	50	1	25	2	50	5	0.1	42

Note: LPIL designates the LOWEST PRACTICAL IDENTIFICATION LEVEL

Station Data Summary Report
Station GH-3

Client: New York COE
Project: DO 58 - Norton Basin 10/01
Location:
Sample Date: 10/1/01

BVA Station: 012
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Annelida									
Polychaeta									
Capitellida									
Capitellidae									
Capitella capitata	0	0	1	25	0	0	1	0	8
Eunicida									
Dorvilleidae									
Schistomeringos rudolphi	5	125	1	25	1	25	7	0.1	58
Phyllodocida									
Glyceridae									
Glycera americana	2	50	1	25	0	0	3	0	25
Hesionidae									
Hesionidae (LPIL)	0	0	1	25	1	25	2	0	17
Podarke obscura	64	1600	71	1775	17	425	152	2.2	1267
Podarkeopsis levifuscina	9	225	8	200	8	200	25	0.4	208
Nereidae									
Nereis acuminata	0	0	1	25	0	0	1	0	8
Nereis succinea	0	0	1	25	0	0	1	0	8
Phyllodocidae									
Eumida sanguinea	1	25	1	25	1	25	3	0	25
Hypereteone lighti	0	0	1	25	2	50	3	0	25
Phyllodoce arenae	1	25	2	50	0	0	3	0	25
Sabellida									
Serpulidae									
Hydroides dianthus	0	0	0	0	1	25	1	0	8
Spionida									
Spionidae									
Polydora cornuta	1	25	4	100	0	0	5	0.1	42

Station Data Summary Report
Station GH-3

Client: New York COE
Project: DO 58 - Norton Basin 10/01
Location:
Sample Date: 10/1/01

BVA Station: 012
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Terebellida									
Pectinariidae									
Pectinaria gouldii	0	0	2	50	1	25	3	0	25
Arthropoda									
Malacostraca									
Amphipoda									
Ampeliscidae									
Ampelisca vadorum	2641	66025	2824	70600	1018	25450	6483	93	54025
Aoridae									
Microdeutopus gryllotalpa	0	0	1	25	0	0	1	0	8
Corophiidae									
Monocorophium tuberculatum	104	2600	72	1800	29	725	205	2.9	1708
Lysianassidae									
Lysianopsis alba	10	250	5	125	8	200	23	0.3	192
Melitidae									
Elasmopus (LPIL)	5	125	0	0	0	0	5	0.1	42
Decapoda									
Decapoda (LPIL)	1	25	0	0	0	0	1	0	8
Paguridae									
Pagurus (LPIL)	0	0	0	0	1	25	1	0	8
Isopoda									
Anthuridae									
Cyathura burbancki	1	25	1	25	1	25	3	0	25

Station Data Summary Report
Station GH-3

Client: New York COE
Project: DO 58 - Norton Basin 10/01
Location:
Sample Date: 10/1/01

BVA Station: 012
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Mollusca									
Bivalvia									
Bivalvia (LPIL)	4	100	0	0	1	25	5	0.1	42
Veneroida									
Petricolidae									
Petricola pholadiformis	0	0	4	100	1	25	5	0.1	42
Tellinidae									
Tellina agilis	0	0	1	25	0	0	1	0	8
Gastropoda									
Gastropoda (LPIL)	1	25	0	0	0	0	1	0	8
Mesogastropoda									
Calyptraeidae									
Calyptraeidae (LPIL)	2	50	0	0	5	125	7	0.1	58
Platyhelminthes									
Turbellaria									
Turbellaria (LPIL)	10	250	11	275	0	0	21	0.3	175
Rhynchocoela									
Rhynchocoela (LPIL)	1	25	0	0	0	0	1	0	8

Note: LPIL designates the LOWEST PRACTICAL IDENTIFICATION LEVEL

Station Data Summary Report
Station LB-1

Client: New York COE
Project: DO 58 - Norton Basin 10/01
Location:
Sample Date: 10/1/01

BVA Station: 007
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Annelida									
Polychaeta									
Phyllodocida									
Phyllodocidae									
Eumida sanguinea	0	0	1	25	0	0	1	20	8
Arthropoda									
Malacostraca									
Amphipoda									
Ampeliscidae									
Ampelisca vadorum	0	0	0	0	1	25	1	20	8
Mollusca									
Bivalvia									
Myoida									
Myidae									
Mya arenaria	2	50	0	0	0	0	2	40	17
Gastropoda									
Neogastropoda									
Nassariidae									
Ilyanassa obsoleta	0	0	1	25	0	0	1	20	8

Note: LPIL designates the LOWEST PRACTICAL IDENTIFICATION LEVEL

Station Data Summary Report
Station LB-2

Client: New York COE
Project: DO 58 - Norton Basin 10/01
Location:
Sample Date: 10/1/01

BVA Station: 008
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density

** No Taxa Found **

Note: LPIL designates the LOWEST PRACTICAL IDENTIFICATION LEVEL

Station Data Summary Report
Station LB-3

Client: New York COE
Project: DO 58 - Norton Basin 10/01
Location:
Sample Date: 10/1/01

BVA Station: 009
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Annelida									
Polychaeta									
Capitellida									
Capitellidae									
Mediomastus ambiseta	0	0	0	0	1	25	1	25	8
Arthropoda									
Malacostraca									
Amphipoda									
Ampeliscidae									
Ampelisca vadorum	0	0	0	0	1	25	1	25	8
Merostomata									
Xiphosura									
Limulidae									
Limulus polyphemus	0	0	1	25	0	0	1	25	8
Mollusca									
Gastropoda									
Neogastropoda									
Nassariidae									
Ilyanassa obsoleta	0	0	1	25	0	0	1	25	8

Note: LPIL designates the LOWEST PRACTICAL IDENTIFICATION LEVEL

Station Data Summary Report
Station NB-1

Client: New York COE
Project: DO 58 - Norton Basin 10/01
Location:
Sample Date: 10/1/01

BVA Station: 001
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Annelida									
Oligochaeta									
Tubificida									
Tubificidae									
Tubificidae (LPIL)	0	0	0	0	1	25	1	0	8
Polychaeta									
Capitellida									
Capitellidae									
Capitella capitata	6	150	0	0	32	800	38	1.2	317
Capitellidae (LPIL)	1	25	0	0	0	0	1	0	8
Mediomastus ambiseta	0	0	1	25	0	0	1	0	8
Orbiniida									
Orbiniidae									
Leitoscoloplos robustus	1	25	0	0	0	0	1	0	8
Phyllodocida									
Hesionidae									
Podarkeopsis levifuscina	0	0	3	75	0	0	3	0.1	25
Nereidae									
Nereis succinea	2	50	7	175	2	50	11	0.4	92
Phyllodocidae									
Eumida sanguinea	1	25	0	0	0	0	1	0	8
Hypereteone lighti	7	175	3	75	0	0	10	0.3	83
Spionida									
Spionidae									
Polydora cornuta	1	25	0	0	1	25	2	0.1	17
Spionidae (LPIL)	0	0	0	0	1	25	1	0	8
Streblospio benedicti	55	1375	45	1125	1	25	101	3.3	842

Station Data Summary Report
Station NB-1

Client: New York COE
Project: DO 58 - Norton Basin 10/01
Location:
Sample Date: 10/1/01

BVA Station: 001
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Terebellida									
Pectinariidae									
Pectinaria gouldii	1	25	0	0	0	0	1	0	8
Arthropoda									
Malacostraca									
Amphipoda									
Ampeliscidae									
Ampelisca vadorum	940	23500	959	23975	973	24325	2872	93.1	23933
Corophiidae									
Monocorophium tuberculatum	4	100	4	100	0	0	8	0.3	67
Lysianassidae									
Lysianopsis alba	0	0	1	25	0	0	1	0	8
Decapoda									
Crangonidae									
Crangon septemspinosa	0	0	0	0	1	25	1	0	8
Mysidacea									
Mysidae									
Mysidae (LPIL)	0	0	0	0	2	50	2	0.1	17
Mollusca									
Bivalvia									
Veneroida									
Mactridae									
Mulinia lateralis	1	25	0	0	0	0	1	0	8
Petricolidae									
Petricola pholadiformis	1	25	1	25	0	0	2	0.1	17

Station Data Summary Report
Station NB-1

Client: New York COE
Project: DO 58 - Norton Basin 10/01
Location:
Sample Date: 10/1/01

BVA Station: 001
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Tellinidae									
Tellina agilis	0	0	4	100	0	0	4	0.1	33
Gastropoda									
Neogastropoda									
Nassariidae									
Ilyanassa obsoleta	3	75	5	125	10	250	18	0.6	150
Pyramidelloida									
Pyramidellidae									
Odostomia trifida	3	75	2	50	0	0	5	0.2	42

Note: LPIL designates the LOWEST PRACTICAL IDENTIFICATION LEVEL

Station Data Summary Report
Station NB-2

Client: New York COE
Project: DO 58 - Norton Basin 10/01
Location:
Sample Date: 10/1/01

BVA Station: 002
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Annelida									
Oligochaeta									
Tubificida									
Tubificidae									
Tubificidae (LPIL)	110	2750	22	550	2	50	134	4	1117
Polychaeta									
Capitellida									
Capitellidae									
Capitella capitata	4	100	0	0	0	0	4	0.1	33
Mediomastus ambiseta	14	350	0	0	0	0	14	0.4	117
Eunicida									
Dorvilleidae									
Schistomeringos rudolphi	2	50	1	25	0	0	3	0.1	25
Orbiniida									
Orbiniidae									
Leitoscoloplos robustus	0	0	0	0	1	25	1	0	8
Phyllodocida									
Glyceridae									
Glycera americana	0	0	4	100	6	150	10	0.3	83
Glycera dibranchiata	0	0	0	0	1	25	1	0	8
Hesionidae									
Hesionidae (LPIL)	0	0	1	25	0	0	1	0	8
Podarke obscura	126	3150	38	950	0	0	164	4.9	1367
Nereidae									
Nereididae (LPIL)	0	0	2	50	0	0	2	0.1	17
Nereis (LPIL)	1	25	0	0	0	0	1	0	8
Nereis succinea	41	1025	21	525	0	0	62	1.9	517

Station Data Summary Report
Station NB-2

Client: New York COE
Project: DO 58 - Norton Basin 10/01
Location:
Sample Date: 10/1/01

BVA Station: 002
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Phyllodocidae									
Eumida sanguinea	70	1750	27	675	1	25	98	2.9	817
Hypereteone lighti	11	275	1	25	0	0	12	0.4	100
Phyllodoce arenae	0	0	0	0	1	25	1	0	8
Syllidae									
Autolytus (LPIL)	20	500	0	0	0	0	20	0.6	167
Syllidae (LPIL)	1	25	0	0	0	0	1	0	8
Sabellida									
Sabellidae									
Demonax microphthalmus	20	500	14	350	0	0	34	1	283
Sabellidae (LPIL)	6	150	2	50	0	0	8	0.2	67
Serpulidae									
Hydroides dianthus	160	4000	107	2675	37	925	304	9.1	2533
Spionida									
Cirratulidae									
Cirratulidae (LPIL)	4	100	28	700	1	25	33	1	275
Tharyx acutus	2	50	0	0	0	0	2	0.1	17
Spionidae									
Polydora cornuta	5	125	4	100	0	0	9	0.3	75
Spio (LPIL)	0	0	1	25	8	200	9	0.3	75
Spionidae (LPIL)	0	0	0	0	1	25	1	0	8
Streblospio benedicti	236	5900	27	675	4	100	267	8	2225
Terebellida									
Pectinariidae									
Pectinaria gouldii	2	50	2	50	0	0	4	0.1	33
Sabellariidae									
Sabellaria vulgaris	1121	28025	542	13550	49	1225	1712	51.3	14267

Station Data Summary Report
Station NB-2

Client: New York COE
Project: DO 58 - Norton Basin 10/01
Location:
Sample Date: 10/1/01

BVA Station: 002
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Terebellidae									
Polycirrus (LPIL)	0	0	1	25	0	0	1	0	8
Terebellidae (LPIL)	0	0	2	50	0	0	2	0.1	17
Arthropoda									
Malacostraca									
Amphipoda									
Aeginellidae									
Paracaprella tenuis	0	0	2	50	0	0	2	0.1	17
Ampeliscidae									
Ampelisca vadorum	8	200	1	25	0	0	9	0.3	75
Aoridae									
Aoridae (LPIL)	1	25	0	0	0	0	1	0	8
Leptocheirus pinguis	0	0	1	25	0	0	1	0	8
Unciola irrorata	0	0	1	25	0	0	1	0	8
Unciola serrata	11	275	52	1300	0	0	63	1.9	525
Corophiidae									
Monocorophium tuberculatum	6	150	12	300	1	25	19	0.6	158
Ischyroceridae									
Erichthonius brasiliensis	1	25	1	25	0	0	2	0.1	17
Lysianassidae									
Lysianopsis alba	1	25	21	525	0	0	22	0.7	183
Melitidae									
Elasmopus levis	0	0	1	25	0	0	1	0	8
Melita nitida	9	225	1	25	0	0	10	0.3	83
Phoxocephalidae									
Eobrolgus spinosus	0	0	2	50	0	0	2	0.1	17

Station Data Summary Report
Station NB-2

Client: New York COE
Project: DO 58 - Norton Basin 10/01
Location:
Sample Date: 10/1/01

BVA Station: 002
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Decapoda									
Decapoda (LPIL)	0	0	1	25	0	0	1	0	8
Paguridae									
Pagurus (LPIL)	0	0	4	100	16	400	20	0.6	167
Palaemonidae									
Palaemonetes vulgaris	1	25	0	0	0	0	1	0	8
Xanthidae									
Panopeus herbstii	14	350	3	75	0	0	17	0.5	142
Cnidaria									
Hydrozoa									
Hydrozoa (LPIL)	1	25	1	25	0	0	2	0.1	17
Mollusca									
Bivalvia									
Veneroida									
Petricolidae									
Petricola pholadiformis	21	525	13	325	0	0	34	1	283
Tellinidae									
Tellina agilis	2	50	0	0	1	25	3	0.1	25
Veneridae									
Gemma gemma	0	0	1	25	0	0	1	0	8
Mercenaria mercenaria	111	2775	11	275	1	25	123	3.7	1025
Gastropoda									
Mesogastropoda									
Calyptraeidae									
Crepidula (LPIL)	0	0	0	0	1	25	1	0	8
Crepidula fornicata	4	100	11	275	31	775	46	1.4	383
Crepidula plana	2	50	1	25	0	0	3	0.1	25

Station Data Summary Report
Station NB-2

Client: New York COE
Project: DO 58 - Norton Basin 10/01
Location:
Sample Date: 10/1/01

BVA Station: 002
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Neogastropoda									
Nassariidae									
Ilyanassa obsoleta	0	0	12	300	10	250	22	0.7	183
Nudibranchia									
Corambidae									
Doridella obscura	6	150	0	0	0	0	6	0.2	50
Platyhelminthes									
Turbellaria									
Turbellaria (LPIL)	1	25	4	100	0	0	5	0.1	42
Rhynchocoela									
Rhynchocoela (LPIL)	0	0	1	25	0	0	1	0	8

Note: LPIL designates the LOWEST PRACTICAL IDENTIFICATION LEVEL

Station Data Summary Report
Station NB-3

Client: New York COE
Project: DO 58 - Norton Basin 10/01
Location:
Sample Date: 10/1/01

BVA Station: 003
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Annelida									
Oligochaeta									
Tubificida									
Tubificidae									
Tubificidae (LPIL)	18	450	1	25	29	725	48	4.1	400
Polychaeta									
Capitellida									
Capitellidae									
Capitella capitata	2	50	0	0	0	0	2	0.2	17
Mediomastus ambiseta	5	125	0	0	0	0	5	0.4	42
Orbiniida									
Orbiniidae									
Leitoscoloplos robustus	1	25	2	50	1	25	4	0.3	33
Phyllodocida									
Glyceridae									
Glycera (LPIL)	0	0	0	0	1	25	1	0.1	8
Glycera americana	4	100	4	100	2	50	10	0.8	83
Hesionidae									
Podarke obscura	41	1025	0	0	0	0	41	3.5	342
Podarkeopsis levifuscina	1	25	0	0	0	0	1	0.1	8
Nereidae									
Nereididae (LPIL)	1	25	0	0	0	0	1	0.1	8
Nereis succinea	10	250	0	0	0	0	10	0.8	83
Phyllodocidae									
Eumida sanguinea	26	650	0	0	2	50	28	2.4	233
Hypereteone lighti	10	250	0	0	2	50	12	1	100

Station Data Summary Report
Station NB-3

Client: New York COE
Project: DO 58 - Norton Basin 10/01
Location:
Sample Date: 10/1/01

BVA Station: 003
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Polynoidae									
Lepidonotus sublevis	1	25	0	0	0	0	1	0.1	8
Polynoidae (LPIL)	0	0	1	25	0	0	1	0.1	8
Syllidae									
Autolytus (LPIL)	1	25	0	0	0	0	1	0.1	8
Sabellida									
Sabellidae									
Demonax microphthalmus	6	150	0	0	0	0	6	0.5	50
Serpulidae									
Hydroides dianthus	18	450	0	0	0	0	18	1.5	150
Spionida									
Chaetopteridae									
Spiochaetopterus oculatus	0	0	0	0	1	25	1	0.1	8
Cirratulidae									
Cirratulidae (LPIL)	39	975	30	750	2	50	71	6	592
Tharyx acutus	6	150	0	0	0	0	6	0.5	50
Spionidae									
Polydora cornuta	0	0	3	75	4	100	7	0.6	58
Spio pettiboneae	1	25	0	0	0	0	1	0.1	8
Streblospio benedicti	86	2150	60	1500	37	925	183	15.5	1525
Terebellida									
Pectinariidae									
Pectinaria gouldii	4	100	0	0	0	0	4	0.3	33
Sabellariidae									
Sabellaria vulgaris	482	12050	0	0	0	0	482	40.8	4017
Terebellidae									
Polycirrus sp. G	1	25	0	0	0	0	1	0.1	8

Station Data Summary Report
Station NB-3

Client: New York COE
Project: DO 58 - Norton Basin 10/01
Location:
Sample Date: 10/1/01

BVA Station: 003
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Arthropoda									
Malacostraca									
Amphipoda									
Ampeliscidae									
Ampelisca vadorum	5	125	0	0	1	25	6	0.5	50
Aoridae									
Aoridae (LPIL)	1	25	0	0	0	0	1	0.1	8
Unciola serrata	6	150	0	0	0	0	6	0.5	50
Corophiidae									
Monocorophium tuberculatum	6	150	0	0	0	0	6	0.5	50
Ischyroceridae									
Erichthonius brasiliensis	2	50	0	0	0	0	2	0.2	17
Lysianassidae									
Lysianopsis alba	2	50	0	0	0	0	2	0.2	17
Decapoda									
Paguridae									
Pagurus (LPIL)	1	25	0	0	4	100	5	0.4	42
Xanthidae									
Xanthidae (LPIL)	1	25	0	0	0	0	1	0.1	8
Cnidaria									
Hydrozoa									
Hydrozoa (LPIL)	1	25	0	0	0	0	1	0.1	8
Mollusca									
Bivalvia									
Veneroida									
Petricolidae									
Petricola pholadiformis	4	100	0	0	0	0	4	0.3	33

Station Data Summary Report
Station NB-3

Client: New York COE
Project: DO 58 - Norton Basin 10/01
Location:
Sample Date: 10/1/01

BVA Station: 003
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Tellinidae									
Tellina (LPIL)	2	50	0	0	0	0	2	0.2	17
Tellina agilis	0	0	1	25	0	0	1	0.1	8
Veneridae									
Gemma gemma	0	0	0	0	1	25	1	0.1	8
Mercenaria mercenaria	47	1175	0	0	12	300	59	5	492
Gastropoda									
Gastropoda (LPIL)	1	25	0	0	0	0	1	0.1	8
Mesogastropoda									
Calyptraeidae									
Crepidula (LPIL)	0	0	1	25	0	0	1	0.1	8
Crepidula fornicata	10	250	1	25	7	175	18	1.5	150
Neogastropoda									
Nassariidae									
Ilyanassa obsoleta	9	225	1	25	107	2675	117	9.9	975
Pyramidelloida									
Pyramidellidae									
Odostomia trifida	0	0	1	25	0	0	1	0.1	8

Note: LPIL designates the LOWEST PRACTICAL IDENTIFICATION LEVEL

Station Data Summary Report
Station NB-4

Client: New York COE
Project: DO 58 - Norton Basin 10/01
Location:
Sample Date: 10/1/01

BVA Station: 004
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Annelida									
Oligochaeta									
Tubificida									
Tubificidae									
Tubificidae (LPIL)	0	0	0	0	1	25	1	0.2	8
Polychaeta									
Capitellida									
Capitellidae									
Capitella capitata	5	125	0	0	0	0	5	1.1	42
Phyllodocida									
Glyceridae									
Glycera americana	0	0	0	0	1	25	1	0.2	8
Hesionidae									
Podarke obscura	0	0	0	0	4	100	4	0.9	33
Podarkeopsis levifuscina	11	275	1	25	0	0	12	2.6	100
Nereidae									
Nereis (LPIL)	0	0	0	0	1	25	1	0.2	8
Phyllodocidae									
Hypereteone lighti	0	0	0	0	4	100	4	0.9	33
Spionida									
Spionidae									
Polydora cornuta	2	50	0	0	0	0	2	0.4	17
Streblospio benedicti	0	0	0	0	1	25	1	0.2	8
Terebellida									
Pectinariidae									
Pectinaria gouldii	1	25	2	50	1	25	4	0.9	33

Station Data Summary Report
Station NB-4

Client: New York COE
Project: DO 58 - Norton Basin 10/01
Location:
Sample Date: 10/1/01

BVA Station: 004
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Arthropoda									
Insecta									
Diptera									
Muscidae									
Muscidae (LPIL)	0	0	0	0	1	25	1	0.2	8
Malacostraca									
Amphipoda									
Ampeliscidae									
Ampelisca vadorum	24	600	3	75	359	8975	386	83.4	3217
Mollusca									
Gastropoda									
Mesogastropoda									
Calyptraeidae									
Crepidula fornicata	0	0	0	0	1	25	1	0.2	8
Neogastropoda									
Nassariidae									
Ilyanassa obsoleta	26	650	13	325	1	25	40	8.6	333

Note: LPIL designates the LOWEST PRACTICAL IDENTIFICATION LEVEL

Station Data Summary Report
Station NB-5

Client: New York COE
Project: DO 58 - Norton Basin 10/01
Location:
Sample Date: 10/1/01

BVA Station: 005
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density

** No Taxa Found **

Note: LPIL designates the LOWEST PRACTICAL IDENTIFICATION LEVEL

Station Data Summary Report
Station NB-6

Client: New York COE
Project: DO 58 - Norton Basin 10/01
Location:
Sample Date: 10/1/01

BVA Station: 006
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Arthropoda									
Malacostraca									
Amphipoda									
Ampeliscidae									
Ampelisca (LPIL)	0	0	1	25	0	0	1	100	8

Note: LPIL designates the LOWEST PRACTICAL IDENTIFICATION LEVEL

Station Data Summary Report
Station R-1

Client: New York COE
Project: DO 58 - Norton Basin 10/01
Location:
Sample Date: 10/1/01

BVA Station: 013
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Annelida									
Oligochaeta									
Tubificida									
Enchytraeidae									
Enchytraeidae (LPIL)	0	0	0	0	1	25	1	0	8
Tubificidae									
Tubificidae (LPIL)	27	675	60	1500	11	275	98	1.8	817
Polychaeta									
Capitellida									
Capitellidae									
Mediomastus ambiseta	25	625	60	1500	7	175	92	1.7	767
Phyllodocida									
Glyceridae									
Glycera (LPIL)	1	25	1	25	0	0	2	0	17
Glycera americana	1	25	5	125	1	25	7	0.1	58
Hesionidae									
Podarke obscura	4	100	1	25	1	25	6	0.1	50
Nereidae									
Nereis succinea	2	50	2	50	2	50	6	0.1	50
Phyllodocidae									
Eumida sanguinea	1	25	2	50	0	0	3	0.1	25
Hypereteone lighti	1	25	2	50	0	0	3	0.1	25
Polynoidae									
Lepidonotus sublevis	2	50	0	0	0	0	2	0	17
Syllidae									
Exogone rolani	31	775	40	1000	12	300	83	1.5	692

Station Data Summary Report
Station R-1

Client: New York COE
Project: DO 58 - Norton Basin 10/01
Location:
Sample Date: 10/1/01

BVA Station: 013
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Sabellida									
Sabellidae									
Demonax microphthalmus	1	25	1	25	0	0	2	0	17
Spionida									
Spionidae									
Polydora cornuta	0	0	1	25	0	0	1	0	8
Streblospio benedicti	163	4075	272	6800	60	1500	495	8.9	4125
Terebellida									
Pectinariidae									
Pectinaria gouldii	0	0	0	0	1	25	1	0	8
Terebellidae									
Neoamphitrite sp. C	0	0	1	25	0	0	1	0	8
Arthropoda									
Malacostraca									
Amphipoda									
Aeginellidae									
Paracaprella tenuis	1	25	0	0	0	0	1	0	8
Ampeliscidae									
Ampelisca vadorum	2931	73275	1185	29625	211	5275	4327	77.7	36058
Aoridae									
Microdeutopus gryllotalpa	23	575	117	2925	5	125	145	2.6	1208
Unciola serrata	0	0	3	75	0	0	3	0.1	25
Corophiidae									
Monocorophium tuberculatum	3	75	9	225	0	0	12	0.2	100
Ischyroceridae									
Erichthonius brasiliensis	0	0	7	175	0	0	7	0.1	58

Station Data Summary Report
Station R-1

Client: New York COE
Project: DO 58 - Norton Basin 10/01
Location:
Sample Date: 10/1/01

BVA Station: 013
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Lysianassidae									
Lysianopsis alba	19	475	39	975	12	300	70	1.3	583
Melitidae									
Elasmopus levis	25	625	65	1625	10	250	100	1.8	833
Phoxocephalidae									
Eobrolgus spinosus	1	25	2	50	1	25	4	0.1	33
Decapoda									
Decapoda (LPIL)	1	25	0	0	0	0	1	0	8
Ostracoda									
Myodocopina									
Cylindroleberididae									
Parasterope pollex	5	125	9	225	1	25	15	0.3	125
Cnidaria									
Anthozoa									
Actiniaria									
Actiniaria (LPIL)	1	25	0	0	0	0	1	0	8
Mollusca									
Bivalvia									
Bivalvia (LPIL)	2	50	11	275	1	25	14	0.3	117
Arcoida									
Arcidae									
Anadara transversa	0	0	0	0	1	25	1	0	8
Nuculoida									
Nuculidae									
Nucula proxima	2	50	1	25	1	25	4	0.1	33

Station Data Summary Report
Station R-1

Client: New York COE
Project: DO 58 - Norton Basin 10/01
Location:
Sample Date: 10/1/01

BVA Station: 013
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Veneroida									
Mactridae									
Mulinia lateralis	0	0	1	25	0	0	1	0	8
Petricolidae									
Petricola pholadiformis	3	75	6	150	1	25	10	0.2	83
Tellinidae									
Tellina (LPIL)	0	0	1	25	0	0	1	0	8
Veneridae									
Mercenaria mercenaria	1	25	1	25	0	0	2	0	17
Veneridae (LPIL)	5	125	4	100	1	25	10	0.2	83
Gastropoda									
Gastropoda (LPIL)	1	25	0	0	0	0	1	0	8
Mesogastropoda									
Calyptraeidae									
Calyptraeidae (LPIL)	0	0	1	25	2	50	3	0.1	25
Neogastropoda									
Nassariidae									
Ilyanassa obsoleta	1	25	0	0	2	50	3	0.1	25
Platyhelminthes									
Turbellaria									
Turbellaria (LPIL)	0	0	1	25	1	25	2	0	17
Rhynchocoela									
Rhynchocoela (LPIL)	5	125	16	400	4	100	25	0.4	208

Note: LPIL designates the LOWEST PRACTICAL IDENTIFICATION LEVEL

Station Data Summary Report
Station R-2

Client: New York COE
Project: DO 58 - Norton Basin 10/01
Location:
Sample Date: 10/1/01

BVA Station: 014
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Annelida									
Oligochaeta									
Tubificida									
Tubificidae									
Tubificidae (LPIL)	56	1400	43	1075	114	2850	213	4.7	1775
Polychaeta									
Capitellida									
Capitellidae									
Capitella capitata	2	50	3	75	9	225	14	0.3	117
Mediomastus ambiseta	362	9050	9	225	258	6450	629	13.8	5242
Eunicida									
Onuphidae									
Diopatra cuprea	6	150	1	25	26	650	33	0.7	275
Onuphidae (LPIL)	0	0	1	25	0	0	1	0	8
Orbiniida									
Orbiniidae									
Leitoscoloplos robustus	23	575	9	225	44	1100	76	1.7	633
Phyllodocida									
Glyceridae									
Glycera (LPIL)	0	0	1	25	0	0	1	0	8
Glycera americana	4	100	4	100	8	200	16	0.4	133
Hesionidae									
Podarke obscura	3	75	0	0	0	0	3	0.1	25
Podarkeopsis levifuscina	0	0	0	0	1	25	1	0	8
Nereidae									
Nereididae (LPIL)	0	0	0	0	5	125	5	0.1	42
Nereis succinea	8	200	2	50	14	350	24	0.5	200

Station Data Summary Report
Station R-2

Client: New York COE
Project: DO 58 - Norton Basin 10/01
Location:
Sample Date: 10/1/01

BVA Station: 014
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Phyllodocidae									
Eumida sanguinea	3	75	0	0	4	100	7	0.2	58
Hypereteone lighti	136	3400	20	500	205	5125	361	7.9	3008
Phyllodoce arenae	2	50	0	0	1	25	3	0.1	25
Syllidae									
Exogone rolani	0	0	1	25	0	0	1	0	8
Spionida									
Spionidae									
Polydora cornuta	0	0	0	0	6	150	6	0.1	50
Streblospio benedicti	672	16800	264	6600	486	12150	1422	31.1	11850
Terebellida									
Pectinariidae									
Pectinaria gouldii	6	150	1	25	7	175	14	0.3	117
Sabellariidae									
Sabellaria vulgaris	0	0	2	50	0	0	2	0	17
Terebellidae									
Eupolymnia nebulosa	1	25	0	0	0	0	1	0	8
Arthropoda									
Malacostraca									
Amphipoda									
Ampeliscidae									
Ampelisca vadorum	545	13625	133	3325	913	22825	1591	34.8	13258
Corophiidae									
Monocorophium tuberculatum	2	50	0	0	0	0	2	0	17
Melitidae									
Elasmopus levis	0	0	0	0	2	50	2	0	17

Station Data Summary Report
Station R-2

Client: New York COE
Project: DO 58 - Norton Basin 10/01
Location:
Sample Date: 10/1/01

BVA Station: 014
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Decapoda									
Paguridae									
Pagurus (LPIL)	1	25	0	0	0	0	1	0	8
Ostracoda									
Myodocopina									
Cylindroleberididae									
Parasterope pollex	0	0	0	0	3	75	3	0.1	25
Cnidaria									
Hydrozoa									
Hydrozoa (LPIL)	1	25	1	25	1	25	3	0.1	25
Mollusca									
Bivalvia									
Bivalvia (LPIL)	3	75	0	0	0	0	3	0.1	25
Veneroida									
Mactridae									
Mulinia lateralis	8	200	0	0	9	225	17	0.4	142
Petricolidae									
Petricola pholadiformis	1	25	0	0	0	0	1	0	8
Tellinidae									
Tellina (LPIL)	0	0	0	0	1	25	1	0	8
Veneridae									
Mercenaria mercenaria	1	25	0	0	0	0	1	0	8
Veneridae (LPIL)	11	275	0	0	5	125	16	0.4	133

Station Data Summary Report
Station R-2

Client: New York COE
Project: DO 58 - Norton Basin 10/01
Location:
Sample Date: 10/1/01

BVA Station: 014
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Gastropoda									
Cephalaspidea									
Acteonidae									
Rictaxis punctostriatus	7	175	0	0	2	50	9	0.2	75
Scaphandridae									
Acteocina canaliculata	3	75	0	0	17	425	20	0.4	167
Mesogastropoda									
Calyptraeidae									
Crepidula fornicata	1	25	0	0	0	0	1	0	8
Neogastropoda									
Nassariidae									
Ilyanassa obsoleta	11	275	9	225	16	400	36	0.8	300
Pyramidelloida									
Pyramidellidae									
Odostomia trifida	3	75	0	0	0	0	3	0.1	25
Rhynchocoela									
Rhynchocoela (LPIL)	8	200	0	0	19	475	27	0.6	225

Note: LPIL designates the LOWEST PRACTICAL IDENTIFICATION LEVEL

Station Data Summary Report
Station R-3

Client: New York COE
Project: DO 58 - Norton Basin 10/01
Location:
Sample Date: 10/1/01

BVA Station: 015
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Annelida									
Oligochaeta									
Tubificida									
Tubificidae									
Tubificidae (LPIL)	72	1800	2	50	4	100	78	2	650
Polychaeta									
Capitellida									
Capitellidae									
Capitella capitata	10	250	0	0	1	25	11	0.3	92
Mediomastus ambiseta	82	2050	12	300	15	375	109	2.8	908
Eunicida									
Onuphidae									
Diopatra cuprea	4	100	3	75	3	75	10	0.3	83
Orbiniida									
Orbiniidae									
Leitoscoloplos robustus	14	350	4	100	1	25	19	0.5	158
Phyllodocida									
Glyceridae									
Glycera americana	3	75	2	50	2	50	7	0.2	58
Hesionidae									
Podarke obscura	1	25	6	150	3	75	10	0.3	83
Podarkeopsis levifuscina	0	0	0	0	1	25	1	0	8
Nereidae									
Nereis (LPIL)	0	0	0	0	1	25	1	0	8
Nereis succinea	25	625	37	925	17	425	79	2.1	658

Station Data Summary Report
Station R-3

Client: New York COE
Project: DO 58 - Norton Basin 10/01
Location:
Sample Date: 10/1/01

BVA Station: 015
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Phyllodocidae									
Eumida sanguinea	8	200	7	175	4	100	19	0.5	158
Hypereteone lighti	139	3475	33	825	32	800	204	5.3	1700
Phyllodoce arenae	1	25	0	0	0	0	1	0	8
Syllidae									
Streptosyllis pettiboneae	1	25	0	0	0	0	1	0	8
Sabellida									
Sabellidae									
Demonax microphthalmus	0	0	1	25	1	25	2	0.1	17
Serpulidae									
Hydroides dianthus	1	25	0	0	0	0	1	0	8
Spionida									
Spionidae									
Polydora cornuta	2	50	2	50	4	100	8	0.2	67
Streblospio benedicti	518	12950	311	7775	243	6075	1072	28	8933
Terebellida									
Pectinariidae									
Pectinaria gouldii	1	25	0	0	0	0	1	0	8
Arthropoda									
Malacostraca									
Amphipoda									
Ampeliscidae									
Ampelisca vadorum	460	11500	504	12600	1052	26300	2016	52.7	16800
Aoridae									
Microdeutopus gryllotalpa	7	175	0	0	0	0	7	0.2	58
Corophiidae									
Monocorophium tuberculatum	19	475	12	300	12	300	43	1.1	358

Station Data Summary Report
Station R-3

Client: New York COE
Project: DO 58 - Norton Basin 10/01
Location:
Sample Date: 10/1/01

BVA Station: 015
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Lysianassidae									
Lysianopsis alba	21	525	1	25	0	0	22	0.6	183
Melitidae									
Elasmopus levis	1	25	5	125	4	100	10	0.3	83
Melita nitida	0	0	3	75	3	75	6	0.2	50
Decapoda									
Xanthidae									
Xanthidae (LPIL)	0	0	0	0	1	25	1	0	8
Ostracoda									
Myodocopina									
Cylindroleberididae									
Parasterope pollex	2	50	0	0	1	25	3	0.1	25
Cnidaria									
Hydrozoa									
Hydrozoa (LPIL)	1	25	1	25	1	25	3	0.1	25
Mollusca									
Bivalvia									
Bivalvia (LPIL)	8	200	0	0	1	25	9	0.2	75
Veneroida									
Petricolidae									
Petricola pholadiformis	1	25	1	25	0	0	2	0.1	17
Veneridae									
Mercenaria mercenaria	2	50	0	0	0	0	2	0.1	17
Veneridae (LPIL)	1	25	1	25	0	0	2	0.1	17
Gastropoda									
Gastropoda (LPIL)	1	25	0	0	0	0	1	0	8

Station Data Summary Report
Station R-3

Client: New York COE
Project: DO 58 - Norton Basin 10/01
Location:
Sample Date: 10/1/01

BVA Station: 015
Sample Type: Macrofauna
Replicates: 3
Sample Area: 0.0400

TAXON	Rep 1		Rep 2		Rep 3		Station		
	Count	Density	Count	Density	Count	Density	Total	Percent	Mean Density
Neogastropoda									
Nassariidae									
Ilyanassa obsoleta	12	300	10	250	7	175	29	0.8	242
Platyhelminthes									
Turbellaria									
Turbellaria (LPIL)	1	25	7	175	19	475	27	0.7	225
Rhynchocoela									
Rhynchocoela (LPIL)	9	225	2	50	0	0	11	0.3	92

Note: LPIL designates the LOWEST PRACTICAL IDENTIFICATION LEVEL

Appendix I-I

ANOVA Tables, June 2001

ANOVA comparing total macroinvertebrate density among Norton Basin deep-water and shallow-water stations, June 2001.

Source	SS	df	MS	F	P
Deep Stations	90.924	8	11.365	37.281	0.0001
Shallow Stations	4.586	5	0.917	5.536	0.0072

Deep Stations

Student-Newman-Keuls
Effect: site
Dependent: Log Density
Significance level: .05

	Vs.	Diff.	Crit. diff.	
LB1	LB2	0.000	.947	
	LB3	.472	1.151	
	NB5	1.138	1.275	
	NB6	1.708	1.364	S
	NB4	2.976	1.431	S
	GH2	4.157	1.489	S
	GH3	4.320	1.537	S
	GH1	4.911	1.581	S
LB2	LB3	.472	.947	
	NB5	1.138	1.151	
	NB6	1.708	1.275	S
	NB4	2.976	1.364	S
	GH2	4.157	1.431	S
	GH3	4.320	1.489	S
	GH1	4.911	1.537	S
LB3	NB5	.667	.947	
	NB6	1.236	1.151	S
	NB4	2.505	1.275	S
	GH2	3.685	1.364	S
	GH3	3.848	1.431	S
	GH1	4.439	1.489	S
NB5	NB6	.569	.947	
	NB4	1.838	1.151	S
	GH2	3.018	1.275	S
	GH3	3.181	1.364	S
	GH1	3.773	1.431	S
NB6	NB4	1.269	.947	S
	GH2	2.449	1.151	S
	GH3	2.612	1.275	S
	GH1	3.203	1.364	S
NB4	GH2	1.180	.947	S
	GH3	1.343	1.151	S
	GH1	1.935	1.275	S
GH2	GH3	.163	.947	
	GH1	.754	1.151	
GH3	GH1	.591	.947	

S = Significantly different at this level.

Shallow Stations

Student-Newman-Keuls
Effect: site
Dependent: Log Density
Significance level: .05

	Vs.	Diff.	Crit. diff.	
R3	R1	1.223	.724	S
	NB1	1.241	.886	S
	NB2	1.388	.987	S
	R2	1.406	1.060	S
	NB3	1.429	1.116	S
R1	NB1	.018	.724	
	NB2	.164	.886	
	R2	.182	.987	
	NB3	.206	1.060	
NB1	NB2	.147	.724	
	R2	.165	.886	
	NB3	.188	.987	
NB2	R2	.018	.724	
	NB3	.041	.886	
R2	NB3	.023	.724	

S = Significantly different at this level.

ANOVA comparing Annelida density among Norton Basin deep-water and shallow-water stations, June 2001.

Source	SS	df	MS	F	P
Deep Stations	29.126	8	3.641	52.512	0.0001
Shallow Stations	7.030	5	1.406	10.074	0.0006

Deep Stations

Student-Newman-Keuls
Effect: Station
Dependent: Log (Annelida+1)
Significance level: .05

	Vs.	Diff.	Crit. diff.	
NB6	NB5	0.000	.452	
	LB3	0.000	.549	
	LB1	0.000	.608	
	LB2	0.000	.651	
	NB4	1.273	.683	S
	GH3	1.955	.710	S
	GH2	2.307	.733	S
	GH1	2.458	.754	S
NB5	LB3	0.000	.452	
	LB1	0.000	.549	
	LB2	0.000	.608	
	NB4	1.273	.651	S
	GH3	1.955	.683	S
	GH2	2.307	.710	S
	GH1	2.458	.733	S
LB3	LB1	0.000	.452	
	LB2	0.000	.549	
	NB4	1.273	.608	S
	GH3	1.955	.651	S
	GH2	2.307	.683	S
	GH1	2.458	.710	S
LB1	LB2	0.000	.452	
	NB4	1.273	.549	S
	GH3	1.955	.608	S
	GH2	2.307	.651	S
	GH1	2.458	.683	S
LB2	NB4	1.273	.452	S
	GH3	1.955	.549	S
	GH2	2.307	.608	S
	GH1	2.458	.651	S
NB4	GH3	.682	.452	S
	GH2	1.034	.549	S
	GH1	1.185	.608	S
GH3	GH2	.352	.452	
	GH1	.503	.549	
GH2	GH1	.151	.452	

S = Significantly different at this level.

Shallow Stations

Student-Newman-Keuls
Effect: Station
Dependent: Log (Annelida+1)
Significance level: .05

	Vs.	Diff.	Crit. diff.	
R3	NB1	.894	.664	S
	R1	1.429	.813	S
	R2	1.649	.906	S
	NB3	1.716	.973	S
	NB2	1.746	1.025	S
NB1	R1	.536	.664	
	R2	.756	.813	
	NB3	.822	.906	
	NB2	.853	.973	
R1	R2	.220	.664	
	NB3	.286	.813	
	NB2	.317	.906	
R2	NB3	.066	.664	
	NB2	.097	.813	
NB3	NB2	.031	.664	

S = Significantly different at this level.

ANOVA comparing Arthropoda density among Norton Basin deep-water and shallow-water stations, June 2001.

Source	SS	df	MS	F	P
Deep Stations	47.283	8	5.910	21.062	0.0001
Shallow Stations	7.204	5	1.441	2.320	0.1079

Deep Stations

Student-Newman-Keuls
Effect: Station
Dependent: Log (Arthropoda+1)
Significance level: .05

	Vs.	Diff.	Crit. diff.	
LB3	LB2	0.000	.908	
	LB1	0.000	1.104	
	NB6	.259	1.223	
	NB5	.318	1.309	
	NB4	.844	1.373	
	GH2	2.532	1.428	S
	GH3	2.866	1.474	S
	GH1	3.465	1.517	S
LB2	LB1	0.000	.908	
	NB6	.259	1.104	
	NB5	.318	1.223	
	NB4	.844	1.309	
	GH2	2.532	1.373	S
	GH3	2.866	1.428	S
	GH1	3.465	1.474	S
LB1	NB6	.259	.908	
	NB5	.318	1.104	
	NB4	.844	1.223	
	GH2	2.532	1.309	S
	GH3	2.866	1.373	S
	GH1	3.465	1.428	S
NB6	NB5	.059	.908	
	NB4	.584	1.104	
	GH2	2.272	1.223	S
	GH3	2.607	1.309	S
	GH1	3.206	1.373	S
NB5	NB4	.526	.908	
	GH2	2.213	1.104	S
	GH3	2.548	1.223	S
	GH1	3.147	1.309	S
NB4	GH2	1.688	.908	S
	GH3	2.023	1.104	S
	GH1	2.621	1.223	S
GH2	GH3	.335	.908	
	GH1	.934	1.104	
GH3	GH1	.599	.908	

S = Significantly different at this level.

Shallow Stations

Student-Newman-Keuls
Effect: Station
Dependent: Log (Arthropoda+1)
Significance level: .05

	Vs.	Diff.	Crit. diff.
R3	R1	.972	1.401
	NB2	1.092	1.715
	NB3	1.595	1.911
	R2	1.636	2.052
	NB1	1.943	2.161
R1	NB2	.120	1.401
	NB3	.623	1.715
	R2	.664	1.911
	NB1	.971	2.052
NB2	NB3	.502	1.401
	R2	.544	1.715
	NB1	.851	1.911
NB3	R2	.042	1.401
	NB1	.348	1.715
R2	NB1	.307	1.401

None were significantly different at this leve

Appendix I-J

ANOVA Tables, October 2001

ANOVA comparing total macroinvertebrate density among Norton Basin deep-water and shallow-water stations, October 2001.

Source	SS	df	MS	F	P
Deep Stations	55.247	8	6.906	86.560	0.0001
Shallow Stations	1.061	5	0.212	1.388	0.2960

Deep Stations

Student-Newman-Keuls
Effect: Site
Dependent: Log Density
Significance level: .05

	Vs.	Diff.	Crit. diff.	
NB5	LB2	0.000	.484	
	NB6	.100	.589	
	LB3	.159	.652	
	LB1	.318	.698	
	NB4	1.907	.732	S
	GH1	3.088	.762	S
	GH2	3.219	.786	S
	GH3	3.325	.809	S
LB2	NB6	.100	.484	
	LB3	.159	.589	
	LB1	.318	.652	
	NB4	1.907	.698	S
	GH1	3.088	.732	S
	GH2	3.219	.762	S
	GH3	3.325	.786	S
NB6	LB3	.059	.484	
	LB1	.218	.589	
	NB4	1.807	.652	S
	GH1	2.988	.698	S
	GH2	3.119	.732	S
	GH3	3.225	.762	S
LB3	LB1	.159	.484	
	NB4	1.748	.589	S
	GH1	2.929	.652	S
	GH2	3.060	.698	S
	GH3	3.166	.732	S
LB1	NB4	1.589	.484	S
	GH1	2.770	.589	S
	GH2	2.901	.652	S
	GH3	3.007	.698	S
NB4	GH1	1.181	.484	S
	GH2	1.312	.589	S
	GH3	1.418	.652	S
GH1	GH2	.131	.484	
	GH3	.238	.589	
GH2	GH3	.107	.484	

S = Significantly different at this level.

Shallow Stations

Student-Newman-Keuls
Effect: Site
Dependent: Log Density
Significance level: .05

	Vs.	Diff.	Crit. diff.
NB3	NB2	.427	.695
	NB1	.581	.851
	R3	.667	.948
	R2	.674	1.018
	R1	.684	1.072
NB2	NB1	.154	.695
	R3	.240	.851
	R2	.247	.948
	R1	.257	1.018
NB1	R3	.086	.695
	R2	.093	.851
	R1	.103	.948
R3	R2	.007	.695
	R1	.017	.851
R2	R1	.010	.695

None were significantly different at this leve

ANOVA comparing Annelida density among Norton Basin deep-water and shallow-water stations, October 2001.

Source	SS	df	MS	F	P
Deep Stations	23.797	8	2.975	92.568	0.0001
Shallow Stations	2.712	5	0.542	3.353	0.0399

Deep Stations

Student-Newman-Keuls
Effect: Station
Dependent: Log (Annelida+1)
Significance level: .05

	Vs.	Diff.	Crit. diff.	
NB-6	NB-5	0.000	.307	
	LB-2	0.000	.374	
	LB-1	.100	.414	
	LB-3	.100	.443	
	NB-4	1.016	.465	S
	GH-3	1.808	.483	S
	GH-2	1.941	.499	S
	GH-1	2.435	.513	S
NB-5	LB-2	0.000	.307	
	LB-1	.100	.374	
	LB-3	.100	.414	
	NB-4	1.016	.443	S
	GH-3	1.808	.465	S
	GH-2	1.941	.483	S
	GH-1	2.435	.499	S
LB-2	LB-1	.100	.307	
	LB-3	.100	.374	
	NB-4	1.016	.414	S
	GH-3	1.808	.443	S
	GH-2	1.941	.465	S
	GH-1	2.435	.483	S
LB-1	LB-3	0.000	.307	
	NB-4	.916	.374	S
	GH-3	1.708	.414	S
	GH-2	1.840	.443	S
	GH-1	2.335	.465	S
LB-3	NB-4	.916	.307	S
	GH-3	1.708	.374	S
	GH-2	1.840	.414	S
	GH-1	2.335	.443	S
NB-4	GH-3	.792	.307	S
	GH-2	.924	.374	S
	GH-1	1.418	.414	S
GH-3	GH-2	.132	.307	
	GH-1	.627	.374	S
GH-2	GH-1	.494	.307	S

S = Significantly different at this level.

Shallow Stations

Student-Newman-Keuls
Effect: Station
Dependent: Log (Annelida+1)
Significance level: .05

	Vs.	Diff.	Crit. diff.	
NB-1	NB-3	.519	.715	
	R-1	.601	.875	
	R-3	.948	.975	
	NB-2	1.008	1.047	
	R-2	1.164	1.103	S
NB-3	R-1	.083	.715	
	R-3	.429	.875	
	NB-2	.489	.975	
	R-2	.646	1.047	
R-1	R-3	.346	.715	
	NB-2	.406	.875	
	R-2	.563	.975	
R-3	NB-2	.060	.715	
	R-2	.217	.875	
NB-2	R-2	.157	.715	

S = Significantly different at this level.

ANOVA comparing Arthropoda density among Norton Basin deep-water and shallow-water stations, October 2001.

Source	SS	df	MS	F	P
Deep Stations	53.762	8	6.720	50.478	0.0001
Shallow Stations	12.642	5	2.528	12.889	0.0002

Deep Stations

Student-Newman-Keuls
Effect: Station
Dependent: Log (Arthropoda+1)
Significance level: .05

	Vs.	Diff.	Crit. diff.	
NB-5	LB-2	0.000	.626	
	NB-6	.100	.760	
	LB-1	.100	.843	
	LB-3	.201	.902	
	NB-4	1.519	.946	S
	GH-1	2.972	.984	S
	GH-2	3.192	1.015	S
	GH-3	3.310	1.045	S
LB-2	NB-6	.100	.626	
	LB-1	.100	.760	
	LB-3	.201	.843	
	NB-4	1.519	.902	S
	GH-1	2.972	.946	S
	GH-2	3.192	.984	S
	GH-3	3.310	1.015	S
NB-6	LB-1	0.000	.626	
	LB-3	.100	.760	
	NB-4	1.419	.843	S
	GH-1	2.872	.902	S
	GH-2	3.092	.946	S
	GH-3	3.209	.984	S
LB-1	LB-3	.100	.626	
	NB-4	1.419	.760	S
	GH-1	2.872	.843	S
	GH-2	3.092	.902	S
	GH-3	3.209	.946	S
LB-3	NB-4	1.318	.626	S
	GH-1	2.772	.760	S
	GH-2	2.992	.843	S
	GH-3	3.109	.902	S
NB-4	GH-1	1.453	.626	S
	GH-2	1.673	.760	S
	GH-3	1.790	.843	S
GH-1	GH-2	.220	.626	
	GH-3	.337	.760	
GH-2	GH-3	.117	.626	

S = Significantly different at this level.

Shallow Stations

Student-Newman-Keuls
Effect: Station
Dependent: Log (Arthropoda+1)
Significance level: .05

	Vs.	Diff.	Crit. diff.	
NB-3	NB-2	.940	.788	S
	R-2	1.885	.964	S
	R-3	2.095	1.074	S
	NB-1	2.258	1.153	S
	R-1	2.281	1.215	S
NB-2	R-2	.944	.788	S
	R-3	1.155	.964	S
	NB-1	1.318	1.074	S
	R-1	1.340	1.153	S
R-2	R-3	.210	.788	
	NB-1	.373	.964	
	R-1	.396	1.074	
R-3	NB-1	.163	.788	
	R-1	.186	.964	
NB-1	R-1	.023	.788	

S = Significantly different at this level.

Appendix II-A

Fish Data Tables, June 2001

6/27/01 to 6/29/01

NB Bottom Depth Deployed 14:00 27th Collected 14:00 29th

Species	Number of Individuals	Total Length (mm)							Biomass (g)
Striped searobin	146	245	260	290	340	285	370	325	50400
		270	270	320	360	300	335	330	
		285	335	305	310	385	320	300	
		300	265	420	270	390	320	350	
		310	290	295	320	315	300	280	
		290	270	355	280	290	290	295	
		330	280	265	285	285	325	285	
		305	300	275	340	290	290	380	
		310	285	345	350	315	320	290	
		280	310	290	305	340	275	330	
		280	290	300	280	280	330	310	
		335	340	380	275	265	370	295	
		290	305	330	290	395	285	370	
		305	305	275	260	335	340	320	
		295	295	285	340	310	260	340	
		360	320	290	290	310	290	155	
		315	260	270	270	285	310	330	
		405	330	280	390	300	310	270	
		295	300	300	290	315	250	335	
		295	320	300	305	290	325	270	
		300	280	295	270	265	300		
Atlantic menhaden	22	380	385	380	355	375	385	380	9800
		340	390	320	365	345	375	370	
		360	380	375	380	385	370	360	
		365							
Weakfish	2	270	230						200
Winter Flounder	1	210							110
Bluefish	1	485							860
Blue crab	6	140	140	145	140	130	125		600
Atlantic horseshoe crab	2	250	200						2800

NB Bottom Depth Deployed 15:35 27th Collected 15:35 29th

Species	Number of Individuals	Total Length (mm)							Biomass (g)
Striped bass	1	555							1700
Atlantic menhaden	13	380	350	365	370	370	365	360	6500
		380	390	380	365	360	370		
Weakfish	1	310							200
Striped searobin	35	330	280	350	280	290	330	350	12600
		310	340	330	310	350	280	310	
		305	370	290	365	320	295	295	
		340	300	305	320	305	295	310	
		270	290	305	270	270	265	310	

NB Bottom Depth 48 hr set

Species	Number of Individuals	Total Length (mm)							Biomass (g)
Blue crab	2	125	130						200
Atlantic menhaden	25	375	355	375	360 1/2Fish		375	370	13400
		370	380	370	380	385	355	375	
		335	360	360	390	385	355 1/2Fish		
		375	370	370	390	345	360		
Weakfish	2	290	290						200
Striped searobin	37	350	310	365	350	390	370	360	14700
		275	290	365	365	320	340	330	
		280	420	320	315	335	370	320	
		295	295	310	300	330	340	295	
		370	275	305	260	330	295	260	
		370	300						
Spot	1	185							30

NB Mid Depth 48 hr set

Species	Number of Individuals	Total Length (mm)							Biomass (g)
Striped searobin	2	320	335						800
Atlantic menhaden	3	370	380	380					1600
Atlantic horseshoe crab	2	220	200						1800
Weakfish	14	260	380	290	335	295	420	325	4100
		330	330	270	310	280	310	300	

NB Mid Depth 48 hr set

Species	Number of Individuals	Total Length (mm)							Biomass (g)
Weakfish	1	410							500
Atlantic menhaden	20	360	370	355	355	370	350	355	9300
		365	320	380	350	375	330	355	
		380	375	360	380	385	370 1/2fish		
Blue crab	1	135							100

NB Mid Depth 48 hr set

Species	Number of Individuals	Total Length (mm)							Biomass (g)
Atlantic searobin	5	295	280	305	275	330			1500
Atlantic menhaden	8	395	385	375	360	340	360	365	4100
		385							
Weakfish	4	340	315	295	285				1100
Blue crab	1	125							120

NB Bottom Depth 48 hr set

Species	Number of Individuals	Total Length (mm)							Biomass (g)
Atlantic searobin	35	280	360	290	280	285	295	330	17100
		315	350	325	390	310	280	310	
		290	295	300	350	380	305	310	
		380	365	295	295	300	365	360	
		380	400	280	325	380	290	280	
Atlantic menhaden	14	365	355	375	380	360	330	360	7100
		370	385	360	360	375	340	370	
Weakfish	2	300	310						500
Striped bass	1	290							260
Bluefish	1	545							1300
Blue crab	1	125							140
Anchovie	1	90							10
Atlantic horseshoe crab	1	210							900
Smooth dogfish	1	1080							4300

NB Bottom Depth 48 hr set

Species	Number of Individuals	Total Length (mm)							Biomass (g)
Striped Searobin	59	375	305	340	380	280	325	400	24700
		360	270	340	345	370	360	290	
		310	310	350	295	310	335	355	
		310	385	320	280	280	330	310	
		250	330	365	310	290	320	345	
		280	345	330	355	270	325	360	
		295	290	300	300	315	290	330	
		400	345	340	340	320	310	280	
		280	405	310					
Striped Bass	1	345							470
Bluefish	1	400							510
Weakfish	4	330	290	290	300				900
Atlantic menhaden	16	375	340	350	370	340	370	355	8000
		325	360	380	350	365	335	370	
		370	360						
Anchovie	1	100							10

6/29/01

LB Bottom 48 hr sets
No Fish

LB Bottom 48 hr sets
No Fish

LB Mid Water 48 hr sets
No Fish

LB Mid Water 48 hr sets

Species	Number of Individuals	Total Length (mm)		Biomass (g)
Bluefish	1	395		550

LB Bottom 48 hr sets

Species	Number of Individuals	Total Length (mm)		Biomass (g)
Striped searobin	2	320	320	700

LB Mid Water 48 hr sets
No Fish

6/27/01

GH 1 Bottom Depth 24 hr set

Species	Number of Individuals	Total Length (mm)							Biomass (g)
Winter Flounder	1	140							30
Atlantic horseshoe crab	3	240	230	190					3700
Summer flounder	2	550	310						2000
Weakfish	3	310	280	300					500
Smooth dogfish	2	340	390						200
Common spider crab	2	70	70						300
Blue crab	4	140	120	135	120				400
Atlantic menhaden	9	340	370	385	365	380	400	345	4400
		370	360						
Striped searobin	121	320	290	310	300	240	280	320	36900
		360	280	280	285	270	265	325	
		315	310	320	295	295	300	280	
		280	270	285	280	290	300	280	
		310	340	270	290	300	290	280	
		290	230	280	280	345	310	325	
		305	280	280	300	310	290	300	
		275	270	290	285	285	275	310	
		295	330	265	290	310	280	340	
		305	330	280	320	300	260	320	
		290	315	285	290	295	300	305	
		270	285	290	270	285	320	260	
		315	310	300	290	290	270	300	
		360	300	280	270	270	320	315	
		310	300	300	320	290	265	300	
		315	315	295	305	315	290	260	
		270	285	230	300	310	280	245	
		295	305						

6/29/01

GH 2 Mid Water 48 hr set

Species	Number of Individuals	Total Length (mm)							Biomass (g)
Common spider crab	1	70							135
Winter flounder	1	140							40
Striped searobin	12	315	380	320	310	300	290	305	4300
		380	300	295	290	280			
Weakfish	8	350	285	305	280	275	320	320	2200
		270	several halves						
Altantic menhaden	19	370	380	390	370	345	395	380	10600
		375	365	380	360	385	365	400	
		365	390	350	380	365			

GH 3 Mid Water 48 hr set

Species	Number of Individuals	Total Length (mm)							Biomass (g)
Common spider crab	3	75	70	60					400
Winter flounder	1	165							50
Striped searobin	16	380	330	310	310	300	280	295	5800
		310	285	275	400	285	290	310	
		310	300						
Weakfish	10	290	270	310	1/2fish	270	285	270	2100
		290	240	320	260				
Altantic menhaden	32	380	375	360	365	370	390	340	16100
		395	400	380	360	370	370	350	
		360	370	380	360	370	340	355	
		380	380	385	390	360	330	350	
		370	360	380	365				
Butterfish	1	215							120

GH 4 Mid Water 48 hr set

Species	Number of Individuals	Total Length (mm)							Biomass (g)
Common spider crab	4	55	65	80	85				500
Striped searobin	31	345	290	270	340	295	275	320	10000
		300	300	280	305	260	340	280	
		285	280	295	400	300	305	260	
		275	300	275	355	285	295	260	
		250	280	280					
Weakfish	2	295	290						500
Atlantic menhaden	11	360	380	350	365	385	370	365	5300
		385	365	350					
Blue crab	3	140	105	110					300
Bluefish	2	440	450						1500

Lost 1 bottom stratum gill net

Another bottom net was tangled with rotten fish (total loss) - cut net since half the catch was a loss, we release the rest uncounted, unweighed

6/27/01

R 1 Bottom 24 hr set

Species	Number of Individuals	Total Length (mm)							Biomass (g)
Atlantic menhaden	33	350	395	400	350	355	370	375	15900
		380	385	370	385	360	350	360	
		370	390	365	375	370	340	360	
		360	375	340	395	380	400	360	
		345	340	360	380	385			
Northern Searobin	12	330	260	285	260	260	255	290	3000
		310	285	250	245	220			
Weakfish	10	275	270	305	300	300	260 EATEN		2400
		300	350	300	260				
Summer flounder	1	295							260
Winter flounder	1	170							58
Blue crab	17	115	140	140	150	130	150	150	2360
		120	160	140	145	145	110	130	
		125	115	105					
Common spider crab	2	75	60						230
Atlantic horseshoe crab	4	800	700	900	1000				3400

R2 Mid Water 24 hr set

Species	Number of Individuals	Total Length (mm)							Biomass (g)
Atlantic menhaden	13	355	395	375	385	365	370	360	5800
		400	340	365	355	350	365		
Butterfish	2	200	170						200
Weakfish	12	285	280	275	315	270	260	280	2600
		255	350	270	325	315			
Blue crab	13	150	140	135	110	140	145	160	1900
		115	145	110	130	110	110		
Atlantic horseshoe crab	4	200	180	225	260				5400

R 3 Bottom 24 hr set

Species	Number of Individuals	Total Length (mm)							Biomass (g)
Bluefish	1	410							500
Summer Flounder	4	305	310	295	310				1300
Weakfish	6	310	310	265	320	270 PIECE		310	1000
Blue crab	9	155	153	127	145	131	120	132	1100
		115	130						
Atlantic horseshoe crab	3	135	290	210					3900
Common spider crab	23	90	85	75	70	60	65	95	3600
		90	75	60	75	85	65	60	
		50	65	65	60	60	80	60	
		55	60						
Rock crab	1	70							35

R 4 Bottom 24 hr set
MOVED DRAMATICALLY OVERNIGHT
NET TANGLE ON TOP OF ITSELF

Species	Number of Individuals	Total Length (mm)							Biomass (g)
Skate	1	700							1600
Winter Flounder	1	190							40
Blue crab	4	145	130	130	145				500
Common spider crab	1	65							91

R 5 Bottom 24 hr set

Species	Number of Individuals	Total Length (mm)							Biomass (g)
Summer flounder	2	320	315						600
Blue crab	8	135	125	100	140	145	135	130	900
		120							
Atlantic horseshoe crab	3	280	230	220					5500
Common spider crab	26	70	70	60	90	80	80	85	4300
		70	50	70	75	80	80	90	
		65	60	60	70	80	90	85	
		80	65	70	70	50			
Lady Crab	33	60	85	70	45	70	70	80	1500
		40	70	45	70	70	65	65	
		55	65	50	70	55	65	70	
		40	70	60	70	45	50	70	
		70	45	65	70	55			
Stripped Searobin	6	160	160	155	145	150	160		100
Weakfish	4	380	300	290	270				900
Porgy (LPI)	1	120							40

Appendix II-B

Fish Data Tables, October 2001

10/1/01

NB 1 Bottom Depth Deployed 10:00 Collected 15:30

Species	Number of Individuals	Total Length (mm)	Biomass (g)
Striped bass	1	330	350
Northern kingfish	1	175	45
Inshore lizardfish	1	170	32
Atlantic horseshoe crab	1	280	260

NB 2 Bottom Depth Deployed 10:00 Collected 15:40

Species	Number of Individuals	Total Length (mm)		Biomass (g)
Striped bass	1	334		380
Atlantic horseshoe crab	2	190	280	
Northern kingfish	1	180		60

NB 3 Mid Depth Deployed 10:00 Collected 15:50

Species	Number of Individuals	Total Length (mm)							Biomass (g)
Blue crab	7	155	166	184	174	170	195	163	263
Weakfish	1	175							46
Scup	1	200							130

NB 4 Mid Depth Deployed 10:30 Collected 16:15
No Fish

NB 5 Bottom Depth Deployed 11:00 Collected 16:15

Species	Number of Individuals	Total Length (mm)		Biomass (g)
Herring	2	94	384	558
Scup	1	97		16

NB 6 Mid Depth Deployed 10:30 Collected 16:10

Species	Number of Individuals	Total Length (mm)	Biomass (g)
Bluefish	1	175	44
Blue crab	1	138	179

10/2/01

NB 1 Bottom Depth Deployed 15:30 Collected 7:50

Species	Number of Individuals	Total Length (mm)	Biomass (g)
Herring	1	85	7

NB 2 Bottom Depth Deployed 15:40 Collected 8:05

Species	Number of Individuals	Total Length (mm)							Biomass (g)
Blue crab	4	145	142	142	133				440
Herring	5	360	381	367	392	369			2740
Inshore lizardfish	1	198							46
Black sea bass	1	254							370

NB 3 Mid Depth Deployed 15:50 Collected 7:55

Species	Number of Individuals	Total Length (mm)							Biomass (g)
Blue crab	3	100 (estimated)	150	137					480
Herring	3	360	368	372					1650

NB 4 Mid Depth
LOST/MIA

NB 5 Bottom Depth Deployed 16:15 Collected 8:20

Species	Number of Individuals	Total Length (mm)							Biomass (g)
Weakfish	5	440	180	195	155	195			907
Herring	7	360	345	360	360	365	366	361	3800
Black sea bass	2	255	325						940
Striped searobin	8	320	320	300	321	342	342	322	3140
		332							
Bluefish	1	275							220
Northern kingfish	2	171	182						92
Scup	1	202							150
Striped bass	2	180	182						185
Atlantic horseshoe crab	2	220	208						2400
Blue crab	1	152							150

NB 6 Mid Depth Deployed 16:10 Collected 8:45

Species	Number of Individuals	Total Length (mm)						Biomass (g)
Herring	6	342	110	165	163	155	160	701
Bluefish	4	281	220	240	240			570
Striped searobin	1	148						50

10/1/01

LB 1 Mid Depth Deployed 11:15 Collected 16:25
No Fish

LB 2 Bottom Depth Deployed 11:00 Collected 16:30

Species	Number of Individuals	Total Length (mm)			Biomass (g)
Herring	2	391	364		1910
Bluefish	3	194	260	265	455
Tautog	3	265	250	245	965
Striped searobin	2	125	137		61
Atlantic horseshoe crab	3	260	220	195	484

LB 3 Bottom Depth Deployed 11:45 Collected 16:45
No Fish

LB 4 Mid Depth Deployed 11:30 Collected 16:50

Species	Number of Individuals	Total Length (mm)		Biomass (g)
Herring	2	405	366	1450

LB 5 Bottom Depth Deployed 12:10 Collected 17:00
No Fish

LB 6 Mid Depth Deployed 11:55 Collected 17:05

Species	Number of Individuals	Total Length (mm)	Biomass (g)
Herring	1	373	560

10/2/01

LB 1 Mid Depth Deployed 16:25 Collected 9:35
No Fish

LB 2 Bottom Depth Deployed 16:30 Collected 9:00

Species	Number of Individuals	Total Length (mm)							Biomass (g)
Herring	7	369	395	378	375	394	353	380	4130
Atlantic horseshoe crab	5	273	174	123	220	210			8220
Striped bass	4	465	445	315	435				2800
Weakfish	3	166	185	730					890
Black sea bass	4	283	196	197	146				840
Summer flounder	1	391							700
Bluefish	1	223							960
Striped searobin	3	188	144	126					170

LB 3 Bottom Depth Deployed 16:45 Collected 9:40
No Fish

LB 4 Mid Depth Deployed 16:50 Collected 9:25

Species	Number of Individuals	Total Length (mm)		Biomass (g)
Herring	2	364	356	1100
Weakfish	2	386	404	1190
Black sea bass	1	230		250
Blue crab	1	125		135
Atlantic horseshoe crab	1	266		2500

LB 5 Bottom Depth Deployed 17:00 Collected 9:45
No Fish

LB 6 Mid Depth Deployed 17:05 Collected 9:47
No Fish

10/2/01

GH 1 Mid Depth Deployed 9:50 Collected 16:05

Species	Number of Individuals	Total Length (mm)							Biomass (g)
Herring	1	374							600
Bluefish	1	220							110
Northern kingfish	2	165	173						130
Blue crab	4	155	130	128	152				600

GH 2 Bottom Depth Deployed 9:55 Collected 16:15

Species	Number of Individuals	Total Length (mm)							Biomass (g)
Common spider crab	1	760							120
Blue crab	8	127	120	136	150	165	152	146	950
		134							
Summer flounder	1	263							180
Northern kingfish	1	170							60

GH 3 Mid Depth Deployed 10:00 Collected 16:40

Species	Number of Individuals	Total Length (mm)							Biomass (g)
Lady crab	1	70							56
Blue crab	10	134	136	132	152	160	133	154	1700
		155	145	130					
Summer flounder	1	158							44

GH 4 Bottom Depth Deployed 10:10 Collected 16:50

Species	Number of Individuals	Total Length (mm)							Biomass (g)
Herring	1	360							400
Northern kingfish	6	187	186	165	187	164	174		280
Bluefish	1	222							110
Scup	2	104	106						30
Striped searobin	1	130							30
Blue crab	5	116	162	152	145	132			1050

GH 5 Mid Depth Deployed 10:20 Collected 17:15

Species	Number of Individuals	Total Length (mm)							Biomass (g)
Blue crab	15	146	135	155	138	156	158	124	2500
		145	135	136	124	141	146	134	
		146							
Atlantic horseshoe crab	1	250							2000
Inshore lizardfish	1	240							100
Summer flounder	1	330							400
Lady crab	1	65							55

GH 6 Bottom Depth Deployed 10:30 Collected 17:45

Species	Number of Individuals	Total Length (mm)							Biomass (g)
Summer flounder	2	132	310						920
Black sea bass	2	294	280						980
Scup	6	200	205	196	206	182	191		980
Bluefish	3	244	261	230					424
Butterfish	1	270							260
Blue crab	3	135	120	160					1700

10/3/01

GH 1 Mid Depth Deployed 16:05 Collected 11:15

Species	Number of Individuals	Total Length (mm)							Biomass (g)
Herring	10	360	352	361	315	362	375	365	6500
		365	375	365					
Weakfish	1	420							700
Bluefish	3	240	240	255					500
Striped bass	3	555	454	405					2950
Striped searobin	15	293	185	213	160	120	200	150	1200
		160	149	146	136	161	143	140	
		190							
Black sea bass	1	235							300
Scup	3	110	190	186					300
Blue crab	4	132	120	135	155				500
Lady crab	1	50							30

GH 2 Bottom Depth Deployed 16:15 Collected 11:35

Species	Number of Individuals	Total Length (mm)							Biomass (g)
Weakfish	1	405							600
Herring	5	375	386	375	345	355			2760
Atlantic horseshoe crab	2	185	190						1500
Striped searobin	6	235	175	200	135	185 1/2 fish			600
Bluefish	2	230	264						300
Blue crab	10	160	150	164	165	150	120	145	1800
		165	135	125					
Lady crab	2	35	45						20
Common spider crab	1	90							410

GH 3 Mid Depth Deployed 16:40 Collected 12:00

Species	Number of Individuals	Total Length (mm)							Biomass (g)
Atlantic horseshoe crab	2	235	255						3100
Blue crab	1	165							250
Herring	8	380	385	350	365	362	365	340	4200
		360							
Striped searobin	22	170	150	200	160	175	150	325	1800
		180	180	171	140	140	161	172	
		145	190	174	144	155	152	190	
		164							
Bluefish	3	220	200	230					600
Weakfish	1	170							40
Summer flounder	1	280							250
Scup	1	115							24

GH 4 Bottom Depth Deployed 16:50 Collected 12:25

Species	Number of Individuals	Total Length (mm)							Biomass (g)
Lady crab	1	75							60
Herring	20	365	367	380	385	355	378	420	12000
		395	372	372	374	360	370	382	
		365	380	385	370	354	375		
Bluefish	2	260	230						280
Common spider crab	1	80							210
Striped searobin	6	230	155	182	220	165	155		410
Inshore lizardfish	1	201							60
Blue crab	5	150	142	145	175	155			1000

GH 5 Mid Depth Deployed 17:15 Collected 12:50

Species	Number of Individuals	Total Length (mm)							Biomass (g)
Lady crab	1	50							28
Striped searobin	7	155	144	164	100	130	170	170	270
Weakfish	3	402	1/2 fish	1/2 fish					740
Herring		380	390	392	380	394	355	362	6300
		345	365	385					
Northern pipefish		150							
Bluefish		345	256	232	233				6100
Summer flounder	1	295							250
Black sea bass	1	90							105
Blue crab		195	185	165	142	158	174	145	2400
		125	135	135	145	155	164		

GH 6 Bottom Depth Deployed 17:45 Collected 13:20

Species	Number of Individuals	Total Length (mm)							Biomass (g)
Striped bass	2	355	450						1200
Herring	6	385	394	365	374	410	360		3800
Atlantic horseshoe crab	4	190	185	202	192				3500
Bluefish	4	250	262	240	165				410
Common spider crab	1	70							110
Scup	3	102	105	107					60
Striped searobin	3	161	130	151					130
Northern kingfish	1	170							50
Lady crab	11	60	49	54	45	50	46	45	270
		42	60	70	45				
Blue crab	11	142	152	142	134	162	120	156	1600
		136	132	138	116				

10/1/01

R 1 Bottom Depth Deployed 11:15 Collected 18:20

Species	Number of Individuals	Total Length (mm)							Biomass (g)
Herring	31	160	175	160	195	180	195	190	1915
		135	160	175	170	175	165	175	
		170	165	158	166	170	125	180	
		125	170	165	182	135	162	114	
		350	362	384					
Weakfish	1	205							85
Bluefish	1	194							50
Blue crab	2	134	148						430

R 2 Bottom Depth Deployed 11:30 Collected 18:30

Species	Number of Individuals	Total Length (mm)							Biomass (g)
Herring	7	375	352	380	343	355	364	90	3808
Striped searobin	2	140	150						130
Northern searobin	2	230	182						230
Black sea bass	2	220	136						430
Summer flounder	1	405							800
Weakfish	2	152	180						90
Striped bass	2	166	167						140
Atlantic horseshoe crab	4	191	189	169	210				3800

10/3/01

R 3 Mid Depth Deployed 11:50 Collected 9:15 *1/2 of net missing*

Species	Number of Individuals	Total Length (mm)							Biomass (g)
Summer flounder	1	310							190
Blue crab	2	150	190						700
Atlantic horseshoe crab	2	145	123						600
Lady crab	6	55	65	65	55	65	55		200
Common spider crab	13	65	95	50	100	85	90	70	2400
		72	80	70	75	75	74		

R 4 Bottom Depth Deployed 12:00 Collected 7:45

Species	Number of Individuals	Total Length (mm)							Biomass (g)
Atlantic horseshoe crab	4	115	210	130	130				180
Spider crab	19	60	76	80	74	72	82	81	3300
		72	100	74	60	80	75	90	
		80	100	62	92	80			
Lady crab	31	50	65	52	35	75	50	54	1100
		62	45	47	65	52	55	55	
		55	50	47	55	52	48	55	
		70	45	51	70	65	82	70	
		52	35	50					
Blue Crab	4	160	150	148	152				800

R 5 Mid depth Deployed 12:02 Collected 8:10 * 1/2 of net missing*

Species	Number of Individuals	Total Length (mm)							Biomass (g)
Atlantic horseshoe crab	14	170	165	175	135	115	135	145	5300
		115	220	155	175	125	130	135	
Black sea bass	1	340							600
Summer flounder	2	270	310						900
Common spider crab	31	110	60	72	76	78	90	70	2000
		80	70	72	90	110	80	55	
		60	80	75	82	70	90	95	
		100	85	90	55	80	110	75	
		85	70	75					
Blue crab	5	130	115	112	149	162			600
Lady crab	47	50	65	70	66	65	50	62	1500
		81	50	55	55	45	40	55	
		55	60	60	55	75	65	55	
		60	55	65	50	55	55	65	
		60	55	55	50	45	50	44	
		44	55	53	70	50	60	80	
		50	55	60	55	65			

R 1 Bottom Depth Deployed 18:20 Collected 9:35

Species	Number of Individuals	Total Length (mm)							Biomass (g)
Herring	20	372	365	382	395	410	380	365	9720
		385	406	375	353	385	340	345	
		345	345	154	150	192	148		
Summer flounder	1	455							1100
Striped searobin	2	75	132						20
Weakfish	3	175	164	165					110
Atlantic horseshoe crab	6	214	201	190	130	250	195		6700
Blue crab	6	155	154	175	155	162	155		1200

R 2 Bottom Depth Deployed 18:30 Collected 10:05

Species	Number of Individuals	Total Length (mm)							Biomass (g)
Atlantic horseshoe crab	6	200	192	185	186	200	220		5200
Striped searobin	2	136	135						50
Northern searobin	3	200	255	235					470
Black sea bass	1	90							9
Weakfish	2	135	135						70
Herring	7	150	375	358	394	365	383	370	3200
Striped bass	1	352							300
Blue crab	1	150							230

Appendix III-A

Sediment Profile Imagery Interactive Database

Appendix III-A:

Sediment Profile Imagery Interactive Database

Please refer to CD-ROM attached to the back cover of this report. The CD-ROM is an interactive HTML database for viewing the SPI data and images. To access the data:

Click on the folder labeled Norton Basin SPI HTML Database

Then click the file Norton Basin Main.html

This brings you to the main navigation page that allows you to click on any focus area you would like to look at. Begin by selecting the one of the focus areas (Norton Basin, Little Bay, Grass Hassock Channel, and The Raunt) that you are interested in by selecting the area outlined in red. Once you are within one of the four focus areas, you can select each station that you want to observe.

Created for:
U.S. Army Corps of Engineers- New York District
CENAN-PL-ES
26 Federal Plaza
New York, NY 10278

Sediment Profile Imagery was collected and processed by:
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Created by:
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June, 2002

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Appendix III-B

Sediment Profile Imagery Data Dictionary

Data Dictionary for 2000 Nearfield SPI Data File

	Variable		Description	Units
A	STATION		Station Name	
B	REP		Replicate image	
C	DAY		Day image collected	day/mon/year
D	PRISM	TIME	Time when image was taken, based on sediment profile camera clock	hours:minutes
E	Pen Min	Qual	Qualifier for minimum prism penetration	
F	Pen	Min	Minimum prism penetration depth in cm	cm
G	Pen Max	Qual	Qualifier for maximum prism penetration	
H	Pen	Max	Maximum prism penetration depth in cm	cm
I	Ave Pen	Qual	Qualifier for average prism penetration depth	
J	ave	Pen	Average prism penetration depth in cm	cm
K	Sur Rel	Qual	Qualifier for surface relief	
L	SUR	REL	Surface relief across the 15 cm width of the prism face plate	cm
M	RPD Min	Qual	Qualifier for minimum RPD	
N	RPD	Min	Minimum RPD depth in cm	cm
O	RPD Max	Qual	Qualifier for maximum RPD	
P	RPD	max	Maximum RPD depth in cm	cm
Q	RPD Ave	Qual	Qualifier for average RPD depth	
R	RPD	ave	Average RPD depth in cm	cm
S	GRAIN SIZE		Sediment grain size estimate	
T	SURFACE	FEATURES	Predominant factor structuring surface sediments	
U	Sedi Layer	Qual	Qualifier for sediment layers	
V	SEDI.	LAYER	Number of sediment layers in image	count
W	AMPHIPOD	TUBES	Number of amphipod tubes in image	ordered category
X	WORM	TUBES	Number of worm tubes in image	ordered category
Y	SURFACE FAUNA	OTHER	Description of other fauna on surface of sediment	
Z	Worm	Qual	Qualifier for infaunal worms	
AA	SUB. FAUNA	WORMS	Number of infaunal worms	count
AB	Burrow	Qual	Qualifier for burrows	
AC	BURROWS		Number of burrows	count
AD	Oxic Void	Qual	Qualifier for oxic voids	
AE	OXIC	VOIDS	Number of water filled inclusions in the sediment that appear oxic	count
AF	Anaerobic Void	Qual	Qualifier for anaerobic voids	
AG	ANAEROBIC	VOIDS	Number of water filled inclusions in the sediment that appear anaerobic	count
AH	Gas Void	Qual	Qualifier for gas voids	
AI	ANAEROBIC	VOIDS	Number of gas filled inclusions in the sediment	count
AJ	SUCC.	STAGE	Estimate of community successional stage	
AK	OSI	Qual	Qualifier for Organism Sediment Index	
AL	OSI		Organism Sediment Index of Rhoads and Germano (1986)	
AM	OTHER		Other comments	

Qualifiers:

IND	Value could not be estimated from slide
INDmin	Prism penetration too shallow to estimate value
INDvid	Value could not be estimated from video tape image
NOcon	Maximum penetration estimated from sediment not in contact with prism faceplate
NObkg	Excludes sediment not in contact with prism faceplate
POOR	Value estimated from poor quality image
>	Value was greater than prism penetration

Ordered Category Classes:	Range of Numbers
NONE	0
FEW	1 to 5
SOME	6 to 20
MANY	>20
MAT	>100

Sediment Categories:	Class	Phi Scale Range	Modal Phi	Upper Limit Size (mm	Grains/cm of image
CB	Cobble	-6 to -8	-7	256	<<1
PB	Pebble	-2 to -6	-4	64	<1
GR	Gravel	-1 to -2	-1.5	4	2.5
VCS	Very-coarse-sand	0 to -1	-0.5	2	5
CS	Coarse-sand	1 to 0	0.5	1	10
MS	Medium-sand	2 to 1	1.5	0.5	20
FS	Fine-sand	4 to 2	3	0.25	40
VFS	Very-fine-sand	4 to 3	3.5	0.12	80
FSSI	Fine-sand with Silt	5 to 4	4.5	0.06	160
FSSICL	Fine-sand-silt-clay	6 to 4	5	0.06	160
SI	Silt	8 to 5	6.5	0.0039	>320
SIFS	Silt with Fine-sand	6 to 5	5.5	0.0039	>320
CL	Clay	>8	10	<0.0005	>2560
/	Layered Sediment				

Surface Features Categories:

BIO	Biogenic processes dominant
BIO/PHY	Combination of both Biogenic and Physical processes
PHY	Physical processes dominant