CHAPTER 32 CONSTRUCTION IMPACTS

32.1 Introduction

The DSNY is planning to restore and modify solid waste transfer operations at their Converted MTS facilities. The new operations, which will containerize MSW for barge transport, are planned for the City's Converted MTSs and will require varying degrees of over-water and on-shore construction. Construction and operation of the Converted MTSs in the Proposed Plan will have potential short- and long-term impacts on the surrounding marine environment and ambient natural resources. Since construction of the MTSs will be ~~less than 3 years~~approximately 28 to 30 months in duration, a detailed construction related impact analysis was not required (see Section 32.2 for more detail). In this section, two types of impacts will be discussed: potential short-term or construction impacts, and potential long-term or operational impacts.

32.2 Construction Schedule

Preliminary schedules were prepared by DSNY's design consultant for construction of the Converted MTSs and are presented in Appendix N to this FEIS. Based on the schedules, the estimated overall construction duration for the Converted MTSs in the Proposed Plan is approximately 28 to 30 months from Notice to Proceed. At all four of the proposed Converted MTSs, contractor mobilization and environmental abatement of the existing facility (i.e., asbestos and lead based paint remediation) would occur over approximately one and a half months. The estimated demolition period of the over-water existing MTSs at North Shore and East 91st Street, and the Hamilton Avenue existing MTS is approximately five months, during which time dredging will occur over an approximate three to four month period. Demolition of the existing Southwest Brooklyn MTS is not planned at this time. The estimated construction period of the Converted MTSs at North Shore and East 91st Street is approximately 17 to 18 months. After demolition (now underway) of the existing incinerators on the Hamilton Avenue and Southwest Brooklyn sites is completed while dredging occurs over an approximate three to four month duration, the estimated construction period for these upland Converted MTSs is approximately nine (9) to 12 months.

32.3 Construction Activities and Equipment

32.3.1 Construction Activities

The major categories of construction activity at each of the Converted MTSs include:

1. Construction of pile foundations (driving piles and construction of pilecaps and beams) and structural concrete for the deck, walls, elevated slab and columns;
2. Construction of the structural steel portion of the processing building (framing, roofing, siding an punch walls);
3. Construction of the in water king pile wall at the proposed Southwest Brooklyn Converted MTS.
4. Construction of the heating, ventilation and air conditioning (HVAC), odor control and dust suppression systems, and installation of plumbing, fire protection and electrical systems for the facility;
5. Installation of architectural finishes, including windows and doors on the processing building;
6. Installation of the gantry cranes and lidding equipment; and
7. Construction of the ramp, including driving support piers, pier stems and caps, and construction of the road slab and deck.

At the North Shore site, all construction activities will occur in Flushing Bay with the exception of a small portion of the access ramp that extends toward the western end of 31st Avenue where the existing ramp is located. At the Southwest Brooklyn site, construction activities will occur on land adjacent to the existing MTS structure, which will remain in place, with the exception of construction of the in water king pile wall. At the East 91st Street site, construction activities will occur in the East River, with the exception of the access ramp that begins at the foot of 91st Street and York Avenue, bisects the Asphalt Green park property, and crosses the FDR drive. This ramp will be reconstructed over the existing access ramp footprint, and will likely involve some temporary lane closures of the FDR Drive during certain construction periods. A discussion of the short term effects of construction on Asphalt Green Park is contained in Section 32.4. At the Hamilton Avenue site, construction activities will occur both on land and over water in the Gowanus Canal.

32.3.2 Construction Equipment

Although some construction equipment and materials will be brought to the site by truck, most of the construction equipment and materials will likely arrive on barges to take advantage of the waterfront access available at all sites. The barges will likely be staged near the sites during most of the demolition and construction period. Most demolition debris would also be removed on barges that hold large quantities of material and can be towed to a transfer or disposal location in a more efficient manner than using transfer trailers. The types of equipment that may be present during demolition and construction activities include:

- Tugboats
- Barges
- Boats
- Cranes
- Derricks
- Piledrivers
- Construction vehicles (e.g. bulldozers, wheel loaders)
- Hydraulic excavators
- Rock augers/drills
- Concrete delivery trucks
- Concrete Pumps
- Asphalt paving equipment
- Welding machines
- Mechanical dredging equipment
- Scissor lifts/hoists
- Air Compressors
- Pneumatic hammers
- Pneumatic/electric tools

A more detailed discussion on dredging is included in Section 32.5.4.

32.4 Potential Construction Impacts

Potential areas of construction-related impacts from the Proposed Action include:

- Temporarily impeded access to community facilities, parks and open space;
- Short term effects on neighborhood character and natural resources;
- Potential exposure to contaminated materials;
- Disposal of construction debris;
- Temporary street or lane closures; and
- Potential traffic, air quality, vibration, and noise impacts.

Since most of the construction at several sites would be over water, this chapter provides an in-depth description of the potential impacts during construction to the marine environment (which consists of the benthic and epibenthic communities, adult finfish and ichthyoplankton) evaluated during a year long study in 2003. See Section 32.5 for more detail.

The level of construction activity at each site will vary over the course of the construction period because certain activities, such as pile driving and construction-related traffic, will be greater at specific periods of time. DSNY is in the process of preparing final bid documents for construction of the Converted MTSs that are expected to be issued in early 2006, pending required approvals and permits. The bid documents will require the selected contractor(s) to submit a detailed demolition/construction sequencing schedule for DSNY review. The peak periods of both on-site and off-site construction activity cannot be determined until the detailed construction schedules and the means and methods to be employed by the selected contractor(s) are known.

While there will be periods of time when construction activities will cause temporary impacts in the areas listed above, DSNY is committed to minimizing these potential temporary impacts.

For example, among other things, DSNY will require the selected contractor to construct temporary construction fencing around the site, and provide security to restrict access to the site by only authorized personnel for the duration of construction. DSNY will also require the contractor to submit: (1) a construction waste management plan that identifies the contractor's plan for management of construction debris generated at the site; and (2) air monitoring and dust minimization measures to minimize the potential for the release of particulates during dust-generating activities. As indicated by the Phase II subsurface investigations conducted at the Southwest Brooklyn and Hamilton Avenue sites and described in the Hazardous Materials sections of this FEIS, the potential for contaminated subsurface materials exists at these sites. Therefore, DSNY will require the contractor to submit Health and Safety Plans for its employees, have appropriate safety professionals on site, and submit a site management plan to address the contractor's procedures for excavation, removal and off-site disposal of any potentially encountered contaminated or hazardous materials in accordance with applicable regulations.

DSNY will also require those contractors who are preparing Maintenance and Protection of Traffic (MPT) plans to assure, to the maximum extent practicable, access to community facilities and services, and parks and open space in the vicinity of the Converted MTSs during construction. These MPT Plans will also be reviewed by appropriate state and City agencies, such as NYSDOT and NYCDOT, when the plans include temporary street or lane closures of state or City roads, and DPR in regard to maintaining access to Asphalt Green and the East River Esplanade parks. Any potential traffic, air quality, noise, and pedestrian access impacts of these street or lane closures will be temporary and localized in nature.

Due to the somewhat specialized nature of the over-water and land side construction of the Converted MTSs, the additional traffic generated from construction vehicles and employees traveling to and from the site cannot be estimated at this time. The duration for demolition of the existing MTSs at East 91st Street and North Shore is approximately five (5) to six (6) months, and construction duration of the Converted MTSs at these locations is approximately 17 to 18 months. The construction duration for the upland Southwest Brooklyn and Hamilton Avenue Converted MTSs is estimated to be approximately nine (9) to 12 months, since it is anticipated that construction of pile foundations, structural concrete, and the structural steel building will require less time at the upland sites. During these periods, the peak periods of activity (with the highest number of construction-related vehicles) is likely to be less than nine (9) to 12 months, so any potential traffic, air quality and noise impacts associated with this construction would be short term. In addition to meeting requirements for applicable state, city and local permits for construction, DSNY will require the contractor to provide noise mitigation strategies, methods, procedures and technology to minimize potential short term noise impacts.

Neighborhood character and visual quality (including river views) near the Converted MTS sites will vary, depending upon the type and duration of demolition/construction activity, but will likely experience some degree of short term adverse impacts as a result.

At the proposed East 91st Street Converted MTS site, the estimated duration for demolition and reconstruction of the access ramp is approximately 11 months. Given that the existing East 91st Street MTS access ramp is adjacent to Asphalt Green (with ballfields to the south and the Aqua Center to the north, east of York Avenue) and crosses over the East River Esplanade, ramp reconstruction would be expected to have short-term effects on these nearby park facilities, even though it would be in the same footprint as the existing ramp. Temporary construction fencing around the construction areas will alter the visual environment, and potentially affect access to small portions of these park facilities while the existing ramp is being demolished and the new one is being built. The estimated duration for demolition of the existing ramp is approximately five (5) months, and for construction of the new ramp is approximately six (6) months (which includes the portion of the ramp over the FDR and the section of ramp passing between the Aqua Center and the park), making these impacts temporary. The ramp work is scheduled to take place towards the end of construction, so that the new ramp is completed at approximately the same time that the proposed Converted MTS is completed. The existing ramp will be used for construction operations until it is demolished.

DSNY is in the process of evaluating specific measures to mitigate these potential impacts at the proposed East 91st Street Converted MTS site. These measures, which will be required in the construction contract documents, could include:

- Requirements that demolition and reconstruction be completed from within the footprint of the existing ramp and from the western most lane of the FDR.
- Isolation of the work area within temporary construction fences and barriers.

- Traffic control provisions and traffic control staff for the York Avenue Transfer Station Ramp intersection.
- Construction of a temporary steel tunnel to maintain the southwest Aqua Center entrance in service.
- Temporary storage structures to compensate for the existing storage space beneath the ramp.
- Facade protection for the Aqua Center.
- Temporary louver filters for the Aqua Center louvers located adjacent to the ramp.
- Strict enforcement of various dust and sedimentation control requirements.
- Soil vibration control and monitoring systems.
- Design of augured shafts for foundations instead of driven piles.
- Stringent post demolition/reconstruction clean up requirements.
- Temporary relocation of Aqua Center utility services.

DSNY is also considering imposing contractual requirements that the work be completed during specific periods of time. DSNY will coordinate these plans with DPR and consult with Asphalt Green to maximize access to these facilities during the various stages of construction activity.

32.52 Construction Impacts to the Marine Environment

Construction impacts to the marine environment result from both the demolition of existing structures and the fabrication of new facilities. Construction impacts are limited temporally to the span of the activities, typically a few years. On a generic basis, these impacts include, but are not limited to, loss of benthic habitat due to dredging, turbidity and siltation from piling removal or installation, loss of encrusting organism habitat from piling removal, and general disruption of existing communities due to human and mechanical activity. Minor water quality impacts, such as localized anoxia, may result if newly exposed reduced sediments draw down dissolved oxygen on contact. It is important to note that extensive sampling of the sediment indicates that the sediments are not "hazardous", although they contain some low levels of contaminants. A list of the potential impacts at the Converted MTSs is presented in Table 32.25-1. The proposed construction plans call for some activity at each of the eight proposed four Converted MTSs in the Proposed Action, but the extent varies, with some sites being totally rebuilt and other sites having relatively minor alterations.

32.52.1 Benthic Communities

Benthic organisms, being immobile (at least in the adult stages), are subject to impacts of construction activities that have the potential for disruption or even obliteration of the populations in the impact zone. The benthic species found at each of the four proposed Converted MTSs are listed in Table 32.25-2. If benthic species diversity is the accepted indicator for overall "health" of the communities around each proposed Converted MTS, it follows that the proposed Converted MTS zones with the highest diversities are likely to be more greatly impacted than those with lower diversities. While species diversity is an accepted indicator, caution must be used in interpreting the data because certain specific monocultures can also be considered highly valuable systems. Nonetheless, lower diversity benthic communities are usually opportunistic species with high abundances and toleration for more degraded environments. The most abundant species observed at thes proposede Converted MTSs were those species tolerant of degraded environments: *Streblospio benedict, Capitella capitata*, polychaetes and oligochaetes. With these caveats in mind, benthic species diversity will be used in this impact analysis to determine probable impacts to the benthic communities.

Table 32.5-125-1
Potential Impacts to Marine Communities at Converted MTSs

Chemical
Heavy metals released from sediment during dredging
Heavy metals and polycyclic aromatic hydrocarbons (PAHs) introduced to sediment and water from treated lumber used in construction
Suspended particles from marine construction and dredging
Anoxia from release of reduced sediments during dredging
Biological
Disrupted communities
Removal of food sources
Minor loss or replacement (< 0.05 acres) of tidal wetland vegetation
Physical
Channel dredging
Dredged material disposal
Dredging and filling
Habitat degradation

Table 32.5~~2~~-2
Organisms Collected in Benthic Grabs at ~~Each~~ the Proposed Converted MTSs in the Proposed Action
January – October 2003

Southwest Brooklyn			
Species	**Total Number**	**Species**	**Total Number**
Streblospio benedicti	4,058	*Mya arenaria*	5
Oligochaeta	991	*Pagurus* sp.	5
Haploscoloplos sp.	477	*Hypaniola grayi*	4
Annelida	336	Bivalvia	4
Capitellidae	162	*Eumida sanguinea*	4
Nereis sp.	159	*Gammurus* sp.	3
Gasrtopoda	104	Hesionidae	3
Phyllodocidae	75	Atherinidae	3
Heteromysis formosa	72	*Palaeomonetes vulgaris*	3
Eteone sp.	62	Isopoda	3
Acteocina canaliculata	54	*Paranaitis speciosa*	3
Cirratulidae	51	*Cirratulus* sp.	3
Capitella capitata	45	*Polydora* sp.	2
Ilyanassa sp.	45	*Polydora ligni*	2
Crepidula fornicata	42	*Podarke obscura*	2
Pectinaria gouldii	35	*Edotea triloba*	2
Ampelisca sp.	34	*Sabelleria vulgaris*	2
Erichthonius sp.	34	*Nephtys* sp.	2
Amphipoda	22	*Pagurus longicarpus*	2
Melita nitida	20	*Leucon americanus*	1
Glycera sp.	19	*Corophium* sp.	1
Eulalia viridis	17	*Scolocolepides viridis*	1
Nereis succinea	15	Polychaeta	1
Tellina agilis	15	Caprellidae	1
Elasmopus levis	13	Syllidae	1
Rictaxis punctostriatus	13	Nudibranchia	1
Glycera americana	12	*Lysianopsis alba*	1
Mytillidae	12	*Mytilus edulis*	1
Xanthidae	10	*Lepidonotus* sp.	1
Paranatus sp.	10	*Oxyurustylis smithi*	1
Notoacmea testudinalis	9	*Clymenella* sp.	1
Neomysis americana	8	*Idotea metallica*	1
Ampelisca venili	8	*Microphthalmus aberrans*	1
Crangon septemspinosa	7	*Phyllodoce* sp.	1
Ilyanassa obsoleta	7	*Polinices duplicata*	1
Mulinea lateralis	5	*Sigalionidae* sp.	1
Spionidae	5		
Total			**7,137**

Table 32.5~~2~~-2 (Continued)
Organisms Collected in Benthic Grabs at ~~Each~~
the Proposed Converted MTSs in the Proposed Action
January – October 2003

Hamilton Avenue			
Species	**Total Number**	**Species**	**Total Number**
Capitella capitata	4,746	Nematoda	6
Streblospio benedicti	1,702	*Ilyanassa* sp.	5
Oligochaeta	1,196	*Corophium* sp.	5
Polydora sp.	462	*Nereis succinea*	4
Annelida	210	*Palaeomonetes vulgaris*	4
Nereis sp.	126	*Leucon americanus*	3
Edotea sp.	115	*Ampelisca* sp.	3
Platyhelminthes	54	*Glycera* sp.	3
Haploscoloplos sp.	29	*Mulinea lateralis*	2
Neomysis americana	26	*Mya arenaria*	2
Phyllodocidae	24	Polychaeta	2
Polydora ligni	22	*Balanus* sp.	2
Podarke obscura	22	*Phyllodoce arenae*	2
Crangon septemspinosa	20	*Schistomeringos rudolphi*	2
Spionidae	13	Amphipoda	1
Capitellidae	12	Sabellidae	1
Cirratulidae	10	*Monoculodes edwardsi*	1
Eumida sanguinea	9	*Nephtys* sp.	1
Scolocolepides viridis	7	*Nereis virens*	1
Hesionidae	7	Decapoda	1
Molgula manhattensis	6	*Fabrica sabella*	1
Syllidae	6	*Hippolyte* sp.	1
Total			**8,877**

Table 32.5~~2~~-2 (Continued)
Organisms Collected in Benthic Grabs at ~~Each~~
the Proposed Converted MTSs in the Proposed Action
January – October 2003

East 91st Street			
Species	**Total Number**	**Species**	**Total Number**
Streblospio benedicti	16,952	*Ilyanassa obsoleta*	5
Oligochaeta	1,738	*Neomysis americana*	4
Annelida	1,637	*Gammurus* sp.	4
Haploscoloplos sp.	569	Amphithoidae	4
Hypaniola grayi	401	*Tharyx* sp.	4
Eteone sp.	393	*Nereis succinea*	3
Spionidae	324	*Parametopella cypris*	3
Cirratulidae	151	Xanthidae	3
Mulinea lateralis	136	*Acteocina canaliculata*	3
Nereis sp.	79	Caprellidae	3
Polydora sp.	65	Actinaria	3
Pectinaria gouldii	55	Corophidae	3
Phyllodocidae	35	*Sigambra* sp.	2
Capitella capitata	25	Polychaeta	2
Ilyanassa sp.	20	*Tellina agilis*	2
Glycera sp.	19	Nudibranchia	2
Bivalvia	17	*Lysianopsis alba*	2
Corophium sp.	13	Decapoda	2
Amphipoda	13	*Fabrica sabella*	2
Rictaxis punctostriatus	13	*Leucon americanus*	1
Mya arenaria	12	*Polydora ligni*	1
Edotea triloba	10	*Scolocolepides viridis*	1
Anemone	8	*Crepidula fornicata*	1
Sabellidae	8	*Erichthonius* sp.	1
Podarke obscura	7	*Glycera americana*	1
Crangon septemspinosa	6	Isopoda	1
Elasmopus levis	6	*Mytilus edulis*	1
Molgula manhattensis	6	*Idotea balthica*	1
Ampharetidae	6	*Ovatella myosotis*	1
Gasrtopoda	5	*Pinnixa* sp.	1
Ampelisca sp.	5		
Total			**22,801**

Table 32.5~~2~~-2 (Continued)
Organisms Collected in Benthic Grabs at
<u>the Proposed</u> ~~Each~~ Converted MTS<u>s in the Proposed Action</u>
January – October 2003

North Shore			
Species	**Total Number**	**Species**	**Total Number**
Streblospio benedicti	4,751	*Nephtys* sp.	5
Oligochaeta	1,459	Capitellidae	4
Haploscoloplos sp.	1,457	Hesionidae	4
Eteone sp.	192	*Cassura longicirrata*	4
Annelida	150	Gasrtopoda	3
Corophium sp.	83	*Edotea triloba*	3
Mulinea lateralis	68	Nudibranchia	3
Sigambra sp.	59	*Mya arenaria*	2
Nereis sp.	45	*Tellina agilis*	2
Ilyanassa sp.	36	Sabellidae	2
Cirratulidae	29	*Mytilus edulis*	2
Phyllodocidae	25	*Cirratulus cirratus*	2
Neomysis americana	23	*Cossura longocirrata*	2
Pagurus sp.	22	*Molgula* sp.	2
Polydora sp.	19	*Glycera* sp.	1
Capitella capitata	15	*Melita nitida*	1
Bivalvia	15	*Rictaxis punctostriatus*	1
Amphipoda	13	*Molgula manhattensis*	1
Polychaeta	13	*Gammurus* sp.	1
Leucon americanus	12	*Ilyanassa obsoleta*	1
Polydora ligni	12	Caprellidae	1
Pectinaria gouldii	10	Atherinidae	1
Hypaniola grayi	9	Pysnogonidae	1
Ampelisca sp.	8	*Tharyx* sp.	1
Nereis succinea	7	*Paranaitis speciosa*	1
Crangon septemspinosa	7	*Jassa falcata*	1
Anemone	5	*Limulus polyphemus*	1
Spionidae	5	Sipunculid	1
Total			**8,603**

The Shannon-Weaver Index for benthic organisms was computed for all four proposed Converted MTSs.[1] This index is used as a measure of community diversity, but also accounts for numbers of individual organisms. Table 32.25-3 lists the stations and their respective indices. In a rank of the indices from the highest to the lowest, a high index indicates a high species diversity.

Table 32.5-2-3
Shannon-Weaver Index and Rank of Benthic Impact at the Proposed Converted MTSs in the Proposed Action

Converted MTS	Shannon-Weaver Index	Rank
Southwest Brooklyn	1.815	High
Hamilton Avenue	1.509	Medium
North Shore	1.487	Medium
East 91st Street	1.116	~~Medium~~Low
Mean (all MTSs)	**~~1.700~~1.482**	

The ranking of high, medium and low are somewhat arbitrary; however, this ranking can be used as a general grouping of the respective proposed four Converted MTS indices to determine impacts. A Shannon-Weaver Index above 1.8 was given a high rank, an index between 1.~~0~~15 and 1.8 was assigned a medium rank (as the mean was 1.48), and an index below 1.~~0~~15 was given a low rank.

At present, the plan is for the degrees of activity and consequent potential for benthic impacts shown in Table 32.25-4. The proposed four Converted MTSs that will have construction of new platforms, causing turbidity and siltation, were assigned a high impact rank. Those with minimal or no construction were assigned a low or no impact rank.

[1] New York City Department of Sanitation, March 2004. Marine Biological Studies of the Marine Transfer Stations Operated by the New York City Department of Sanitation. Prepared by EEA, Inc.

Table 32.52-4
Construction Activity and Potential Impacts

Proposed Converted MTS	Construction Activity	Marine Resource Impacts	Degree of Impact
Southwest Brooklyn	Existing platform to remain, king pile wall to be constructed	NoneTurbidity, siltation	(nonemoderate)
Hamilton Avenue	Existing platform removed	Minimal	(low)
North Shore	New, larger platform	Turbidity, siltation, tidal wetland disturbance	(high)
East 91st Street	New, larger platform	Turbidity, siltation	(high)

If the two above tables are combined, the matrix shown in Table 32.25-5 can be constructed. In order to determine the expected impacts, turbidity and siltation received a high rank, while the removal of platforms with no new construction received a low rank. If two high ranks were compared, the expected impact was high. If a high and medium rank were compared, the expected impact was moderate. If the Shannon-Weaver Index or construction activity had a low rank, the expected impact was ranked as minimal or none.

Table 32.52-5
Degree of Expected Benthic Impacts

Proposed Converted MTS	Degree of Expected Impacts
Southwest Brooklyn	NoneModerate
Hamilton Avenue	Minimal
North Shore	Moderate
East 91st Street	Moderate

The needs of the project require that the old platforms be removed and new ones constructed. Southwest Brooklyn is an exception; the existing platform will remain in place. The construction of new platforms will cause turbidity and siltation, which could smother benthic communities. There will also be some turbidity and siltation as a result of the construction of a king pile wall at Southwest Brooklyn, though it will be far less than what would be expected from the construction of new platforms. Impacts will be greatest to the benthic communities at the proposed Converted MTSs that have the most diverse benthic communities. The above ranking of expected benthic impacts from construction appears logical as West 135th Street and South Bronx had the highest Shannon-Weaver indices and significant construction activities. Conversely, Southwest Brooklyn, Greenpoint and Hamilton Avenue ranked low on impacts. No Moderate impacts are expected at the proposed Southwest Brooklyn, North Shore and East 91st Street Converted MTSs. , There as nois no over-water platform construction is slated at Southwest Brooklyn, however, there will be some dredging for navigational purposes and construction of a king pile wall, which will cause some short-term impacts to benthic fauna. Both the North Shore and East 91st Street sites will experience moderate impacts to the benthic communities as they will both have new platforms constructed, resulting in turbidity and siltation. The proposed Hamilton Avenue Converted MTS ranked low on impacts. No new over-water construction is planned at Hamilton Avenue and the benthic community at Greenpoint is not very diverse, so the limited construction should not result in drastic impacts.

32.52.2 Epibenthic Communities

Examination of the colonization plates revealed that most of the proposed Converted MTSs had extensive macrofaunal communities within a single growing season. Most growth was observed in the spring and summer months. The most abundant species were those that are tolerant of degraded environments, such as the amphipod *Corophium insidiosum*, the polychaete worm, *Polydora sp.* and the tunicate *Molgula manhattensis*. All species found on the colonization arrays at each proposed Converted MTS are listed in Table 32.25-6. Removal of the existing structures will temporarily eliminate these communities and cause a localized loss of food sources for fish species (e.g., tautog) that prey on them. At the Hamilton Avenue Converted MTS, this impact will be the most pronounced compared to the others because substrate for

Table 32.5~~2~~-6
Epibenthic Organisms Collected ~~at Each~~
at the Proposed Converted MTSs in the Proposed Action
April 2003 – February 2004

Proposed Converted MTS	Epibenthic Organism	
Southwest Brooklyn	Actinaria	*Gammarus oceanicus*
	Ampellisca sp.	Hydrozoa, Mud, & Algal Film
	Ampithoe valida	Isopoda
	Antinoella sarsi	*Jassa falcata*
	Aoridae	*Lepidonotus squamatus*
	Balanus sp.	*Lyonsia* sp.
	Caprella penantis	*Melita nitida*
	Caprella sp.	Melitidae
	Corophium insidiosum	*Microdeutopus* sp.
	Corophium sp.	*Molgula manhattensis*
	Crepidula fornicata	*Mytilus edulis*
	Crepidula plana	*Nereis* sp.
	Elasmopus levis	*Nereis succinea*
	Enrichthonius sp.	*Paracaprella* sp.
	Eumida sanguinea	*Paracaprella tenuis*
Hamilton Avenue	*Ampellisca* sp.	*Molgula manhattensis*
	Balanus sp.	*Mytilus edulis*
	Copepoda	Nereidae
	Corophium insidiosum	*Nereis* sp.
	Corophium sp.	*Nereis succinea*
	Eumida sanguinea	Phyllodocidae
	Gammarus mucronatus	*Pleusymtes glaber*
	Hydrozoa, Mud, & Algal Film	*Polydora* sp.
	Isopoda	*Sabella microphthalma*
	Jassa falcata	*Sabellaria vulgaris*
	Lepidonotus squamatus	Sabellidae
	Lysonia sp.	Stenothoidae
	Melita nitida	Syllidae
	Microdeutopus sp.	

Table 32.~~2~~5-6 (Continued)
Epibenthic Organisms Collected at ~~Each~~
the Proposed Converted MTSs in the Proposed Action
April 2003 – February 2004

Converted MTS	Epibenthic Organism	
East 91st Street	*Ampellisca* sp.	*Molgula manhettansis*
	Antinoella sarsi	*Mytilus edulis*
	Balanus sp.	*Nereis succinea*
	Brania wellfleetensis	*Paracaprella tenuis*
	Caprella penantis	*Phyllodoce arenae*
	Corophium insidiosum	*Phyllodoce* sp.
	Corophium sp.	*Pleusymtes glaber*
	Elasmopus levis	*Polydora* sp.
	Erichthonius brasiliensis	Polynoidae
	Eumida sanguinea	*Sabella microphthalma*
	Exogone dispar	*Sabellaria vulgaris*
	Hydrozoa, Mud, & Algal Film	Sabellidae
	Jassa falcata	Spionidae
	Lyonsia sp.	Stenothoidae
	Melita nitida	Xanthidae
	Microdeutopus sp.	*Molgula manhettansis*
North Shore	*Ampellisca* sp.	*Microdeutopus* sp.
	Antinoella sarsi	*Molgula manhattensis*
	Balanus sp.	*Nereis succinea*
	Copepoda	*Phyllodoce arenea*
	Corophium insidiosum	Phyllodocidae
	Corophium sp.	*Pleusymtes glaber*
	Elasmopus levis	*Polydora* sp.
	Gammarus mucronatus	*Sabella microphthalma*
	Hydrozoa, Mud, & Algal Film	Spionidae
	Jassa falcata	Stenothoidae
	Melita nitida	

growth will be permanently removed. ~~Greenpoint will also have a loss of macrofauna due to a reduction in platform size.~~ The other Converted MTSs will have as much or more new hard surface available for colonization so this initial habitat loss will not be significant. The epibenthic community is expected to remain at Southwest Brooklyn, as no pier removal ~~or construction~~ is planned at this Converted MTS~~.~~, and the community will colonize the new king pile wall.

It is important to note that colonization was observed during one sampling season and therefore the new structures are expected to be colonized fairly quickly. However, colonization may be delayed if treated lumber is used in construction. Treated lumber prevents marine growth until enough of the treatment has leached out of the lumber to allow a suitable environment for growth. Two widely used treatments for marine construction are creosote and chromated copper arsenate (CCA). Although both are used to deter marine growth, studies have suggested that they do not pose a significant risk to aquatic life.[2] Creosote releases PAHs and CCA releases copper, chromium and arsenic; however, the most leaching occurs with the initial introduction to the water and leaching decreases with time.[3] The leachate from both types of treated lumber is absorbed by the sediment and is either metabolized by microorganisms or becomes biologically unavailable.[4] Because leaching decreases with time, both benthic and epibenthic organisms are expected to recolonize the sediment and reclaim the submerged structures. It must also be noted that many of the benthic and epibenthic organisms found around the proposed Converted MTSs were those tolerant of degraded environments and would generally be the first to be found again.

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[2] Sinnott, T.J., 2000. Assessment of the Risks to Aquatic Life from the Use of Pressure Treated Wood in Water. New York State Department of Environmental Conservation.
[3] Ibid.
[4] Ibid.

32.2.5.3 Adult Finfish

Construction impacts such as turbidity and siltation will be limited spatially to the immediate area of the ~~transfer station~~proposed Converted MTS. These impacts will also be restricted temporally to the time of construction, approximately one to one-and-one-half years. Adult finfish impacts are not expected because motile organisms will avoid construction activities that produce less than optimal environmental conditions. Fish generally display avoidance behavior of areas that have one milligram per liter or more of suspended sediment.[5] Some fish are more tolerant of suspended sediment than others. For example, bottom dwellers, such as flounders, are more tolerant of suspended particles than pelagic species, and clupeids (herring) are most sensitive to suspended sediment as it easily clogs their gills.[6] Table 32.24-7 shows the relative sensitivity of the finfish collected at the proposed Converted MTSs to suspended particles in the water column.

The pile-driving activity associated with pier construction may also cause fish to avoid the construction sites. Relative finfish sensitivity to noise is listed in Table 32.25-7. Studies on the effects of offshore pile-driving on finfish, which may be more intense than the type used in this project, have indicated that, in general, bottom dwelling fish (flatfish, etc.) are less sensitive to pile-driving than pelagic fish (whose swim bladders are sensitive to pressure changes, which in turn affects the ear).[7] Herring have been documented to show escape responses to pile-driving.[8] Avoidance response of juvenile salmonids to pile-driving activity in harbors has also been documented.[9] Although there were no salmonids at any of the proposed Converted MTSs studied, this study may be extrapolated to suggest that finfish would probably avoid the areas where marine construction is occurring.

[5] Bio/consultant as. Evaluation of the Effect of Sediment Spill from Offshore Wind Farm Construction on Marine Fish.
[6] Ibid.
[7] Bio/consultant as. Evaluation of the Effect of Noise from Offshore Pile-Driving on Marine Fish.
[8] Ibid.
[9] Feist, B.E., Anderson, J.J., and Miyamoto, R., 1992. Potential Impacts of Pile Driving on Juvenile Pink (*Oncorhynchus gorbuscha*) and Chum (*O. keta*) Salmon Behavior and Distribution.

Table 32.25-7
Adult Finfish Sensitivity to Suspended Particles and Noise Associated with Marine Construction[1]

Common Name	Suspended Particles	Noise
Alewife	High	High
American Eel	Moderate	Moderate
American Shad	High	High
Atlantic Butterfish	Moderate	Moderate
Atlantic Croaker	Moderate	Moderate
Atlantic Herring	High	High
Atlantic Menhaden	High	High
Atlantic Silverside	Moderate	Moderate
Atlantic Tomcod	Moderate	Moderate
Bay Anchovy	Moderate	Moderate
Black Sea Bass	Moderate	Moderate
Blueback Herring	High	High
Bluefish	Moderate	Moderate
Cunner	Moderate	Moderate
Gizzard Shad	High	High
Grubby Sculpin	Moderate	Moderate
Hickory Shad	High	High
Hogchoker	Low	Low
Lined Sea Horse	Moderate	Moderate
Little Skate	Low	Low
Naked Goby	Moderate	Low
Northern Pipefish	Moderate	Moderate
Oyster Toadfish	Low	Low
Scup	Moderate	Moderate
Smallmouth Flounder	Low	Low
Smooth Dogfish	Moderate	Low
Spotted Hake	Moderate	Moderate
Striped Bass	Moderate	Moderate
Striped Searobin	Moderate	Moderate
Summer Flounder	Low	Low
Tautog	Moderate	Moderate
Weakfish	Moderate	Moderate
White Perch	Moderate	Moderate
Windowpane	Low	Low
Winter Flounder	Low	Low
Winter Skate	Low	Low

Note for Table 32.~~2~~5-7:

(1) This table uses information from European sources to show a relative sensitivity of the fish collected at the MTSs to activities associated with marine construction. Both studies were conducted in Europe and discuss European species. The families of the fish studied were used to determine a general impact on the local finfish families collected at the proposed Converted MTSs.

Table 32.~~2~~4-8 lists the adult finfish species collected at each proposed Converted MTS. It must be noted that only ~~six~~ two of the four proposed Converted ~~eight~~ MTSs in the Proposed Action were sampled for adult finfish due to physical restraints of two of the sites. The two MTSs that were not sampled for adult finfish were East 91st Street and Hamilton Avenue. The flatfishes (flounders) and clupeids were totaled for each proposed Converted MTS. One ~~Four~~ of the ~~six~~four proposed Converted MTSs that were trawled (~~South Bronx,~~ Southwest Brooklyn~~, West 135th Street and West 59th Street~~) had substantially more flatfish than herrings. The finfish communities at the above-mentioned proposed Converted MTS~~s~~ indicates that there may possibly be a less drastic community shift at ~~those~~ this Converted MTS~~s~~ during platform modification than at Converted MTSs with a high clupeid population. North Shore ~~and Greenpoint~~ had more herrings surrounding the site ~~Converted MTS~~, and may experience more finfish avoidance behavior that the other proposed Converted MTSs. General avoidance behavior of the finfish that live near the proposed Converted MTSs was observed during the summer months when the dissolved oxygen levels decreased in the water, resulting in the movement of fish away from the affected areas. A similar response would occur if marine construction released anoxic sediment that absorbed the oxygen from the water, causing a temporary drop in dissolved oxygen levels.

32.~~2~~5.4 Ichthyoplankton

Ichthyoplankton are more sensitive to construction impacts than adult finfish. This is due to high mortality experienced in egg and larval stages. The lethal concentration of suspended sediment for finfish eggs and larvae is generally one milligram per liter of water.[10] For demersal fish eggs (those that lay on the substratum), the impacts are similar to those of the benthic invertebrates. These eggs could be smothered by sediment during construction. Pelagic eggs are free-floating and could be carried or swept through an impact zone, but given the current velocities in most of the proposed Converted MTS areas, are unlikely to stay for any extended period. Table 32.~~2~~5-9 indicates

[10] Bio/consultant as. Evaluation of the Effect of Sediment Spill from Offshore Wind Farm Construction on Marine Fish.

Table 32.2~~5~~-8
Number of Adult Finfish Collected at
the Proposed ~~Each~~ Converted MTSs in the Proposed Action
January – December 2003

	Species	Total Number	EFH Listed
Southwest Brooklyn	Bay Anchovy	898	
	Weakfish	69	
	Scup	68	*
	Little Skate	39	
	Windowpane	38	*
	Summer Flounder	35	*
	Atlantic Croaker	24	
	Atlantic Herring	20	*
	Atlantic Silverside	18	
	Striped Bass	15	
	Striped Searobin	14	
	Winter Flounder	10	*
	Spotted Hake	9	
	Atlantic Butterfish	8	*
	Atlantic Menhaden	6	
	Atlantic Tomcod	4	
	Bluefish	4	*
	Smooth Dogfish	3	
	Black Sea Bass	2	*
	Northern Pipefish	2	
	Winter Skate	2	
	Alewife	1	
	Grubby Sculpin	1	
	Lined Sea Horse	1	
	Oyster Toadfish	1	
	Smallmouth Flounder	1	
	Total	**1,293**	**8**

Table ~~32.2~~32.5-8 (continued)
Number of Adult Finfish Collected at
the Proposed ~~Each~~ Converted MTSs in the Proposed Action
January – December 2003

	Species	Total Number	EFH Listed
North Shore	Atlantic Silverside	44	
	Atlantic Herring	40	*
	Atlantic Menhaden	21	
	Striped Bass	15	
	Bay Anchovy	2	
	Winter Flounder	2	*
	Grubby Sculpin	1	
	Northern Pipefish	1	
	Total	**126**	**2**

Table ~~32.2~~32.5-9
Life History Characteristics of Finfish Found in the Central Part of the Mid-Atlantic Bight

Scientific Name	Common Name	Spawning Time	Spawning Location	Egg Type	Habitat	
					Summer	Winter
Mustelus canis	Smooth Dogfish	March - May	Estuary / Mid-Atlantic Bight	Live	Estuary	Ocean
Anguilla rostrata	American Eel	March - May	Sargasso Sea	◆	Estuary	Estuary
Conger oceanicus	Conger Eel	June - February	Sargasso Sea	◆	Estuary	◆
Alosa aestivalis	Blueback Herring	March - May	Fresh Water	Pelagic	Estuary	Ocean
Alosa mediocris	Hickory Shad	March - May	Fresh Water	Demersal / Pelagic	◆	◆
Alosa pseudoharengus	Alewife	March - May	Fresh Water	Pelagic	Estuary	Ocean
Alosa sapidissima	American Shad	March - May	Fresh Water	Demersal / Pelagic	Fresh Water / Estuary	Ocean
Brevoortia tyrannus	Atlantic Menhaden	Sept.-Nov. & March - May	Mid and South Atlantic Bight	Pelagic	Estuary	Ocean
Clupea harengus	Atlantic Herring	March - May	Mid-Atlantic Bight	Demersal	◆	◆
Anchoa hepsetus	Striped Anchovy	June - August	Mid-Atlantic Bight	Pelagic	Estuary / Ocean	Estuary / Ocean
Anchoa mitchilli	Bay Anchovy	June - August	Estuary / Mid-Atlantic Bight	Pelagic	Estuary	Ocean
Osmerus mordax	Rainbow Smelt	March - May	Fresh Water	Demersal	Brackish	Estuary
Synodus foetens	Inshore Lizardfish	◆	South Atlantic Bight	◆	◆	Ocean
Microgadus tomcod	Atlantic Tomcod	December - February	Fresh Water	Demersal	Estuary / Fresh Water	Fresh Water
Pollachius virens	Pollock	September - February	Mid-Atlantic Bight	Pelagic	Estuary	Ocean
Urophycis chuss	Red Hake	June - August	Mid-Atlantic Bight	Pelagic	Ocean	Ocean
Urophycis regia	Spotted Hake	June - Nov. & March - May	Mid-Atlantic Bight	Pelagic	Ocean	Ocean
Urophycis tenuis	White Hake	March - May	Mid-Atlantic Bight	Pelagic	Ocean	Ocean

Table ~~32.2~~32.5-9 (Continued)

Life History Characteristics of Finfish Found in the Central Part of the Mid-Atlantic Bight

Scientific Name	Common Name	Spawning Time	Spawning Location	Egg Type	Habitat	
					Summer	Winter
Ophidion marginatum	Striped Cusk-Eel	June - November	Mid-Atlantic Bight	Pelagic	Estuary / Ocean	Ocean
Opsanus tau	Oyster Toadfish	March - August	Estuary	Demersal	Estuary	Estuary
Strongylura marina	Atlantic Needlefish	March - May	Estuary	Demersal	Estuary	◆
Cyprinodon variegatus	Sheepshaed minnow	March - August	Estuary	Demersal	Marsh	Estuary
Fundulus heteroclitus	Mummichog	March - August	Estuary	Demersal	Marsh	Estuary
Fundulus luciae	Spotfin Killifish	March - August	Estuary	Demersal	Marsh	Estuary
Fundulus majalis	Striped Killifish	March - August	Estuary	Demersal	Creeks / Shores	Estuary
Lucania parva	Rainwater Killifish	March - August	Estuary	Demersal	Marsh	Estuary
Gambusia holbrooki	Eastern Mosquitofish	June - August	Fresh Water	Live	Fresh Water / Estuary	Fresh Water / Estuary
Menidia beryllina	Inland Silverside	March - August	Estuary	Demersal	Marsh	Estuary
Menidia menidia	Atlantic Silverside	March - August	Estuary	Demersal	Estuary	Ocean
Apeltes quadracus	Fourspine Stickleback	March - May	Estuary	Demersal	Eelgrass	Estuary
Gasterosteus aculeatus	Threespine Stickleback	March - May	Estuary	Demersal	Marsh	Ocean
Hippocampus erectus	Lined Seahorse	March - August	Estuary / Mid-Atlantic Bight	Live	Estuary	Ocean
Syngnathus fuscus	Northern Pipefish	June - August	Estuary	Live	Estuary	Ocean
Prionotus carolinus	Northern Searobin	June - November	Mid-Atlantic Bight (Estuary◆)	Pelagic	Estuary / Ocean	Ocean
Prionotus evolans	Striped Searobin	June - November	Mid-Atlantic Bight (Estuary◆)	Pelagic	Estuary / Ocean	Ocean
Myoxocephalus aenaeus	Grubby	December - February	Estuary / Mid-Atlantic Bight	Demersal	Estuary / Ocean◆	Estuary / Ocean◆

Table ~~32.2~~32.5-9 (Continued)
Life History Characteristics of Finfish Found in the Central Part of the Mid-Atlantic Bight

Scientific Name	Common Name	Spawning Time	Spawning Location	Egg Type	Habitat	
					Summer	Winter
Morone americana	White Perch	March - May	Fresh Water	Demersal / Pelagic	Estuary / Fresh Water	Estuary
Morone saxatilus	Striped Bass	March - May	Fresh Water	Pelagic	Estuary / Fresh Water	Estuary
Centropristis striata	Black Sea Bass	March - November	Mid-Atlantic Bight	Pelagic	Estuary / Ocean	Ocean
Pomatomus saltatrix	Bluefish	March - August	Mid and South Atlantic Bight	Pelagic	Estuary	Ocean
Caranx hippos	Crevalle Jack	◆	South Atlantic Bight	Pelagic	Estuary	◆
Lutjanus griseus	Gray Snapper	June - August	South Atlantic Bight	Pelagic	◆	◆
Stenotomus chrysops	Scup	March - August	Estuaries, Bays, Cont Shelf	Pelagic	Estuary	Ocean
Bairdiella chrysoura	Silver Perch	June - August	◆	Pelagic	Estuary	◆
Cynoscion regalis	Weakfish	March - August	Estuary / Mid-Atlantic Bight	Pelagic	Estuary	Ocean
Leiostomus xanthurus	Spot	December - February	Southern Mid-Atlantic Bight	Pelagic	Estuary	Ocean
Menticirrhus saxatilis	Northern Kingfish	June - August	Mid-Atlantic Bight	Pelagic	Ocean / Estuary	Ocean
Micropogonias undulatus	Atlantic Croaker	June - November	Southern Mid-Atlantic Bight	Pelagic	Estuary	Estuary
Pogonias cromis	Black Drum	June - August	Mid-Atlantic Night	Pelagic	Estuary	Ocean
Chaetodon ocellatus	Spotfin Butterflyfish	◆	South Atlantic Bight	Pelagic	Estuary	◆
Mugil cephalus	Striped Mullet	December - February	South Atlantic Bight	Pelagic	Estuary / Fresh Water	Ocean
Mugil curema	White Mullet	March - May	South Atlantic Bight	Pelagic	Estuary	Ocean
Sphyraena borealis	Northern Sennet	March - May	South Atlantic Bight	Pelagic	Estuary	◆

Table ~~32.2~~32.5-9 (Continued)
Life History Characteristics of Finfish Found in the Central Part of the Mid-Atlantic Bight

Scientific Name	Common Name	Spawning Time	Spawning Location	Egg Type	Habitat	
					Summer	Winter
Tautoga onitis	Tautog	March - November	Estuary / Mid-Atlantic Bight	Pelagic	Estuary	Estuary
Tautogolabrus adspersus	Cunner	March - November	Mid-Atlantic Bight	Pelagic	Estuary	Estuary /Ocean
Pholis gunnellus	Rock Gunnel	December - February	Estuary / Mid-Atlantic Bight	Demersal	Estuary	Ocean
Astroscopus guttatus	Northern Stargazer	June - August	Estuary / Mid-Atlantic Bight	♦	Estuary / Ocean	♦
Hypsoblennius hentz	Feather Blenny	June - August	Estuary	Demersal	Estuary	Estuary
Ammodytes americanus	American Sand Lance	December - February	♦	Demersal	Estuary	Estuary
Gobionellus boleosoma	Darter Goby	June - August	Estuary	Demersal	Estuary	Estuary
Gobiosoma bosc	Naked Goby	March - August	Estuary	Demersal	Estuary	Estuary
Gobiosoma ginsburgi	Seaboard Goby	June - August	Estuary	Demersal	Estuary / Ocean	♦
Peprilus triacanthus	Butterfish	June - August	Estuary / Mid-Atlantic Bight	Pelagic	Estuary / Ocean	Ocean
Scophthalmus aquosus	Windowpane	March - May & Sept. - November	Estuary / Mid-Atlantic Bight	Pelagic	Estuary / Ocean	Ocean
Eutropus microstomus	Smallmouth Flounder	March - November	Mid-Atlantic Bight	Pelagic	Estuary / Ocean	Ocean
Paralichthys dentatus	Summer Flounder	September - February	Mid-Atlantic Bight	Pelagic	Estuary	Estuary
Pseudopleuronectes americanus	Winter Flounder	December - February	Estuary / Mid-Atlantic Bight	Demersal	Estuary	Estuary /Ocean♦
Trinectes maculatus	Hogchoker	March - November	Estuary	Pelagic	Estuary	Estuary
Sphoeroides maculatus	Northern Puffer	March - August	Estuary	Demersal	Estuary	Ocean

Source : Able, K.W. & Fahay, M.P., 1998 The First Year in the Life of Estuarine Fishes in the Middle Atlantic Bight. Rutgers University Press. New Brunswick, NJ.
♦ = Unknown.

the time of year and egg type of the more abundant species located in the central part of the Mid-Atlantic Bight.[11] This table may be used as an indicator of those species more at risk to impacts from construction.

Larval forms that have motility (i.e., can swim) will behave like the adult finfish and avoid areas where the environmental conditions are unfavorable. As with the eggs, any that are swept through the construction sites by currents would not be exposed to suspended sediments for extended periods of time due to current velocities in the areas.

Currents may play an important factor in reducing impacts to non-motile finfish eggs and larvae. Most of the proposed Converted MTSs have slated construction that would cause siltation; however, any egg or larvae swept into the construction zone should be swept out of the zone fairly quickly due to strong currents experienced at the proposed Converted MTS sites. The two proposed Hamilton Avenue Converted MTSs that is are on a restricted water bodyies with less strong current regimes.; Greenpoint and Hamilton Avenue, are places where eEggs and larvae may have a greater residence time and exposure to suspended sediment,. Hhowever, thiese proposed Converted MTSs hasve a lesser degree of over-water construction planned than most other proposed Converted MTSs, and had among the lowest concentrations of finfish eggs and larvae, so impacts should be minimal.

The finfish eggs and larvae collected at each of the four proposed Converted MTS are presented in Table 32.232.5-10. Winter flounder is the only species collected at the proposed Converted MTSs that lays demersal eggs. Because of its recreational importance and declining numbers, winter flounder is of concern to fisheries biologists and regulatory scientists. Winter flounder eggs were only present and collected at the three of the Converted MTSs — South Bronx, proposed East 91st Street Converted MTS site. and West 59th Street. Winter flounder larvae were collected at all eightfour of the proposed Converted MTS sites. Construction impacts are expected to be negligible to winter flounder or other ichthyoplankton species.

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[11] Able, K.W. and Fahay, M.P., 1998. The First Year in the Life of Estuarine Fishes in the Middle Atlantic Bight. Rutgers University Press. New Brunswick, NJ.

Table ~~32.2~~32.5-10
Finfish Larvae Collected ~~At~~
at the Proposed ~~Each~~ Converted MTSs in the Proposed Action
January – September 2003

Southwest Brooklyn	EFH Listed	Hamilton Avenue	EFH Listed
Winter Flounder	*	Winter Flounder	*
Anchovy spp.		Anchovy spp.	
Goby spp.		Atlantic Mehnaden	
Atlantic Menhaden		Goby spp.	
Windowpane	*	Sculpin spp.	
Herring spp.		Tautog	
Sculpin spp.		Windowpane	*
Northern Pipefish		Weakfish	
Weakfish		Herring spp.	
American Sand Lance		Rock Gunnel	
Tautog		Northern Pipefish	
Threespine Stickleback		Alewife	
Fourbeard Rockling		American Sand Lance	
Smallmouth Flounder		Atlantic Herring	*
Labridae		Labridae	
Searobin spp.		Fourbeard Rockling	
Rock Gunnel		Feather Blenny	
Scup	*	Striped Bass	
Cunner		Cunner	
Fourspot Flounder			
Atlantic Butterfish	*		
Striped Searobin			

Table ~~32.2~~32.5-10 (Continued)
Finfish Larvae Collected ~~A~~
at the Proposed ~~Each~~ Converted MTSs in the Proposed Action
January – September 2003

East 91st Street	EFH Listed	North Shore	EFH Listed
Winter Flounder	*	Herring spp.	
Anchovy spp.		Atlantic Menhaden	
Goby spp.		Anchovy spp.	
Atlantic Menhaden		Winter Flounder	*
Herring spp.		Goby spp.	
Sculpin spp.		Atlantic Menhaden	
Fourbeard Rockling		Sculpin spp.	
Northern Pipefish		Tautog	
Weakfish		Cunner	
Windowpane	*	Northern Pipefish	
Rock Gunnel		Rock Gunnel	
Tautog			
Threespine Stickleback			
Summer Flounder	*		

Although impacts are expected to be minimal, regulatory agencies (USACOE and NYSDEC) will regulate the dredging and construction with environmental safeguards such as environmental buckets for the dredge, silt curtains, and environmental windows (discussed further below) to protect spawning times of striped bass and winter flounder.

There are two basic categories of dredging methods:

- **Mechanical Dredging** – Mechanical dredging uses a clamshell-style bucket to scoop up the sediments. Various types of buckets are available. A conventional bucket is an open top bucket whereas an "Environmental" bucket is an overlapping, sealed clamshell-style bucket. Environmental buckets "grab" the sediments and some water, but seal tightly in order not to let the sediments out into the waterway.
- **Hydraulic Dredging** – Hydraulic dredges work like vacuum cleaners to remove bottom sediments and associated water. The major drawback of hydraulic dredging is that it removes excessive amounts of water that must be transported offsite for disposal. Consequently, hydraulic dredging is generally not suitable or utilized unless the dredged material can be released directly into a disposal area.

In general, the environmental safeguards that may be utilized to protect the environment and may be specified by the regulatory agencies are as follows:

- **Environmental Buckets**

  Resuspension of sediments and any associated contaminants is a concern during the dredging operation. Mechanical dredging using an environmental bucket is suitable to minimize this concern. The environmental bucket is an overlapping, sealed clamshell-style bucket that is used to scoop up the sediments. During its descent, a venting system allows water to pass through the bucket, minimizing sediment resuspension. The bucket is lowered to the bottom, making a cut in the sediments. During closing, the sides overlap, effectively sealing all sediment in the bucket. The bucket is then raised to the surface just above the waterline, where it is allowed to drain water from the vents before releasing the sediments into a receiving container, usually a hopper barge.

- **Silt Curtains**

  These are specifically engineered barriers that float above the water surface and extend to the bottom. Silt curtains, where practical, are used to protect against dispersal of sediments during the dredging operation. Silt curtains, however, are not practical in waters impacted with swift current conditions.

- **Environmental Windows**

  Dredging may not be allowed during certain months of the year to protect the biological organisms. This time period, for example, is generally November 15 through April 15 to protect the Stripped Bass and Winter Flounder during their spawning and earlier growth.

Dredging will be necessary at the Converted MTSs to allow barge access during construction and operation of these facilities. DSNY has carefully considered various dredging methods and has selected to employ mechanical dredging using an environmental bucket.

- The environmental bucket will be equipped with sealing gaskets or overlapping sealed design at the jaws, with a signal light in the control station to verify bucket closure and seal.
- The bucket hoist speed will be limited to approximately 2 ft/second.
- The bucket will be lowered to level of barge gunwales prior to release of load.
- Excessive loss of water, sediment or both from the time the bucket breaks the water surface to the time it crosses the barge gunwale will not be permitted. In

other words, the environmental bucket will be kept in good working order throughout the dredging operation.

In addition to utilizing an Environmental Bucket, DSNY proposes to employ the following safeguards to further protect the environment during the dredging operation:

- No barge overflow or return of untreated water will be allowed.
- Silt curtains will be deployed at those locations, where practical.
- Depending upon stipulations of the Joint Permit issued by the USACOE and NYSDEC, dredging operations may be limited from November 15 through April 15 to protect the Striped Bass and Winter Flounder during their spawning and earlier growth.

Further, DSNY seeks to transport the dredged material offsite for a beneficial use such as its use as a cover material at Fresh Kills or other landfill.

32.~~5~~6 Operational Impacts

While the construction impacts are limited to the duration of the activities, the operational impacts will persist for the duration of the facilities' life span, a time span measured in decades. For the purpose of this F~~D~~EIS section, the major operational impact will be the footprint of the structures over water. While the littoral zone covered by the structures will not be devoid of invertebrate and finfish resources, the coverage will block sunlight and hinder primary production. Each of the four proposed Converted MTSs has differing amounts of existing and proposed coverage; the differences are listed in Table 32.~~5~~6-1.

Table 32.~~5~~6-1
Existing and Proposed Platform Coverage at
the Proposed~~Each~~ Converted MTSs in the Proposed Action

Proposed Converted MTS	Existing Square Feet	Proposed Square Feet	Difference
Southwest Brooklyn	23,855	23,855	0
Hamilton Avenue	~~34,905~~ 29,450	0	~~(34,905)~~ (29,450)
East 91st Street	~~34,717~~ 35,203	~~78,374~~ 77,815	43,657 42,612
North Shore	~~40,747~~ 40,124	~~87,149~~ 86,283	~~46,402~~ 46,159
Total	**128,632**	**187,953**	**59,321**

Inspection of the above table reveals that the ~~Greenpoint,~~ Hamilton Avenue and Southwest Brooklyn proposed Converted MTSs can be eliminated from the long-term impact discussion since they are either remaining in place or ~~are being replaced with facilities that have substantially smaller footprints.~~their over-water footprint is being removed.

It is safe to say that the impacts of large platforms on the harbor estuary ecology are controversial. Studies conducted by EEA in the late 1980s showed similar finfish and benthic communities in the interpier and underpier environments in two large-scale programs on the Hudson and East Rivers, respectively.[11,12,13] Other studies, primarily by Able *et., al.*, have

[11] New York City Public Development Corporation, 1991. East River Landing Aquatic Environmental Study. Final Report. Prepared by EEA, Inc.
[12] New York City Public Development Corporation, 1988. Hudson River Center Aquatic Environmental Study. Draft Interim Report. Prepared by EEA, Inc.
[13] Stoecker, Roy R., J. Collura and P.J. Fallon., 1992. Aquatic Studies at the Hudson River Center Site, pp. 407-427 In: Estuarine Research in the 1980s. The Hudson River Environmental Society Seventh Symposium on Hudson River Ecology (C. Lavett Smith ed.). State University of New York Press. Albany.

shown that caged winter flounder failed to thrive underneath large platforms.[14,15] Able's studies are controversial, however, because the fish were caged, and this may impact the results of the study. Some fish are even known to associate with submerged structures, as it provides shelter and surfaces for food to grow. While the field tests appear to be contradictory for finfish, there is no doubt that fish do indeed inhabit at least the interface of platforms, and the benthic invertebrate communities are virtually identical in the underpier and interpier zones.

From a regulatory perspective, there is acceptance that platforms do not necessarily cause the underpier zones to be devoid of life, but they are still considered to be a taking of marine environmental resources and the procedural, if not environmental, equivalent of fill.

32.~~5~~6.1 Benthic Communities

The studies done by EEA and published in the late 1980s and early 1990s were conclusive regarding the benthic organism communities under large platforms in the Hudson and East Rivers. A comparison involving hundreds of grab samples from the inter and underpier zones indicated there was no statistically significant difference in species composition and abundance.[16,17,18] Based largely upon these published studies, it appears unlikely that the reconstruction, or even enlargement, of the present platforms will materially alter the benthic meiofauna communities over the long term. Benthic communities that may have experienced toxicity due to leachate from treated lumber used to build the piers would quickly be rebuilt as the leaching decreases and the pollution tolerant organisms, that had dominated the benthic communities before construction started, would come back. Those communities displaced by

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[14] Able, K.W., Manderson, J.P., and Studholme, A.L., 1998. The Distribution of Shallow Water Juvenile Fishes in an Urban Estuary: The Effects of Manmade Structures in the Lower Hudson River. Estuaries. Vol. 21, No. 4B, pp. 731-744.

[15] Duffy-Anderson, J.T. and Able, K.W., 1999. Effects of Municipal Piers on the Growth of Juvenile Fishes in the Hudson River Estuary: A Study Across a Pier Edge. Marine Biology. 133: 409-418.

[16] New York City Public Development Corporation, 1991. East River Landing Aquatic Environmental Study. Final Report. Prepared by EEA, Inc.

[17] New York City Public Development Corporation, 1988. Hudson River Center Aquatic Environmental Study. Draft Interim Report. Prepared by EEA, Inc.

[18] Stoecker, Roy R., J. Collura and P.J. Fallon., 1992. Aquatic Studies at the Hudson River Center Site pp. 407-427 In: Estuarine Research in the 1980s. The Hudson River Environmental Society Seventh Symposium on Hudson River Ecology (C. Lavett Smith ed.). State University of New York Press. Albany.

construction would begin reclaiming the sediment soon after construction was completed.[19,20] The opportunistic species would appear first, followed by longer-lived species.[21,22]

32.~~5~~6.2 Epibenthic Communities

The long-term impact to epibenthic communities will be beneficial. The planned enlargement of the platforms will provide significantly more hard surface for macrofauna and the finfish that use them as a food source. The ~~five~~ two proposed Converted MTSs that will have increased platforms, and therefore increased areas for epibenthic growth once the treated lumber has lost its toxicity, are ~~West 135th Street, West 59th Street,~~ East 91st Street~~, South Bronx~~ and North Shore. Southwest Brooklyn will also have more surface area for epibenthic growth with the addition of the king pile wall. The increase in epibenthic colonizers should lead to an increase in finfish species that feed on these organisms (e.g., cunner and tautog).

32.~~5~~6.3 Adult Finfish

The EEA studies on the East River showed altered finfish communities in the under- and interpier zones. Abundances of fish under South Street Seaport Pier 17, which was used as a model, did show moderately lower numbers under piers and different types of finfish in the two zones.[23] Interpier-underpier studies on the Hudson River also showed slightly different finfish densities for several species beneath piers as opposed to in open water.[24,25] It is possible, even

[19] U.S. Department of the Interior. Minerals Management Service, 2000. Environmental Survey of Potential Sand Resource Sites: Offshore New Jersey. Prepared by Applied Coastal Research and Engineering, Inc., Continental Shelf Associates, Inc., Barry A. Vittor & Associates, Inc., and Aubrey Consulting, Inc.
[20] U.S. Army Corps of Engineers, 1999. The New York District's Biological Monitoring Program for the Atlantic Coast of New Jersey, Asbury Park to Manasquan Section Beach Erosion Control Project. Draft. Phase II-III. During Construction and 1st Year Post-Construction Studies.
[21] U.S. Department of the Interior. Minerals Management Service, 2000. Environmental Survey of Potential Sand Resource Sites: Offshore New Jersey. Prepared by Applied Coastal Research and Engineering, Inc., Continental Shelf Associates, Inc., Barry A. Vittor & Associates, Inc., and Aubrey Consulting, Inc.
[22] U.S. Army Corps of Engineers, 1999. The New York District's Biological Monitoring Program for the Atlantic Coast of New Jersey, Asbury Park to Manasquan Section Beach Erosion Control Project. Draft. Phase II-III. During Construction and 1st Year Post-Construction Studies.
[23] New York City Public Development Corporation, 1991. East River Landing Aquatic Environmental Study. Final Report. Prepared by EEA, Inc.
[24] New York City Public Development Corporation, 1988. Hudson River Center Aquatic Environmental Study. Draft Interim Report. Prepared by EEA, Inc.
[25] Stoecker, Roy R., J. Collura and P.J. Fallon., 1992. Aquatic Studies at the Hudson River Center Site pp. 407-427 In: Estuarine Research in the 1980s. The Hudson River Environmental Society Seventh Symposium on Hudson River Ecology (C. Lavett Smith ed.). State University of New York Press. Albany.

likely, that construction of larger platforms at the proposed East 91st Street Converted MTS siteand South Bronx, located on the East River, and possibly the proposed North Shore Converted MTS, located in Flushing Bay off the East River, will cause population declines and shifts in finfish species composition underneath these platforms. Interpier underpier studies on the Hudson River also showed slightly different finfish densities for several species beneath piers as opposed to in open water.[26,27] Using this study as a model, there is a possibility of a shift in the finfish communities at the West 59th and West 135th Street Converted MTSs with the expansion of piers. Conversely, the proposed Hamilton Avenue Converted MTSs that hasve a reduction in pier coverage, Greenpoint and Hamilton Avenue, may also see a small shift in local finfish communities. Because finfish for the most part are transient, these shifts cannot be quantified absent a future monitoring program. Regardless, a conservative approach would be to allow for some reduction, measurable or not, in local fish stocks due to construction of the enlarged platforms.

The present plan is to construct 120,264 59,321 square feet (approximately 2.81.36 acres) of new platforms in the harbor estuary should full build-out be accomplished. Based upon existing data and previous studies, the proposed Converted MTSs which will experience a net gain in pier coverage will be the most likely finfish impact receptors.

32.56.4 Ichthyoplankton

Aside from the possible population shifts at the proposed Converted MTSs with increased pier structures, there is little likelihood that the enlarged proposed Converted MTSs would have any significant or even measurable impacts on ichthyoplankton communities.

[26] New York City Public Development Corporation, 1988. Hudson River Center Aquatic Environmental Study. Draft Interim Report. Prepared by EEA, Inc.

[27] Stoecker, Roy R., J. Collura and P.J. Fallon., 1992. Aquatic Studies at the Hudson River Center Site pp. 407-427 In: Estuarine Research in the 1980s. The Hudson River Environmental Society Seventh Symposium on Hudson River Ecology (C. Lavett Smith ed.). State University of New York Press. Albany.

32.67 Overview of Marine Environmental Impacts

Construction, or short-term impacts resulting from the project, will be limited both spatially and temporally. The greatest impacts will be temporary destruction of benthic and epibenthic communities and avoidance by finfish due to suspended particles and food source reduction. While they may not be amenable to avoidance or reduction, these impacts will be limited and will not last beyond one seasonal cycle for invertebrates. Temporary Cconstruction impacts on finfish will not be quantifiable. Further discussions of the details of the impacts and their significance are provided in section 9 of Chapters 4 thru 31.

Full build-out of the project will result in an additional 2.81.36 acres of new platform in the harbor marine environment. From a regulatory (not environmental review) perspective, this impact may be significant due to the timeframe of the project – decades. If the judgment of the agencies is a finding of significant negative impact, then mitigation programs may need to be devised, assuming that no landside alternative is possible.