TETRA TECH EM INC.



# Memorandum

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SUBJECT: USACE Contract No. DACW33-94-D-0002 -- NE TERC
New Bedford Harbor Operable Unit 1 – North Lobe Dredging
Use of Sediment as Fill in Debris Disposal Area

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This memorandum presents options for using contaminated sediment from the North Lobe Dredging as fill in the Debris Disposal Area (DDA) at Area C in the area that will be used to support future desanding equipment. Sediment will be mechanically dredged from the North Lobe, transferred by barge to Area C, then placed into temporary stockpiles in the DDA and screened to remove oversize material. Material that passes through the screen will be placed into the existing disposal cells and the oversize material will be placed into the DDA.

In the event that there is not sufficient capacity in the cells for all the sediment, sediment will be stockpiled in the DDA. The question addressed in this memorandum is: can this sediment be processed so that it could provide adequate subgrade support for future desanding equipment?

In order to answer this question, it is necessary to know the type of sediment that will be dredged and the type of facilities that will be built for future desanding. Based on our sediment sampling and recent dredging at the South Lobe, the dredged sediment will be a mixture of plastic silt, fine sand, and natural organic material and will have a high water content.

As described in the Basis of Design/ Design Analysis Report for Dewatering and Desanding Facility, the concept design for desanding is to cover the area with temporary asphalt pavement, then place skid-mounted equipment inside a temporary building constructed with fabric over a metal frame. Equipment will be connected by HDPE or PVC pipe with flexible connectors between tanks and pumps. Soil settlement is not critical for this type of temporary facility and settlement of several inches will not cause structural damage or over-stress piping connections. If there is differential settlement of slurry tanks, they can be leveled by jacking up a portion of the support skid. The equipment and building will be supported by asphalt and an underlying gravel layer. With this type of support, there is relatively low bearing pressures applied to the subgrade soil.

Based on experience with the Early Action, South Lobe and from other projects, the dredged sediment will not be suitable for fill immediately after screening. However, after processing to lower the water content and proper compaction, it will provide adequate subgrade support for the desanding equipment. There are several alternative processing methods that will reduce the water content.

- One method is to stockpile the sediment after screening and leave it until next summer. During this time, some water will drain by gravity and self-weight consolidation and some will evaporate. This alternative was successfully used for some of the dredged sediment from the Early Action area. The disadvantage of this alternative is the time it takes for consolidation and evaporation. The advantage is the low cost.
- A second alternative is to mix the screened sediment with some of the oversize material. This blending will reduce the overall water content, which will make the sediment more suitable for compaction. The disadvantage of this alternative is that there may not be enough oversize material to mix with the sediment and the mixing costs more than gravity and evaporation drying. The advantage is that is could be done sooner and is less dependent on warm weather.
- A third alternative is to add cement or lime before compacting on site. This was successfully used for the South Lobe and for the City of New Bedford State Pier project. The disadvantage of this method is the cost for treatment and potential air quality impacts during processing. The advantage is that is can be done sooner and can be designed to provide higher strengths than the other alternatives.

In conclusion, in my opinion the dredged sediment from the North Lobe can be used as subgrade fill to support desanding equipment and operations. Since the volume of sediment that may require processing and placement in the DDA is unknown at this time, I recommend that the sediment be screened, then temporarily placed in the DDA, covered to prevent precipitation infiltration and left there until next summer. There will be time next year to process the dredged sediment as part of the sitework for preparing the DDA area for the desanding equipment.