SECTION FOUR

POTENTIAL FOR PILOT-SCALE OPERATIONS

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This section contains the requested data items described in the revised specification No. SED-2 dated January 8, 1996, and was submitted previously as part of MARCOR's revised price proposal to conduct a pilot scale study.

4.1 PROCESS FLOW CHART

Figure 4-1 presents a schematic of the treatment process and the components of the proposed system. As shown on Figure 4-1, the as dredged sediment will be transferred to a dewatering filter container. Decanted water will be temporarily stored on-site pending sampling/characterization. The dewatered sediment will be thoroughly mixed with a slurry mixture of the ACT reagent and placed in a lined roll off container for curing. After final cure, samples will be collected for waste classification and the treated sediment will subsequently be transported to a lined Subtitle D landfill for disposal.

4.2 ESTIMATED MASS BALANCE

For 25 cubic yards of "as-dredged" sediment, MARCOR assumes a 30% volume reduction will occur during the container filter dewatering phase. The exact number of gallons decanted in the dewatering phase will be recorded and subsequent calculations revised accordingly. Assuming a 30% volume reduction, 17.5 cubic yards of sediment will undergo treatment and 1515 gallons of water will be pumped to the storage tank.

At a 25% weight of sediment to weight of dry ACT reagent addition rate, and assuming a bulk density of 71 lb/cubic feet for the dewatered sediment, the 17.5 cubic yards of sediment will require a total of 8387 pounds of ACT reagent. To prepare the decanted water slurry, 8387 pounds of ACT

Treatment Process Chart
Pilot Scale Sediment Treatment

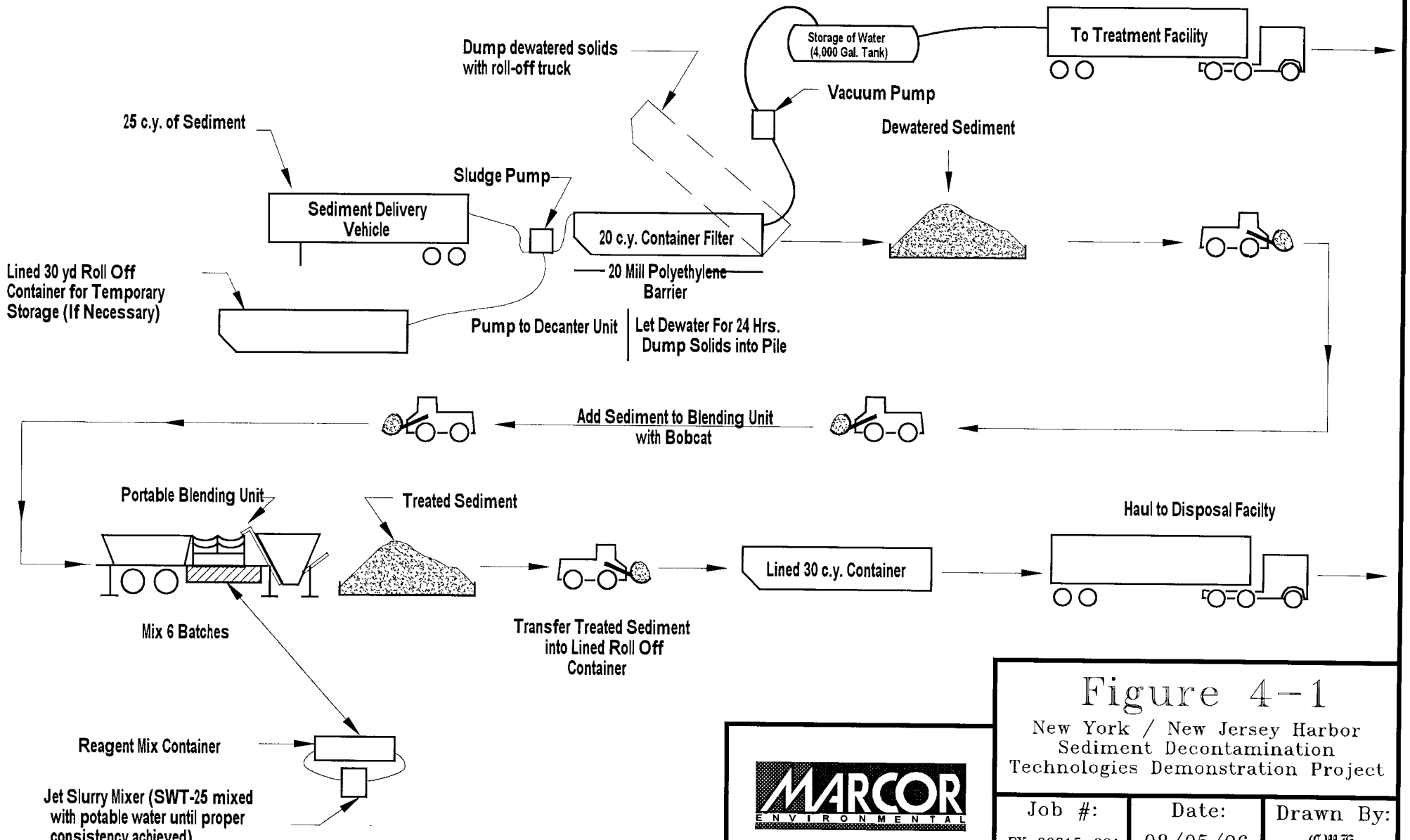

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Figure 4-1

New York / New Jersey Harbor Sediment Decontamination Technologies Demonstration Project

Job #:	Date:	Drawn By:
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will be mixed with 1106 gallons of potable water. This will occur in two separate batches.

After treatment, approximately 27 cubic yards of treated sediment will be produced and 1515 gallons of water will remain in the storage tank. The calculation can be simplified as follows:

> 25 cu.yds sediment + 8387 lbs. ACT + 1106 gallons potable water=27 cu.yds trtd sediment + 1515 gallons decanted water

4.3 TREATMENT EFFLUENTS AND DISPOSAL PROCEDURES

The only potential side stream or effluent generated from the ACT treatment process will be water decanted from the sediment. The volume collected will depend on the degree to which the sediment is dewatered, if any, prior to delivery to the pilot project site. The water decanted on site will be stored in a 4000 gallon polyethylene tank with built-in secondary containment. There are no other gaseous, liquid or solid effluents anticipated.

Two options exist for the disposal of the decanted water, the first being discharge to a local Publicly Owned Treatment Works (POTW) and the second being treatment at a permitted Treatment, Storage and Disposal Facility (TSDF). In most cases, the most cost-effective option for treatment would be discharge to a POTW, however, if excessive analysis is required prior to discharge, it may not be the most economical choice for such a small volume of water. The second option would be to transport the water in a bulk tanker truck to a TSDF such as E.I. Dupont in Deepwater, NJ where the water would undergo physical and chemical treatment.

Treated sediment will be analyzed/characterized for disposal at Browning-Ferris Industries Greentree Landfill in Greentree, PA. The material will be loaded into dump trailers and transported to this lined Subtitle D facility. If the pilot scale treatability takes place in the state of New Jersey, the treated sediment would have to be deemed exempt from the Solid Waste Flow Regulations to be landfilled

out of state.

Another option for disposal of the treated sediment exists in recycling the material as clean fill. MARCOR has identified several local clean fill suppliers who would be willing to handle the treated sediments from the pilot scale study assuming they are permitted to do so.

4.4 OPTIMAL WATER CONTENT

The optimal water content of the sediment prior to initiating the treatment with the ACT reagent has not been fully quantified. However, in general, some degree of sediment dewatering will be necessary so that the material can be handled with standard mixing/blending equipment. The optimal water content is therefore more a function of the equipment's ability to handle the sediments rather than a requirement of the technology to treat contaminants within a saturated matrix. However, it is conceivable that specialized equipment could be fabricated to handle the task of mixing "as dredged" material with the dry reagent to provide a thorough mixing and obtain effective treatment.

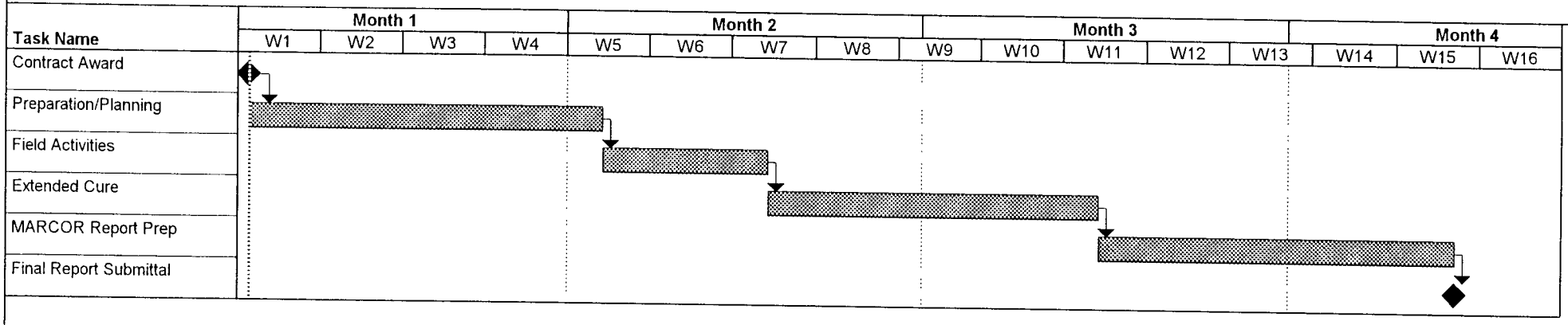
4.5 PATENT INFORMATION

The developer of the ACT technology, Mr. Jeff Newton, through a Canadian company, has applied for a patent in both the United States and Canada.

4.6 ESTIMATED IMPLEMENTATION SCHEDULE

Figure 4-2 presents a proposed implementation schedule for proceeding with the ACT technology through Phase II-Pilot Scale operations.

Figure 4-2
BNL NY/NJ HARBOR SEDIMENTS PILOT SCALE STUDY
PROPOSED PROJECT SCHEDULE



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Date: 8/5/96

Task
Progress
Milestone
Summary
Rolled Up Task
Rolled Up Milestone
Rolled Up Progress

4.7 DEMONSTRATION LOCATION

MARCOR of Pennsylvania would prefer the use of a Brookhaven National Laboratory (BNL)-supplied facility, whether it be located at the Port Newark warehouse or the Brookhaven National Laboratory property, for the demonstration location. Considering the quantity of material intended for treatment in the Request For Proposal(25 cubic yards), activity on-site should be completed in a relatively short time frame. It could prove to be an onerous and time-consuming task to obtain local, state and federal permits (if required) to perform the pilot scale demonstration at a MARCOR-supplied facility. Thus, if a BNL-supplied facility is available, MARCOR would prefer to take advantage of that option. The pilot demonstration proposed by MARCOR would require a minimum of 1 acre, preferably 1.5 acres if available.

4.8 UTILITY REQUIREMENTS

The pilot scale system proposed by MARCOR would require a minimum of 200 kilowatts, 3 phase, 480 volts. The water source must supply a minimum of 50 pounds per square inch and 6 GPM.

4.9 PERSONNEL

The staff MARCOR would utilize for the implementation of the pilot scale study would include the following: project manager, on-site manager, site supervisor, equipment operators (2), laborers(2), truck driver and technical assistance such as a chemist, H & S officer and R & D managers.