Port of New York and New Jersey

ALTERNATIVE SCENARIOS FOR THE REALIZATION OF A DREDGED MATERIAL PUBLIC PROCESSING OR STORAGE FACILITY

AUGUST 2007

Prepared by: **U.S. Army Corps of Engineers**
New York District
Planning Division
26 Federal Plaza
New York, NY 10278-0090

ALTERNATIVE SCENARIOS FOR THE REALIZATION OF A DREDGED MATERIAL PUBLIC PROCESSING OR STORAGE FACILITY

FOR THE

PORT OF NEW YORK AND NEW JERSEY

AUGUST 2007

Prepared by:

U.S. Army Corps of Engineers
New York District (CENAN-PL-E)
26 Federal Plaza
New York, NY 10278-0090

TABLE OF CONTENTS

SECTION **PAGE**

LIST OF TABLES

TABLE **PAGE**

ACRONYMS AND ABBREVIATIONS

BDP	Buy-Develop-Operate
BOO	Build-Own-Operate
BOT	Build-Operate-Transfer
BTO	Build-Transfer-Operate
CAD	Confined Aquatic Disposal facility
CDF	Confined Disposal Facility
CY	Cubic Yard
DB	Design-Build
District	New York District, USACE
DMMP	Dredged Material Management Plan
EIS	Environmental Impact Statement
ENSP	Endangered and Nongame Species Program
GAO	Government Accounting Office
GIS	Geographic Information System
GPS	Global Positioning System
HARS	Historic Area Remediation Site
HPO	Historic Preservation Office
JAP	Joint Application for Permit
LURP	Land Use Regulation Permit
LDO	Lease-Develop-Operate
MCY	Million Cubic Yards
NEA	Northern Ecological Associates, Inc.
NJ	New Jersey
NJNHP	New Jersey Natural Heritage Program
NY	New York
NYCEDC	New York City Economic Development Corporation
NYCRR	New York Code Rules and Regulations
NYSDEC	New York State Department of Environmental Conservation
NYSDOS	New York State Department of State
PANYNJ	Port Authority of New York and New Jersey
Port	Port of New York and New Jersey
PPF	Public Processing Facility
PPP	Public-Private Partnerships
PSF	Public Storage Facility
SEQR	State Environmental Quality Review Act
Subgroup	PPF Subgroup
TBD	To Be Determined
UPA	Uniform Procedures Act
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
WRDA	Water Resources Development Act

1.0 INTRODUCTION

The United States Army Corps of Engineers (USACE), New York District (District), is working with its partners in the Port of New York and New Jersey (Port) to investigate the feasibility of developing a dredged material public processing and/or storage facility in the New York – New Jersey Harbor (Harbor). In conjunction with the Port Authority of New York and New Jersey (PANYNJ), the New York State Department of Environmental Conservation (NYSDEC), the United States Environmental Protection Agency (USEPA), the New Jersey Department of Environmental Protection (NJDEP), the New Jersey Department of Transportation, Office of Maritime Resources (NJDOT/OMR), the New York State Department of State (NYSDOS), and the New York City Economic Development Corporation (NYCEDC), the District is also investigating alternative conceptual management scenarios for designing, constructing, operating, and maintaining a dredged material public processing or public storage facility.

1.1 BACKGROUND

The USACE is responsible for maintaining navigation channels and shipping berths at their prescribed depth. Sediments are continuously washed into waterways, both from natural erosional processes and during storm events, and a wide array of contaminants can be found associated with these sediments. As a result, the USACE regularly engages in maintenance dredging that removes sediments containing different concentrations and types of contaminants.

The USACE is mandated to dredge and place these sediments in an environmentally appropriate and cost-effective way. The cost associated with suitable placement sites for maintenance dredged material that does not meet threshold requirements for ocean placement at the Historic Area Remediation Site (HARS) is significantly higher than for dredged material that is suitable for placement at the HARS.

An approach that has gained increasing attention and support since the late 1990s is the stabilization of non-HARS material via processing techniques that improve geotechnical properties while also binding some contaminants and reducing the leachability of others. The processed dredged material can then be used beneficially for various purposes, such as sanitary landfill cover, brownfield remediation, and quarry reclamation. To date, privately operated processing facilities, often serving project-specific needs, have managed the processing of non-HARS suitable material in the Port.

Processing facilities typically contain a small amount of temporary storage for pre-processed dredged material on-site. A consistent, steady supply of dredged material is important for a processor to maintain operational efficiency, and therefore cost-effective processing. The primary means to stabilize flow rate is via a pre-processing storage area. Many ports in the United States temporarily store dredged material in confined disposal facilities (CDFs). The Port of New York and New Jersey does not currently contain any CDFs for the temporary placement of pre-processed dredged material.

1.2 CURRENT SITUATION

There are three existing dredged material private processors currently operating in the Harbor (Table 1). Clean Earth Dredging Technologies, Inc. processes dredged material in a pugmill and Donjon Marine Company, Inc. uses in-barge processing. Jay Cashman, Inc. is temporarily processing dredged material in-barge while it works to complete the permit process for pugmill processing; it has secured an Acceptable Use Determination (AUD) and needs an air permit. Two companies are preparing to enter the processing business (Table 1). Great Lakes Dredge and Dock, Inc. and 148 Doremus Avenue, LLC anticipate beginning operations in 2007. Great Lakes Dredge and Dock, Inc. is awaiting approval of its remedial workplan and 148 Doremus Avenue, LLC is awaiting an air permit, which is currently under final review.

Table 1 lists site location, processing technique, and approximate processing capacity for the current dredged material private processors, and estimates these attributes for the potential processors. The active facilities have successfully operated at rates ranging between 2,000 and 4,000 cubic yards (CY)/day. Ranges in processing rates are relatively large, reflecting the constraints all processors operate within (e.g., weather, dredging rate, dredging windows, equipment repair). These rates are the equivalent of a processing range per year of approximately 320,000 CY/year to 736,000 CY/year. Although these ranges are estimates, the low end of the range is the equivalent of processing 2,000 CY/day, five days a week, during an 8-month dredging window (i.e., 20 days/month) while the high end of the range is the equivalent of processing 4,000 CY/day, almost six days a week, during an 8-month dredging window (i.e., 23 days/month).

Table 1. Existing and Potential Dredged Material Private Processing Facilities for Landfill, Brownfield, Quarry, and Mine Remediation Sites (USACE 2006a).

	Location	Processing Technique	Processing Capacity: CY/day - MCY/year	Date of Availability
Existing Processing Sites				
Clean Earth Dredging Technologies, Inc.	Jersey City, NJ	Pugmill	4,000 - 1.2	Currently Operating
Donjon Marine Company, Inc.	Port Newark, NJ	In-Barge	8,000 - 2.4	Currently Operating
Jay Cashman, Inc.	Elizabeth, NJ	In-Barge/ Pugmill	4,000 - 1.2	Currently Operating
Potential Processing Sites				
Great Lakes Dredge and Dock, Inc.	Kearny, NJ	Pugmill	4,000 - 1.2	2007
148 Doremus Avenue, LLC	Newark, NJ	Pugmill	4,000 - 1.2	2007

Notes: CY = Cubic yards
MCY = Million cubic yards
TBD = To Be Determined

1.3 PURPOSE AND NEED

The Regional Dredging Team (RDT), which includes representatives from the PANY/NJ, NYSDEC, USEPA, NJDEP, NJDOT/OMR, and NYCEDC, is considering the economic advantages of constructing and operating a dredged material public processing facility (PPF) and/or a dredged material public storage facility (PSF) (i.e., a CDF) for material unsuitable for HARS placement. The public sector's motivation to become involved in dredged material processing and storage via a PPF and/or a PSF stems from the following considerations:

1) in both short- and long-term planning horizons, non-HARS suitable dredged material quantities are projected to increase;
2) upfront costs for a facility adequately sized to process these quantities could be more expensive than the market can support (i.e., require the assumption of more risk per unit of expected return than the market is willing to bear);
3) small private processing facilities might be economically unsustainable because, even with a projected increase in dredged material volume, supply will continue to be episodic and unpredictable.

Addressing these considerations will minimize the possibility of a disruption in maintenance dredging due to inadequate processing capability. For example, if processors expanded their facilities and processing capacity due to projected increases in dredged material supply and the increases didn't occur, either at all or in the projected timeframe, processors would face increased costs and reduced revenue. Because of the higher fixed or overhead costs associated with expansion and the lack of an increase in revenue, this situation could result in processors going out of business. Conversely, if maintenance dredging activities increased and existing processors couldn't adequately process or store the dredged material in a timely fashion, maintenance dredging activities would be hampered. A cessation of maintenance dredging in the Port due to inadequate processing capabilities is unacceptable.

The District and its Port partners are committed to investigating alternative scenarios to the current dredged material processing situation and engaging processors in working towards a future of stable and cost-effective dredged material processing. Examining conceptual management scenarios for designing, constructing, operating, and maintaining a dredged material PPF and/or PSF is one aspect of the investigation.

1.4 STUDY ORGANIZATION

Section 2.0 provides background on dredging, processing, and placement, and describes a one-day agency-sponsored workshop held in 2007. Section 3.0 outlines economic considerations relating to a PPF and a PSF. Section 4.0 presents and compares three alternative scenarios (public, private, and public-private) to handling dredged material processing and storage in the Port. Section 5.0 provides background on public-private partnerships, including a summary of existing Federal authority to participate in one, and describes a range of potential public-private partnerships for the Port. Section 6.0 outlines potential Federal and state environmental permitting requirements. Section 7.0 presents conclusions. Section 8.0 lists references.

2.0 REGIONAL CONSIDERATIONS

The current dredged material processing and placement situation in the Port reflects the unique environmental and political situation of the New York City metropolitan area. During the past 15 years, in the face of significant operational challenges, dredged material processors have responded to the need for dredged material processing and upland placement (Sections 2.1 and 2.2). Temporary storage of pre-processed dredged material has not been pursued by the private sector. A dredged material processing and placement workshop, sponsored by the public sector in January 2007 and attended by representatives from a large segment of the dredged material industry, discussed the need and feasibility of temporary storage as well as public processing capacity (Section 2.3).

2.1 DREDGING AND PROCESSING

The Port of New York and New Jersey is the largest port on the eastern seaboard of North America and has immediate access to the largest rail and interstate highway network in the northeast. Metropolitan New York is one of the most concentrated and affluent consumer markets in the world, and its transportation infrastructure, of which the Port is a critical element, serves as a conduit for goods from all over the world. Materials and products passing through the Port have final destinations throughout the metropolitan area and in large portions of the northeastern and midwestern United States.

Currently, some of the Port navigation channels are too shallow to be used by the largest deep-draft vessels while loaded in an economically efficient manner. Consequently, shipping companies experience inefficiencies and increased costs because they are unable to fully load their deep-draft vessels, which could lead to offloading containers to smaller vessels to enter the Port. The District, PANYNJ, and the states of New York and New Jersey are working to lower transaction costs associated with transportation of goods by making the channels in the Port safe and efficient for the newer deep-draft vessels increasingly used by the international shipping commerce sector. The Harbor Deepening Project would result in many of the navigation channels in the Port reaching 50 feet below mean low water to accommodate the deep-draft vessels.

The deepening of several navigation channels to meet the demands of the global marketplace and provide safe shipping channels for vessels involved with interstate and international commerce will result in the production of increased volumes of maintenance dredged material in the future. Placement of the dredged materials resulting from these projects is one of the most challenging issues facing the Port. Significant quantities of material currently dredged each year from the Harbor are no longer suitable for use in the remediation of the HARS (USACE 2006a). Projections of future maintenance dredging indicate that approximately 1.55 million cubic yards (MCY) per year will require alternate placement sites (USACE 2006a).

The permitting process for the dredging of material typically places the responsibility for finding a placement site with the dredger, rather than with the processor. A dredger applies for a permit from the USACE to dredge the material, and specifies on the permit one or more potential

placement sites. For upland placement of dredged material, dredgers work with state regulatory agencies, on a site-specific basis, to determine the sediment characteristics and contaminant levels that must be met by the dredged material for it to be placed at the site. Because the placement site dictates the soil and contaminant properties of the end product, the dredger looks for a processor that can meet their end product requirements for the best cost.

Pugmill and in-barge processing are the two general types of dredged material processing currently conducted in the Port of New York and New Jersey (Table 1; USACE 2006a). Both types of processing have to contend with shifting short-term volume estimates for incoming dredged material because of weather disruptions, equipment difficulties, and uncertainty involved with in situ dredged material volume estimates. Regardless of processing type, this variable stream of incoming dredged material makes it difficult to maximize processing efficiency, because not all processing capacity is used. A greater than expected influx of dredged material can result in handling inefficiencies, while a lower than expected influx of dredged material may mean the facility doesn't benefit from certain economies of scale and operates at less than maximum cost-effectiveness. In either scenario, processing price may increase.

2.2 PLACEMENT

In ports around the country, dredged material managers rely on a variety of options for dredged material placement. The least expensive and most commonly used option is to place dredged material in open water (e.g., ocean sites, coastal areas, inland waterways). Dredged material also can be used beneficially for creating wetlands and artificial reefs and, in the case of dredged sand, for beach renourishment purposes. Aquatic and upland CDFs are commonly employed when sediment testing has revealed that dredged material contains contaminants that preclude its placement in open waters (USACE 2003). CDFs for permanent placement of dredged material are constructed so that contaminants are precluded from entering the surrounding area. Sediments that contain contaminants can also be treated with additives to immobilize the contaminants (i.e., processed), resulting in dredged material suitable for upland placement in certain situations.

About two-thirds of the material resulting from maintenance dredging in the Port of New York and New Jersey is not suitable to remediate the HARS. Unlike other regions of the country, the Port does not use containment islands and upland CDFs for permanent placement of non-HARS material. These options were not considered environmentally acceptable in the Port in the past. The Port does contain a Confined Aquatic Disposal (CAD) facility in Newark Bay, but its use is strictly controlled and it is not generally available. The construction of additional CADs for permanent dredged material storage in the Port is unlikely (USACE 2006a).

As a result of these constraints, upland placement of processed dredged material is an important option in the Port of New York and New Jersey, which has become the de facto leader in sediment stabilization technologies in the United States. For large volumes of non-HARS material, upland placement is the only currently viable option. Since the end of the 1990s, increased emphasis has been placed on using sediment stabilization techniques to process non-HARS dredged material for use in remediating upland locations, such as brownfield sites, former

sanitary landfills, and quarries (NJDOT/OMR 2003). There are many examples in the Port of processed dredged material being used in this way (NJDOT/OMR 2003; USACE 2006a).

2.3 PROCESSING AND PLACEMENT WORKSHOP

A one-day workshop was convened January 31, 2007 entitled *Dredged Material Processing and Placement Workshop: Current and Future Issues in the Port of NY/NJ* (USACE 2007a). The workshop was sponsored by the USACE, USEPA, PANYNJ, and the NJDOT/OMR for the purpose of: 1) having a dialogue with the private sector on the current and future state of dredged material processing and placement and 2) presenting current public sector ideas for cost-effectively handling future dredged material processing and placement. A broad spectrum of private sector representatives from the dredging industry attended, and the majority of them expressed interest in continuing a regular dialogue with the public sector.

At the beginning of the workshop, the District recounted how the closing of the "Mud Dump Site" and the establishment of the Historic Area Remediation Site (HARS) in 1997 changed the paradigm of dredged material management and created a strong need for alternative disposal options, especially for non-HARS material. Processed dredged material was used for reclaiming brownfield sites and other upland uses, but it became clear that a steady flow rate was important for such ventures to be profitable. Redevelopment of a brownfield site requires an ample, steady supply of dredged material in order to fill the site quickly and cost-effectively, while an ideal placement site, from the District's perspective, would accommodate sporadic dredged material inputs and be available for long-term use.

In order to overcome this continuing disconnect, the District stressed the need for shared risk and for maximizing public sector and private sector strengths. For example, public sector strengths include long-term planning and design. Private sector strengths include managing, operating, and marketing. In order to reduce the cost of dredging and placement, the public and private sectors could work together through their complementary strengths to efficiently and effectively manage dredged material in the Port. In this way, the current situation in the Port could be avoided, where due to the high cost of dredging, processing, and placing dredged material, the USACE and others are precluded from dredging the full amount of material they need to dredge on an annual basis.

The PANY/NJ then described their perspective on current and future dredging in the Port. After reviewing the types and volumes of dredged material projected to result from the 50-foot Harbor Deepening Project, it was emphasized that although the Port may have processing capacity on an annual basis for material that does not pass ocean placement criteria, the reality of the situation is that the episodic nature of dredging creates periods of low and high demand for processing capacity. From the PANY/NJ's perspectives, a surge pile (i.e., an area designed to temporarily store excess unprocessed dredged material) would ameliorate the current situation of inadequate rate capacity. As with the USACE, the PANY/NJ stated that the current cost of processing dredged material was unsustainable and that at current prices its budget simply could not cover the amount of dredging needed to be performed.

In response to the USACE's and PANY/NJ's stated need for greater predictability, and their belief that increased predictability via the identification of long-term placement sites and reliable flow rates would decrease costs, the private sector agreed that predictability of dredged material volumes and timing would assist them in their operations, but that it wouldn't necessarily reduce their costs. Other items that were listed as equally or more difficult to contend with included: environmental regulations, permitting, the cost of raw material for processing, skilled labor, the final placement of the material, and the characteristics (e.g., water content) of the dredged material.

It was estimated that predictability comprised 10% of "the problem", while the other items accounted for the other 90%. The private sector also stated that identifying a long-term placement site like the mines in Pennsylvania would significantly decrease uncertainty around the cost of placement, although the degree to which the reduction in uncertainty reduced the cost of processing and placement would be influenced by transportation costs to Pennsylvania. For a complete summary of the discussions and topics covered during the workshop, see USACE 2007a.

3.0 ECONOMIC CONSIDERATIONS

A significant challenge facing dredged material processors is the financial risk associated with the substantial capital investment necessary for the start-up and infrastructure requirements of a new processing facility. These costs are directly tied to the volume of dredged material that the facility is designed to accommodate, but future dredging volumes are difficult to predict. Although the cost effectiveness of a facility's operation is affected by the processing capacity at which it operates, there is no guarantee that the predicted future volumes of dredged material will be consistently available. To minimize the risk to their financial investment, processors account for uncertainties in dredged material rates by increasing dredged material processing and placement costs/CY. To investigate the potential role of the public sector in reducing this risk, and therefore the cost of processing and placement, an economic cost/benefit analysis of a PPF (Section 3.1) and a PSF (Section 3.2) was conducted by a subgroup of the RDT.

3.1 PUBLIC PROCESSING FACILITY

During the last decade, the RDT has considered the economic benefits of constructing a PPF to handle material unsuitable for HARS placement as an alternative to utilizing existing privately operated facilities. In order to investigate more closely the economic realities and potential cost savings of a PPF for the Port, the District and its Port partners commissioned a study to evaluate the relative costs and benefits of various combinations of PPF characteristics or attributes (USACE 2006b). The District, in conjunction with the RDT's PPF Subgroup (comprised of representatives from the USACE, NYDEC, NJDEP, NJDOT/OMR, and PANY/NJ), regularly met for more than a year to discuss input and assumptions of the economic model and guide its development.

The goal was to establish the outlines of a cost-effective facility that would meet the dredged material management needs of the Port region. However, "cost-effective" was defined as in relation to the other alternatives. All of the costs in the study were estimates developed for the purposes of comparing alternatives and conducting sensitivity analyses. The costs for capital, infrastructure, materials, labor, etc. are reasonable estimates designed for conceptual, screening-level purposes; they do not reflect a prediction of future actual costs to build and operate a facility.

At the beginning of the process, four alternatives for a PPF were developed. Using the District's 1999 Dredged Material Management Plan (DMMP) as a foundation, they evaluated the range in dredged material types and volumes that might be processed through a PPF. Conservative estimates of the annual costs to process dredged material through the facility(ies) were developed so that the ranges in cost among alternatives could be compared. These costs covered management and processing of the dredged material, starting from delivery to a PPF and ending at final placement at an upland location (or sale of the processed product). The economic model made it possible to evaluate the effects on cost of changing PPF attributes such as dredged material volumes; facility location; material types processed; transportation methods; types of processing; nature, size and cost of equipment; and predictability of dredged material supply.

Based on the projected outcomes of the four alternatives, the PPF Subgroup developed an Optimum Alternative. Formulation of the Optimum Alternative was achieved through incremental adjustments in various PPF attributes. The Subgroup analyzed the effects to cost that resulted from adjusting the attributes, continuing to modify PPF attributes until the optimal cost-to-benefit ratio was derived. The resulting Optimum Alternative was found to consist of a single PPF sized to process 1.5 million cubic yards of fine-grained silty dredged material annually. This type of non-HARS dredged material results most commonly from maintenance dredging.

The economic model also concluded that a minimum of approximately 20 acres of land would be required to accommodate the Optimum Alternative, and that the site would need direct shoreline access to the Harbor. Proximity to major highways was also a site access consideration, since the model assumed that truck transport of material from a PPF to beneficial use sites would occur in the initial years of operation. Because of the significant cost savings associated with barge transportation, however, it was assumed that barge transportation of processed dredged material would be rapidly implemented. Rail access was also an important consideration, so that upland sites inaccessible by water and distant from the Port could be considered for beneficial use of processed dredged material.

The estimate of 20 acres includes space for the eventual adaptation of the facility to process more highly contaminated sediments associated with remedial dredging projects. While a viable, cost-effective treatment process has not yet been demonstrated on a large-scale, a number of promising technologies are under development. When such a technology becomes available to process more highly contaminated dredged material into a salable product, it could be sited at a PPF. If this new technology could also process a portion of the maintenance dredging material into a salable product, overall costs for a PPF could be significantly reduced through revenue generation from the sale of the product (USACE 2006b).

3.2 PUBLIC STORAGE FACILITY

In Spring 2006, after the economic modeling study was finalized (Section 3.1), the RDT's PPF Subgroup decided to investigate the possibility of controlling processing costs by creating a steady, consistent flow rate of dredged material to processing facilities. Because the sensitivity analysis of the economic model (Section 3.1) concluded that the major factor that influenced processing costs was the need for a steady flow rate, a study was funded by the District to investigate the potential of lowering costs by creating pre-processed dredged material storage, which would act as a surge pile (USACE 2007b).

The economic model (Section 3.1) was used to evaluate the additional costs anticipated as a result of providing various amounts and types of storage. Facilities capable of storing from 250,000 to 1.5 million cubic yards (CY) of in-channel material were considered. An In-Water CDF, Nearshore CDF, Upland Pit CDF, and an Upland Bermed CDF were the types of storage facilities evaluated. Increases in cost as a result of providing storage were evaluated as an added component in an Updated Optimum PPF Model so that the relative cost of each storage facility and volume, with various scenarios, could be evaluated and compared (USACE 2007b).

As discussed above (Section 3.1) in relation to a PPF, the goal for the PSF modeling was to establish the outlines of a cost-effective storage facility for different sizes and types of storage facilities, not to generate costs that reflect a prediction of future actual costs to build and operate a facility. As with the economic modeling for a PPF, all of the costs in the storage modeling study were estimates developed for the purposes of comparing alternatives and conducting sensitivity analyses, so that costs for capital, infrastructure, materials, labor, etc. are reasonable estimates designed for conceptual, screening-level purposes only.

The economic modeling analysis conducted on storage options assumed PPF managers would be able to control the flow of dredged material so that material would go directly from the dredging site to the processing facility(ies) when and where processing capacity was available. Material would only go to the storage facility when dredging rates exceeded overall available processing capacity.

Similarly, removal or mining of material from the storage facility would not occur if dredging were meeting the needs of the processing facility(ies). Mining from storage would only take place when there was no dredging underway or when dredging rates were lower than available processing capacity. Unlike dredging, there would be no periods when removal of material from storage would be prohibited. Consequently, dredged material processing and placement could be year round operations.

Dredged material would be delivered to the storage facility or processing facility(ies) in PPF supplied scows by the dredging firms. Storage operations or processing operations would take control of the loaded scow and provide the dredger with an empty scow to take back to the dredging site. Scows would be offloaded as required into the storage facility by the storage operation. When material from storage was needed by the processing facility(ies), storage operations would mine the stored dredged material, place it into PPF scows, and deliver it to the processing facility.

Adding temporary storage for pre-processed dredged material increased overall PPF modeled costs from 6% to 24%. In terms of the cost per in channel cubic yard of material processed annually through an Updated Optimum Alternative PSF (i.e., an optimum alternative for each of the four storage types), the increase ranged from $3.36 to $13.00 per cubic yard more than the base cost without storage, with the Updated Optimum Alternative, Upland Pit CDF for 500,000 CY, creating the smallest increase in cost. Space requirements for the various storage facilities ranged from as little as 8 additional acres of space to almost 120 acres.

Cost components within the model – such as percent profit, recovery of capital costs, long-term contracted costs for processing materials, long-term maintenance costs, and general management and administrative costs – could potentially be reduced if storage facilities reduced risks to dredgers, processors and placement operators, thereby ensuring long-term operations and allowing predictable material management. The resulting reductions in these costs components would reduce overall costs to process material through the Updated Optimum PPF, including the storage facility. Modeling suggests the cost reduction could be as much as 20% to 30% below the base costs of the Updated Optimum PPF Model. If a 20% to 30% reduction in costs could be

achieved by adding one of the lower cost storage options, then the storage facility would contribute to lower overall cost.

In addition to the cost savings that could be realized by stabilizing supply, a public storage facility would allow dredgers to conduct dredging operations independent of processing capacity. Similarly, processors could conduct processing operations independent of the standard eight-month dredging season. This flexibility would increase the ability of both parties to operate at their maximum efficiency.

As envisioned by the PPF Subgroup, existing processors would be given the first opportunity to handle and process dredged material, and the storage facility would be used for material that exceeded the processors' capacity. Material processed immediately would have a different, lower tipping fee than material that went into temporary storage. An advantage to private sector processors would be a guaranteed minimum amount of material per year (depending on contracts) that could be processed as quickly as possible, regardless of dredging schedules.

4.0 STRATEGIC CONSIDERATIONS

As a first step in envisioning how a PPF and/or PSF would be carried forward from design and permitting to construction and operation, the PPF Subgroup divided the range of ownership and management options for a dredged material PPF and PSF into three scenarios: public (Federal and non-Federal), private, and public-private partnership. For the purpose of comparing these scenarios, it was assumed that public participation could involve the USACE, the PANYNJ, and the states of New York and New Jersey; private participation would be the purview of private enterprises with expertise and experience in the processing of dredged material; and, a public-private partnership would be a combination of one or more of the public entities (Federal and non-Federal) listed above and a private company(ies).

As a starting point in the evaluation process, and as a foundation from which to adequately assess strategic ownership and management scenarios, it is important to briefly describe the alternative scenarios (Section 4.1). This requires a summary of the defining characteristics of the public sector and private sector, from the context of their participation in the operation of a PPF and/or PSF (Sections 4.1.1 and 4.1.2). A brief description follows of the basic attributes of public-private partnerships that are important in defining their potential role in the operation of a PPF and PSF (Section 4.1.3). Alternative scenarios are compared, with particular attention paid to financing and solvency issues (Section 4.2). A rationale for using a public-private partnership to operate a processing or storage facility in the Port of New York and New Jersey is then presented (Section 4.3).

4.1 ALTERNATIVE SCENARIOS

4.1.1 Public Sector

Characteristics of the public sector that support its role in the operation of a PPF and/or PSF include legal authority to proceed with activities that have far-reaching social consequences; established contracting and procurement policies and staff; and clear administrative procedures. The public sector also has the mandate and access to resources to pursue far-reaching policies with long-term, widespread impacts to meet the dual goals of providing for recognized public needs and protecting public health and the environment. In addition, the public sector can generate funds through tax revenues (HDR 2005).

A characteristic of the public sector that could constrain its role in the operation of a PPF and/or PSF is that it may not always be able to respond quickly to new situations or technologies. The public sector's established procedures can also become a detriment if innovation is hampered and potential efficiencies (managerial and technical) are not realized. Likewise, public employees may be constrained by bureaucratic procedures. The public sector has tremendous resources at its disposal, but it is sometimes criticized for under-utilizing them (HDR 2005).

4.1.2 Private Sector

A characteristic of the private sector that supports its role in the operation of a PPF and/or PSF is the capacity to satisfy (and, at times, even to create) consumer needs via the production of goods and services in a progressively more efficient fashion. These management and production efficiencies result from the timely, decisive adoption of innovative systems and technologies. Such strengths are generally attributed to the effect of market competition and the motivation to maximize profits/shareholder value. Surviving and thriving in a competitive environment has increasingly required, among other things, an emphasis on personnel development and an awareness of emerging industry ideas and trends. To bid on new work and secure new contracts, private sector enterprises have to continually demonstrate knowledge of new techniques, both managerial and technical. Especially in large companies in complex fields, this expertise extends to cash flow management and contracting (Norment 2005).

A characteristic of the private sector that limits its role in the operation of a PPF and/or PSF is referred to as "market failure". Market failure occurs when private sector markets over-produce goods responsible for imposing social costs, and when they under-produce (or don't produce at all) goods generating social benefits. In the case of the "goods with social benefits" scenario, the social benefits generated by certain goods tend to be widely dispersed, in such a way that it is difficult or impossible for any private firm to charge and collect from everyone deriving benefits from its product. Under such conditions, a presumably profit-driven enterprise would, in effect, be giving away much of its product. Consequently, such goods are not produced in socially optimal quantities, if at all, by private sector entities. Overall, market failure describes a condition where the allocation of goods and services by a market is not efficient.

4.1.3 Public-Private Partnerships

A public-private partnership is a contractual agreement between a public sector entity and a private sector entity for the provision of a recognized vital good or service in at least one of the following functional areas: planning, construction, operation, ownership, or financing (Brusewitz 2005). Historically, partnerships between public agencies and private companies have been used frequently in the United States to, among other reasons, ensure the continuing availability of certain vital services that generate significant social benefits. As described in Section 4.1.2, such services are unlikely to be provided in acceptable quantities, if at all, by the private sector. The "goods with social benefits" scenario is regarded as an acceptable justification for public sector intervention in private markets.

In public-private partnerships, the public sector entity absorbs a share of what might be a significant level of risk, and assumes a portion of what might otherwise be a prohibitive initial capital investment for a private firm (HDR 2005). For its part, the private sector presumably brings to the arrangement the production and managerial efficiencies that are commonly associated with the private sector. In general, public-private partnerships are designed to maximize the perceived strengths of each partner (Sections 4.1.1 and 4.1.2).

A commonly perceived strength of public-private partnerships is their ability to provide high-quality public services cost-effectively. This requires efficient planning and construction, so that

project development (e.g., permitting and environmental compliance activities) and project implementation are on-time and within-budget. Public-private partnerships are often used as a mechanism to reduce both public capital expenditure and risk borne by private sector enterprises. Depending on the type of public-private partnership, along with the shared risk comes the potential for shared financial gain (Seader 2002).

Commonly perceived limitations of public-private partnerships include the prospect of layoffs for public sector employees, and at least the appearance that such ventures are less accountable to the public than governments themselves. Similarly, there is the concern that a government may lose control over the provision of a service if a public-private partnership is formed to provide it. Along with the fear of a potential lack of public control comes the related concern that public-private partnerships will increase their profitability by increasing the cost of the public service to consumers. However, these and other concerns have been addressed in the literature (e.g., HDR 2005). There is no evidence that the inherent structure of public-private partnerships causes personnel layoffs, reduces accountability to the public, or provides inadequate or more costly services.

There are certain characteristics that define successful public-private partnerships (Section 5.1), and underlying them all is the importance of strong leadership among the key players. Research has shown that the most important aspect of strong leadership in the public sector is effective monitoring and oversight of the operations involved in the delivery of the public service. Strong leadership was found to be the most important factor in ensuring high quality, cost-effective public services (HDR 2005). Specifically, leadership and cooperation among public and private partners means: clear accountability for results, clear and comprehensive criteria for performance specified in contracts, and clear public objectives.

4.2 COMPARISON OF ALTERNATIVE SCENARIOS

4.2.1 Financing

A primary challenge in the pre-construction phase for a project as large, complex, and expensive as that of developing a dredged material PPF and/or PSF is securing the necessary funds upfront to undertake the wide range of necessary pre-construction activities. These activities include project components such as design, permitting, and property acquisition. In particular, the expense of property acquisition in the Harbor area could be very high. Environmental compliance and permitting activities (Section 6.0) could also be significant (note: economic modeling (Sections 3.1 and 3.2) did not include property costs or environmental compliance and permitting costs) Capital and infrastructure costs (e.g., costs related to providing a scow fleet, portside infrastructure facilities, and truck transportation) for both processing and storage alternatives could be on the order of tens of millions of dollars. Costs developed for the economic modeling studies [Section 3.1 (USACE 2006b) and Section 3.2 (USACE 2007b)] were developed at a screening level for comparison among alternatives, not as actual, predicted costs.

In a venture exclusively financed by the public sector, public sector funding of capital and infrastructure costs could be secured via Congressional appropriation to the USACE or a decision by the PANYNJ's Board of Commissioners to use facility toll and fee revenue. As a bi-

state agency operated pursuant to an interstate compact, the PANYNJ has no power to tax and does not receive tax money from any local or state governments. Instead, it operates on the revenues it generates from rents, tolls, fees, and facilities. The public sector usually has several fund raising options. In addition to direct appropriations, state and local governments can issue revenue or general obligation bonds, levy fees, and raise taxes (Smith 2004). Currently, the State of New Jersey has $26 million set aside from the Dredging and Harbor Revitalization Bond Act of 1996 for the planning and development of dredged material processing and storage facilities in the state (Section 13, Public Law 1997, Code 97, as referenced in Section 18, Public Law 1996, Code 70, Facilities for Dredged Material Management).

In a venture exclusively financed by the private sector, private sector funding of capital and infrastructure costs would be secured through attracting private investment. Details on potential private sector financing arrangements can be found elsewhere (e.g., Oakley et al. 1998; Feldman 2004), but the experience of some privately owned dredged material processing and upland placement sites in the Port indicates that developers use tipping fees on incoming dredged material as a revenue source, with the goal of redeveloping a piece of property as quickly as possible to recoup their large upfront investment. In this situation, a steady supply of dredged material is crucial for maintaining a positive cash flow. However dredged material supplies are often variable due to shifting dredging schedules and uncertain in situ estimates. An argument can be made that the significant economic risks render conditions in the Port not conducive to attracting competition among private companies in the business of handling dredged material (Tavolaro 2002).

In a venture financed by both the public and private sector, the mechanisms described above could be employed by each partner (i.e., a public-private partnership wouldn't generate required funds as a single entity). By the means available to each partner, public-private partnerships could raise funding for capital and infrastructure costs by both tapping into government funding sources and seeking to attract outside investors by means of a variety of financing instruments (Norment 2005). However, some case-studies have demonstrated that public-private partnerships create an effective way to take advantage of attractive financial instruments and conditions, including tax-exempt debt financing (Schiller 2004).

4.2.2 Solvency

In light of high start-up costs to plan, design, and construct a new facility, a risk characterizing all three scenarios is that the eventual operation of a dredged material PPF and/or PSF would not prove economically viable. This could occur, for example, if projected dredged material volumes were not realized, so that projected revenue generation levels were not reached and the facility operated at a loss. In the case of a public or public-private partnership, because of the government's greater ability to absorb risk, the facility could continue to operate at a loss if the economic importance of maintaining the shipping channels and the political will behind continuing to process dredged material were strong enough. This would create a short-term government subsidy of a public good (i.e., maintained navigation channels), and potentially a long-term exclusive Federal provision, if the social benefits justified sustained government intervention.

Operating continuously at a loss even if it were diversified into other profitable lines of business is impossible for a private firm (because of the very nature of a public good or service). The likely ability of a government or a public-private partnership to continue operations during short or long periods of economic uncertainty and loss virtually guarantees that the critical service of dredging and processing non-HARS dredged material for upland placement would not be disrupted.

Unless a PPP arrangement was made with an existing processing facility(ies), so as to reduce the necessary capital investment, the large start-up costs associated with constructing a PPF and/or PSF in the Port must be recouped during the facility's operation. Since the attributes of the Optimum Alternative (Section 3.1) and any of the four Updated Optimum Alternatives (Section 3.2) are independent of whether a public sector, private sector, or public-private partnership undertakes the effort, the actual risk associated with different annual volumes of dredged material is the same for all three scenarios; however, the way in which that risk is apportioned is different.

In both the public sector and private sector scenarios, the ultimate financial responsibility is straightforward – it rests exclusively with the public or private entity. In public-private partnerships, regardless of the specific arrangement, a key element of the partnership is risk tolerance. For any public-private partnership to be successful, the partners must agree upon a satisfactory level and distribution of risk. As part of the contractual agreement, the partners specify their roles and responsibilities and describe the apportionment of risk in different project phases. The range of public-private partnerships available differs in the details of risk allocation and in the corresponding potential for return. Potential public-private partnership arrangements are discussed in more detail in Section 5.0. Since the details of risk apportionment are often complicated, legal experts are usually hired to develop and document the details of the relationship between the public and private parties (HDR 2005).

4.3 APPLICATION IN THE PORT

Although it is difficult to assign a value to reliability, the potential costs to the Port of a situation in which processing capacity could not meet demand are substantial. During Subgroup meetings in the 2003–2006 timeframe, there was a consensus that relying exclusively on the private sector for developing non-HARS processing facilities in the Harbor would be overly risky and would not serve the best interests of the Port. If the processing of dredged material were exclusively in the hands of the private sector and processing capacity could not match dredged material volumes, then planned maintenance dredging activities could be negatively affected. Depending on the duration and intensity of the decrease in processing capacity, a backlog of dredging could occur. This could potentially increase the cost of the dredging since the demand for the limited amount of equipment and companies able to perform the dredging work would be high.

Public-private partnerships provide a vehicle to harness the efficiency and expertise of the private sector while managing the financial risk to acceptable levels via public sector participation. And since there is a range of different types of public-private partnerships, with varying amounts of public involvement in different phases of project development (Section 5.3),

the Port stakeholders could develop a partnership that maintains a strong public role in certain areas of interest.

For example, currently, the public sector isn't usually aware of potential dredged material placement sites until the permitting process. A PPF and/or PSF developed by a public-private partnership could increase the public sector's involvement in the identification and planning of suitable placement sites. This increased emphasis on the final placement of processed dredged material could encourage long-range planning and strengthen dredged material management in the Port.

In addition, dredging could become economically feasible for small quantity generators that currently cannot afford to conduct necessary dredging. Depending on the level of political will and the urgency of the need, a public-private partnership could establish a policy to attract small quantity dredgers by establishing a "tiered" payment structure that would charge small quantity operators less.

5.0 PUBLIC-PRIVATE PARTNERSHIPS

Section 5.1 provides background on the evolution of public-private partnerships (PPPs) in the United States and characteristics that define successful PPPs. Section 5.2 describes the authority the USACE has for operating a dredged material PPF and/or PSF using a public-private partnership. Section 5.3 summarizes definitions of different types of PPPs that could be implemented for the realization of a PPF and/or PSF for the Port of New York and New Jersey.

5.1 BACKGROUND

The development and use of PPPs in the United States was accelerated in the 1980's and 1990's. One underlying cause for the increase was the widespread need to increase certain public services, and PPPs were seen as one way to efficiently provide these services without large tax increases. Today there are numerous types of public-private partnerships in use, with a wide range of levels of participation between the two sectors.

Regardless of the specific PPP, there are several key elements necessary for any PPP to be successful. First, the public partner must have the authority to undertake the public service, as well as the legal authorization to enter into a contractual agreement with a private entity. The public need the public partner has identified must be acute and reasonably expected to continue into the future. Since future revenues and benefits derived from the provision of the product or service are generally used to justify the initial investment, it is critical that the identified need extend well into the future.

Second, the private partner must possess both experience in all the necessary functional areas, and the expertise to complete the project. Often the private partner will actually be a partnership among companies that have combined their individual expertise to meet the multiple, diverse requirements of the project. The legal form of the "team" can vary (e.g., special purpose corporation, joint venture). In order to put together the best team of experts with the appropriate skill sets, the scope of the project should be well-defined.

Third, it is imperative that both the public and private partner agree on the details of the project's implementation and execution, including agreements related to potential costs and revenue associated with producing the product or service (Smith 2004). The actual contractual agreement between the public and private partners is often highly complex. Numerous documents are usually required as components of the partnership agreement, particularly if private investment is involved. The legal requirements involved in developing and brokering a partnership agreement are significant, and it is common for lawyers specializing in the field of public-private partnerships to be involved. A PPP contract is much more complicated than a standard design and construction agreement (Smith 2004).

5.2 FEDERAL AUTHORITY

In order to initiate a study to investigate an issue and determine whether there is a Federal interest in proceeding further, the USACE must receive Congressional authorization to conduct

the study. If the USACE has performed a study in the geographic area of interest before, a new study can be authorized by a resolution of either the House Transportation and Infrastructure Committee or the Senate Environment and Public Works Committee. If the USACE has not previously investigated the area, the study must be authorized by an act of Congress, typically a Water Resources Development Act (WRDA).

The District is authorized to conduct navigation studies, implement navigation improvement projects (e.g., deepen or expand existing channels), and maintain these projects (e.g., maintenance dredging) in the Port. Authorization for these navigation-related activities includes *managing* the resulting dredged material. The most recent authority supporting study of possible navigation improvements in the Port of New York and New Jersey is Section 435 of WRDA 1996 (P.L. 104-303). The most recent authority supporting the implementation of these navigation improvements in the Port is Section 101(a)(2) of WRDA 2000 (P.L. 106-541).

In terms of authority specifically related to the processing and temporary storage of pre-processed dredged material, WRDA 2005 (which did *not* become law) would have given the USACE the authority to acquire, design, construct, manage, and operate a dredged material processing facility, and to use it for treatment, contaminant reduction, and disposal of dredged material. Although specific language regarding processing, treatment, and contaminant reduction is not contained in previous WRDAs or Congressional resolutions, in conjunction with its navigation improvement and maintenance responsibilities, the USACE has extensive experience with the design, construction, and operation of long-term dredged material storage facilities (e.g., Section 201 of WRDA 1996; Section 101 of WRDA 1986).

Section 207 of WRDA 1996 authorizes the USACE to select a disposal method that is not the least-cost option if the incremental costs of the disposal method are "reasonable in relation to the environmental benefits". In combination with its authority to operate dredged material disposal facilities, the authority granted to the USACE to use dredged material in beneficial use applications (even if those applications are not the least-cost alternative) is evidence that the intent of Congress is to allow the USACE to process dredged material as necessary in order to use the material for an environmentally beneficial application.

Section 217 of WRDA 1996 gave the USACE the authority to enter into public-private partnerships to acquire, design, construct, manage or operate dredged material disposal facilities in connection with the construction and maintenance of Federal navigation projects. The text specifically states that such a facility could be used "to demonstrate potential beneficial uses of dredged material".

5.3 POTENTIAL PUBLIC-PRIVATE PARTNERSHIPS

An examination of the current uses and structures of PPPs in the United States identified twelve types of PPPs that could be used in the Port to implement the planning, design, construction, and operation and maintenance of a dredged material PPF and/or PSF. Although there is no standard model of a public-private partnership, there are general types, and within those types each PPP is tailored to the specific needs and parameters of the project. Other varieties of public-private partnerships exist, but only the PPPs that could be applied to the development of a PPF and/or

PSF are discussed below. The basic structure of each type of public-private partnership is briefly discussed, and Table 2 provides a matrix of characteristics defining the various types of PPPs.

5.3.1 Turnkey

A public sector entity contracts with a private partner to design and build a facility in accordance with designated design criteria and performance standards. The private developer commits to building a facility for a specified cost and absorbs any additional costs (Government Accounting Office [GAO] 1999). The public partner provides financing and manages all daily operations. Ownership is retained throughout by the public partner (Seader 2002).

5.3.2 Build-Operate-Transfer (BOT)

A private partner builds a facility to the specifications of a public partner. The private partner retains ownership and operates the facility for a mutually agreed upon time based on a contract or franchise agreement, and then transfers ownership of the public service facility to the public partner, typically at no cost to the public partner (GAO 1999, Seader 2002).

The private partner usually provides all of the funds to build, operate, and maintain the facility for the length of the contract (Seader 2002). As such, the term of the contract/franchise agreement must be long enough to allow the private partner to earn a reasonable return on its investment. When the contract/franchise agreement comes to term, the public partner must either take over operations or offer a new contract/franchise agreement to the existing private partner or a new one (GAO 1999).

5.3.3 Build-Transfer-Operate (BTO)

The BTO model is similar to the BOT model, except that the transfer to the public owner takes place at the time that construction is completed, rather than at the end of the franchise period (GAO 1999, Seader 2002).

5.3.4 Build-Own-Operate (BOO)

A private partner is contracted to construct and operate a facility for use by a public partner. The private partner is not required to transfer ownership to the public partner, and it is never obligated to take title to the facility or purchase it. The private sector partner provides all financing for the facility (GAO 1999, British Columbia Ministry of Municipal Affairs 1999, Seader 2002).

5.3.5 Design-Build (DB)

A private partner is contracted by the public sector to design and build a facility for a public partner, combining the architectural/design and construction services into a single, fixed-fee contract. The public partner provides financing, retains ownership, and is responsible for operating and maintaining the facility (GAO 1999; U.S. Department of Transportation, Federal Highway Administration [USDOT FHWA] 2006).

5.3.6 Design-Build-Maintain (DBM)

A private partner is contracted by the public sector to design and build a facility for a public partner, combining the architectural/design and construction services into a single, fixed-fee contract. In addition, the private partner provides maintenance of the facility for a period of time agreed upon with the public partner. The public partner is responsible for permanent financing and operations. Ownership of the facility is retained by the public partner (GAO 1999).

5.3.7 Design-Build-Operate (DBO)

A single contract is awarded to a private entity to design and build a facility for a public partner, and then to operate the facility for a specified period of time. Title remains with the public partner, which provides long-term financing (GAO 1999, Seader 2002).

5.3.8 Lease/Purchase

A public partner contracts a private partner to finance and build a facility for a public service. The private partner then leases that facility to the public partner for a predetermined period of time. The public partner acquires equity and at the end of the lease term the public partner owns the facility or purchases it for any remaining balance from the private partner (GAO 1999). The private or public partner may operate the facility during the lease term.

5.3.9 Contract Services

Contract services are for sites with pre-existing facilities. There are two forms of contract services PPPs: Operations and Maintenance, and, Operations, Maintenance, and Management. In an Operations and Maintenance contract services PPP, a public partner contracts with a private partner to operate and maintain a facility providing a public service. In an Operations, Maintenance, and Management contract services PPP, a public partner contracts with a private partner to operate, maintain, and manage a facility providing a public service (GAO 1999). In both forms of contract services PPPs, ownership of the facility, as well as overall financial responsibility, remains with the public partner (GAO 1999, Seader 2002).

5.3.10 Lease-Develop-Operate (LDO) or Buy-Develop-Operate (BDO)

LDO and BDO are for sites with pre-existing facilities. A private partner leases or buys a facility from a public partner. The private partner invests capital in the facility, often for the purposes of renovation and/or expansion, and then operates the facility for a specified period of time under a contract with the public partner. In this way, the private partner has an opportunity to recover invested funds and obtain a return on its investment (GAO 1999, British Columbia Ministry of Municipal Affairs 1999).

5.3.11 Sale/Leaseback

Sale/Leaseback is for sites with pre-existing facilities. A public owner sells a facility to a private entity (or vice versa) and then leases it back from the new owner (GAO 1999).

Table 2. Matrix of Defining Characteristics Among Public Private Partnerships Appropriate for the Realization of a Public Processing and/or Storage Facility.

Type of PPP	Project Type	Contract Term	Applicable Phases					Ownership by Phase (if specified)					Financial Provider by Phase[1] (if specified)					Final Owner
			Design	Construction	Operation	Maintenance	Management	Design	Construction	Operation	Maintenance	Management	Design	Construction	Operation	Maintenance	Management	
Turnkey	New	Fixed-Fee[2]	X	X	X	X	X	Public	Public	Public	Public	Public	Public	Public	Public	Public	Public	Public
Build-Operate-Transfer	New	Specified		X	X				Private	Private				Private	Private[3]			Public
Build-Transfer-Operate	New	Specified		X	X				Private	Public			Private	Private	Private[3]			Public
Build-Own-Operate	New	Indefinite		X	X				Private	Private				Private	Private			Private
Design-Build	New	Fixed-Fee[2]	X	X	X	X		Public	Public	Public	Public		Public[4]	Public	Public	Public		Public
Design-Build-Maintain	New	Fixed-Fee/ Specified[5]	X	X		X		Public	Public	Public	Public		Public[4]	Public		Private[6]		Public
Design-Build-Operate	New	Fixed-Fee/ Specified[5]	X	X	X			Public	Public	Public	Public		Public	Public	Public			Public
Lease-Purchase	New	Specified		X	X				Private	Private				Private	Private or Public[7]			Public
Contract Services																		
Operations and Maintenance	Existing	Specified			X	X				Public	Public				Public	Public		Public
Operations, Maintenance, and Management	Existing	Specified			X	X	X			Public	Public	Public			Public	Public	Public	Public
Lease-Develop-Operate or Buy-Develop-Operate	Existing	Specified		X	X				Private/ Public[8]	Private/ Public[8]				Private	Private[3]			Private/ Public[8]
Sales-Leaseback	Existing	Specified				X				Either[9]					Either[9]			Either[9]

Notes:

1 The entity providing the funding; it may or may not be the one actually performing the work.
2 A fixed-fee contract to provide a service. Each fixed-fee contract will specify its own timeframe for the completion of services.
3 Financial responsibility inferred, not explicitly stated.
4 A private partner designs and builds a facility for a public partner for a fixed-fee; any costs assumed by the private partner are its responsibility.
5 Fixed-fee for the design and construction of a facility, in addition to a contract to maintain or operate it for a specified contract term.
6 Financial responsibility is borne by the private partner for a specified period of time.
7 Either partner is able to operate the facility. Although not specified, it is inferred that financial responsibility for the operation phase will belong to the partner operating the facility.
8 If the PPP is a LDO, the public partner retains ownership. If the PPP is a BDO, the private partner is the owner.
9 Ownership will depend on which partner sells the facility and which partner leases the facility. For example, if the public partner sells the facility and then leases it back, the private partner is the owner.
10 Dependent upon who is the lessee and the lessor.

6.0 ENVIRONMENTAL PERMITTING

Federal and state environmental permits and approvals would be required for the construction and operation of a dredged material PPF and/or PSF in the Port of New York and New Jersey. Due to the nature of either type of facility, it is anticipated that the public would both scrutinize environmental compliance documents and seek a high level of involvement in the planning process. State permitting requirements would depend on the state the facility is located in, and different state permits would apply. Table 3 identifies potential environmental permits that would be required to construct and operate a PPF and/or PSF in either New York or New Jersey. The exact permits required for the facility will depend on the final site location, facility design, and treatment processes, among other things. Both New York and New Jersey coordinate their permitting processes with Federal agencies.

6.1 FEDERAL REQUIREMENTS

Implementation of a PPF and/or PSF via the public sector or a public-private partnership scenario would entail a certain level of funding from the Federal government, and, as such, the PPF and/or PSF would require review under the 1969 National Environmental Policy Act (NEPA). NEPA requires Federal agencies that fund, support, permit, or implement major programs and activities to take into consideration in the decision-making process the environmental consequences of proposed actions (42 USC 4321 *et seq.*). Accordingly, an environmental assessment (EA) or an environmental impact statement (EIS) would be required to evaluate alternatives, identify potential impacts to the human and natural environmental, and develop mitigation strategies. As part of this process, the applicant would be required to initiate coordination with the U.S. Fish and Wildlife Service (USFWS), the USACE, and other Federal and state agencies to minimize adverse impacts to ecological resources.

6.2 NEW YORK STATE PERMITS AND APPROVALS

The NYSDEC manages the New York State environmental permit review process under the Uniform Procedures Act (UPA) to protect New York's air, water, mineral and biological resources. Under the UPA, the NYSDEC reviews and grants permit applications, provides information concerning particular applications and opportunities to review and comment on EIS or other permit support documentation, and participates in hearings concerning permit applications. New York State implements a coordinated environmental regulatory review between the USACE and the NYSDEC with the Joint Application for Permit (JAP) process. Using the JAP, an applicant has the opportunity to apply for several environmental permits using one simple form.

In New York, several environmental approvals would likely be required for construction of a PPF and/or PSF. These approvals include state-level endangered and threatened species consultation, State Historic Preservation Office (SHPO) approval, and a Coastal Zone Consistency Determination.

In addition to permit review and environmental approvals, the NYSDEC is responsible for the implementation of the State Environmental Quality Review Act (SEQR). New York's SEQR requires that all state and local government agencies consider equally environmental impacts and social and economic factors for all actions that they have the discretion to approve, fund, or directly undertake. During the SEQR process, all potential environmental impacts are identified and evaluated for significance. In the event that potential significant adverse environmental impacts are identified, an EIS would be required to identify all reasonable alternatives and ways to avoid or minimize these impacts.

6.3 NEW JERSEY PERMITS AND APPROVALS

The NJDEP, Office of Permit Coordination and Environmental Review, is responsible for implementation of New Jersey's ONE STOP Process, a total facility approach for coordinated permitting and compliance assistance. ONE STOP is designed to streamline the environmental permitting process by providing a single point of entry to the state environmental permitting process and development of a project team comprised of permitting, compliance, and enforcement staff.

In addition, the Office of Permit Coordination and Environmental Review coordinates NJDEP review of EAs and EISs required by NEPA and/or New Jersey Executive Order No. 215 of 1989 (EO 215). Provisions in EO 219 require submission of an EA or EIS to the NJDEP for projects with the potential for adverse environmental impacts and that are initiated or funded by departments, agencies, and authorities of the State of New Jersey. The objective of the order is to reduce or eliminate potential adverse environmental impacts of projects initiated or funded by the state.

The NJDEP has developed a number of permitting programs designed to protect New Jersey's natural resources. One of the primary natural resource regulatory entities is the Land Use Regulation Program (LURP), which manages freshwater wetlands, stream encroachment/ floodplains, tidelands, and coastal zone permitting. Air and water quality permitting programs are administered by the Environmental Regulation Unit.

Environmental approvals, including rare species protection and historic preservation, would be required by several New Jersey agencies prior to construction of a PPF and/or PSF. For instance, the New Jersey Natural Heritage Program (NJNHP) and Endangered and Nongame Species Programs (ENSP) would have to consider known occurrences of New Jersey-listed plants and animals. Coordination with the New Jersey Historic Preservation Office (HPO) would be required to identify any potential historic resources that may be affected by construction and operation of a PPF and/or PSF.

Table 2. State Natural Resource Protection Permits and Approvals Potentially Required for Realization of a Public Processing or Storage Facility.

Natural Resource	Permit/Approval	
	New York	**New Jersey**
Air	State Facility Permit *6 NYCRR 201* Title V Permit *6 NYCRR 201*	Preconstruction Permit (minor facility) *N.J.S.A. 26:2C, N.J.A.C. 7:27-8* Operating Certificate (minor facility) *N.J.S.A. 26:2C, N.J.A.C. 7:27-8* Small Emitter General Air Permit (SEGAP) *N.J.S.A. 26:2C, N.J.A.C. 7:27-22* Operating Permit/Part 70 Permit (major facility) *N.J.S.A. 26:2C, N.J.A.C. 7:27-22*
Stream/ Floodplain	Stream Disturbance (Bed and Banks) *6 NYCRR 608*	Stream Encroachment Permit *N.J.S.A. 58:10A, N.J.A.C. 7:13*
Water Quality	401 Water Quality Certification (JAP)	Water Quality Certificate under Section 401 of Clean Water Act *N.J.S.A. 58:10A, N.J.A.C 7:9B*
Pollutant Discharge Elimination System	SPDES General Permit for Storm Water Discharges Associated with Construction Activities *6 NYCRR 750* SPDES General Permit for Storm Water Discharges Associated with Industrial Activity except Construction Activity	NJPDES Permit *N.J.S.A. 58:10A, N.J.A.C. 7:8*

Table 3. State Natural Resource Protection Permits and Approvals Potentially Required for Realization of a Public Processing or Storage Facility (continued).

Erosion and Sediment Control	General Permit for Construction Activities *6 NYCRR 700* SPDES Permit *6 NYCRR 750* Coastal Erosion Control	NJ Soil Erosion and Sediment Control Act *N.J.S.A. 4:24-39, N.J.A.C. 7:8*
Freshwater Wetland	Freshwater Wetlands/Section 404 Waters of the United States Joint Application for Permit (JAP) *6 NYCRR 665*	Individual Freshwater Wetlands Permit Individual Open Water Fill Permit Letter of Interpretation *N.J.S.A. 13:9B, N.J.A.C. 7:7A*
Tidal Wetland/ Coastal Zone	Tidal Wetlands (JAP) *6 NYCRR 661* Navigable Waters (Excavation and Fill) (JAP) Docks, Moorings, or Platforms (Construct or Place) (JAP)	Waterfront Development Permit *N.J.S.A 12:5-3, N.J.A.C. 7:7* Coastal Wetlands Permit *N.J.S.A 13:9A-1, N.J.A.C. 7:7* CAFRA Individual Permit *(Coastal Area Facility Review Act actions south of Cheesequake Creek)* *N.J.S.A 13:19-1, N.J.A.C. 7:7* Tidelands Lease *N.J.S.A 12:3, N.J.A.C. 7:7* Coastal Zone Consistency Determination *16 U.S.C. 1451, N.J.A.C. 7:7C*

Table 3. State Natural Resource Protection Permits and Approvals Potentially Required for Realization of a Public Processing or Storage Facility (continued).

State Endangered Species	NY Endangered Species/NY Natural Heritage Program Coordination	NJ Endangered Plants List NJ Endangered Nongame Species Program
Historic Places	NYS SHPO	NJ SHPO *N.J.S.A. 13:1B, N.J.A.C. 7:4*
Solid and Hazardous Waste	*NYS considers dredged material a solid waste unless it is material dredged as part of a freshwater wetlands permit, tidal wetlands permit, Section 401 Water Quality Certificate, or Coastal Erosion Hazard Area.* *6 NYCRR 360-1.2(a)(4)(ix)* *An individual Beneficial Use Determination (BUD) would be required to utilize the material following processing.* *6 NYCRR 360-1.15*	*No clear permits identified; however, the facility may require a permit if it generates hazardous waste* *N.J.S.A. 13:1E-1*
State-level Environmental Impact Assessment	State Environmental Quality Review (SEQR) *6 NYCRR 617*	Environmental Assessment *Executive Order 215 of 1989*
Section 404 Waters of the United States	USACE/NYSDEC Joint Application for Permit	ENG Form 4345 Application for Department of the Army Permit
Section 10 Rivers and Harbors Act	USACE/NYSDEC Joint Application for Permit	ENG Form 4345 Application for Department of the Army Permit
Section 307 Coastal Zone Management Act	Federal Consistency Assessment Form	New Jersey Coastal Zone Form
Federally-listed Endangered Species	USFWS New York Field Office Coordination	USFWS New Jersey Field Office Coordination
Section 106 National Historic Preservation Act	NYSHPO Coordination	NJ SHPO Coordination

7.0 CONCLUSIONS

The risks and challenges faced by private dredged material processors directly contribute to high processing costs and uncertain revenues. It is a consensus of the PPF Subgroup that dredged material processing could become less costly if the public sector became more involved in managing the uncertainty surrounding dredged material supply and placement, and shared the financial risk associated with facilities and operations. The District and its Port partners are committed to working with private dredged material processors to explore potential solutions for future dredging and processing needs in the Harbor. The interest in developing a PPF and/or PSF stems from the need for increased cost-effective processing and storage options, not from an implicit or explicit desire to replace existing private processors with a publicly operated facility.

Many opportunities exist via public-private partnerships for the public sector to become involved in the design, construction, operation, management, and operation and maintenance of a PPF and/or PSF for non-HARS dredged material. The value of a public-private partnership is in its ability to capitalize on the strengths of both the public and private sectors. A Harbor-wide processing and/or storage facility developed via a public-private partnership could help to reduce costs for stabilization and transportation by reducing the uncertainty associated with processed dredged material volumes and placement. The economic modeling overseen by the Subgroup has provided the public sector with the information it needs to proactively evaluate its role in dredged material processing and storage. With increased understanding of the economics of processing and storage, the public sector can work to avoid paying exorbitant processing fees in the future.

A goal of a PPF and/or PSF would be to ensure an ample, reliable supply of pre-processed or processed dredged material to the point where upland placement of dredged material for beneficial uses became an economically preferred alternative. In this way, dredging could become economically feasible for small quantity generators that cannot currently afford to conduct necessary dredging.

A PPF and/or PSF developed via a public-private partnership would strengthen long-term dredged material planning and management in the Port. By expanding temporary storage capacity to the point where storage becomes the public sector's sole involvement and processing is conducted exclusively by private operators, a PSF has the potential to focus the role of the public sector in dredging, processing and placement operations to one of providing and managing a storage site accessible to both dredging and processing firms.

8.0 REFERENCES

British Columbia Ministry of Municipal Affairs. 1999. Public Private Partnerships: A Guide for Local Government. http://www.cserv.gov.bc.ca/lgd/pol_research/MAR/PPP/ppp.pdf (retrieved January 19, 2005).

Brusewitz, M.R. 2005. Public-private Partnerships in the United States. Project Finance Legal Advisors Review 2004/2005: 70-71. http://www.orrick.com/fileupload/394.PDF (retrieved January 5, 2005).

Douglas, W.S., and L.J. Baier, R.J. Gimello, and J. Lodge. 2003. A Comprehensive Strategy for Managing Contaminated Dredged Material in the Port of New York and New Jersey. Journal of Dredging Engineering 5(3): 1-12.

Feldman, R. D. 2004. Federal Public-Private Partnerships: Synthesis of Lessons Learned from BRAC and other Programs. http://ncppp.org/resources/index.html. (retrieved February 28, 2006)

Government Accounting Office. 1999. Public-Private Partnerships: Terms Related to Building and Facility Partnerships. http://ncppp.org/howpart/ppptypes.html (retrieved January 5, 2006).

HDR. 2005. Creating Effective Public-Private Partnerships for Buildings and Infrastructure in Today's Economic Environment. http://ncppp.org/resources/papers/ HDRP3whitepaper.pdf (retrieved February 6, 2006).

Lee, C. R. 2000. Reclamation and beneficial use of contaminated dredged material: Implementation guidance for select options. Dredging Operations and Environmental Research Technical Notes Collection (ERDC TN-DOER-C12), U.S. Army Engineer Research and Development Center, Vicksburg, MS. *www.wes.army.mil/el/dots/doer*

National Council for Public-Private Partnerships. 2003. Critical Choices: The Debate Over Public-Private Partnerships and What it Means for America's Future. http://ncppp.org/presskit/2003whitepaper.pdf (retrieved January 19, 2006).

New Jersey Department of Transportation, Office of Maritime Resources (NJDOT/OMR). 2003. Current Status of Dredged Material Processing in the New York/New Jersey Harbor. 102 pages.

Norment, R. 2002. Public Private Partnerships – American Style. The PFI Journal. 39: 26-27. http://www.ncppp.org/resources/papers/PFIArticle.pdf (retrieved January 5, 2006).

Norment, R. 2005. Public Private Partnerships. Presentation at the National Council of Public-Private Partnerships. Delivered March 24, 2005 at the North Carolina Transportation Forum, Charlotte, North Caroline. http://ncppp.org/resources/papers/norment_nc.pdf

(retrieved February 3, 2006).

Oakley, R.T., L. Skully, M.R. Weimar, R. DiPrinzio, J.H. Holbrook, and P.K. Kearns. 1998. Privatization Financing Alternatives: Blending Private Capital and Private Resources for a Successful Project. http://ncppp.org/resources/papers/scully_privatefinance.pdf (retrieved March 1, 2006).

Prieto, B. 2005. PPPs – A Contractor/Developer's "How To" Guide. http://ncppp.org/resources/papers/prieto_howtoguide.pdf (retrieved January 19, 2006).

Seader, D.L. 2002. The United States' Experience with Outsourcing, Privatization and Public-Private Partnerships. http://www.ncppp.org/resources/papers/seader_usexperience.pdf (Retrieved January 25, 2006).

Schiller, E.A. 2004. Successful Procurement and Finance Methods: The Southwest Florida Experience. http://ncppp.org/resources/papers/schiller_procurement.pdf (retrieved February 28, 2006).

Smith, J. 2004. Design-Build-Finance-Own-Operate-Transfer Approaches. The National Council for Public Private Partnerships. http://ncppp.org/resources/index.html. (retrieved February 21, 2006).

Stern, E.A., K. Donato, K.W. Jones, and N.L. Clesceri. 1998. Processing Contaminated Dredged Material From the Port of New York-New Jersey. Estuaries. 21: 646-651.

Tavolaro, J. 2002. Management of Dredged Material Disposal: Public Sector Responsibility or Private Sector Opportunity? Conference Proceedings from Dredging '02: Key Technologies for Global Prosperity 2003. American Society of Civil Engineers. 12 pp.

United States Department of Transportation, Federal Highway Administration (USDOT/FHWA). 2006. PPP Options. http://www.fhwa.dot.gov/ppp/index.htm (retrieved January 5, 2006).

United States Army Corps of Engineers (USACE). 2001. Beneficial Uses of Dredged Material for Habitat Creation, Enhancement, and Restoration in New York – New Jersey Harbor. USACE, New York District. 134 pp.

USACE. 2003. Dredging Operations and Environmental Research – Contaminated Sediments Research Summary. U.S. Army Engineer and Research Development Center. http://el.erdc.usace.army.mil/factsheets/doer-cs.pdf (retrieved February 9, 2006).

USACE. 2006a. Dredged Material Management Plan for the Port of New York and New Jersey. USACE, New York District.

USACE. 2006b. Economic Modeling Summary Report – Feasibility Analysis for a Dredged Material Public Processing Facility for the Port of New York and New Jersey. USACE, New York District.

USACE. 2007a. Summary of Discussions – Dredged Material Processing and Placement Workshop: Current and Future Issues in the Port of NY/NJ. 7 pp.

USACE. 2007b. Potential Dredged Material Storage Facilities and Their Impact on Public Processing Facility Economic Modeling Summary Report. USACE, New York District.