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ENVIRONMENTAL ASSESSMENT

AND

FINDING OF NO SIGNIFICANT IMPACT

Proposed Change to Ongoing Maintenance Dredging of the Providence River and Harbor Federal Navigation Project, Providence, Rhode Island

New England District
U.S. Army Corps of Engineers
696 Virginia Road
Concord, Massachusetts 01742

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ENVIRONMENTAL ASSESSMENT

1.0 INTRODUCTION

The purpose of this Environmental Assessment (EA) is to present information on the environmental features of the project area and to review project information to determine the potential impacts of proposed changes to the project as originally set forth in the Providence River and Harbor Federal Maintenance Dredging Project Final Environmental Impact Statement (PRHMDP FEIS, 2001). This Environmental Assessment describes project compliance with the National Environmental Policy Act of 1969 (NEPA) and all appropriate Federal and State environmental regulations, laws and executive orders. Methods used to evaluate the environmental resources of the area include biological sampling, sediment analysis, review of available information, and coordination with appropriate environmental agencies and knowledgeable persons. This report provides an assessment of environmental impacts and alternatives considered along with other data applicable to the Clean Water Act Section 404 (b) (1) and Section 102 and 103 of the Marine Protection, Research and Sanctuaries Act (MPRSA) evaluation requirements.

2.0 PROPOSED CHANGE TO PROJECT

An Environmental Impact Statement was prepared in August 2001 for the dredging of the Providence River and Harbor (Figure 1) and selection of suitable disposal sites for the dredged material (USACE, 2001). The PRHMDP FEIS called for dredged material that was unsuitable for open water disposal to be placed into subaquaqueous confined aquatic disposal (CAD) cells located in the upper portion of the Providence River (see Figure 2). Ultimately, the CAD cells were to be capped with material from the upper Fuller Rock Reach (Figure 1), represented by sampling sites G and H (Figure 3). The Rhode Island Coastal Resources Management Council (RI CRMC) has requested that the CAD cells be left uncapped for several years to accommodate future dredging needs of the state. (See Section 2.1 for estimated future dredging/disposal needs). Approximately 250,000 cubic yards (191,139 m^3) of sediments from the upper Fuller Rock Reach area that were to be used as cap material are suitable for unconfined open water disposal based on prior testing. The originally proposed CAD cell cap material from the upper Fuller Rock Reach will now be placed at Site 69b (Figure 4) along with the rest of the suitable dredged maintenance material from this project including other material represented by samples G and H. Suitable material from Conimicut Point Reach will be dredged last. This material will be available to be used as the cap for the CAD cells if necessary and to cover the material from upper Fuller Rock Reach disposed at Site 69b, since the FEIS states that cleaner suitable sediments from the lower reaches will be placed on top of sediments from the upper reaches (USACE, 2001). The proposed project change will involve placing all suitable dredged maintenance material at Site 69b and leaving the CAD cells uncapped for several years and ultimately capped with suitable material.

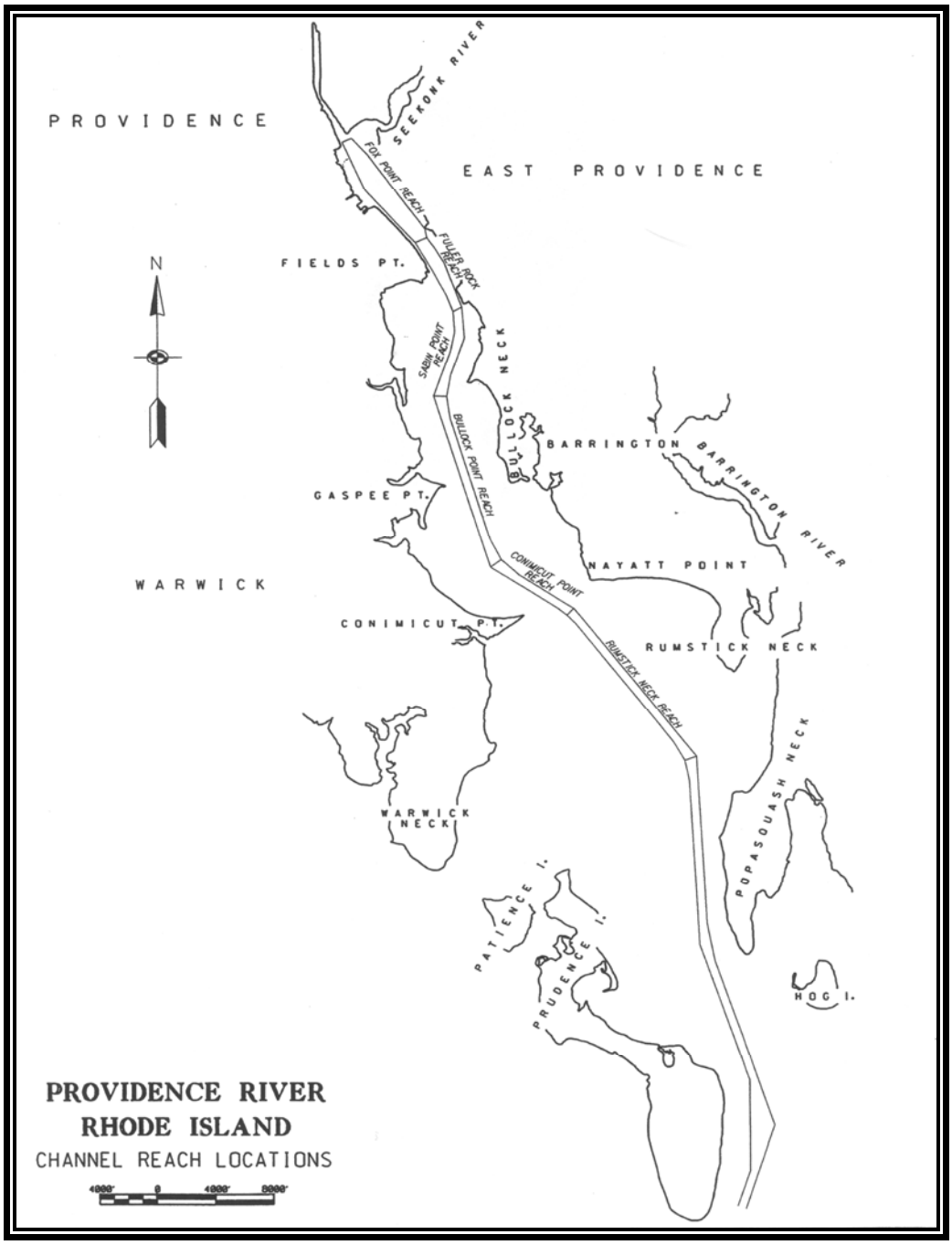


Figure 1. Reaches of the Federal Channel.

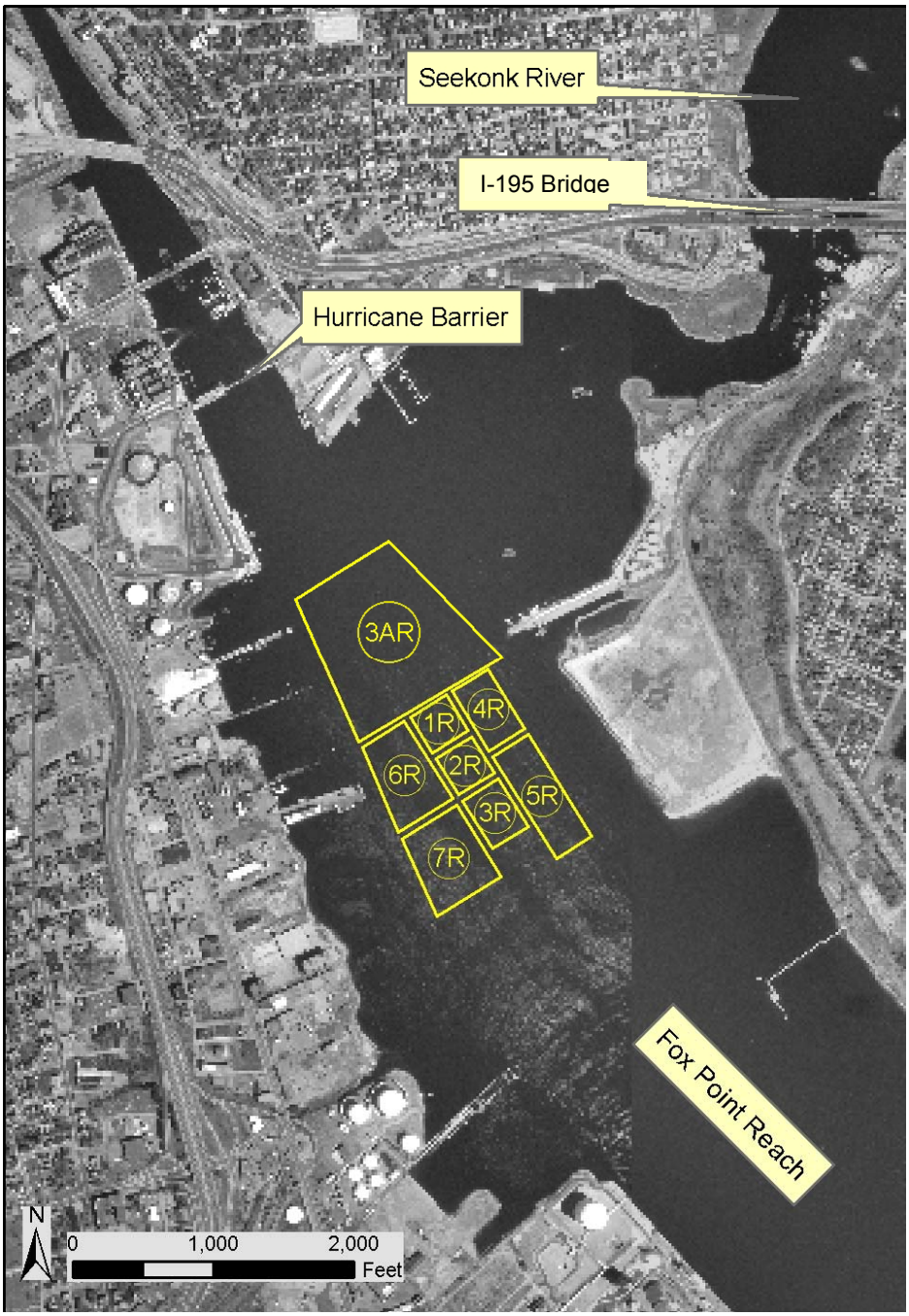


Figure 2. Map of Providence CAD cells.

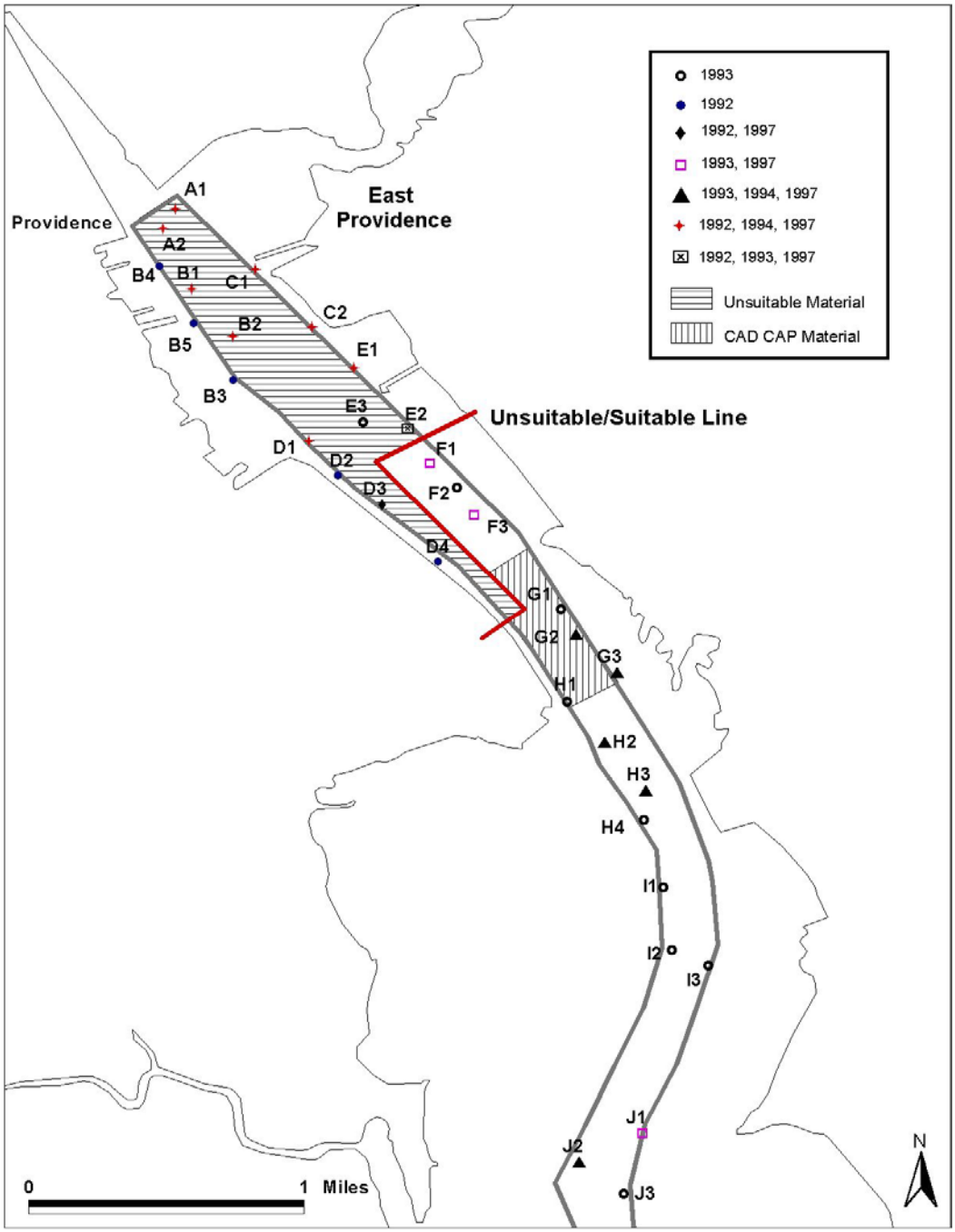


Figure 3. Suitable\Unsuitable Areas of Dredged Material, Sample Sites G/H that were to be used as CAD cell cap material.

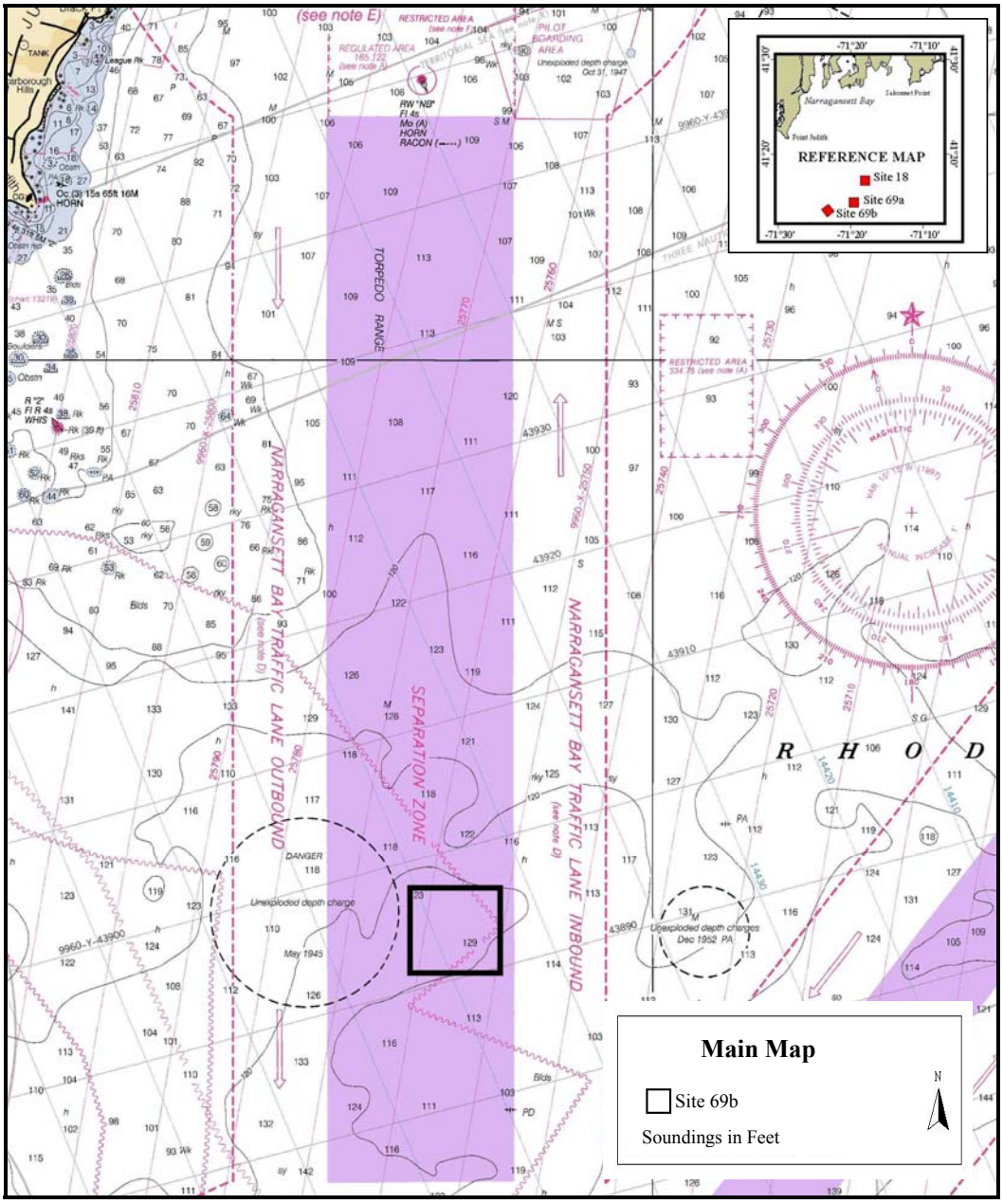


Figure 4. Site 69b, Separation Zone Site

2.1 Description of the Providence River Federal Navigation Project

The Federal Navigation Channel is a 16.8-mile (27 kilometers [km]) long channel that begins near the head of Providence Harbor and follows the Providence River on a southerly course to deep water near Prudence Island (Figure 1). The upper two and one-half miles comprise the main harbor of the Port of Providence. The channel is generally 600 feet (ft) (183 meters [m]) wide, except for a length between Fields Point (near the Providence-Cranston city line) and Fox Point, where it has varying widths of up to 1,700 ft (520 m). The channel has an authorized depth of 40 ft (12 m), however, shoaling has reduced controlling depths in the channel to as shallow as 30 ft (9.2 m).

Restoring the authorized dimensions involves the removal (dredging) of 4.3 million cubic yards (mcy) (3.3 million cubic meters [m^3]) of sediment and the subsequent disposal of that material at appropriate location(s). Sediments from the channel were tested extensively and evaluated in accordance with the requirements of MPRSA and CWA guidelines to assess their suitability for unconfined open water disposal. Confined Aquatic Disposal (CAD) cells (pits dug in the base of the river) are being used to isolate sediments that are considered "unsuitable" for unconfined open water disposal.

In conjunction with the Federal project, twenty applicants have requested permits from the Corps of Engineers under Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act for dredging related activities at the time of the FEIS. These applicants fall into two groupings. The first includes the marine terminals and facilities that directly depend upon the Federal Navigation Channel to provide access and maintain operations (eight locations). The second includes marinas and other facilities located throughout Narragansett Bay and related waters that have expressed an interest in dredging because the Federal dredging project provides an opportunity to use an active disposal site. At this time permits for only ten of those projects have been issued, but an additional 12 non-EIS applicants for permits have been issued by USACE and the state for a total of 322,474 cy of dredged material. Presently 205,097 cy of dredged material has been disposed of into the CAD cells by private applicants. USACE has five additional applications in various stages of review for CAD cell disposal of 21,070 cy of material. There are at least four more projects in the pre-application stage at USACE for CAD cell disposal of 51,00 to 141,00 cy of material.

3.0 PURPOSE AND NEED FOR THE PROJECT

Rhode Island has limited space available for disposal of dredged material that is unsuitable for open water disposal or beneficial use. The RI CRMC has requested that the CAD cells be left uncapped to provide additional disposal capacity for projects within Rhode Island and also to provide additional settlement time for material placed within these cells. The cells will ultimately be capped with suitable maintenance material from these State and private projects once capacity has been reached. The quality of the majority of the dredged material from the non-federal projects that will ultimately be placed into the CAD cells and used as cap material is anticipated to be cleaner than the upper Fuller Rock Reach material

(originally proposed cap material) and the environment surrounding the CAD cells (Dan Goulet, pers. comm., 28 October 2004).

4.0 ALTERNATIVES

The PRHMDP FEIS (USACE, 2001) considered the various alternative dredging methods and disposal alternatives for the overall project. The proposed actions were determined to be the least environmentally damaging practicable alternative. This EA will only consider a "no action" alternative and no capping alternative for the Providence River CAD cells.

4.1 No Action Alternative

The No Action alternative would be to cap the Providence River CAD cells. The dredged material from the upper Fuller Rock Reach (sampling site G and H) that was to cap the CAD cells will be disposed of at Site 69b. Suitable material from Conimicut Point Reach will be dredged last to provide a cap for the CAD cells if the "no action" alternative is selected. Once capped, the CAD cells will no longer be available as a disposal site for dredged material that is not suitable for open water disposal (i.e. the residual cell capacity would be lost to future projects). Cost for disposal of privately dredged material would increase if the CAD cells were closed to disposal due to testing and lack of disposal options. As stated in the FEIS, higher cost disposal options may preclude the amount of local dredging as small marinas could not afford the cost. Studies from the Boston Harbor CAD cells have shown that it is environmentally safe to leave the CAD cells uncapped for an extended time (SAIC, 2000 & 2003).

4.2 No Cap Alternative

The "no cap" alternative is to leave the CAD cells open and available for disposal of dredged material until the cells are filled to capacity. This allows additional time for all the material to consolidate and provides much needed additional disposal capacity for both suitable and unsuitable material from Rhode Island dredging projects. Based on estimated dredging needs and dredge window restrictions, it will take about five to six years for the cells to reach capacity and be capped. This is the preferred alternative.

Additionally, all dredged material from Conimicut Point Reach will be disposed of at Site 69b on top of the material from the upper Fuller Rock Reach area (original CAD cap material). Sediments from both of these sites have been determined to be suitable for open water disposal at Site 69b without management (see suitability determination updated # 4 dated 4 December 1997 in Appendix A).

5.0 AFFECTED ENVIRONMENT

5.1 Site Locations and General Description

The Providence River Federal Channel and Harbor are located in the Providence River and upper Narragansett Bay in the state of Rhode Island. The Providence ship channel

is divided into an entrance channel and six reaches (Figure 1). The channel reaches from north to south are Fox Point, Fuller Rock, Sabin Point, Bullock Point, Conimicut Point, and Rumstick Neck. The Providence River is a tidal river formed by the junction of the Woonasquatucket and Moshassuck Rivers, which flow from northern Rhode Island. From this confluence, the Providence River flows southerly for 8 mi (12.9 km) before emptying into Narragansett Bay. This environmental assessment will focus on not capping the CAD cells with material from the Providence River and Harbor Maintenance Dredging Project and placing all remaining suitable dredged maintenance material at Site 69b.

5.2 Physical and Chemical Characteristics

A. Conimicut Point Reach

Sediments from Conimicut Point Reach are the material that is now being used as Cap material for the CAD cells if the CAD cells are capped. Since this EA is proposing to dispose of the dredged sediments from Conimicut Point Reach at Site 69b instead of the CAD cells, this Reach is referred to as the dredge site.

The PRHMDP FEIS (USACE, 2001) has a detailed summary of the chemical and physical characters of the entire Providence River Federal navigation channel including water quality and sediment characterization. See Chapter Six especially section 6.2. Based upon bulk chemistry for samples M1, M2, M3 (Figure 5) taken in 1992, the sediments of Conimicut Point Reach were found suitable for open water disposal (See Suitability Determinations from 17 March 1994 and 28 April 1995 in Appendix A).

B. Disposal Site 69b

Water quality at Site 69b in the Rhode Island Sound is classified as SA (RI DEM). SA waters are designated for harvesting of shellfish for direct human consumption; primary and secondary contact recreational activities; fish and wildlife habitat; aquaculture; navigation; industrial cooling; and good aesthetic value.

Site 69b is located on the northern tip of a large topographic depression, roughly 7.5 mi (12 km) due east of Block Island. It is a 1 nautical mile square with its center located at 41º13’51”N and 71º 22’49”W (NAD 83). The maximum depth of the depression is about 129 ft (39 m). Water depths of the surrounding area are between 113 and 118 ft (34 to 35 m) to the north, east, and south of the surveyed area.

Figure 6 shows sampling locations and sediment/habitat types in and around Site 69b, based on sediment profile sampling surveys conducted in June 1997 and November 1999. One replicate station (B15) in the northernmost corner of the site showed an area of fine sand bottom. Two locations slightly north of the boundary (B14, B8) are characterized by fine sand and hard bottom. Station B2, along the northern boundary of the site, also consists of hard bottom areas. These areas presumably correspond to shallower depths in this area. Very fine rippled sand (habitat SA.F) characterized the southernmost stations within the site (Figure 5). The rippled sand corresponds to shallower depths and presumed higher near-

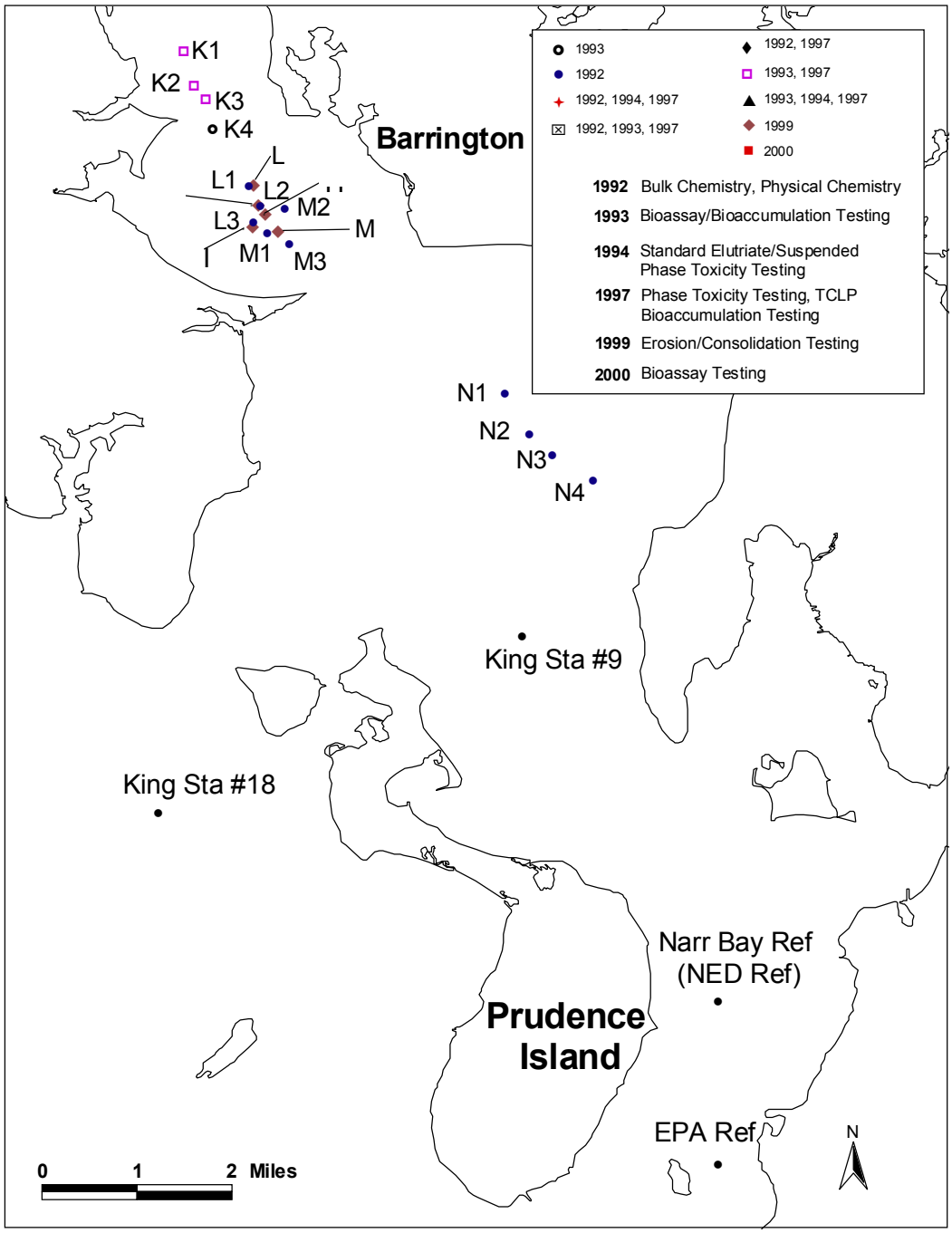
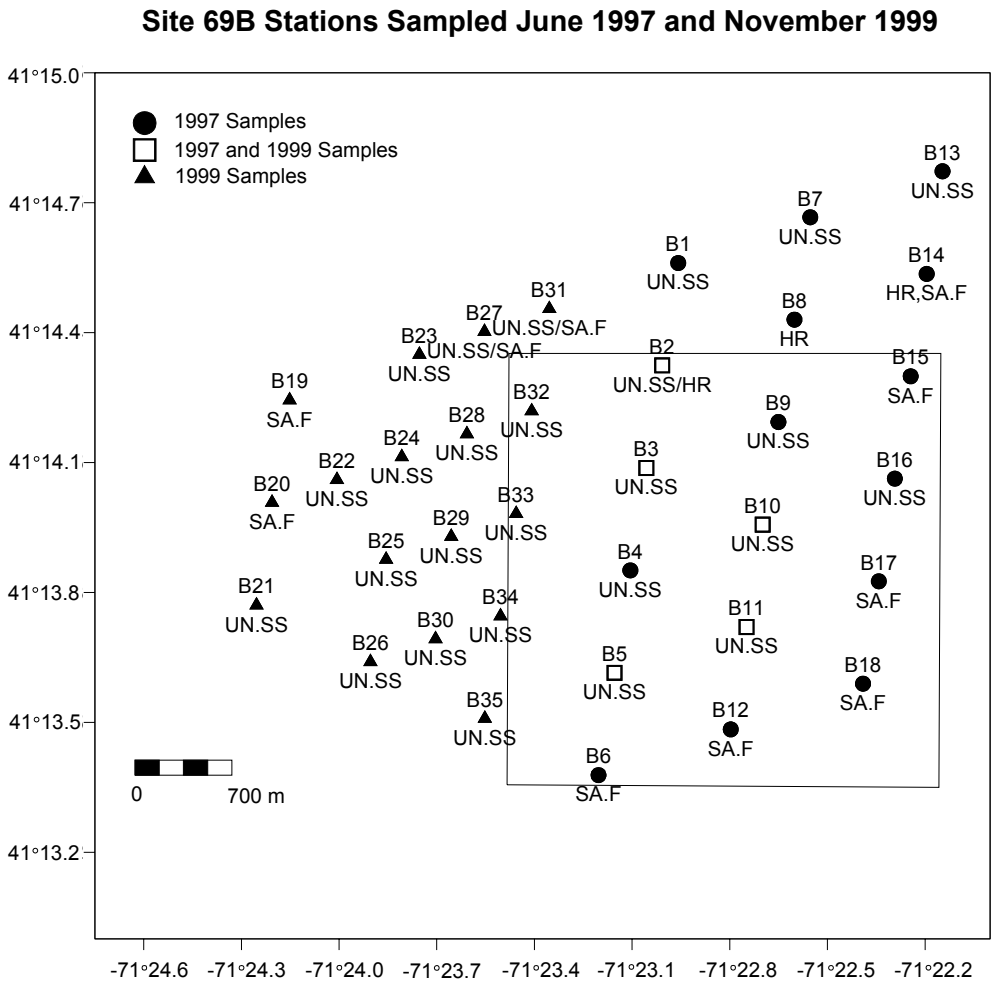


Figure 5. Locations of Project Sediment Samples (Lower Reaches) (USACE, 2001, Figure 6.2.2-8).



SA.F	Fine sand bottom
SA.M	Medium sand bottom
SA.G	Medium to coarse sand bottom with gravel
HR	Hard bottom - boulders/pebbles
UN.SS	Fine sand/silt clay unconsolidated soft bottom
UN.SI	Silt unconsolidated soft bottom
UN.SF	Soft silt clay/high water content unconsolidated soft bottom

Figure 6. Sampling Locations and Habitat Types at Separation Zone (Site 69b)

bottom energy regimes at these stations, which are near or outside the 120-ft depth contour. Sampling at most of the stations within the proposed site boundaries, revealed an unconsolidated soft bottom (habitat UN.SS or very fine sand mixed with silt-clay), suggesting a predominantly depositional environment within the depression (Figure 5). At several stations near the western boundary of Site 69b (*e.g.*, Stations B25, B27, B28, B31, B32, and B33), the sediment profile sampling data obtained in November 1999 showed a distinct silty/silt-over-sand stratigraphy. The thin surface layer of silty/silt suggests recent deposition.

Three core samples were also taken from Site 69b in November 1999. Table 1 contains a summary of the grain size results. These core samples are a better match to the fine sand sediments that fisherman claim are present in the area of Site 69b.

Table 1. Summary of Grain Size results for samples taken at disposal Site 69b.

Sample	Gravel (%)	Coarse Sand (%)	Medium Sand (%)	Fine Sand (%)	Silt (%)	Clay (%)
Site 69b-1	2.11	2.69	11.85	61.19	10.95	11.20
Site 69b-2	14.86	2.06	10.99	52.33	8.36	11.40
Site 69b-3	3.05	2.70	11.90	60.04	10.91	11.40

Concentrations of total organic carbon (TOC) were relatively low (<0.8 %, ≤ 0.41 in core samples) in surface sediments from Site 69b and were strongly correlated with grain size. Concentrations of organic contaminants (i.e., total PAH) and most metals correlated well with TOC but not with grain size. For example, lower chemical concentrations were found in sediments with low TOC and higher chemical concentrations were found in sediments with higher TOC. However, sediments from Site 69b contained slightly higher chemical concentrations than expected for sediments with small amounts of fine material (<15 percent fines). Interestingly, the correlation between chemical concentrations and sediment grain size was stronger in sediments located adjacent to Site 69b. For example, concentrations of some chemicals (e.g., total PAH, Cu, and Hg) were higher in sediments located to the west of Site 69b, which typically had higher amounts of fines and TOC. Concentrations of chemicals found in the Site 69b sediments were well below established sediment quality benchmarks (i.e., NOAA ER-L and ER-M values), suggesting that surface sediments from Site 69b are not impacted by contamination (EPA and USACE, 2004).

Concentrations of suspended solids in Rhode Island Sound reported by Collins (1976) ranged from 0.23 mg/L to 1.61 mg/L. During the fall of 1985 and spring of 1986, TSS measurements in Rhode Island Sound ranged from 0.33 to 3.79 mg/L (Pilson and Hunt, 1989). Pratt and Heavers (1975) indicated that average concentrations of suspended matter in Rhode Island Sound ranged from 1 to 2 mg/L. Dissolved oxygen concentrations in Rhode Island Sound in May 1986 were between 9.0 and 9.9 ppm (Pilson and Hunt, 1989).

More details can be found in the PRHMDP FEIS (USACE, 2001) Section 6.2.6.

C. CAD Cells

Dredged material from the Providence River and Harbor Federal navigation channel that was determined to be unsuitable for ocean disposal has been placed within the CAD cells. This dredged material in the CAD cells is as clean or cleaner than the surrounding sediments of the Fox Point Reach region. See the PRHMDP FEIS (USACE, 2001).

5.3 Biological Resources

A. Conimicut Point Reach

The following information about Conimicut Point Reach is summarized from the PRHMDP FEIS Chapter 5 (USACE, 2001). In the Lower Providence River south of Fields Point to Conimicut Point, there is a down-bay gradient from the contaminated and poorly oxygenated sediments of the upper portions of the river to a more saline and generally less-stressed system influenced, to a greater degree, by upper bay waters. The channel habitat changes from the classification of "polluted dredged channel" to "estuarine dredged channel," as per French *et al.* (1992), to reflect the low densities of mid-estuarine and estuarine offshore species, such as the suspension-feeding shellfish *Mulinia lateralis* and the polychaete worm *Mediomastus ambiseta*. Quahogs (*Mercenaria mercenaria*) and soft-shell clams (*Mya arenaria)* are abundant in portions of the lower river below Gaspee Point. Soft-shelled clams may also be found further up the river. The shallow sections of the river adjacent to the channel are classified as "upper bay soft bottom" habitat having low diversities and high numbers of animals, such as the polychaetes *Streblospio* and *Mediomastus,* which are adapted to high-nutrient, low-oxygen conditions (French *et al.*, 1992).

Three benthic samples were taken from within Conimicut Point Reach area; two silty and one sandy sample all with shall hash were collected. The sandy sample had the lowest abundance (8,725 organisms/m^2 or 811 organisms/ft^2), but highest number of taxa (26). *Mytilus edulis* was the most abundant taxon at the sandy site with 29 percent of the total. The silty samples varied widely both in abundance and number of taxa. One sample contained 99,425 organisms/m^2 (9,240/ft^2), which represented 17 taxa. The other sample contained 10,875 organisms/m^2 (1,011/ft^2) consisting of 10 taxa. Both silty samples were dominated by *Mulinia lateralis*, which represented more than 90 percent of the total abundance in each sample. Overall, species diversity and evenness were low, indicative of stressed conditions in the Conimicut Point Reach. Additional information can be found in the PRHMDP FEIS Section 6.3 (USACE, 2001).

B. Disposal Site 69b

Rhode Island Sound is a complex area including depositional and non-depositional environments, which dictate the structure, stability, and nature of the benthic community. Some areas may reflect a combination of erosional and depositional processes (textural patchiness; Knebel *et al.*, 1982), which provides a variety of substrate types for benthic habitat. The bottom types range from silty sand (unconsolidated/depositional), to sand-

rippled (reworked/sorted sediments), to hard stone and rock cobble (erosional/high energy/non-depositional).

In Rhode Island Sound, these areas usually consist of unconsolidated soft bottoms having relatively deep redox potential discontinuity (RPD) depths (well-oxygenated), and a mixture of pioneering and high-order successional-stage organisms, such as the deposit-feeding amphipod crustacean *Ampelisca agassizi*, the bivalve mollusk *Nucula annulata,* and polychaete worms typically found in low-disturbance regimes. Coarse-grained sediments typically provide habitat to a more mobile sand community of opportunistic and lower-successional-stage species. However, the heterogeneity of substrate types available for colonization in a rock cobble/sandy area can increase the number of resident species (diversity) and enhance the value of the benthic habitat.

The majority of the stations within the proposed site boundaries were characterized by unconsolidated soft bottom (UN.SS = very fine sand mixed with silt-clay), suggesting a predominantly depositional environment within the topographic depression (Figure 5). The overall average RPD depth for the Site 69b stations sampled in June 1997 was 4.10 cm, while an average RPD depth of 2.49 cm was observed in November 1999. These RPD values are both indicative of active bioturbation by benthic macrofauna and good resulting sediment aeration. In June 1997, the infaunal successional stage included mainly stage-I and stage-II organisms. Stage-I and stage-II organisms continued to dominate in November 1999, with a few stations showing stage I-on-III organisms. Overall, these successional stage results suggest that a diverse and healthy benthic community inhabits the site, thus providing fish foraging habitat. The sediment profile survey results from June 1997 and November 1999 suggest that this community is characterized by some spatial and/or temporal variability in composition and abundance. Specifically, in June 1997, stage-II amphipods appeared to be abundant at the site, while in November 1999, significantly fewer stage-II amphipods, but more stage-I and stage I-on-III successional organisms were found. Benthic species likely to be encountered within the UN.SS habitat type at Site 69b would include the amphipod *Ampelisca* sp., the bivalve *Nucula* sp., and various polychaetes. The overall average OSI value for the Site 69b stations was +7 in June 1997 and +6 in November 1999. Both of these values are high and considered indicative of healthy overall benthic habitat quality (USACE, 2001).

The infaunal communities found within Site 69b and in the nearby areas during the 2001 and 2003 sediment characterization surveys were very similar (Batelle, 2002 and 2003). The number of infaunal animals within each area was moderate to relatively high, with about 32,000 individuals/m^2 found within Site 69b, about 25,000 individuals/m^2 occurring among the stations just outside Site 69b that were sampled in 2001, and about 29,000 individuals/m^2 found in the area north and west of the site sampled in 2003. The average numbers of species found in the Site 69b samples (sampled in 2001), nearby samples (sampled in 2001), and samples to the north and west (sampled in 2003) were 53, 46, and 57, respectively. These sets of moderately high values were reflected in the moderately high Shannon-Wiener diversity (*H* 2) values calculated for the Site 69b and nearby area samples. Evenness values were moderate at the Site 69b stations and at the nearby stations (0.6) (EPA & USACE, 2004).

Two of the three most abundant species co-occurred at all three locations: the small clam *Nucula annulata* and the tube-dwelling amphipod *Ampelisca agassizi*. The relative contribution of these two taxa to the total abundance of the infauna (identified to species) was similar in 2001 (49 percent) to that in 2003 (48 percent). The density of *N. annulata* among all area samples was about 6,850 individuals/m^2 for samples collected in 2001 and about 8,450 individuals/m^2 for samples collected in 2003. Other numerically important species in 2001 were three polychaete worms (*Polygordius* sp., *Tharyx acutus*, and *Exogone hebes*), and small crustaceans such as *Byblis serrata* and *Eudorella pusilla.* In 2003, other common taxa included the crustaceans *Crassicorophium crassicorne, Eudorella pusilla*, and *Unciola irrorata* and additional clam species (*Crenella decussata, Nucula delphinodonta*). In general, the infaunal community in Site 69b was very similar to that found in the nearby area and was typical of the open-water silty-sand/sand communities found in Rhode Island Sound. Cluster analyses performed combining the 2001 and 2003 data (Batelle, 2003b) indicated that eight of the samples collected west and north of Site 69b in 2003 were more similar to each other than to any of the other samples collected in 2001 or 2003, which may indicate that the recent disposal of dredged material in Site 69b has slightly changed the nearby infaunal community.

Of all the areas sampled in Rhode Island Sound for the PRHMDP (USACE, 2001) Site 69b had the lowest abundance of lobsters, and the lowest overall abundance and weight of finfish among the Rhode Island Sound sites. However, samples of winter flounder abundance in the vicinity of Site 69b were highest for abundance and second highest for weight among the 3 sites considered. Squid, skate, spiny dogfish, Atlantic butterfish, and red hake were the other common fish sampled in the area. In studies completed or reviewed for the RI Long-Term Dredged Material Disposal Site Evaluation Project (EPA & USACE, 2004) Site 69b was not found to be an area of distinctive lobster, shellfish, or finfish resources.

C. CAD Cells

The Fox Point Reach area where the CAD cells have already been dug is a highly stressed environment. There is low abundance and diversity of benthic organisms and fish. Although diversity (number of species, 5 unique taxa) and abundance (number of organisms, mean of 75/m^2) benthic organisms were low, evenness within the Fox Point Reach benthic samples was high.

5.4 Threatened and Endangered Species

As a result of coordination with the U.S. Fish and Wildlife Service it has been determined, that there are no Federally-listed or proposed threatened and/or endangered species under their jurisdiction are known to occur in dredging or CAD cell areas. Several threatened and endangered species may be found in Rhode Island Sound. The species that could potentially be impacted by disposal operations include three species of whales (humpback whale, *Megaptera novaeangliae*, fin whale, *Balaenoptera physalus*, northern right whale, *Eubalaena glacialis*) and four species of sea turtles (Kemp's ridley sea turtle,

Lepidochelys kempi, loggerhead sea turtle, *Caretta caretta*, leatherback sea turtle, *Dermochelys coriacea*, green sea turtle, *Chelonia mydas*).

Use of Rhode Island Sound by the whales appears related to availability of prey, annual migration patterns, and age. While adults and juveniles may both occur in Rhode Island coastal waters, juveniles spend the most time in the area. Similarly, juvenile Kemp's ridley, green, and loggerhead sea turtles are likely to occur in Rhode Island Sound. Unlike the whales, sea turtles are more likely to follow preferred benthic prey close to shore and, possibly, into Narragansett Bay. Leatherback sea turtles prefer jellyfish and other pelagic planktonic prey and, therefore, tend to occur in more open waters (NMFS, correspondence dated February 13, 1998).

5.5 Historical and Archaeological Features

As a result of coordination with the State of Rhode Island Historical Preservation and Heritage Commission as part of the PRHMDP-EIS, it has been determined that the proposed dredging will not impact any historical or cultural resource. The proposed work involves the maintenance dredging of previously dredged areas. Any cultural resources present would have been impacted by the original construction. Remote sensing and an underwater archaeological investigation were conducted at Site 69b; no significant cultural resources were identified (USACE, 2001).

5.6 Air Quality and Noise

The entire state of Rhode Island is designated a non-attainment zone for ozone (O_3). Non-attainment zones are areas where the National Ambient Air Quality Standards (NAAQS) have not been met. Ozone is formed when nitric oxide (NO), hydrocarbons, oxygen (O_2), and sunlight combine in the atmosphere. Nitrogen oxides are released during the combustion of fossil fuels (*e.g.*, operation of gasoline and diesel-powered construction equipment, including dredges, scows, and dump trucks). Ozone non-attainment zones are classified, in increasing degrees of severity, as marginal, moderate, serious, severe, and extreme. The entire State of Rhode Island is located in a serious non-attainment zone, meaning that it has an ozone value between 0.16 and 0.18 ppm. This means that there was more than one day per year when the highest hourly ozone measurement in Rhode Island exceeded the threshold of 0.12 ppm. If an area exceeded this threshold by no more than one day, then it is considered in attainment. To be in attainment, an area must meet this ozone standard for three consecutive years. The RIDEM monitors ambient air quality, and creates and enforces air pollution control programs contained in its state implementation plan (SIP). One part of the RIDEM SIP is an attainment demonstration that shows that by 2007, the Rhode Island non-attainment zone will meet EPA's ozone NAAQS due to pollution control programs implemented by the state and EPA.

Conimicut Point Reach and the other areas along the shore south of Providence and East Providence are generally quiet, with residential development and open space. Site 69b is located in an open-water area near a Federal shipping channel. The noise at this site includes sounds generated by a variety of large vessels, including tankers, barges, and cargo

Comment [E1]: Is this still true?

ships. Other noise in these areas is primarily natural in origin and considered normal background noise. The noise (vessel-generated and otherwise) originating at these sites is not audible from land.

5.7 Essential Fish Habitat

The 1996 amendments to the Magnunson-Stevens Fishery Conservation Management Act direct the National Marine Fisheries Service and the New England Fishery Management Council to protect and conserve the habitat of marine, estuarine, and anadromous finfish, mollusks, and crustaceans. This habitat is termed "essential fish habitat", and is broadly defined to include "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." Managed species listed for the 10' x 10' minute squares of latitude and longitude which includes the Conimicut Point Reach have the coordinates 41°50.0' N, 71° 20.0' W, 41° 40.0' N, and 71° 30.0' W. Site 69b fall within the 10'X 10' minute squares with the coordinates 41° 20.0' N, 71° 20.0' W, 41° 10.0' N, and 71° 30.0' W.

As stated in the NMFS EFH designations (http://www.nero.noaa.gov/hcd/webintro.html), sixteen federally managed species have the potential to occur in the dredged area and thirty-one federally managed species have the potential to occur within disposal area. American plaice (*Hippoglossoides platessoides*) is the only species found in the dredged area but not in the disposal area. Species that have the potential to be found in the project area include: Atlantic cod, *Gadus morhua*; haddock, *Melanogrannus aeglefinus* (both sites); whiting, *Merluccius bilinearis*; red hake, *Urophysis chuss* (both sites); witch flounder, *Glyptocephalus cynoglossus* (both sites); winter flounder, *Pleuronectes americanus* (both sites); yellowtail flounder *Pleuronectes ferruginea*; windowpane flounder, *Scopthalmus aquosus*; ocean pout, *Macrozoarces americanus*; Atlantic sea herring, *Clupea harengus* (both sites); monkfish, *Lophius americanus*; bluefish, *Pomatomus saltatrix* (both sites); Atlantic butterfish, *Peprilus triacanthus*; Atlantic mackerel, *Scomber scombrus* (both sites); summer flounder, *Paralichthys dentatus* (both sites); scup, *Stenotomus chrysops* (both sites); black sea bass, *Centropristus striata* (both sites); ocean quahog, *Artica islandica*; spiny dogfish, *Squalus acanthias*; king mackerel, *Scomberomorus cavalla* (both sites); Spanish mackerel, *Scomberomorus maculates* (both sites); cobia, *Rachycentron canadum* (both sites); common thresher shark, *Alopias vulpinus*; blue shark, *Prionace glauca*; dusky shark, *Charcharinus obscurus*; shortfin mako shark, *Isurus oxyrhyncu*; sandbar shark, *Charcharinus plumeus*; bluefin tuna, *Thunnus thynnus*; sand tiger shark, *Odontaspis Taurus*; little skate, *Leucoraja erinacea* (both sites); and winter skate, *Leucoraja ocellata* (both sites).

6.0 ENVIRONMENTAL CONSEQUENCES

The dredging of approximately 200,000 cubic yards (152,911 m^3) of silty material from the shoaled area of the Federal navigation channel of Conimicut Point Reach region of Providence River will be performed by a mechanical dredge. The mechanical dredge excavates the sediments from the dredge area with a bucket apparatus (an enclosed clamshell bucket in this case) attached to a barge and a crane. The material will be deposited on a scow

and transported to disposal Site 69b. The potential impacts of dredging and disposal on water quality, sediment quality, and biological resources of the area are addressed below.

6.1 Physical and Chemical Resources

Dissolved oxygen (DO) may be slightly altered during the actual dredging and disposal activities, due to sediment oxygen demand (SOD). However, these changes are likely to be temporary and will return to "pre-project" conditions upon completion of the project. No appreciable changes in the salinity regime, tidal flows or tide height are expected as a result of the proposed dredging or disposal activity.

A. Conimicut Point Reach

Dredging operations will not have significant long-term impacts on turbidity levels or water column chemistry at the dredging area. The amount of turbidity generated during a dredging operation depends on the physical characteristics of the sediments to be removed, ambient currents, and type of dredging equipment. Resuspension of sediments is generally due to the dynamic impact of the bucket on the channel bottom, the spillage and leakage from the filled bucket, and the washing action of the empty bucket falling through the water column (Hayes, 1986). An enclosed bucket could resuspend solids concentration of 50-300 mg/l within 100 feet (30.5 m), 40-210 mg/l within 200 feet (61 m) and 25-100 mg/l within 400 feet (121.9 m) downstream of the dredge (Hayes, 1986). Bohlen *et al*. (1979) has found that during dredge operations with a large volume bucket dredge, material concentrations within the dredge induced plume decrease rapidly and approach background within approximately 2,000 feet (0.61 km). Temporary increases in turbidity would be expected at the dredging site and this has the potential to create short-term changes in dissolved oxygen. Due to the silty nature of this material, it is expected to stay suspended for a period of time, but cease with the completion of the dredging operation. No significant release of contaminants is expected during the dredging events.

Water quality monitoring has taken place in the vicinity of the CAD cells during both dredging and disposal operations.

The areas within Conimicut Point Reach of the Providence River Federal navigation project that are to be dredged will result in deeper waters in those areas and impacts to fish species will likely differ from species to species depending on life history, habitat use, distribution and abundance. The sediment type at the dredged location is not expected to change significantly.

B. Disposal Site 69b

A barge will subsequently dispose of the CAD cell cap material at Site 69b in Rhode Island Sound. There are three distinct phases when dredged material is released from a barge and descends through the water column as a dense fluid-like jet (Truitt, 1986). The three physical phases are 1) convective descent, 2) dynamic collapse, and 3) long-term or passive diffusion. Truitt (1986) concluded from an analysis of several studies that the short-term

impacts resulting from suspended sediment are confined to a well-defined layer near the bottom. Above the bottom layer, suspended sediment concentrations would be one to two orders of magnitude less and the total amount of solids dispersed over longer distances is one to five percent of the original material. No significant release of contaminants is expected during disposal, as the material is relatively clean. Therefore, no significant impacts to water quality are expected from disposal of the Conimicut Point Reach material.

Monitoring for the Providence River maintenance project at the Rhode Island Sound disposal site has consisted of (1) a series of bathymetric surveys, (2) a sediment profile camera (SPC) and drop video camera (DVC) survey of various disposal features (Science Applications International Corporation, 2004), and (3) monitoring of plume behavior and toxicity (draft contract report). Monitoring of benthic habitat conditions within the disposal site has not occurred due to the fact that disposal is ongoing throughout much of the site. This type of monitoring will take place following the late 2004 project completion and will consist of a benthic community and sediment profile camera survey to be conducted in mid-2005.

Bathymetric data have been used to manage placement of sediments at the disposal site and to document changes in seafloor morphology. Surveys were conducted in February, July, and September 2003 and February, May and September 2004. Initial disposal focused on the creation of a north-south trending containment berm within the western boundary of the site using the glacial sediments dredged to create the CAD cells. Later, when channel maintenance sediments were being disposed, a grid disposal pattern was used to create a relatively level sediment deposit across the eastern two thirds of the site.

The primary focus of the SPC and DVC survey was to assess the extent and thickness of several features noted in an earlier side scan survey conducted for the ongoing investigations for long term designation of the site. This side scan survey showed evidence of small amounts of material outside the site that had trailed from the barges following the main sediment release within the site. Survey results confirmed that these features were disposal trails and that they were of no more than a few meters (12-35) wide and a few cm (6-18) thick. The trails consisted largely of muddy fine sand mixed with clumps of white clay.

Plume monitoring showed no evidence of toxicity from the collected plume material and also confirmed predictions that plumes did not persist at more than 10 mg/l suspended solids for more than two hours. A total of six separate disposal events were monitored to assess plume behavior. Plumes were tracked using three separate drogues rigged to follow the surface, mid-, and near-bottom water masses. Plume transport, extent, and magnitude were assessed using acoustic doppler current profiling (ADCP), optical back-scatter (OBS), a standard transmissometer, and a Niskin bottle sampling rosette. On four of these plumes water was also collected for laboratory assessment of plume toxicity using mysid shrimp and juvenile silverside fish. All of these samples showed no evidence of toxicity to either of the tested species. These results supported the evaluation made during initial project review that dilution would minimize the potential for water column toxicity.

The actual distribution of disposal events will be controlled by placing buoys on the site and directing the dredging contractor to dispose of certain quantities of material at a specific buoy or geographic coordinate. The dredged material from Conimicut Point Reach will be used to cover material from the upper Fuller Rock Reach region.

Depth will change at the disposal site where the dredge material is placed. Water depth at the specific disposal area within Site 69b will become shallower, however, this impact has been accounted for as part of the PRHMDP FEIS (USACE, 2001).

Disposal of the Providence River and Harbor dredged sediments will leave the disposal site with more silty material than Site 69b had before disposal operations. This has the potential to affect commercial trawling activities in the immediate area. However, as originally indicated in the Record of Decision for the FEIS, fine sandy material of similar physical characteristics to the disposal site prior to dredging will ultimately be placed over the PRHMDP disposed material. The fine sand dredged from the creation of the CAD cells that originally was intended to cover the disposal site has already been disposed of at Site 69b due to the sequence of dredging used to minimize impacts to fishery resources. Currently, efforts to locate new sources of fine sand are underway. It is the intent of USACE to find fine sandy material to return Site 69b to the fine sandy pre-disposal conditions.

However, it is noted that the site is currently in the process of being designated as a long- term disposal site for the placement of dredge material. The Final Environmental Impact Statement for the Rhode Island Region Long-Term Dredge Material Disposal Site Evaluation Project (EPA & USACE, 2004) has been completed and released to the public for review. Impacts associated with long-term disposal, including topographic changes and changes in sediment characteristics, have been evaluated (EPA & USACE, 2004). In light of this development, it is concluded that the placement of suitable sandy material at Site 69b would only detract from disposal site capacity and not fulfill its originally intended purpose of returning the site to pre-disposal conditions. Consequently, in the likely event that the Rhode Island Sound disposal site becomes officially designated in the near-term, the plan to ultimately place sandy material over site 69b may be reevaluated in light of this changed condition

C. CAD Cells

The Providence River CAD cells that will not be capped with the material from Conimicut Point Reach are not expected to affect the water or sediment chemistry of the Fox Point Reach region. The CAD cells will eventually be capped with suitable maintenance material. The area is depositional, so eventually a thin layer of material from the surrounding environment will cover the CAD cell sediments. Leaving the CAD cells uncapped allows additional settlement time for the material placed there and provides additional disposal capacity for dredging projects within Rhode Island. Most of the privately dredged material that will be placed into the CAD cells is cleaner than the material originally intended as cap material as well as the material found in the surrounding environment (Dan Goulet, pers. comm., 28 Oct. 2004).

It is expected that the CAD cell used for the disposal of material from the Pawtuxet Cove Federal navigation project will be capped with cleaner material from the Bullock Point Cove Federal navigation project.

In order to assess water quality impacts associated with CAD cell disposal operations for the Providence River and Harbor Maintenance Dredging Project (PRHMDP), a comprehensive water quality monitoring program has been conducted by the USACE from the initiation of disposal operations according to specifications outlined by the Water Quality Certification issued by RIDEM (March 20, 2003). The purpose of this monitoring was to ensure compliance with the State of Rhode Island Water Quality Standards and included real-time plume tracking using Acoustic Doppler Current Profiling (ADCP), vertical profiling and the physical, chemical and biological testing of water samples (including turbidity profiling, dissolved oxygen monitoring, total suspended solids, dissolved metals and toxicity testing). The timing and intensity of the monitoring was triggered by specific disposal events (i.e. first disposal event at high tide, low tide disposal within the first 11 events, disposal when cell contents are within 20 feet from the top of the cell) with the results compared to specific project compliance criteria along downfield transects. The results of this monitoring showed that the sediments resuspended by the disposal events (and dredging) generally returned to background levels within 500-800 feet of the disposal cell and no elevations were observed beyond 1800 feet downcurrent, even when the dredges were working adjacent to the disposal cell. No criteria exceedances for either dissolved metals or toxicity were encountered at the 1500-foot downstream compliance location(s). In addition, non-required samples collected for chemical and biological analysis directly within the disposal plume immediately following disposal showed no identifiable issues. Consequently, no significant impacts to the water quality would be expected during additional CAD cell disposal operations.

Monitoring of a Boston Harbor CAD cell showed that there is the potential for very short-term resuspension of minor volumes of sediment in the CADs during passage of a vessel such as an LNG carrier, but the dredged material resettles within the cell. Resuspension caused by an LNG carrier over an open CAD cell was greater than a capped CAD cell, but the sediments settled to the seafloor within one hour of resuspension before it traveled a significant distance (e.g. 200 m) (SAIC, 2000). The material at the bottom of the channel where the CAD cells are now located had the same or higher contamination levels as material within the CAD cells and these contaminated sediments were even shallower and subject to more potential transport. Once the sediments are in the CAD cells and surrounded by depths 2-3 meters shallower, there is a very low probability that they will be able to escape from the CAD in response to prevailing physical events (Thomas Fredette, pers. comm., 2004).

Another study was designed to determine if fine-grained harbor sediments in the vicinity of the Boston Harbor CAD cells were being resuspended and transported into the CAD cells. To achieve this goal, artificial fluorescent sediment tracer was deployed at positions upstream and downstream of the CAD cell designated as the Supercell using two different tracer colors. Tracer particles were mixed with ambient material, frozen in blocks, and placed on the seafloor. Sediment grab sampling surveys were then conducted upstream and downstream, as well as within the Supercell, at two-week intervals (surveys T18 and

T32). This tracer study indicated that both upstream and downstream transport of sediment, including deposition in the CAD cell, occurs in the study area and that vessel traffic in the river is likely the primary mechanism for resuspension of bottom sediments (SAIC, 2003).

Based upon the studies from the Boston CAD cells, it is concluded that the unsuitable dredged material placed within the CAD cells will stay within the cells although it is likely that large vessels could resuspend minor amounts of material into the water column for a short time period. This is less likely to happen in Providence River CAD cells as compared to the Boston CAD cells since these cells have not been filled to capacity. Therefore, these sediments are not near the surface of the CAD cells and less likely to be subjected to the scouring effects of passing vessels. Over time, material from the surrounding environment will be deposited within the CAD cells providing additional protection against exposure to the surrounding environment.

6.2 Biological Resources

The potential impacts of dredging on marine organisms is expected to be limited to the physical effects, as dredging operations are not likely to have an effect on water column chemistry since the material is relatively clean (see FEIS and section 6.1).

A. Conimicut Point Reach

Benthic organisms inhabiting the shoaled areas of the entrance channel would be destroyed during the dredging process. Non-motile organisms associated with the bottom sediments would be removed by the action of the dredge. Motile epibenthic organisms such as crabs would probably avoid the area of disturbance, although slower moving forms may be entrained by the dredge and destroyed. Studies by McCauley *et al*. (1977) in Oregon indicated that pre-dredging conditions in a channel could be reestablished in as little as 28 days after dredging ceases. However, complete recolonization by sedentary adult forms of many pre-dredging organisms could take up to 2-3 years because of changes in physical site conditions and interspecific competition (competition among unlike species) in the recolonization of displaced organisms.

The benthic invertebrates inhabiting these areas would be expected to be mostly opportunistic species with life history characteristics adapted to a changing environment with frequent disturbances. Periodic dredging of these areas would not significantly alter the overall benthic community structure of the areas adjacent to the Federal navigation channel of Conimicut Point Reach.

Sedimentation and turbidity caused by the action of the dredge can impact benthos and finfish due to the physical effects of the suspended sediments. Suspended sediments can clog breathing structures of organisms if present for several days in large concentrations. Bell (1986) indicated that 500 to 1000 ppm of suspended material could be carried for short periods of time without being detriment to fish. Dredging operations are not expected to have any significant impacts on the finfishes that may be in the vicinity of dredging operations. It is anticipated that fish in the vicinity during project operations will have the

ability to avoid the area and will not be impacted. In addition, the increased turbidity levels, as a result of the dredging, should be localized and of a short duration, not having significant impacts on the finfish populations in the area. See the Essential Fish Habitat section (6.4 and Appendix O of PRHMDP FEIS) for more information. In coordination with NMFS and RIDEM, in Conimicut Point Reach dredging will not occur from February 1 through March 30 to protect winter flounder spawning or between June 1 through July 31 to protect quahog spawning that may be present in the area.

B. Disposal Site 69b

The effects of open water disposal at Site 69b on resources (*e.g.*, benthic animals, finfish, *etc*.) would be temporary. Suspended solids and contaminant concentrations would not reach harmful levels outside of the mixing zone. Over a longer term, resources would recover to pre-disposal levels within about one year of the completion of disposal operations. The recovery of resources after disposal is based on the compatibility of the pre- and post-disposal sediment type and the ability of the community to rapidly recolonize the site.

The benthic community at Site 69b is an advanced stage community, which means it will take longer to recover than if it were a pioneering community. However, even this advanced stage community would fully recover within about a year of completing disposal activities on any portion of the site. Therefore, the fish and other predators that feed on the site would be able to resume their use of the site within a year after disposal is complete wherever a compatible sediment type is provided. Mitigation of impacts to the benthic community and the finfish and other predator communities that rely on it is not warranted because the impacts would not be significant in terms of duration or overall magnitude (USACE, 2001). Chapter 4 of the FEIS for the RI Long-Term Dredged Material Disposal Site Evaluation Project (EPA & USACE, 2004) evaluated the long-term environmental consequences of dredged material disposal at site 69b. The FEIS concluded that there would be only minimal short-term, long-term, or cumulative adverse impacts to the marine environment from designation of Site 69b.

Disposal operations are not expected to have any significant impacts on the finfishes that may be in the vicinity of dredging operations. It is anticipated that fish that may be in the vicinity during project operations will have the ability to avoid the area and will not be impacted. In addition, the increased turbidity levels, as a result of the disposal from the PRHMDP, should be localized and of a short duration, not having significant impacts on the finfish populations in the area. See the Essential Fish Habitat section (6.4) for more information.

The primary physical disturbances of dredged material disposal on aquatic populations are caused by an increase in turbidity levels within the water column and through direct burial. Burial can impact benthic organisms to varying degrees. Some organisms possess the ability to move through the sediment layer that deposits over them and others do not. Vertical migration through the deposited sediments is influenced by several factors including sediment type, sediment depth, burial duration, temperature, and adaptive features such as an organism's ability to burrow and to survive in low-oxygen conditions. Maurer *et*

al. (1986) indicated that major taxa such as mollusks (clams), crustaceans (e.g., crabs, lobsters), and polychaetes (worms) responded differently to burial. Sediment type (e.g., mud, sand, and mixtures of mud and sand) greatly influenced the ability of buried organisms to migrate though the sediment to their normal depths of habitation. The type of disposed sediment compared to ambient sediment is also important to site recovery and the diversity of the community that recolonizes the area. Also important are life habits of benthic organisms, such as feeding type (e.g., surface suspension feeders, deep-burrowing siphonate suspension feeders, infaunal non-siphonate suspension feeders, burrowing siphonate feeders). Organisms that burrow deeply into sediments tend to be able to survive greater burial depths, often up to 20 inches, and are thus less susceptible to impact from burial. Larger decapod crustaceans (e.g., shrimp species, lobster) have been particularly able to penetrate deeply into the sediment. Suspension feeders such as those above generally can survive only a few inches of burial (0.4 to 4 inches).

C. CAD Cells

While the construction of the CAD cells did impact the existing benthic community, the community was highly stressed and consisted of few species with few individuals. It is anticipated that they will recolonize the area after disposal operations are complete. The contamination levels of the material within the CAD cells is similar to that of the surrounding environment and this limits the number and abundance of organisms that have the potential to recolonize the cells. The placement of cleaner material from privately dredged projects and the eventual placement of a cap of suitable dredged material on the CAD cells would allow a more stable benthic community to develop.

6.3 Endangered Species

The PRHMDP FEIS (USACE, 2001) coordinated with USFWS and NMFS, and it has been determined that the proposed activity will not affect endangered species or critical habitat designated as endangered or threatened pursuant to the Endangered Species Act of 1973 (87 Stat. 844). Several endangered or threatened whale and sea turtle species frequent portions of Rhode Island Sound. A trained endangered species observer will be present for all disposal operations that occur in Rhode Island Sound.

6.4 Essential Fish Habitat

An assessment of the project area in the Fox Point Reach and Conimicut Point Reach regions of Providence River with disposal at Site 69b in Rhode Island Sound indicates that there will be no significant impacts to Essential Fish Habitat, as defined by the Magnuson-Stevens Fishery Conservation and Management Act and amended by the Sustainable Fisheries Act of 1996, with this project. “Essential fish habitat” is broadly defined to include “those waters and substrates necessary to fish for spawning, breeding, feeding, or growth to maturity.” Impacts to essential fish habitat from this project include temporary increases in turbidity from dredging activities and the temporary loss of benthic organisms associated with the dredged material.

The PRHMDP FEIS (USACE, 2001 Appendix O) evaluated both the dredge area and disposal areas for impacts to EFH species (copy of EFH assessment can be found in Appendix C). Winter flounder larvae have the greatest potential to be impacted by these dredging activities. Dredging will be avoided from February 1 through March 30 in the Conimicut Point Reach region to avoid the period when winder flounder spawn.

Site 69b is within a part of Rhode Island Sound that has EFH designated for 31 species (Table 2). However, only six of these species (excluding the two skate species recently added to the EFH listing for the site) were caught in the tows conducted in 2003 (EPA & USACE, 2004). Three species (winter flounder, Atlantic butterfish, and spiny dogfish) were relatively common. Site 69b is within EFH that has been designated for winter flounder eggs, larvae, juveniles, and adults. However, dredged material disposal at Site 69b would not adversely impact concentrations of winter flounder eggs, larvae, and juveniles because they are not uniquely found in the open water deep areas of this site.

Table 2. Essential fish habitat species potentially found at Site 69B (X) and Providence River (P).

Species	**Eggs**	**Larvae**	**Juveniles**	**Adults**
Atlantic cod *(Gadus morhua)*	X	X		X
haddock *(Melanogrammus aeglefinus)*		X P		
whiting *(Merluccius bilinearis)*	X	X	X	X
red hake *(Urophycis chuss)*	X	X P	X P	P
witch flounder *(Glyptocephalus cynoglossus)*	X			
winter flounder *(Pleuronectes americanus)*	X P	X P	X P	X P
yellowtail flounder *(Pleuronectes ferruginea)*	X	X	X	
windowpane flounder *(Scopthalmus aquosus)*	X	X	X	X
American plaice *(Hippoglossoides platessoides)*		P	P	P
ocean pout *(Macrozoarces americanus)*	X	X	X	X
Atlantic sea herring *(Clupea harengus)*		P	X P	X P
monkfish *(Lophius americanus)*	X	X		
bluefish *(Pomatomus saltatrix)*			P	X P
Atlantic butterfish *(Peprilus triacanthus)*			X	
Atlantic mackerel *(Scomber scombrus)*	X P	P	P	P
summer flounder *(Paralicthys dentatus)*	X	X P	P	X P

scup *(Stenotomus chrysops)*	n/a P	n/a P	X P	X P
black sea bass *(Centropristus striata)*	n/a n/a		X P	P
ocean quahog *(Artica islandica)*	n/a	n/a	X	X
spiny dogfish *(Squalus acanthias)*	n/a	n/a	X	X
king mackerel *(Scomberomorus cavalla)*	X P	X P	X P	X P
Spanish mackerel *(Scomberomorus maculatus)*	X P	X P	X P	X P
cobia *(Rachycentron canadum)*	X P	X P	X P	X P
common thresher shark *(Alopias vulpinus)*		X	X	X
blue shark (*Prionace glauca)*		X	X	X
dusky shark *(Charcharinus obscurus)*			X	
shortfin mako shark *(Isurus oxyrhyncus)*			X	
sandbar shark *(Charcharinus plumbeus)*			X	X
bluefin tuna *(Thunnus thynnus)*				X
sand tiger shark *(Odontaspis Taurus)*		X		
Little skate (*Leucoraja erinacea*)			X P	X P
Winter skate (*Leucoraja ocellata*)			X P	P

6.5 Air Quality Statement of Conformity

The project would have no long-term impacts on air quality. During dredging equipment operating on the site would emit pollutants including nitrogen oxides that can lead to the formation of ozone. In order to minimize air quality effects during construction, all dredges, tugs, and other equipment would be properly outfitted with air pollution controls, as required by the Rhode Island Air Quality Control Regulations pertaining to dust, odors, construction, noise, and motor vehicle emissions. There would be no long-term effects on air quality. This project therefore complies with the Federal requirements for activities under the Clean Air Act within the Rhode Island State Implementation Plan. No permits for air quality are required under RI Regulation # 9, therefore no additional conformity analysis was performed.

6.6 Historic and Archaeological Resources

Coordination with the State of Rhode Island Historical Preservation and Heritage Commission for the PRHMDP FEIS has determined that the proposed dredging and disposal will not impact any historical or cultural resources.

6.7 Cumulative Impacts

Cumulative impacts are by definition, those resulting from incremental impact of the proposed action when added to other past, present, and reasonably foreseeable future actions. The effects of previous actions were generally limited to infrequent disturbances of the benthic communities in the project areas.

A. Conimicut Point Reach

Dredging of the Federal navigation channel is an infrequent event and no adverse cumulative impacts are projected as a result of this or future projects.

B. Disposal Site 69b

When the PRHMDP FEIS was written no cumulative impacts were expected from this project at the disposal site. At the time, disposal at Site 69b was to be only from this Federal project and associated private dredging. Dredged material disposal is one of many potential perturbations to a system. Because of their localized nature, impacts from the disposal of dredged material are difficult to isolate from other factors, including storms, which cause coastal ecosystems to change. Available information provides evidence that major system-wide effects resulting from disposal have not occurred in the past. It is known that the sediments within disposal sites recover and develop biological communities that are healthy and able to support species typically found in the ambient surroundings.

Since the Rhode Island Region Long-Term Dredged Material Disposal Site Evaluation Project FEIS (EPA & USACE, 2004) has been released for public comment and the site is potentially near designation, it is probable that Site 69b will become a long-term disposal site in the very near future. Consequently, this needs to be considered in assessing the cumulative impacts. A condition of the PRHMDP ROD is to cover all of the silty dredged material with more sandy material in order to return Site 69b to fine sandy pre-disposal conditions. Since the fine sand dredged during CAD cell creation has already been disposed of at Site 69b this material is no longer available for use. However, efforts are underway to locate clean fine sand with similar physical characteristics to the disposal site as existed prior to disposal, from other dredging projects. Once identified, this material will be used as a source of a clean sandy layer at 69b as originally intended. Therefore, a time lag may occur between the completion of the PRHMDP and the application of this fine sandy layer.

However, it must be taken into consideration when assessing cumulative impacts that Site 69b will become part of a long-term disposal site as proposed in the Rhode Island Region Long-Term Dredged Material Disposal Site Evaluation Project FEIS (EPA &

USACE, 2004) before the sand layer discussed above is applied. Should this site be officially designated with disposal planned to occur in a close timeline to the final disposal event from the PRHMDP, the need for the fine sand layer as originally required would no longer be useful and would serve to reduce the capacity of the site to accept suitable dredged material from future projects as identified in the Rhode Island Region Long-Term Dredged Material Disposal Site Evaluation Project FEIS (EPA & USACE, 2004). If this is the case, as disposal operations are opened at Site 69b, dredged material from the PRHMDP disposed of at the site will be covered by other suitable dredged material which will isolate it from the surrounding environment. .

C. CAD cells

No cumulative impacts are expected at the uncapped CAD cells. The contaminated material is isolated from the surrounding environment with little potential for dispersal. The additional time allows the sediments to consolidate further, creating more space in the CAD cells for future disposal of unsuitable dredged material. The majority of material added to the CAD cells from private dredging has at most the same level of contaminants as the original cap material (upper Fuller Rock Reach material). Most of the sediments from the private dredging projects are cleaner than the current material in the CAD cells and that of the surrounding environment.

6.8 Environmental Justice and Impacts to Children

On February 11, 1994, Executive Order 12898, *"Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations,"* was issued directing federal agencies to consider environmental justice. Environmental Justice is defined as identifying and addressing disproportionately high and adverse human health or environmental effects of an agency's programs, policies, and activities on minority populations and low-income populations. The President's "Memorandum on Environmental Justice" accompanying the Executive Order directs each "federal agency [to] analyze the environmental effects, including human health, economic and social effects, of Federal actions, including effects on minority communities, when such analysis is required" by the National Environmental Policy Act.

Executive Order 13045, “Protection of Children From Environmental Health Risks and Safety Risks,” requires federal agencies to identify and assess environmental health risks and safety risks that may disproportionately affect children. The proposed site for dredging is not adjacent to or near any schools or playgrounds. The environmental effects of this project are occurring in areas without any human populations. Therefore, the Proposed Action will not pose any significant or adverse short or long-term health and safety risks to children.

No significant adverse impacts to children, minority or low-income populations are anticipated. The environmental effects of this project are occurring in areas without these populations.

7.0 MEASURES TAKEN TO MINIMIZE ENVIRONMENTAL IMPACTS

1. Dredged material from Conimicut Point Reach will be placed over material from the upper Fuller Rock Reach at disposal Site 69b.

2. As previously coordinated with NMFS and RIDEM for the PRHMDP EIS, dredging will not occur between Bullock Point and 3,500 feet south of Conimicut Point during the winter flounder spawning (egg) period (February 1 through March 30).

3. As previously coordinated with NMFS and RIDEM for the PRHMDP EIS, dredging will not occur between Sabin Point and Conimicut Point from June 1 through July 31 to avoid impacting quahog spawning.

4. As previously coordinated, a trained endangered species observer will be present for all operations that occur in Rhode Island Sound.

8.0 COORDINATION AND CORRESPONDENCE

A public notice was released for this project on September 2, 2004 and coordination has been conducted between Federal and State agencies to address the various aspects of this project. The following agencies that have been contacted for this project include:

Rhode Island Department of Environmental Management
Rhode Island Coastal Resources Management Council
Rhode Island Historical Preservation & Heritage Commission
U.S. Environmental Protection Agency
U.S. Fish and Wildlife Service
National Marine Fisheries Service

9.0 REFERENCES

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10.0 COMPLIANCE

Federal Statutes

1. Archaeological Resources Protection Act of 1979, as amended, 16USC 470 et seq.

Compliance: Issuance of a permit from the Federal land manager to excavate or remove archaeological resources located on public or Indian lands signifies compliance. Not applicable to this project.

2. Preservation of Historic and Archeological Data Act of 1974, as amended, 16 U.S.C. 469 et seq.

Compliance: Project has been coordinated with the State Historic Preservation Officer. No impacts to archaeological resources are anticipated.

3. American Indian Religious Freedom Act of 1978, 42 U.S.C. 1996.

Compliance: Must ensure access by native Americans to sacred sites, possession of sacred objects, and the freedom to worship through ceremonials and traditional rites. Coordination revealed no conflicts.

4. Clean Air Act, as amended, 42 U.S.C. 7401 et seq.
Compliance: Public notice of the availability of this report to the Environmental Protection Agency is required for compliance pursuant to Sections 176c and 309 of the Clean Air Act. An Air Quality Statement of Conformity is contained in this EA.

5. Clean Water Act of 1977 (Federal Water Pollution Control Act Amendments of 1972) 33 U.S.C. 1251 et seq.

Compliance: A Section 404(b)(1) Evaluation and Compliance Review has been incorporated into the project report. An application has been filed to amend the exiting State Water Quality Certification pursuant to Section 401 of the Clean Water Act.

6. Coastal Zone Management Act of 1972, as amended, 16 U.S.C. 1451 et seq.

Compliance: A CZM consistency determination has been provided to the State for review and concurrence that the proposed project is consistent with the approved State CZM program to the maximum extent practicable.

7. Endangered Species Act of 1973, as amended, 16 U.S.C. 1531 et seq.

Compliance: Coordination with the U.S. Fish and Wildlife Service (FWS) and National Marine Fisheries Service (NMFS) determined that formal consultation requirements pursuant to Section 7 of the Endangered Species Act was not required.

8. Estuarine Areas Act, 16 U.S.C. 1221 et seq.

Compliance: Not applicable, as this report is not being submitted to Congress.

9. Federal Water Project Recreation Act, as amended, 16 U.S.C. 4601-12 et seq.

Compliance: Public notice of availability to the Environmental Assessment to the National Park Service (NPS) and Office of Statewide Planning relative to the Federal and State comprehensive outdoor recreation plans signifies compliance with this Act.

10. Fish and Wildlife Coordination Act, as amended, 16 U.S.C. 661 et seq.

Compliance: Coordination with the FWS, NMFS, and State fish and wildlife agencies signifies compliance with the Fish and Wildlife Coordination Act.

11. Land and Water Conservation Fund Act of 1965, as amended, 16 U.S.C. 4601-4 et seq.

Compliance: Public notice of the availability of this report to the National Park Service (NPS) and the Office of Statewide Planning relative to the Federal and State comprehensive outdoor recreation plans signifies compliance with this Act.

12. Marine Protection, Research, and Sanctuaries Act of 1971, as amended, 33 U.S.C. 1401 et seq.

Compliance: The site 69b has undergone a formal site selection process in accordance with MPRSA.

13. National Historic Preservation Act of 1966, as amended, 16 U.S.C. 470 et seq.

Compliance: Coordination with the State Historic Preservation Office signifies compliance.

14. Native American Graves Protection and Repatriation Act (NAGPRA), 25 U.S.C. 3000-3013, 18 U.S.C. 1170.

Compliance: Regulations implementing NAGPRA will be followed if discovery of human remains and/or funerary items occur during implementation of this project.

15. National Environmental Policy Act of 1969, as amended, 42 U.S.C 4321 et seq.

Compliance: Preparation of an Environmental Assessment signifies partial compliance with NEPA. Full compliance shall be noted at the time the Finding of No Significant Impact or Record of Decision is issued.

16. Rivers and Harbors Act of 1899, as amended, 33 U.S.C. 401 et seq.

Compliance: No requirements for Corps projects or programs authorized by Congress. The proposed maintenance dredging is being conducted pursuant to the Congressionally-approved authority.

17. Watershed Protection and Flood Prevention Act as amended, 16 U.S.C 1001 et seq.

Compliance: Floodplain impacts have been considered in project planning to comply with this Act.

18. Wild and Scenic Rivers Act, as amended, 16 U.S.C 1271 et seq.

Compliance: Not applicable, the project is not located in a designated wild and scenic river.

19. Magnuson-Stevens Act, as amended, 16 U.S.C. 1801 et seq.

Compliance: Coordination with the National Marine Fisheries Service and preparation of an Essential Fish Habitat (EFH) Assessment signifies compliance with the EFH provisions of the Magnuson-Stevens Act.

Executive Orders

1. Executive Order 11593, Protection and Enhancement of the Cultural Environment, 13 May 1971

Compliance: Coordination with the State Historic Preservation Officer signifies compliance.

2. Executive Order 11988, Floodplain Management, 24 May 1977 amended by Executive Order 12148, 20 July 1979.

Compliance: Public notice of the availability of this report or public review fulfills the requirements of Executive Order 11988, Section 2(a) (2).

3. Executive Order 11990, Protection of Wetlands, 24 May 1977.

Compliance: Public notice of the availability if this report for public review fulfills the requirements of Executive Order 11990, Section 2 (b).

4. Executive Order 12114, Environmental Effects Abroad of Major Federal Actions, 4 January 1979.

Compliance: Not applicable, the project is located within the United States.

5. Executive Order 12898, Environmental Justice, 11 February 1994.

Compliance: Not applicable, the project is not expected to have a significant adverse impact on minority or low income population, or any other population in the United States.

6. Executive Order 13007, Accommodation of Sacred Sites, 24 May 1996

Compliance: Not applicable unless on Federal Lands, then agencies must accommodate access to and ceremonial use of Indian Sacred Sites by Indian religious practitioners, and avoid adversely affecting the physical integrity of such sacred sites.

7. Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks. 21 April, 1997.

Compliance: Not applicable, the project would not create a disproportionate environmental health or safety risk for children.

8. Executive Order 13175, Consultation and Coordination with Indian Tribal Governments, 6 November 2000.

Compliance: Consultation with Indian Tribal Governments, where applicable, and consistent with executive memoranda, DoD Indian Policy, and USACE Tribal Policy Principles signifies compliance.

Executive Memorandum

1. Analysis of Impacts on Prime or Unique Agricultural Lands in Implementing NEPA, 11 August 1980.

Compliance: Not applicable, the project does not involve or impact agricultural lands.

2. White House Memorandum, Government-to-Government Relations with Indian Tribes, 29 April 1994.

Compliance: Consultation with Federally Recognized Indian Tribes, where appropriate, signifies compliance.

CLEAN WATER ACT, SECTION 404 (b) (1) EVALUATION AND FINDING OF COMPLIANCE

PROJECT: Proposed Change to Ongoing Maintenance Dredging of the Providence River and Harbor Federal Navigation Project, Providence, Rhode Island

PROJECT MANAGER: Edward O'Donnell PHONE NO. (978) 318-8375

FORM COMPLETED BY: Valerie Cappola PHONE NO. (978) 318-8067

PROJECT DESCRIPTION:

An Environmental Impact Statement was prepared based on the controversy associated with dredging the Providence River and Harbor and the lack of a suitable disposal site for the material. The Providence River and Harbor Federal Maintenance Dredging Project final environmental impact statement (PRHMDP FEIS) called for dredged material that was unsuitable for open water disposal to be placed into subaquaqueous confined aquatic disposal (CAD) cells (see Figure 2). The CAD cells were to be capped with material from the upper Fuller Rock Reach region (Figure 1), specifically sampling sites G and H. The Rhode Island Coastal Resources Management Council has requested that the CAD cells be left uncapped. The shoaled sediments from sampling sites G and H, comprising approximately 250,000 cubic yards (191,139 m^3) of material are suitable for unconfined open water disposal. This material is now being placed at Site 69b instead of the CAD cells. Site 69b (Figure 4) is currently being used for the disposal of other dredged maintenance material from this project. Suitable material from Conimicut Point Reach will cover the material from upper Fuller Rock Reach at Site 69b. This Clean Water Act 404(b)1 analysis amends the previous evaluation in the PRHMDP FEIS that disposed material in the CAD cells will be capped with suitable dredged material from the PRHMDP.

NEW ENGLAND DISTRICT
U.S. ARMY CORPS OF ENGINEERS, CONCORD, MA

EVALUATION OF CLEAN WATER ACT SECTION 404(b)(1) GUIDELINES

PROJECT: Proposed Change to Ongoing Maintenance Dredging of the Providence River and Harbor Federal Navigation Project, Providence, Rhode Island

1. Review of Compliance (Section 230.10(a)-(d)).

	YES	NO
a. The discharge represents the least environmentally damaging practicable alternative and if in a special aquatic site, the activity associated with the discharge must have direct access or proximity to, or be located in the aquatic ecosystem to fulfill its basic purpose.	X	
b. The activity does not appear to: 1) violate applicable state water quality standards or effluent standards prohibited under Section 307 of the CWA; 2) jeopardize the existence of Federally listed threatened and endangered species or their habitat; and 3) violate requirements of any Federally designated marine sanctuary.	X	
c. The activity will not cause or contribute to significant degradation of waters of the U.S. including adverse effects on human health, life stages of organisms dependent on the aquatic ecosystem, ecosystem diversity, productivity and stability, and recreational, aesthetic, and economic values.	X	
d. Appropriate and practicable steps have been taken to minimize potential adverse impacts of the discharge on the aquatic ecosystem.	X	

2. Technical Evaluation Factors (Subparts C-F).

		N/A	Not Significant	Significant
a.	Potential Impacts on Physical and Chemical Characteristics of the Aquatic Ecosystem (Subpart C)			
	1) Substrate		X	
	2) Suspended particulates/turbidity		X	
	3) Water column impacts		X	
	4) Current patterns and water circulation		X	
	5) Normal water fluctuations		X	
	6) Salinity gradients		X	

		N/A	Not Significant	Significant
b.	Potential Impacts on Biological Characteristics of the Aquatic Ecosystem (Subpart D)			
	1) Threatened and endangered species		X	
	2) Fish, crustaceans, mollusks, and other organisms in the aquatic food web		X	
	3) Other wildlife (mammals, birds, reptiles and amphibians)		X	
c.	Potential Impacts on Special Aquatic Sites (Subpart E).			
	1) Sanctuaries and refuges	X		
	2) Wetlands	X		
	3) Mud flats	X		
	4) Vegetated shallows	X		
	5) Coral reefs	X		
	6) Riffle and pool complexes	X		
d.	Potential Effects on Human Use Characteristics (Subpart F).			
	1) Municipal and private water supplies	X		
	2) Recreational and commercial fisheries		X	
	3) Water-related recreation		X	
	4) Aesthetics impacts		X	
	5) Parks, national and historic monuments, national seashores, wilderness areas, research sites and similar preserves		X	

3. Evaluation and Testing (Subpart G).

a.	The following information has been considered in evaluating the biological availability of possible contaminants in dredged or fill material. (Check only those appropriate.)	
	1) Physical characteristics	X
	2) Hydrography in relation to known or anticipated sources of contaminants	X
	3) Results from previous testing of the material or similar material in the vicinity of the project	X
	4) Known, significant sources of persistent pesticides from land runoff or percolation	
	5) Spill records for petroleum products or designated hazardous substances (Section 311 of CWA)	X

	6) Public records of significant introduction of contaminants from industries, municipalities, or other sources.	X
	7) Known existence of substantial material deposits of substances which could be released in harmful quantities to the aquatic environment by man-induced discharge activities	
	8) Other sources (specify)	
	List appropriate references. See Final Environmental Impact Statement for the Providence River and Harbor Maintenance Dredging Project and Environmental Assessment for Proposed Change to Ongoing Maintenance Dredging of the Providence River and Harbor Federal Navigation Project, Providence, Rhode Island.	

	YES	NO
b. An evaluation of the appropriate information in 3a above indicates that there is reason to believe the proposed dredged material is not a carrier of contaminants, or that levels of contaminants are substantively similar at extraction and disposal sites and not likely to require constraints. The material meets the testing exclusion criteria.	X	

4. Disposal Site Delineation (Section 230.11(f)).

a.	The following information has been considered in evaluating the biological availability of possible contaminants in dredged or fill material. (Check only those appropriate.)	
	1) Depth of water at disposal site	X
	2) Current velocity, direction, variability at disposal site	X
	3) Degree of turbulence	X
	4) Water column stratification	X
	5) Discharge vessel speed and direction	X
	6) Rate of discharge	X
	7) Dredged material characteristics (constituents, amount, and type of material, settling velocities)	X
	8) Number of discharges per unit of time	X
	9) Other factors affecting rates and patterns of mixing (specify)	
	List appropriate references. See Final Environmental Impact Statement for the Providence River and Harbor Maintenance Dredging Project and mixing zone document appended to this evaluation and Environmental Assessment.	

	YES	NO
b. An evaluation of the appropriate information factors in 4a above indicated that the disposal sites and/or size of mixing zone are acceptable.	X	

5. Actions to Minimize Adverse Effects (Subpart H).

	YES	NO
All appropriate and practicable steps have been taken, through application of recommendation of Section 230.70-230.77 to ensure minimal adverse effects of the proposed discharge.	X	

List actions taken

1. Per previous coordination with NMFS and RIDEM conducted for the PRHMDP EIS avoid dredging from February 01 to March 30 during the period when winter flounder are spawning in the area between Bullock Point and 3,500 feet south of Conimicut Point.

2. Per previous coordination with NMFS and RIDEM conducted for the PRHMDP EIS avoid dredging between Sabin Point and Conimicut Point from June 1 through July to avoid impacting quahog spawning.

3. 3. Material from the lower reaches (Conimicut Point Reach) will be placed over material from the upper reaches at the disposal site as described in the PRHMDP FEIS.

6. Factual Determination (Section 230.11).

A review of appropriate information, as identified in Items 2 – 5 above, indicates there is minimal potential for short or long term environmental effects of the proposed discharge as related to:		
	YES	NO
a. Physical substrate at the disposal site (review Sections 2a, 3, 4, and 5 above)	X	
b. Water circulation, fluctuation and salinity (review Sections 2a, 3, 4, and 5)	X	
c. Suspended particulates/turbidity (review Sections 2a, 3, 4 and 5)	X	
d. Contaminant availability (review Sections 2a, 3, and 4)	X	
e. Aquatic ecosystem structure, function and organisms (review Sections 2b and 2c, 3, and 5)	X	
f. Proposed disposal site (review Sections 2, 4, and 5)	X	
g. Cumulative effects on the aquatic ecosystem	X	
h. Secondary effects on the aquatic ecosystem	X	

7. Findings of Compliance or Non-compliance

	YES	NO
The proposed disposal site for discharge of dredged or fill material complies with the Section 404(b)(1) guidelines.	X	

_____ Date

_____
Thomas L. Koning
Colonel, Corps of Engineers
Division Engineer

FINDING OF NO SIGNIFICANT IMPACT

An Environmental Impact Statement was prepared based on the controversy associated with dredging the Providence River and Harbor and the lack of a suitable disposal site for the material. The Providence River and Harbor Federal Maintenance Dredging Project final environmental impact statement (PRHMDP FEIS) called for dredged material that was unsuitable for open water disposal to be placed into subaquaqueous confined aquatic disposal (CAD) cells (see Figure 2). The CAD cells were to be capped with material from the upper Fuller Rock Reach region, specifically sampling sites G and H (Figure 1). The Rhode Island Coastal Resources Management Council has requested that the CAD cells be left uncapped for several years. The shoaled sediments from sampling sites G and H, comprising approximately 250,000 cubic yards (191,139 m^3) of material are suitable for unconfined open water disposal. This material is now being placed at Site 69b instead of the CAD cells. Site 69b (Figure 4) is currently being used for the disposal of other dredged maintenance material from this project. Suitable material from Conimicut Point Reach will cover material from the upper Fuller Rock Reach at Site 69b.

This assessment has been prepared in accordance with the National Environmental Policy Act of 1969 and all applicable environmental statutes and executive orders. It has been determined that an Environmental Impact Statement is not required and is based upon the information contained in the Environmental Assessment and the following considerations.

1. Based on physical and chemical analyses and using best management practices, the material in the project area will have no significant adverse effect upon existing water quality at the dredging or disposal area, pursuant to the Clean Water Act and the Marine Protection, Research, and Sanctuaries Act.

2. Impacts to biological resources will be minimized by not allowing dredging in the region between Bullock point and 3,500 feet south of Conimicut Point to occur between February 1 and March 30 to avoid the spawning period of winter flounder.

3. Impacts to biological resources will be minimized by restricting dredging between Sabin Point and Conimicut Point from June 1 through July to avoid quahog spawning.

4. The project will not affect any State or Federally threatened, endangered, or rare species, pursuant to the Endangered Species Act.

5. As a result of coordination with the State Historic Preservation Office, it has been determined that no cultural resources will be impacted by the proposed dredging or disposal operation.

6. A temporary impact will be caused by removal of benthic organisms from the shoal areas in the channel and anchorage areas by the dredging operations, and by

burial with deposition of sediments at the disposal site. These organisms will be replaced by recolonization of species from adjacent areas.

7. Dredging and disposal operations will cause only localized and temporary turbidity and sedimentation.

8. This project complies with the Clean Air Act. A statement of Conformity can be found in Section 6.5 of the Environmental Assessment.

9. Material from the lower reaches (Conimicut Point Reach) will be placed over material from the upper reaches at the disposal site 69b as described in the PRHMDP FEIS.

Based on my review and evaluation of the environmental effects as presented in the Environmental Assessment, I have determined that the Proposed Change to Ongoing Maintenance Dredging of the Providence River and Harbor Federal Navigation Project is not a major Federal action significantly affecting the quality of the human environment, and is therefore exempt from requirements to prepare an Environmental Impact Statement.

_____
Date

_____
Thomas L. Koning
Colonel, Corps of Engineers
Division Engineer

APPENDIX A

SUITABILITY DETERMINATIONS

APPENDIX B

CORRESPONDENCE

APPENDIX C

ESSENTIAL FISH HABITAT