GUIDANCE FOR NEW YORK DISTRICT

DREDGED MATERIAL INSPECTORS

US Army Corps of Engineers
New York District

Operations Division, Operations Support Branch
Dredged Material Management Section
26 Federal Plaza
New York, New York 10278

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ACRONYMS AND DEFINITIONS

ADISS – Advanced Dredging & Industrial Solutions

BDMMES – Backup Dredged Material Monitoring Equipment and Software

DGPS – Differential Global Positioning System
DMI – Dredged Material Inspector
DMTPM - Dredged Material Transport and Placement Meeting

EPA – Environmental Protection Agency

HARS – Historic Area Remediation Site

MDS – Mud Dump Site
MPRSA – Marine Protection, Research, and Sanctuaries Act

NJDEP – New Jersey Department of Environmental Protection
NMFS – National Marine Fisheries Service
NOAA – National Oceanographic and Atmospheric Administration
NYD - New York District
NYSDEC – New York State Department of Environmental Conservation

PDMMES – Primary Dredged Material Monitoring Equipment and Software
POC – Point of Contact
PRA - Priority Remediation Areas
Pre-Con – Pre-Construction Meeting

ROSBA – Rockaway Offshore Sand Borrow Area

SBOBA – Sea Bright Offshore Borrow Area
SBZ – Shipwreck Buffer Zone

TPL – Transportation and Placement Log

USACE – US Army Corps of Engineers
USCG – United States Coast Guard

1. INTRODUCTION

Dredging activities in the New York Harbor and vicinity are highly scrutinized by Federal and State agencies, environmental organizations, and the general public. Although comprehensive requirements and procedures are part of every dredging project, there is still a need for independent verification of compliance with contract specifications, permit conditions, and environmental laws. US Army Corps of Engineers, New York District (NYD) Dredged Material Inspectors (DMIs) provide the independent observation and verification. DMIs are required by NYD to be aboard all vessels transporting dredged material to offshore placement sites in the inner New York Bight and vicinity (Figure 1). The National Marine Fisheries Service (NMFS) also requires marine mammal/endangered species observers to be aboard these vessels. Dredging contractors prefer to hire DMIs and NMFS Observers with both certifications due to reduced cost and logistical requirements.

This guidance manual has been prepared to assist NYD DMIs in performing their duties and provides a summary of the NYD's role in dredging projects. DMIs must fully understand all the information within this guidance manual prior to working on a NYD dredging project.

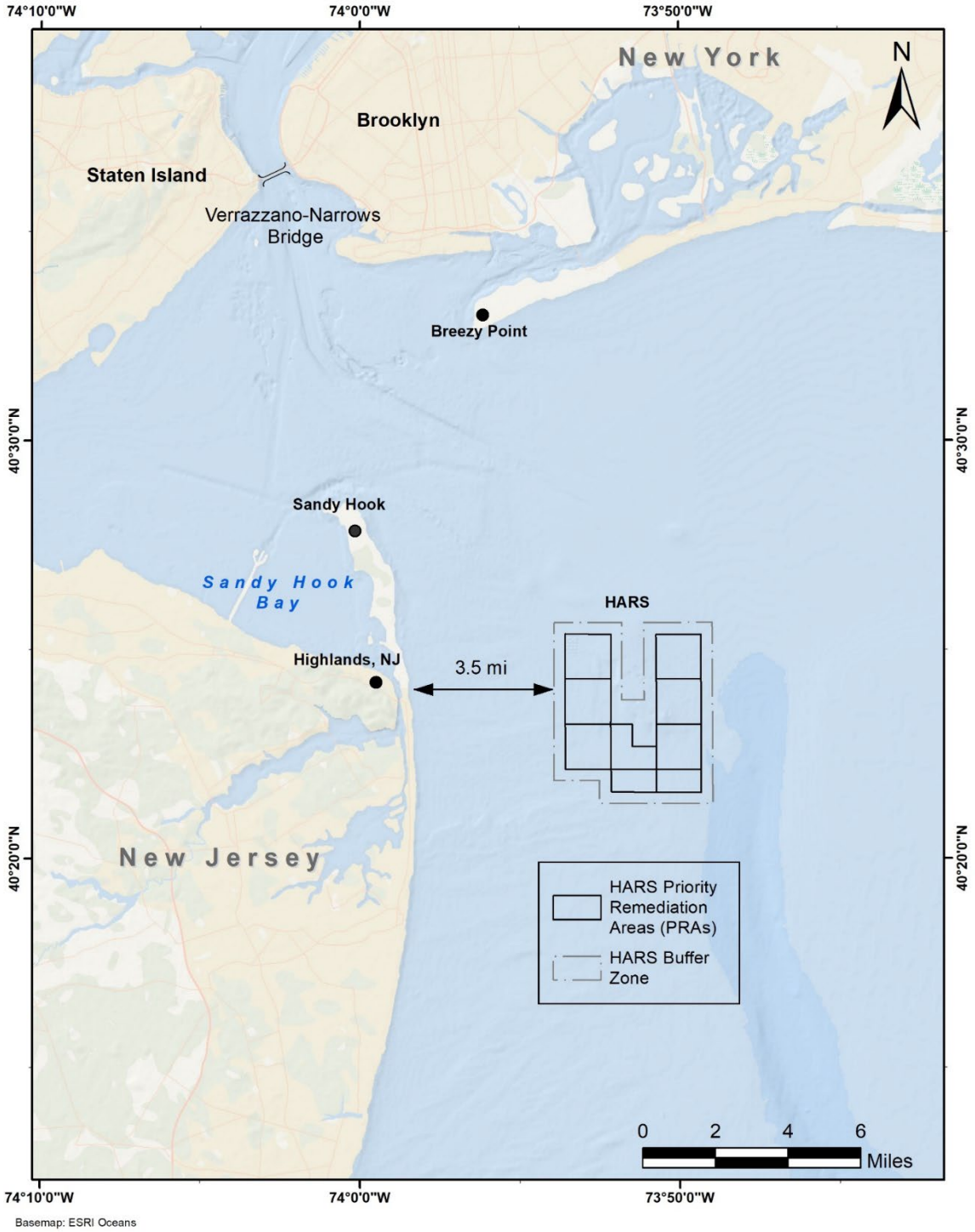


Figure 1. Inner New York Bight and New York Harbor with location of Historic Area Remediation Site (HARS).

2. DREDGING ACTIVITIES

US Army Corps of Engineers, New York District is responsible for providing permits to private dredging projects and also to oversee Federal Navigation dredging projects located in New York Harbor and the surrounding areas.

- **Federal projects**: NYD issues contracts to private dredging companies to conduct dredging in Federal Navigation Channels. Contract specifications describe the procedures and guidelines to be followed during activities at the dredging site and during placement of dredged material.

- **Private dredging projects**: NYD grants permits to conduct dredging. Permit conditions describe procedures and guidelines associated with dredging, transportation of dredged material and dredged material placement.

Dredging is divided into two categories:

- **Maintenance dredging** involves removal of natural sediment that accumulates in existing channels, harbors and other waterways.

- **New work dredging** (also called construction dredging) involves creation of new channels or deepening of existing channels below originally constructed depths.

Sediment build up occurs when particles settle to the bottom of navigable waters and accumulation of sediment decreases the water depth. Dredging is needed to increase water depth in navigable channels and prevent ships from hitting the bottom.

Dredged material varies greatly in its characteristics. In general, it has a high fluid content giving it a soup-like consistency, dark color and an odor. The high water content is due to a lack of compaction of the sediments; the dark color is due to low oxygen in the sediments reducing iron compounds; and the smell, usually of rotten eggs, is due to hydrogen sulfide gas produced by microbial decay of organic matter. Maintenance dredged material may consist of silt/clay, sand, gravel and/or rock. New work dredged material is glacial till, red clay or rock and has a very different appearance than recently deposited maintenance material.

There are no regular schedules for conducting maintenance dredging of Federal navigation channels in the New York Harbor area. Periodic bathymetric surveys or reports of potential shoaling problems are used to justify maintenance dredging. Private property owners also rely on the same type of information to determine if dredging is required.

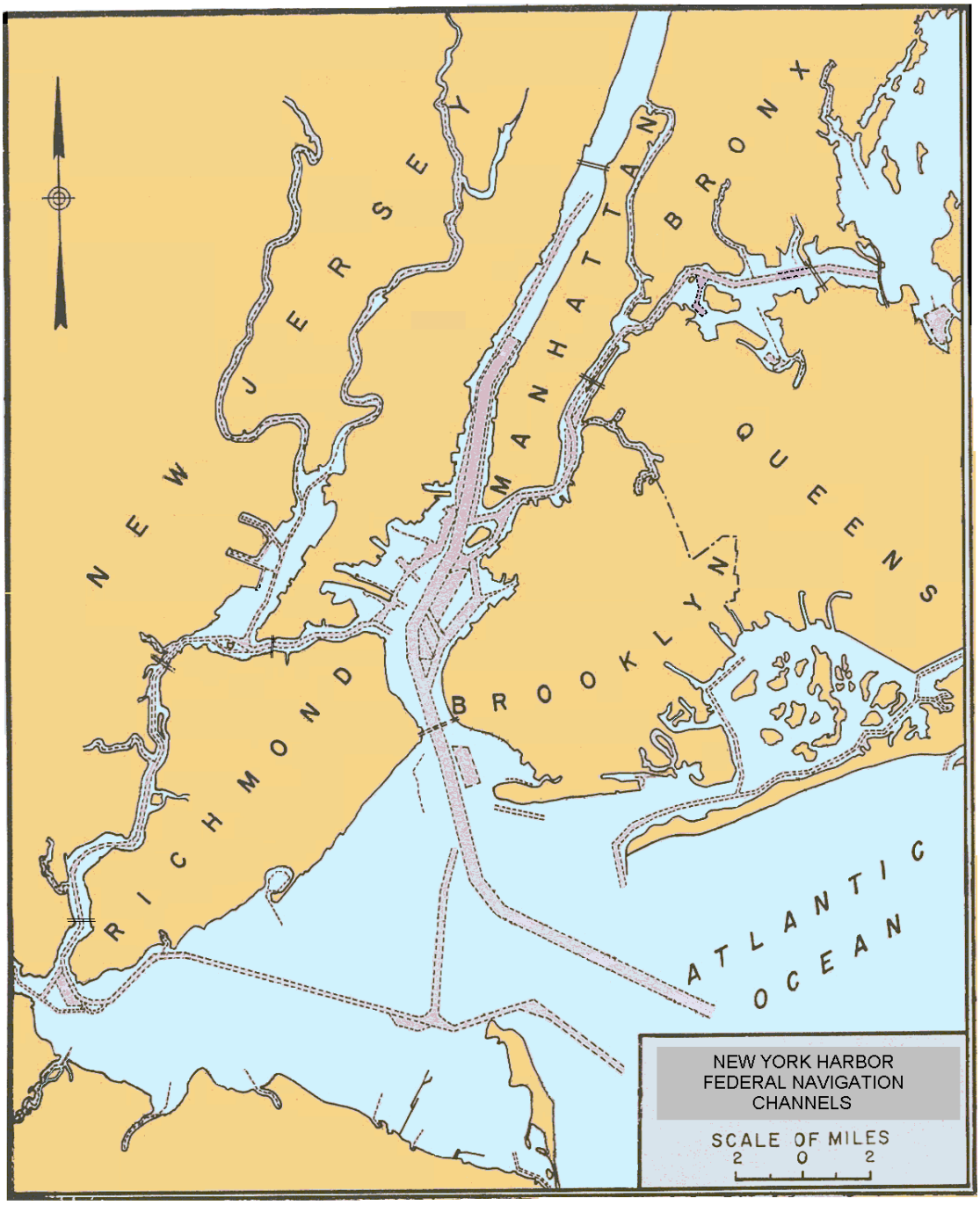


Figure 2. Federally maintained navigation channels in the New York Harbor area.

3. PLACEMENT SITES

3.1 HISTORIC AREA REMEDIATION SITE (HARS)

The New York Bight Apex and surrounding area has been used for disposal of dredged sediment and other materials since the 1800's. The Marine Protection, Research, and Sanctuaries Act (MPRSA) was enacted by Congress in 1972 to address and control the dumping of materials into ocean waters. Title 1 of MPRSA authorized EPA and the US Army Corps of Engineers to regulate disposal of dredged material in the ocean. Concerns over potential adverse effects of contaminated sediments in the area of the New York Bight known as the Mud Dump Site (MDS)(Figure 3) led to its closure in September 1997. Simultaneous with closure of the MDS, the site and surrounding areas used for disposal of dredged material were re-designated under 40 CFR Section 228 as the Historic Area Remediation Site (HARS). Remediation of the HARS requires placement of at least a one-meter cap of clean dredged material.

The HARS is divided into nine Priority Remediation Areas (PRAs). Placement of dredged material is only allowed within the confines of the nine PRAs. A buffer zone surrounds the entire HARS. Dredged material must never be placed within the Buffer Zone, No Discharge Zone, Shipwreck Buffer Zones (SBZ), 1993 and 1997 Capping Projects or outside of the HARS buffer zone. The buffer zone surrounding historical shipwrecks is 0.27nm (500m or 1640 ft). The location of the nine PRAs, Shipwreck Buffer Zones, No Discharge Zone, Buffer Zone and 1993 and 1997 Capping Projects are illustrated in Figure 3.

All dredged material proposed for ocean placement must meet testing criteria, as described in 40 CFR parts 227.6 and 227.27, and is jointly determined suitable for placement at the HARS as Remediation Material by NYD and USEPA Region 2 (EPA), as described in 40 CFR Part 228.15. Prior to placement of any dredged material at the HARS, a series of laboratory tests are conducted to ensure that the material will not cause environmental harm. Only dredged material that meets HARS testing criteria is allowed to be placed at the Historic Area Remediation Site.

3.2 OFFSHORE SAND BORROW AREAS

The New York District has identified coastal areas in New York and New Jersey which require periodic and regular beach replenishment. Dredged sand is temporarily placed and stored at an offshore borrow site to be used later for beach replenishment projects. Two borrow sites currently used by NYD are the Sea Bright Offshore Borrow Area (SBOBA) and the Rockaway Offshore Sand Borrow Area (ROSBA) (Figure 4). ***Dredged material assigned for placement at these offshore borrow sites are monitored, tracked, and documented by DMIs, following the same requirements as for HARS placement.***

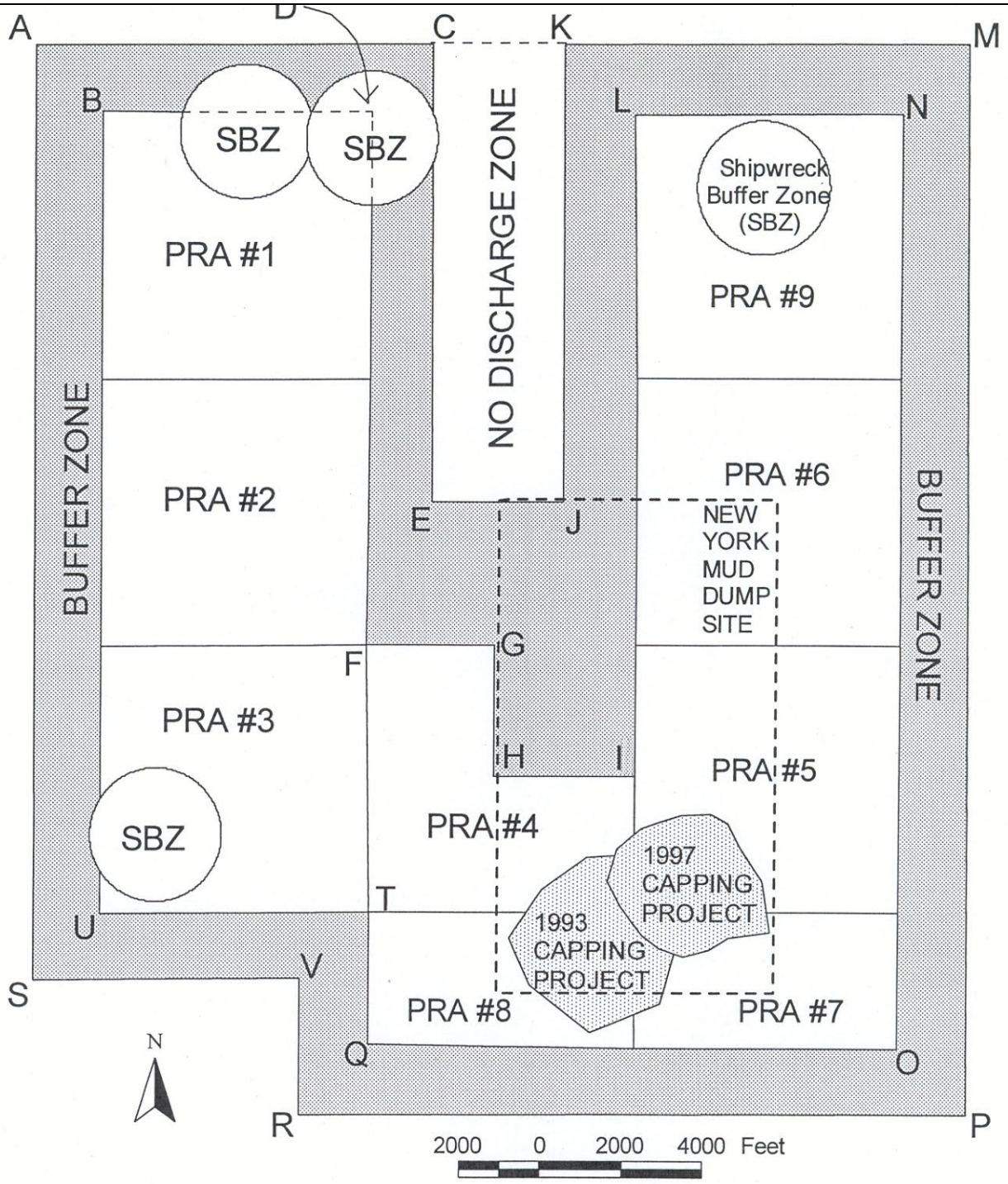


Figure 3. Map of HARS with Priority Remediation Areas (PRAs), Buffer Zone, No-Discharge Zone, 1993 and 1997 Capping Projects and Shipwreck Buffer Zones (SBZ).

Figure 4. Map of Offshore Borrow Areas – SBOBA and ROSBA

3.3. ARTIFICIAL REEFS (for >75% ROCK)

Some construction dredging projects involve excavation of rock. For example, the Kill Van Kull/Arthur Kill navigation improvement projects included several areas with significant volumes of rock. The location of artificial reefs in New York and New Jersey are shown in Figures 5 and 6. Each reef has permit conditions which list the shallowest water depths allowed. DMIs must be aware of permit conditions and other project specific information. DMIs and vessel crews must carefully monitor water depths with the towing vessel fathometer to help determine if any areas are approaching depths that may cause problems. Accurate placement of dredged rock at reef sites is very critical because of water depth limitations. Unlike fine grained material (silt) and sand that spreads out after placement, dredged rock dumped from scows creates well-defined mounds on the bottom. An individual load of rock may create a single mound over 100 feet across, extending 8 to 10 feet above the bottom. A single misplaced load of rock may result in a water depth limit being exceeded and cause a navigation hazard.

An example of a huge error occurred at the Atlantic Beach Artificial Reef. The permitted water depth at the reef is -40 feet MLW. As dredged rock was placed at the site, depths in some areas became shallower than -40' MLW. Despite the DMI TPL form having a field for depth at time of placement, tugs traversing the site never reported decreased depths (< 40' MLW). One area of the reef continued to receive rock until depths of -22' MLW were created and caused an unsafe navigation hazard. Subsequent bathymetric surveying eventually revealed the problem and rock disposal was diverted to another reef, while the existing excessive height mounds at the reef were dredged back down to a safe -40'MLW. This expensive mistake could have easily been avoided if the DMI read and recorded the fathometers readings while traversing the reef and reported the unsafe observed water depths.

Figure 5. Artificial Reef Locations in New York (Source: NY State Department of Conservation)

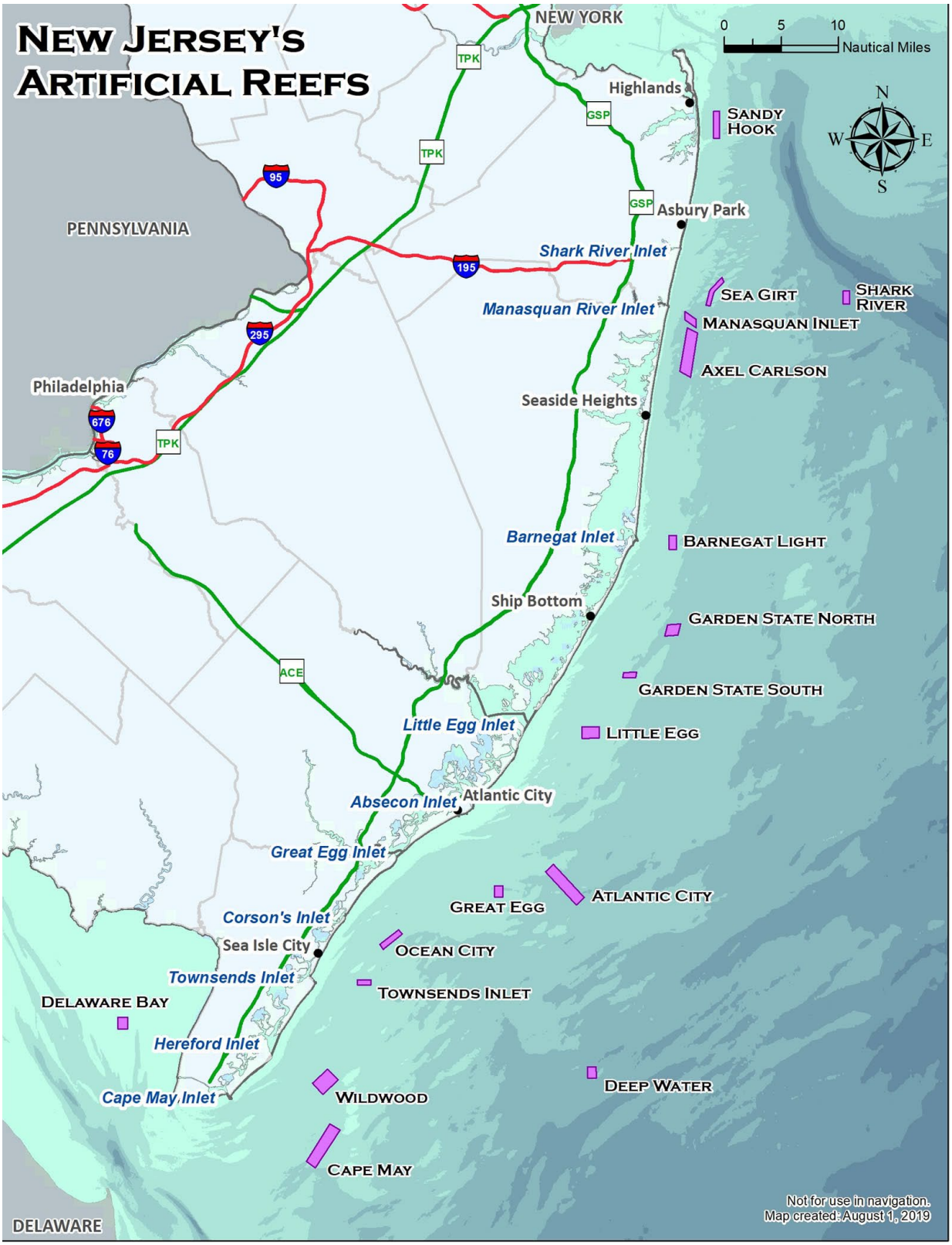


Figure 6. Artificial Reef Locations in New Jersey (Source: NJ Division of Fish & Wildlife)

4. DREDGED MATERIAL INSPECTOR DUTIES

4.1 GENERAL

a. DMIs do not have the authority to direct activities of a dredging contractor.

b. DMIs are responsible for observing the transportation and placement of dredged material at the HARS and assisting the vessel crew in making sure that placement occurs in the correct location.

c. DMIs are responsible to be on duty and in the transport vessel wheelhouse to observe container vessel monitoring equipment function. This duration lasts from completion of scow loading with dredged material and until the scow has completely emptied dredged material at the placement location. *If maintenance issues occur during transport of a loaded scow, the DMI must remain on duty in the wheelhouse until the scow has placed dredged material at the placement site or returned to the dredging site for repairs.

d. DMIs must report observed deficiencies and may refuse being transported offshore if their personal safety is a concern.

e. Any perceived violations of permit conditions or contract specifications should be reported by DMIs, but would not usually be considered justification for refusing to travel aboard a towing vessel to conduct his/her duties as a DMI on a project.

f. Although dredging contractors must pay for the services of DMIs working on each dredging project, the NYD has the ultimate authority in regulating the duties and expectations of DMIs. As such, NYD also has sole authority in deciding if a DMI is or is not fulfilling his/her duties as a DMI.

g. Dredging contractors may not dismiss a DMI for reporting incidents, conditions, or deficiencies observed, or perceived, while working on a project.

h. DMIs must report data, observations and other information as it is, not as it might be requested by anyone.

i. If NYD determines that a DMI is withholding information or falsely reporting information, the DMI will be removed from the list of certified DMI's and not permitted to work as a DMI for NYD.

4.2 PRIOR TO BEGINNING WORK AS A DMI ON A PROJECT:

Every DMI assigned to a project must attend the pre-construction (pre-con) meeting for that project. The meeting is held at the US Army Corps of Engineers, NYD office located at 26 Federal Plaza, New York, New York in lower Manhattan, within 10 days of the start of dredging. DMIs and the project team must be physically present at this meeting. However, in times of emergency, this meeting may take place virtually at the discretion of NYD.

At the Pre-Con Meeting:

a. Review permit conditions and Placement Requirements for private dredging projects or Contract Specifications for Federal dredging projects. Contract Specifications or Placement Requirements include a map of the placement grid to be used for the project.

b. DMIs should try to obtain the project specific documents related to dredged material placement and review them before the pre-construction meeting. Unclear items can be discussed at the pre-con meeting prior to project start-up.

c. A checklist will be provided to all DMIs working on a project to help ensure that the duties of each DMI are clearly outlined. An electronic version of the checklist is included with the scow monitoring software used on board tugs to transport scows. The checklists are set up such that a "NO" answer requires immediate notification of NYD personnel and others, and in the case of dredging site requirements, may require a delay in transportation of dredged material from the project site until certain conditions/requirements are fulfilled. Refer to Appendix F for the list of POCs at NYD.

d. The Transportation and Placement Log (TPL) form and the DMI Checklist are the basic means for DMIs to document each placement trip. The TPL and Checklist are discussed in detail in Appendices C and D, respectively.

4.3 AT THE DREDGING SITE:

a. **DMIs should bring their personal belongings to the dredging site and be prepared to stay** aboard a towing vessel for the duration of dredged material transportation and placement, as arranged with the dredging contractor and/or their supervisor.

b. **A legible copy of the contract specifications or requirements and permit conditions must be in the DMI's possession**.

c. **DMIs must read through the project specific information** related to placement of dredged material and be familiar with the location of the dredging site and placement location prior to start of the project.

d. **Observe the scow prior to departing the dredging site for visible damage such as cracks, holes or large dents**. Any visible damage should be reported immediately to NYD and other point of contacts (POCs). Dredging projects will usually have a requirement that a backup scow be available for use if a regularly used scow develops a problem during the course of the project. NYD and other POCs should be notified if a backup scow is brought into service.

e. **Convert the scow draft into a scow volume if the scow monitoring equipment does not automatically do this**. A scow loading table must be used to estimate the quantity of dredged material in a scow (Figure 7). Loading tables associated with all scows used during a dredging project must be provided to DMIs working on a project. The sediment density (expressed as pounds per cubic foot) is used with the average scow draft to determine the estimated volume of dredged material contained in the scow. Table 2 lists typical densities associated with the various dredged material types encountered during NYD dredging projects. This volume of dredged material contained in the scow should be entered into the electronic log form of the scow monitoring software.

f. **Observe the loaded scow for possible listing.** Listing (leaning toward one side or one end) indicates unequal load distribution. Listing may simply be due to dredged material being unequally distributed in the scow, or it could indicate leaking of one of the chambers in the scow's hull. Significant listing, more than a few degrees, should be reported immediately.

g. **Record the characteristics of the dredged material in the scow on the TPL form and photograph the scow contents**. Three clear and well-lit photographs must be taken by the DMI and reviewed prior to submission. These three photos should be a close-up of the dredged material in the scow, an overview of the scow load and a photograph of the plimsoll. Appendix G describes how to document scow contents through visual inspection and digital photography. An electronic drop-down menu for material description is included with the scow monitoring software.

Rock dredging projects: The percent of rock within a scow should be recorded. For engineering purposes, rock is defined as single, discreet particles (as opposed to clumps) larger than 2.5 inches in diameter. The percent of rock is usually provided by the operator of the dredging equipment. Scows loaded with >75% rock are usually transported to an artificial reef for placement, although rock has been approved by EPA for placement at the HARS during some past projects.

h. **Record the scow volume before departing the dredging site**. The maximum volume of dredged material allowed in a single scow ranges from about 3,000yd^3 to 6,000 yd^3. Most scows cannot hold more than 6,000 yd^3. However, some scows are larger, and some projects have a smaller volume per scow limit. If the maximum volume per scow is exceeded, immediate notification must be made. Scows that contain more than the maximum volume allowed must not be transported from the dredging site. If a scow at the dredging site contains more than the maximum volume allowed, material must be removed from the overloaded scow by the contractor.

Table 1. Typical densities of dredged materials associated with New York District dredging projects.

Dredged Material Type	Density (lb/ft^3)
Soft, maintenance mud	90
Sand	110
Glacial till	110
Red Clay	110
Rock	120

i. **Scow monitoring equipment is critical to helping ensure proper placement of dredged material**. Scows must not be transported from the dredging site unless the equipment is fully operational. Any malfunctions must be reported immediately to NYD, other POCs, and the scow monitoring equipment contractor. If the primary scow monitoring system is not working, the backup scow monitoring system may be used for placement of dredged material. However, the backup system must only be used as an emergency procedure while waiting for the primary scow monitoring system to be repaired. If scow monitoring contractor personnel are aboard a towing vessel to service the equipment, the backup system, or towing vessel DGPS system, may be used to place dredged material even if a previous trip used only the backup system. Unless the primary or backup scow monitoring system is operable, or a scow monitoring equipment contractor representative is aboard the towing vessel to service the equipment, scows must not be transported from the dredging site. If the primary scow monitoring system is not operable, the backup system must be used on no more than two consecutive trips to an open-water placement site.

j) **Record the time of departure from the dredging site in the TPL**, along with any other relevant information.

k) **Prior to departing the dredging site, the DMI working on board the towing vessel should determine, to the best of their ability, if full compliance with**

any other contract or regulatory requirements related to dredged material placement has been met.

Avg. Draft (ft)	Molded Displacement (ST)	Load Weight (ST)	Load Volume (CY) 80 lb/cf 1.28 s.g.	90 lb/cf 1.44 s.g.	100 lb/cf 1.60 s.g.	110 lb/cf 1.76 s.g.	120 lb/cf 1.92 s.g.
2.50	1,091	110	102	90	81	74	68
2.75	1,203	222	206	183	165	150	137
3.00	1,317	335	311	276	248	226	207
3.25	1,430	449	416	370	333	302	277
3.50	1,544	563	521	463	417	379	347
3.75	1,658	677	627	557	502	456	418
4.00	1,773	792	733	652	587	533	489
4.25	1,888	907	840	747	672	611	560
4.50	2,004	1,023	947	842	758	689	631
4.75	2,120	1,139	1,055	937	844	767	703
5.00	2,236	1,255	1,162	1,033	930	845	775
5.25	2,352	1,371	1,270	1,129	1,016	923	846
5.50	2,469	1,488	1,378	1,225	1,102	1,002	919
5.75	2,587	1,606	1,487	1,322	1,189	1,081	991
6.00	2,705	1,724	1,596	1,419	1,277	1,161	1,064
6.25	2,823	1,842	1,706	1,516	1,365	1,241	1,137
6.50	2,942	1,961	1,816	1,614	1,453	1,321	1,210
6.75	3,061	2,080	1,926	1,712	1,541	1,401	1,284
7.00	3,181	2,200	2,037	1,810	1,629	1,481	1,358
7.25	3,301	2,320	2,148	1,909	1,718	1,562	1,432
7.50	3,421	2,440	2,259	2,008	1,807	1,643	1,506
7.75	3,542	2,561	2,371	2,107	1,897	1,724	1,581
8.00	3,663	2,682	2,483	2,207	1,986	1,806	1,655
8.25	3,783	2,802	2,595	2,306	2,076	1,887	1,730
8.50	3,905	2,924	2,707	2,406	2,166	1,969	1,805
8.75	4,027	3,046	2,820	2,507	2,256	2,051	1,880
9.00	4,149	3,168	2,933	2,607	2,347	2,133	1,956
9.25	4,272	3,291	3,047	2,709	2,438	2,216	2,031
9.50	4,395	3,414	3,161	2,810	2,529	2,299	2,107
9.75	4,518	3,537	3,275	2,911	2,620	2,382	2,184
10.00	4,642	3,661	3,390	3,013	2,712	2,465	2,260
10.25	4,766	3,785	3,504	3,115	2,803	2,549	2,336
10.50	4,890	3,909	3,619	3,217	2,895	2,632	2,413
10.75	5,014	4,033	3,734	3,319	2,987	2,716	2,489
11.00	5,138	4,157	3,849	3,421	3,079	2,799	2,566
11.25	5,263	4,281	3,964	3,524	3,171	2,883	2,643
11.50	5,387	4,406	4,080	3,626	3,264	2,967	2,720
11.75	5,512	4,531	4,195	3,729	3,356	3,051	2,797
12.00	5,637	4,656	4,311	3,832	3,449	3,135	2,874
12.25	5,762	4,781	4,427	3,935	3,542	3,220	2,951
12.50	5,888	4,907	4,543	4,038	3,635	3,304	3,029
12.75	6,013	5,032	4,660	4,142	3,728	3,389	3,106
13.00	6,139	5,158	4,776	4,245	3,821	3,473	3,184
13.25	6,265	5,284	4,893	4,349	3,914	3,558	3,262
13.50	6,391	5,410	5,009	4,453	4,008	3,643	3,340
13.75	6,518	5,537	5,127	4,557	4,101	3,728	3,418
14.00	6,644	~~5,663~~	5,244	4,661	4,195	3,814	3,496

100% Capacity is 5,542 CY

Figure 7. Example of a Scow Loading Table. Each scow class will have a specific loading table. The estimated volume of dredged material in the scow is determined as the value associated with the intersection of the dredged material density column and the row with the average scow draft. For example, if the scow contains typical maintenance mud, a density of 90 lb/ft^3 should be used. Average scow drafts are listed in the first column of the table. If the average scow draft is 11.00 feet, the scow is estimated to contain 3,400yd^3 (rounded to the nearest 100 ft^3). For this same average draft, if the scow was loaded with dredged rock, with an estimated density of 120 lb/ft^3, it would contain 2600 yd^3.

l) **Leaking scows have been one of the main causes of misplaced dredged material in the recent past**. In an effort to help detect leaks before they reach a critical level, scow draft must be monitored throughout each trip to the designated ocean placement location. In addition to recording the scow draft obtained from the intersection of the water surface with the marks on the outside of scows, the scow draft, as indicated by the scow monitoring equipment, should be observed and recorded on the TPL five to ten minutes after leaving the dredging site. Some shifting of the load usually occurs once underway. By waiting several minutes after leaving the dredging site, the electronically monitored draft value will more accurately represent the "starting" draft value. While underway, the draft value should be periodically checked to compare with this starting value. The next section of this guidance manual discusses the procedure associated with scow draft monitoring while underway.

The seal at the bottom of split-hull scows will wear and sometimes be damaged during placement of dredged material into the scow. If the seal is significantly compromised, leakage of dredged material may occur. If visibility is sufficient, and weather conditions are favorable, the water behind the scow should be observed for muddy plumes that may indicate leaking of dredged material from the scow. If a leak is suspected, immediate notification should be made to the notification list. Scow draft monitoring is an important way to help detect a leaking scow. Leaking of dredged material will cause the draft to slowly decrease.

Rock Projects: If a large load of rock is being transported in a scow, water may leak into the scow through a faulty seal. In this case, the scow draft may slowly increase. If the load of rock is large enough, water leaking into the scow could produce a dangerous situation in which the buoyancy of the scow is not sufficient to keep the rock afloat. Special care must be maintained. Since loads of rock create such significant mounds on the bottom, additional effort to get the scow out of a navigation channel must be made if an emergency dump is required. **Scow loads of rock that are being transported to a reef site must never be dumped at the HARS. If emergency dumps of rock are required, scows should be located outside of any navigation channels and in water deep enough to prevent any mound from causing a navigation hazard.**

By carefully monitoring the draft, it is hoped that a scow with a leak can be repaired before reaching a critical level. Water leaking into a scow hull chamber may cause the scow draft to increase. If a leak is detected early enough on the trip to the ocean placement site, it may be possible to return to the dredging site to remove dredged material from the scow, or pump water out from a hull chamber, to avoid an emergency dump. If a leak is detected later into the trip, it may be best to continue to the placement location, depending on the distance remaining in the trip and the severity of a leak. **The DMI and vessel captain should jointly agree the best course of action, but the final decision is up to the discretion of the captain. Misplaced dredged material, whether due to**

mechanical problems, misjudgment, weather, or any other reason, is the sole responsibility of the vessel captain and dredging contractor.

Although the scow monitoring hardware and software equipment provide a reliable and accurate way to place dredged material in the ocean, the system is not 100% reliable. As such, DMIs must be able to perform basic navigational tasks if the scow monitoring hardware and software system is not functioning, such as checking position and verifying proper operation of GPS equipment. The following items and equipment must be present aboard the towing vessel to ensure that backup procedures and other tasks can be performed:

1. **Fathometer**: The fathometer must be operating at all times while underway and be visible to any DMI working on the vessel. Towing vessels are not allowed to leave the dredging site unless a working fathometer is aboard. Water depth at the placement location is a required piece of information that must be recorded on the TPL form.

2. **Operable Radio**: Weather/sea conditions are another source of potential problems during ocean disposal of dredged material. An operable radio must be aboard the towing vessel that receives NOAA marine weather forecasts and ocean conditions. The present and forecasted marine weather and ocean conditions at the designated placement location must be monitored on the radio to determine if safe and accurate placement of dredged material will likely occur. Winds and seas at a reporting station closest to the placement location must be recorded, as well as the winds and seas forecast to be present at the time of placement. This information must be recorded in the comments section of the TPL form. The weather and sea conditions should be periodically monitored while underway to determine if conditions have or are forecasted to significantly degrade. Waves large enough to break into loaded scows are of particular concern since dredged material would likely be washed off the scow, constituting unauthorized discharge of dredged material. Large waves may also pose a risk of capsizing a scow. Anytime seas are as high as six feet, these concerns should be taken seriously, and it may be necessary to delay the trip until seas subside.

3. **DGPS Navigation System**: A fully operational and functioning DGPS navigation system must be on board the towing vessel and available for the DMI to obtain vessel coordinates while underway. A fully functional radar system must also be on board and available if conditions require the DMI to use it.

4. **Radio Control System:** Most scows used on NYD dredging projects are radio-controlled. When such scows are used, the radio control system must be fully functional. Malfunctions discovered on previous trips must be fixed prior to use on subsequent trips.

5. **Hand-held Laser Range Finder:** If the primary scow monitoring system is not functioning, and the backup system is used, the distance from the towing vessel to the scow must be measured using a hand-held laser range finder. The range finder must have at least a 1000-foot range and cannot be manufactured greater than ten years prior. The laser range finder must be available for use by the DMI at any time. If the backup scow monitoring system also fails, the DMI must use the tug DGPS and the laser range finder (or ships radar) to determine the position of the tug and scow at the placement location. The vessel captain must work with the DMI to determine when the scow is in the correct location prior to sending the "scow door open" command with the radio-control system.

6. **Cell Phone:** Each DMI working on a dredging project must be provided with a personal cell phone with a unique telephone number. The phone must be in the possession of a DMI at all times and available to send or receive telephone calls related to DMI duties. Cell phones provided by the dredging contractor should not be used for personal calls unless given approval by the dredging contractor.

7. **Protractor**: A protractor must also be on board and available for DMI use. A protractor is used to determine the offset of the scow from the tug track line if the primary scow monitoring system is not functioning. The vessel radar may also be used for this purpose. By combining the angular displacement of the scow from the vessel track line with the distance from the scow to the towing vessel and the towing vessel position, the position of the scow can be accurately located on a map of the placement area. An accurate position of the scow must be known before placement can be made.

8. **Dividers**: A pair of dividers must be available for use by DMIs on each project vessel to allow accurate scaling of distances on placement maps. An up-to-date nautical chart that includes the placement area must also be available for use on board the towing vessel.

4.4 ENROUTE TO THE PLACEMENT LOCATION:

After leaving the dredging site while underway to the placement location, DMIs must continue to do the following:

a) **Monitor the status of the scow and scow monitoring equipment**.

b) **Monitor the weather forecast:** If the weather is marginally suitable for placement, conditions should be closely monitored. The towing vessel captain

may decide, with consultation from the DMI, to return to the dredging site based on an updated marine forecast.

c) **Monitor for marine mammals and endangered species:** If the DMI on duty is also a NMFS endangered species/marine mammal observer, they must monitor for endangered species and report in the TPL.

d) **Continue to Monitor Scow Draft for Leaky Scow**: The scow draft should continue to be monitored with the primary scow monitoring system. The draft values while underway should be compared with the draft values recorded approximately 5-10 minutes after leaving the dredging site. ***The scow draft should not vary by more than 15-20 points (or ~1.0-1.5 feet of draft)***. If the draft varies by more than this, a leak may be present and immediate notification must be made. Increasing draft may indicate the scow is taking on water, either through a hole in one of the hull compartments, or, in the case of a scow heavily loaded with rock, through the seal in the scow doors. Decreasing draft may indicate dredged material is leaking out of the scow through the door seal. However, depending on the position of a potential hull leak, the draft may actually increase as a hull chamber fills with water, due to the position of the scow pressure sensor rising while the opposite end of the scow sinks. Any significant change in draft indicates the need to closely monitor for additional changes. Serious leaks may cause the need to conduct an emergency dump. ***Any emergency dump should be conducted as far outside of navigation channels as possible****.* The exact time and position of the scow when an emergency dump occurs should be recorded on the TPL form, along with immediate notification.

e) **Continue to Monitor for Listing**: Scow draft changes may not always reveal that a scow is leaking. As a scow takes on water, the weight distribution may change, causing the area of the pressure sensor on the scow to maintain its vertical position. However, the scow may develop a noticeable list. If visibility is sufficient, scows should be monitored for potential listing. Significant listing should be reported immediately and indicates that scow draft should also be closely monitored.

Gradual leaking of dredged material from a scow may not significantly change the draft, but may be revealed by turbid water plumes behind a scow. If visibility is sufficient, the water behind a scow being towed should be checked for the presence of turbid plumes. Observed plumes should be reported immediately. Plumes indicate the need to closely monitor the scow draft. Slow, steady, gradual changes in draft, even if less than 1.5 feet may indicate leakage is occurring. As with any other observations, if anything seems even potentially out-of-the-ordinary, it should be noted on the log form and reported to appropriate personnel associated with the project.

f) **Compare towing vessel and scow DGPS:** The towing vessel DGPS and scow

DGPS positions should be compared by noting the position of the towing vessel as it passes a fixed position (channel marker, bridge, etc.) and the scow as it passes the same point. The scow DGPS receiver is near the stern of a scow. Immediate notification should be made if the positions are significantly different (> 30-50 feet). A nautical chart should be checked to determine which of the two positions appears to be correct. If the towing vessel DGPS system appears to be malfunctioning, the captain must be notified for potential correction while underway. If the scow monitoring DGPS appears to be malfunctioning, scow monitoring contractor personnel must be notified to correct the problem.

4.5 IN THE VICINITY OF THE DESIGNATED PLACEMENT LOCATION:

Each dredging project will have a designated placement grid. Individual grid cells are as small as 100' x 100'. Although a single grid cell is scheduled for placement during a trip, it is understood that dredged material will land in more than one grid cell. Scow doors should be first opened when crossing over the target grid cell, with material landing in grid cells along the path of the scow. If the dredged material is scheduled for placement at the HARS, the grid cell indicated for placement by the scow monitoring software may change based on the estimated arrival time. Some grids are divided into two groups of cells. One group is only allowed to receive dredged material during flooding or ebbing tide. The monitoring software calculates the stage of the tidal currents at the time of scow door opening based on the estimated arrival time at the HARS. Cell numbers indicated by the software for placement may not be in sequential order due to this tidal dependent feature of some grids.

A few miles from the placement site, the estimated time of arrival at the placement grid, entered on the TPL form at the beginning of the trip, should be updated if factors enroute have significantly changed the transport time. An updated time may result in the scow monitoring software indicating a cell number different from the cell indicated at the start of the trip. The captain should be notified of a change to allow any necessary course corrections. The same grid cell must never be used for placement on consecutive offshore placement trips, or even during the same week. If more than one tug is being used on the project, and more than one DMI is working, communication between vessels must be maintained to avoid duplicate cell placement.

Regardless of potential changes in the grid cell number, DMIs should be in communication with the captain regarding the placement location and the position and course of the towing vessel. The captain may wish to utilize information from the monitoring system to help direct the scow to the designated placement grid cell. When a remotely operated scow is used, the scow radio control system should be operating without any problems.

The following placement protocol associated with the use of radio-controlled, unmanned scows shall be followed:

1. Dredged material must be sequentially placed in grid cells within grids designated for each dredging project. The details of each placement grid are distributed at the pre-construction meeting associated with the project.

2. Container vessels must be towed at an appropriate speed and tow length that ensures successful placement of dredged material at the placement site, and that also maintains reliable navigation under safe weather/sea conditions.

3. Prior to leaving the dredging site, scows must be inspected to ensure correct operation of mechanical features. Scows must also be inspected for the presence of any conditions that may cause navigation problems. The scow radio-control system (if used on the project) and the ADISS and ADISSPlay systems must be inspected for correct operation. A hand-held laser range finder must be carried aboard each towing vessel. Range finders shall be tested prior to departure from the dredge site. If any problems with the scow, radio-control system, Scow monitoring hardware and software systems, or range finder are encountered, corrections must be made before offshore transport of the scow may proceed. However, when the Scow monitoring hardware and software systems are malfunctioning, dredged material may be transported from the dredging site if ADISS personnel are on board or are communicating with the DMI to fix/service the equipment. Alternatively, the ADISSLt equipment may be used while problems with the Scow monitoring hardware and software equipment are being corrected. However, the ADISSLt equipment is emergency backup equipment and may only be used on two consecutive trips offshore. ADISSLt is not to be used as a long-term backup to the Scow monitoring hardware and software equipment.

4. A scow loading table for the scow being towed on the trip to the offshore placement site must be provided to the NYD certified Corps DMI (DMI) working aboard the towing vessel. The estimated dredged material density must be provided to the DMI to use with the loading table to estimate the volume of dredged material within the scow. The values in Table 1 should be used if the dredged material density is not known.

5. Scows must be monitored for possible leaks. After leaving the dredging site, the scow draft count values must be recorded from the ADISSPlay system on the transportation and placement log form. If the counts begin to significantly change during transport, either leakage of dredge material from the scow may be occurring (counts decreasing), or the scow's hull may be taking on water (counts increasing). However, depending on the specific location of a leak, the opposite trend may occur, according to the direction of a list caused by a leak. Scows suspected of leaking must be inspected. **If any leaks are found, they must be repaired prior to using the scow again.**

6. Scows must be brought to the designated grid cell of the placement grid developed for each dredging project using the DGPS navigation systems of the tug and scow. Scow position will be monitored by the ADISSPlay system on board the tug. Placement in the

appropriate grid cell will be documented by the dredge DMI using the ADISSPlay system while the scow position and draft information are monitored automatically by the ADISS system.

7. If the ADISSPlay system does not show reliable DGPS coordinates in the vicinity of the offshore placement site, the tug DGPS and ADISSLt must be used to locate the placement cell and estimate the scow position during placement. Length of towlines must be measured using a handheld laser range finder. The bearing to the scow from the towing vessel must also be noted at the time of placement. Tow lengths must be less than 200 feet unless ocean/weather conditions require longer lines for safe navigation. Vessel navigation during placement must be maintained in the direction of the maximum grid dimension to the greatest extent possible. Perimeter grid cells will not be used when ADISSPlay is not functioning. If the designated placement cell is located along the perimeter of the grid, the adjacent cell located closer to the grid center will be used. The dredge DMI must record the following information if this option is used:
   a) coordinates of the tug at the start and end of placement
   b) length of tow line (distance from tug stern to scow bow)
   c) estimate of lateral displacement of scow from target longitude

8. Placement must only occur when reliable coordinates of the scow, provided by GPS technology at the time of scow door opening, are available. If reliable coordinates of the scow cannot be established, the scow must be brought back to the dredge site for correction of navigation problems. Dredged material must not be placed if reliable DGPS coordinates of the tug or scow are not available.

9. If an ADISS system fails after leaving the dredging site, the scow must not be used again until a fully operational ADISS system is installed. If ADISS personnel are on board, or communicating by telephone with the DMI, to correct problems, or the ADISSLt equipment is functional, offshore transport may occur. However, ADISSLt is emergency backup to the Scow monitoring hardware and software equipment, is not to be routinely used for offshore placement, and may only be used on two consecutive offshore placement trips.

10. If the Scow monitoring hardware and software systems are not functioning properly, placement must occur within the grid only if the scow and towing vessel are both within the grid at the time scow doors are opened.

11. If a situation arises that requires emergency dumping of dredged material, all reasonable efforts to dump outside of navigation channels must be made.

12. If radio communication with the scow is lost, preventing operation of radio-controlled scows, a person must board the scow to either fix the problem or operate the scow. Anyone on a scow must have at least two working radios. Scow opening must only occur when radio communication with radio-controlled scows is maintained. If the radio control system cannot be fixed, the scow must be towed to the designated placement location and manually discharged following steps (1) through (8). If the scow's engine

cannot be operated by the radio-control system, and the scow is boarded to attempt to fix the engine, the scow must be located at the designated placement position if the scow's engine is started. Past use of radio-controlled scows revealed that manually starting a scow's engine after a failed radio-controlled engine start could cause the "scow open" command to be completed, causing the scow to dump at the location of engine startup. Any problems with a radio control system must be fixed prior to subsequent use of the scow.

13. If the primary scow monitoring hardware and software system is not functioning properly at the time a scow is ready to be transported from dredging site, the backup scow monitoring system may be used while the primary scow monitoring hardware and software system problems are being corrected.

14. Scows containing dredged material must not be towed from the dredging site for ocean placement unless ocean/weather conditions are forecast to allow safe and accurate placement of dredged material within a designated placement grid.

15. Particular care must be used when placing dredged material within the placement grid due to proximity to historic shipwrecks. Dredged material must never be placed in historical shipwreck buffer zones (0.27 nm radius) or on historic shipwrecks.

    Artificial Reef Projects: Coordinates of wrecks and features of concern will be provided at the pre-construction and/or ocean placement meeting.

16. Particular care must be used when placing dredged material adjacent to HARS buffer zones. Dredged material must never be placed in the No-Discharge Zone, HARS buffer zone or anywhere outside of a grid designated for a project.

17. **Rock Projects Only:** While within the boundary of a rock placement location, particularly when traversing the designated placement grid, DMIs and towing vessel crew members must observe water depths, at least once every five seconds, from the tug's fathometer. The shallowest depths noted, and DGPS coordinates of the position, must be recorded on the TPL form. Recorded depths should include a correction for the depth of the fathometer, to indicate actual water depths, rather than the depth beneath the fathometer. If depths within 15 feet of the permitted reef depth are noted anywhere at the reef site, the depth and DGPS coordinates must be recorded on the TPL form and the Notification List must be notified immediately. The area of the grid or placement area in which depths within 15 feet of the permitted reef depth were detected must not be used for placement until additional bathymetric information is obtained. Additional placements must not occur within a radius of 200 ft from the coordinates of any depth observed to be within 15 feet of the permitted reef depth unless directed to by NYD. For example, if a reef is permitted for depths of –50ft MLW, any depths observed less than or equal to –65ft MLW must be reported immediately and placement must not occur within 200 feet of the position of the shallower depth.

18. If deemed necessary, scow monitoring equipment, placement guidelines, and other aspects of dredged material placement at the HARS may be changed by the US Army Corps of Engineers. Notice of any changes will be provided to the dredging contractor for implementation as soon as practicable.

19. Transportation and placement log (TPL) forms must be completed electronically or by hand within 30 minutes of placement at the offshore placement site (within 30 minutes of scow door closure prior to leaving the offshore placement site). TPL forms must be emailed to US Army Corps of Engineers, NY District, c/o Dredged Material Management Section (see Appendix B) within 2 hours of placement at the offshore placement site. Copies of TPL forms must be signed by the DMI after completion of each trip and placed in a file/folder for submission to NYD after project completion or when the DMI completes his/her duties on the project.

20. To help ensure that dredged material is transported and placed at the offshore placement site in accordance with the guidelines described above, the attached checklist (Appendix D) has been prepared. Items in the checklist must be reviewed by the DMI at the dredging site, while underway, and at the HARS, offshore sand borrow site, reef or other designated placement location. Each item that is pertinent to the trip must be answered with a "YES" or "NO" answer, along with other information specific to a checklist item. Any item on the checklist that receives a "NO" answer must be reported immediately to the NYD primary and secondary contact (see Appendix B and Project Placement Requirements) and a dredging contractor representative not on board the towing vessel. If the placement is scheduled for a New Jersey reef, the New Jersey Department of Environmental Protection (NJDEP) must also be contacted immediately. If the placement is scheduled for a New York reef the NYSDEC must also be contacted immediately. If the "NO" answer is related to the scow monitoring hardware and software systems, the scow monitoring contractor must also be notified immediately (Appendix B). Each placement trip must use a checklist, to be completed by the DMI working aboard the towing vessel. Checklists must be signed and dated by the DMI and placed in a file.

21. All original copies of TPL forms for each trip to the HARS, signed and dated by the DMI on duty during each trip, must be submitted via mail to the **US Army Corps of Engineers - NY District, Attention: Dredged Material Management Section, 26 Federal Plaza, Rm 16-406, New York, NY 10278** at the completion of the project. (Appendix B)

22. Failure to adhere to the specifications discussed in these placement guidelines may result in revocation of the dredging permit and/or a monetary fine. DMIs who fail to comply with these guidelines may lose certification to work as DMIs on NYD dredging projects.

Hopper Dredges. If Hopper Dredges are used for placement of dredged material at the HARS or authorized offshore borrow areas, the placement guidelines as described for scows should be followed, except for procedures/guidelines associated

with towing. If Hopper Dredges are used for placement at the HARS or offshore borrow areas, pumping out is prohibited. Placement must occur by bottom release from the hopper(s). If bottom release is not possible, the Hopper Dredge must be repaired to allow bottom release before offshore placement can occur. If pumping out is conducted (the dredged material is pumped out of the hopper and discharged at the water surface), NYD should be immediately notified via DMI cellphone.

5. DMI SAFETY ON VESSELS

Safety aboard towing vessels is regulated by USACE and the US Coast Guard (USCG). DMIs should be familiar with the safety regulations associated with the vessels they are working on. Life jackets and suitable shoes should be worn on an exposed vessel deck. One of the most critical factors of marine safety in the New York Harbor and Bight is water temperature. Figure 8 shows the mean and range of water temperature in the inner New York Bight. The water is dangerously cold from October through early June. Any submersion may result in hypothermia, and if rescue is not accomplished quickly, death may occur. The danger of cold water is particularly critical from November through May. July, August, and September are the only months when an extended period of time could typically be spent in the water without a significant threat of hypothermia, although even in those months, unless rescued within a couple of hours, hypothermia could set in. During the heart of winter, when water temperatures may dip below 40º F, a person overboard without a life jacket, would probably die in less than 30 minutes (Table 2). Even with a life jacket, death would probably occur in less than 90 minutes.

Table 2. Cold-water hypothermia and survival time

WATER TEMPERATURE (ºF)	TIME UNTIL EXHAUSTION/ UNCONSCIOUSNESS	EXPECTED SURVIVAL TIME
32.5	<15 min.	10 to 45 min.
32.5 – 40	15 - 30 min.	30 to 90 min.
40 – 50	30 - 60 min.	1 to 3 Hours
50 – 60	1 - 2 Hours	1 to 6 Hours
60 – 70	2 - 7 Hours	2 to 40 Hours
70 – 80	3 - 12 Hours	3 hrs to Indef.
>80	Indefinitely	Indefinitely

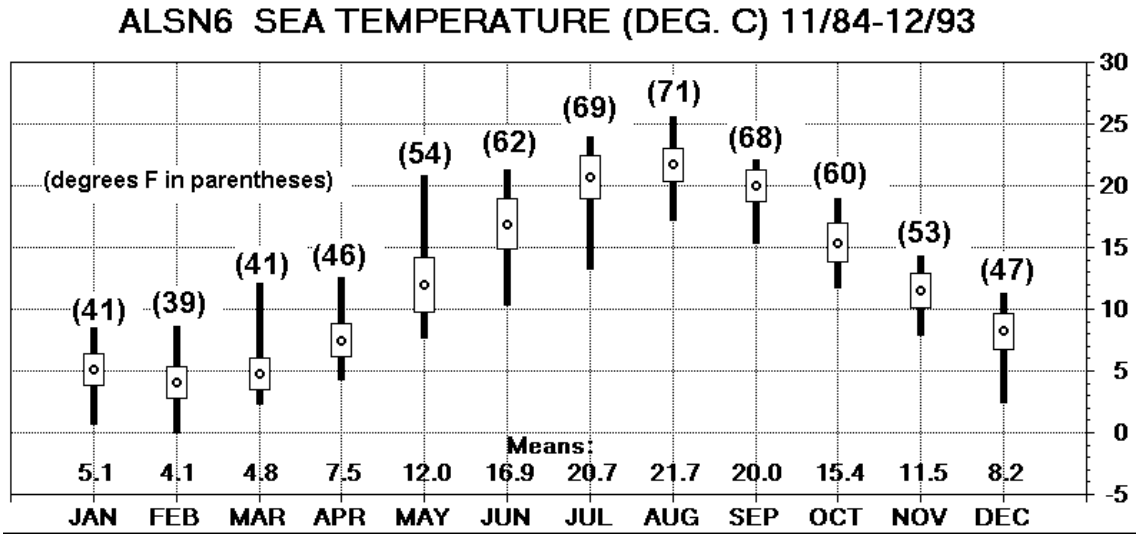


Figure 8. Atlantic Ocean sea surface temperature of the inner New York Bight. Data collected from the Ambrose Tower (NOAA). Temperature values and ranges are listed in ºC. The equivalent mean ºF mean values are listed in parentheses.

APPENDIX A. DREDGED MATERIAL MONITORING EQUIPMENT AND SOFTWARE

The contractor is required, at their own expense, to have all container vessels or other vessels used to transport dredged material to designated placement locations (HARS, artificial reefs, offshore sand borrow areas, upland or other locations in the New York Bight or Lower Bay) equipped with dredged material monitoring equipment and software, through a contractor (i.e. Dredged Material Monitoring Equipment and Software contractor) not owned or affiliated with the dredging company. The following specifications are associated with and required for the container vessel monitoring equipment, software, and website (http://adissdata.com/):

- A self-contained “black box” unit must be installed on all container vessels (scows) and must be capable of recording on a 24-hour basis, latitude and longitude positions of the container vessel, through DGPS technology, and container vessel draft, using a water pressure sensor, at variable sampling rates ranging from one position and draft value every 6 seconds to one position and draft value every ten minutes, according to NY District requirements.

- Any transport vessels used to transport dredged material and all dredges used on the project must be equipped with satellite real-time tracking and messaging system maintained by the container vessel monitoring contractor.

- **Primary Dredged Material Monitoring Equipment and Software** (PDMMES), consisting of laptop computers with container vessel monitoring software, on board all transport vessels used to transport dredged material, must allow data, being collected by the “black box” units on the container vessels being towed, to be viewed in real-time by U.S. Army Corps of Engineers, New York District certified, Dredged Material Inspectors (DMIs), and by transport vessel crew members when used for offshore placement trips.

- **Backup Dredged Material Monitoring Equipment and Software** (BDMMES), used for offshore placement trips, consisting of laptop computers with container vessel monitoring software, on board all transport vessels used to transport dredged material, must allow the DGPS position of the transport vessel to be viewed on the computer screen, along with an estimated position of the container vessel based on the towing distance and angular offset of the container vessel from the course line of the transport vessel.

- Laptop computer container vessel monitoring software must also include an electronic version of the Transportation and Placement Log form (TPL) to be completed by the NYD DMI during each placement trip.

- Laptop computer container vessel monitoring software must also include an electronic checklist (described in Permit Placement Conditions) for completion by the NYD DMI.

- Laptop computer container vessel monitoring software must also include map displays with selectable scales that allow NYD DMIs to view the New York Harbor area and New York Bight, HARS, offshore borrow areas, reef placement sites, and designated placement grids and coordinates. The container vessel monitoring software must graphically display placement grids developed for the project and allow viewing of the position of the transport vessel and container vessel throughout the placement trip.

- Laptop computer container vessel monitoring software must also include links to websites that allow NOAA offshore buoy data to be viewed in real-time, along with the latest marine weather forecasts.

- Laptop computer container vessel monitoring software must allow real-time plotting of container vessel draft and speed, to be used to monitor potential container vessel leakage

- Laptop computer container vessel monitoring software must allow downloading of digital camera photos for inclusion with placement trip data.

- Laptop computer container vessel monitoring software must allow transmission of the following at the end of each placement trip: electronic TPLs, checklists, container vessel position, speed, draft data, fathometer data, and digital photos to a website.

Additionally, in support of the container vessel monitoring equipment and software, the contractor must ensure the following:

- Transport vessels must have access to internet while at sea and must be able to transmit when vessels are in the vicinity of the Ambrose Channel. The container vessel monitoring contractor must be provided full access to all transport vessels and container vessels used on the project, as required to service container vessel monitoring equipment and/or software.

- The container vessel monitoring software/equipment shall be programmed by container vessel monitoring contractor personnel for use aboard any transport, or other, vessels used to transport dredged material away from the dredging site, exclusive of tender tugs used at the dredging site to move container vessels while at the dredging site.

- The contractor shall ensure that the container vessel monitoring equipment is operational 24 hours each day, at all times dredged material is being loaded at dredging sites, transported from dredging sites, and while returning to dredging sites after ocean placement, and when returning from upland facilities.

- The contractor is required to provide the container vessel monitoring contractor with a container vessel loading table for each container vessel used to transport dredged material to upland facilities and ocean placement locations.

- Although the NYD DMIs will observe the operation of the container vessel monitoring equipment and software, operation and maintenance of the container vessel monitoring equipment and software will be the responsibility of the dredging contractor, through a contract with the container vessel monitoring contractor. It is the contractor's responsibility to ensure that the container vessel monitoring equipment is in a continuous, operable condition at all times.

Container vessel monitoring equipment and software must be approved by NY District prior to use. If NY District has not previously observed the operation of container vessel monitoring equipment and software proposed for use by the contractor, satisfactory demonstration of the equipment and software must be performed prior to approval by NY District.

Container vessels used to transport dredged material to the offshore placement sites are required to have one acoustic bin-level sensor installed in addition to the container vessel draft sensor. The bin level sensor must be integrated with the Primary Dredged Material Monitoring Equipment and Software to include bin level data with the data provided by the DGPS receiver and container vessel draft sensor. DMIs are not required to be present on transport vessels used when transporting vessels loaded with dredged material for upland treatment/placement, however, NY District may require an independent observer to accompany each upland placement trip and to verify data associated with each upland placement trip.

Any problems with operation/function of the container vessel monitoring software and/or equipment should be directed to the container vessel monitoring contractor immediately and to the NY District.

To ensure proper communication of the container vessel monitoring components on the transport vessel and container vessel, the same transport vessel used to transport a container vessel loaded with dredged material toward a designated ocean placement location must continue to be used until placement has occurred. Switching of transport vessels once a placement trip has begun must not occur unless a mechanical problem or other unforeseen problem prevents the use of the transport vessel for ocean placement. If such switching is required, the container vessel monitoring contractor must be notified to ensure proper operations of the container vessel monitoring equipment and software.

APPENDIX B: CONTACT INFORMATION

Each dredging project will have people associated with different aspects of the project. Project specific contact information will be provided to DMIs at the pre-construction meeting or at another time prior to beginning work on the project. The Dredged Material Management Section can also be contacted at the following email: NYDredging@usace.army.mil. As of July 2022, the following general contact information were correct:

US Army Corps of Engineers - NYD
Dredged Material Management Section
26 Federal Plaza, Rm 16-406
New York, NY 10278-0090

Ryan P. Corbett
(917) 790-8082
Email: Ryan.P.Corbett@usace.army.mil

Beth Nash
(917) 790-8537
Email: Beth.K.Nash@usace.army.mil

Kelly L. Vega
Chief, Dredged Material Management Section
(917) 790-8429
Email: Kelly.L.Vega@usace.army.mil

Additional Contacts:

ADISS, Inc.
President
200 Circuit Drive
North Kingstown, RI 02852
(401) 862-0490
Email: mwakeman@adissdata.com

US Coast Guard
212 Coast Guard Drive
Staten Island, NY 10305
(718) 354-4037

APPENDIX C: USACE TRANSPORTATION AND PLACEMENT LOG

The USACE Transportation and Placement Log (TPL) (illustrated on the following page) is the standard reporting form for documentation of all trips associated with placement of dredged material at the HARS, offshore borrow site, artificial reefs, or other placement locations specified by USACE. The form is completed electronically when ADISSPlay is functioning properly. After completion, the TPL is emailed to the Dredged Material Management Section Contact List. If ADISSPlay is not functioning properly, a copy of a blank TPL form should be completed by hand and emailed to NY District. Each item requiring an entry on the TPL form is discussed below. The weather/sea conditions that are forecast for the placement site and the wave heights being reported at the Station 44065 buoy, at the time the scow is first towed away from the dredging site, must be recorded in the comments section at the bottom of the log for comparison with the actual conditions at the site at the time of placement.

Log Number: This is the sequential number assigned to each open-water placement trip. Each log number is required to be uniquely associated with a particular trip with sequential progression.

Date: This is the date the scow leaves the dredging site. The actual date of placement may occur the next day if the scow departs a dredge site very late in the day, resulting in actual placement after midnight.

Project Information:

Trip Number: The trip number and log number should be the same. DMIs working on different tugs should communicate with each other to ensure the correct trip and log numbers are being recorded.

Target Cell: The grid cell number designated for placement at the offshore placement site. Grid cells are to be sequentially used for placement, unless otherwise directed by NY District, or programmed in the ADISSPlay system. Some projects require use of different parts of a placement grid depending on the stage of the tide. The ADISSPlay system indicates the appropriate grid cell if this tidal requirement is active. If ADISSPlay is not functioning properly, requiring the use of the ADISSLt system, perimeter grid cells must not be used. In this scenario, the adjacent grid cell closer to the grid center should be used.

PRA Number: This is the Priority Remediation Area (PRA) number assigned for placement of dredged material in the HARS. The exception is offshore borrow sites and artificial reef projects which do not have PRA numbers. In this case, N/A would be entered on the TPL.

Permit Number: Permit numbers assigned by the NY District for Private Projects are entered. The contract number is entered for Federal contract dredging projects.

Project Name: This is the dredging project name assigned by NY District.

Tow Owner: The dredging company name is entered if the tug is owned by the dredging company. However, dredging companies often contract out towing services and in this case the towing company name should be entered. The captain's name should be entered if the tug is owned by an independent tugboat captain.

DMI's Name: The name of the DMI working at the time of the trip.

Tug's Navigational Unit: The brand of GPS navigation system used on the tug.

Tug and Scow Information:

Tug Name: The official vessel name assigned to the tug. (written on the bow)

Tug Captain: The captain of the tug during the placement trip.

Scow Name/Number: The vessel identification painted on the sides of the scow.

Scowman's Name: N/A

USACE Transportation and Placement Log

Log Number: **Date:**

Project Information

Trip Number: **Target Cell:** **PRA Number:** **Tow Owner:**

Permit: **Inspector's Name:**

Project Name: **Tug's Navigational Unit:**

Tug and Scow Information

Tug Name: **Scow Name/Number:**

Tug Captain: **Scowman's Name:**

Loading/Pre-Transit Information:

Dredge Departed From:

Material (Cubic yds.): **Time Loading Complete (hh:mm:ss):**

Est. Density: **ETA to Placement Site (hh:mm:ss):**

Material Description: **Aft Draft: Forward Draft:**

Winds at reporting station closest to placement location are presently blowing:

Image of Material: **Material Closeup:** **Image of Plimsoll Mark:**

Placement Site Weather Conditions

Wind Direction (from): **Wind Speed (mph):**

Observed Water Depth (ft): **Wave Swell Height (ft):**

Visibility (N miles): **Weather Conditions:**

Marine Mammals/Sea Turtles Sighting (Yes/No):

Transit/Placement Information

Time Scow Departed Dredge Site: **Tug position determined by (GPS/DGPS):**

Time scow arrives at project placement area:

Approximate distance from scow to target at time of discharge (ft):

Length of towline at time of discharge:

Distance from tug navigational antenna to tug's towing bit (ft):

Direction of scow relative to tug towing bit (degrees):

Estimated Scow Speed (kts): **Scow Heading (Degrees):**

Start Time (doors open):

Speed (kts): **GPS/DGPS Latitude:**

Heading (degrees): **GPS/DGPS Longitude:**

End Time (placement complete):

Speed (kts): **GPS/DGPS Latitude:**

Heading (degrees): **GPS/DGPS Longitude:**

Post Placement Time (doors closed):

Speed (kts): **GPS/DGPS Latitude:**

Heading (degrees): **GPS/DGPS Longitude:**

Comments

Loading/Pre-Transit Information:

Material (Cubic yds): The volume of dredged material in the scow. If direct measurements in the scow are made by the dredging contractor, then enter this number in the log. Otherwise, the scow loading table for the loaded scow should be used to estimate the volume based on the dredged material density, provided by the contractor, and the scow draft.

Estimated Density: This is the value provided by the contractor. If a reliable value is not provided, the values listed in the DMI Guidance Manual (Table 1) should be utilized. These density estimates include the porosity of the material and interstitial water within the dredged material.

Time Loading is Complete: The time of day the last bucket/scoop of dredged material is placed in the scow

Description of Material: The basic visual characteristics of the dredged material should be entered; color, material type, and percent. See Appendix G for instructions on describing the dredged material.

Winds at reporting station closest to placement location are presently blowing: The website link to the Ambrose station or NOAA weather radio reports for this station should be used to determine the most recent winds. The Long Island station should be used for the closest wave heights, unless the Ambrose station wave gauge is reporting. The significant wave height reported refers to the highest 1/3 of waves, which means there are even larger waves occurring. Any time seas are reported to be higher than 6 feet and/or winds are higher than 30 knots, particular caution should be maintained. Seas in excess of 8 feet have produced many problems with dredged material placement in the past and should be avoided if possible. It is advisable to wait until calmer conditions occur if seas are in the 6 to 8 foot range and growing. The captain of the vessel should be made aware of unfavorable conditions and advised not to proceed if conditions will likely result in placement problems.

Percent Rock: Some scows will contain a mix of rock and non-rock dredged material. Rock is defined as individual rocks larger than 2.5 inches in diameter. Smaller rocks and sedimentary particles are considered non-rock. The percent of rock in a scow can only be estimated by someone loading the scow, unless someone else is in a position to view every bucket/scoop that is placed in the scow. This percentage must be provided to the DMI on duty when the scow is ready to be transported to the placement location. In the past, only scows with >75% rock were permitted to be brought to an artificial reef site and scows with less than 76% rock were brought to the HARS for placement. However, depending on the project, rock may now be placed at the HARS. Rock will form fairly steep mounds within a scow. If a scow loaded with rocky material forms steep mounds in the scow, and is reported as consisting of less than 75% rock, this discrepancy should be reported on the log form. Likewise, if a scow is reported to contain more than 75% rock, yet lies relatively flat inside the scow, this should also be reported on the log form under the “Comments” section at the bottom of the form.

ETA at Placement Site: Depending on the distance to the placement site, which is a function of the location of the dredging site and placement sites, the travel time will vary from about 2 hours to 6 hours. The estimated time of arrival at the placement site will also vary according to the load size, tug power, wind, tide, and waves.

Scow Draft Aft: The water surface intersection with the aft draft marks should be recorded.

Scow Draft Foreward: Likewise, the draft near the scow bow should be recorded. These draft measurements are not necessarily the same as the ADISSPlay draft value recorded by a sensor in the aft of the scow.

Placement Site Weather Conditions:

At the ocean placement site, **Wind Direction**, the direction the wind is blowing from should be recorded, along with the **Wind Speed**, as estimated by the DMI, and general **Weather Conditions** (fog, rain, snow, etc.). The **Wave Height**, height of the typical larger waves should also be recorded. Wave height is the vertical distance from the top of waves (the crest) to the bottom of the wave trough (the lowest level between waves). **Visibility** should also be recorded, the maximum distance at which objects can be seen. If **Marine Mammals/Sea Turtles** are sighted, it should be noted on the log and a separate record of the sighting should be prepared for NMFS.

Observed Water Depth: At the location of placement (scow opening) the water depth should be recorded. Since the fathometer on the tug will not be recording the water depth beneath the scow, the water depth should be monitored prior to scow opening, with the reading that is closest to the expected position of the scow at the time of scow door opening recorded on the log form. Water depth is particularly critical at artificial reef sites and water depths must be recorded continuously while traversing any artificial reef. Minimum depths observed anywhere at the reef site, along with the GPS coordinates, must be recorded during each reef placement trip. If any depths are observed to be within 15 feet of the permitted depth at the reef, immediate telephone notification must be made, along with a special note at the bottom of the log form. The area where the shallower depth was observed must not be used for any additional rock placement unless otherwise directed by NY District.

Transit/Placement Information:

Time Scow Departed Dredge Site: This is the time a loaded scow is transported away from the dredge, prior to being transported offshore. Sometimes the scow may be held in the area for a while prior to offshore transport. If a significant interval occurs between the time of initial scow “departure” from the dredge site and actual transport offshore, the reason for the delay should be noted in the *Comments* block at the bottom of the form, but the time of the initial “departure” should still be listed in the departure block.

Tug Position Determined By (GPS/DGPS): The tug will have a GPS (Global Positioning System) based navigation system. The Differential GPS (DGPS) systems allow greater

accuracy in positioning due to shore-based beacons that improve the resolution provided by the network of satellites. At times the DGPS capability may not be functioning, requiring use of standard GPS technology, which should be noted on the log. No commercial vessel should ever operate without at least a functional GPS navigation system.

Approximate Distance from Scow to Target at Time of Discharge (ft): If the designated target cell is not used for placement, the distance from the scow at the time scow doors are opened should be estimated and recorded on the log.

Time Scow Arrives at Project Placement Area: This is the time the scow enters the placement grid.

Length of Towline at Time of Discharge (ft): The hand-held laser range finder, required to permit and/or contract specifications to be aboard all towing vessels used to transport dredged material, must be used to determine the distance between the stern of the towing vessel and the bow of the scow. If inclement weather and/or high seas prevent the laser range finder from providing a reliable towing distance, the towing vessel radar system may be used to estimate the distance.

Scow Heading (degrees): This is the direction the scow is moving through the water, recorded as degrees from north (due north is listed as 0º or 360º, with degree increases from zero to 360º occurring clockwise).

Estimated Scow Speed (kts): The scow speed should almost always be listed as equal to the tug speed, unless a sharp turn or sudden change in the power of the tug causes the scow speed to defer from the tug speed.

Distance from Tug Navigational Antenna to Tugs Towing Bit (ft): The DGPS antenna on the tug will usually be located outside the wheelhouse toward the bow of the tug. Depending on the size of the tug, the distance from this antenna to the towing bit can be significant. This distance must be added to the tow length measured with the laser range finder to accurately plot the position of the scow in relation to the tug if the ADISSPlay and ADISSLt are not functioning properly.

Direction of Scow Relative to Tug Towing Bit (Degrees): Depending on the wind, waves, and time elapsed since the last turn of the tug, the scow course may significantly deviate from the tug course; the scow may not track directly behind the tug. This deviation must be measured using a protractor and a pen or pencil by lining up the 90º mark on the protractor with the center of the stern of the tug. A pencil or pen is then used to point at the scow, with the end of the pencil/pen at the center of the base of the protractor. The intersection of the line of sight with the arc of the protractor determines the deviation from the towing vessel course. If the scow is towing directly behind the tug, the deviation is 0º. If the scow appears to deviate to the left of the tug's stern, when viewing the scow while looking across the stern, the number of degrees left of 0º, rounded to the nearest 5º, is recorded on the log form as negative degrees. Deviation to the right of the tug's course is listed as positive degrees.

Start Time (DOOR OPEN):

Speed (kts):

Heading(Degrees): **GPS/DGPS: Latitude** **GPS/DGPS: Longitude**

This information should correlate with the opening of the scow doors at the start of dredged material placement. The speed and heading of the scow, as displayed by ADISSPlay, should be recorded, along the latitude and longitude of the scow when the doors first opened. If ADISSPlay is not providing this information, the speed, heading, and position of the scow should be estimated based on the towing vessel speed and heading, the tow length, and the angular displacement of the scow from the towing vessel course.

End Time (Placement Complete): The end time is the time when all dredged material has been placed; the scow is essentially empty. During placement of soft, watery, maintenance material, scows typically empty within 10 to 20 seconds. Scow loads of stickier dredged material may take longer to empty, requiring extended time within the placement grid. While scows are emptying, they must be within the designated project grid. The speed, heading, and position of the scow should be recorded as discussed above.

Post Placement Time (Doors Closed): Scow doors must be closed prior to transport of the scow back to the dredging site. After the scow has been effectively completely emptied, the doors are closed, and the speed, heading, and position of the scow are recorded as previously discussed.

Comments: This section of the log form should be used to document anything unusual, particularly discrepancies from permit and/or contract requirements, and items on the DMI checklist that could not be answered with a “YES” answer. The forecasted weather/sea conditions for the placement location as transmitted by the NWS at the time the scow is being towed away from the dredging site prior to ocean placement should be recorded here, along with the wave heights and wind conditions being broadcast from offshore buoys. Because DMI Logs and other documentation of each placement event may provide legal documentation of placement in the event of legal proceedings related to placement, it is imperative that complete and accurate reporting be conducted, and that anything unusual, even if perceived to be minor, is recorded.

Copies of DMI Logs should be printed from the ADISSPlay computer, signed, and emailed in PDF format to the Dredged Material Management Section at the NY District. If a completed copy of the log can’t be printed, a log should be completed by hand, signed, and emailed to NY District. Original, signed, logs should be kept in a folder for submission to NY District when a DMI completes work on a project.

Appendix D. DMI Checklist

Dredged Material Inspector (DMI) Checklist:

DREDGING PROJECT: _____

TRIP NUMBER: _____

DREDGED MATERIAL INSPECTOR NAME: _____

INSPECTOR SIGNATURE: _____

DATE: _____

Answer YES or NO to the following questions. Circle other choices and/or fill in blanks as appropriate. Any item on the checklist that receives a "NO" answer must be reported immediately to NY District at: (917) 790-8082 or (917) 790-8537, the permittee, and a dredging contractor representative not on board the transport vessel. If the "NO" answer is related to the container vessel monitoring systems, the container vessel monitoring contractor must also be notified immediately. Items receiving "NO" answers must be indicated on the TPL using the letter-number code next to each item description and described on the TPL comments section.

All of the checklist items included with the "At the Dredging Site" portion of the trip must receive a "YES" answer before a vessel containing dredged material may be transported away from the dredging site for placement at the offshore placement site. If ANY of these checklist items receives a "NO" answer on the checklist, the issue must be corrected, such that the checklist item can be answered with a "YES" prior to the container vessel that is being used for transport of dredged material departs from the dredging site.

PART A - At the Dredging Site:

A1 For all dredging projects, a copy of the placement requirements, received at the pre-construction and/or Dredged Material Transport and Placement Meeting (DMTPM) is in the DMI's possession. For federal projects, a copy of the contract specifications is in the DMI's possession. For permitted projects, a copy of the permit special conditions is in the DMI's possession.

A2 The container vessel being used to transport the dredged material is mechanically sound, does not leak, and has no visible damage that may cause leaking.

A3 A regularly used container vessel was used (i.e. as opposed to a backup container vessel).

A4 A container vessel loading table for the container vessel being towed is aboard the transport vessel and available for the DMI to use.

A5 An estimated dredged material density has been provided by the dredging contractor and recorded on the TPL form.

A6 The material being dredged has been observed by the DMI for general characteristics (grain size, color, consistency) and recorded on the TPL form.

A7 For container vessels loaded with any rock (rock is defined as any stones greater than 2.5 inches in diameter), the estimated rock percent, as provided by the dredge operator, has been recorded on the TPL form.

A8 An estimate of the volume of material in the container vessel has been calculated by the DMI using the container vessel loading table and recorded on the TPL form; if not automatically calculated by the container vessel monitoring software.

A9 Container vessel contains less volume of dredged material than the maximum volume allowed for placement during a single trip. *Container vessels loaded with a total of more than 6,000 CY of dredged material and water must not be transported to the HARS.*

A10 The monitoring systems (Primary and Backup) are fully operational and are functioning. Any container vessel monitoring system malfunctions must be reported immediately to the DMMESC. Transport vessels are not allowed to leave the dredging site while transporting any container vessels with dredged material if the container vessel monitoring systems are not fully operational. If the PDMMES system is not functional, the Backup monitoring system may only be used on two (2) consecutive offshore placement trips using an affected container vessel. No more than two (2) consecutive trips without the PDMMES system can ever be made.

A11 A fathometer is fully operational, functioning, and installed on the transport vessel.

A12 A radio on board the transporting vessel is operable and can receive NOAA marine weather forecasts and ocean conditions.

A13 Current and forecasted marine weather and ocean conditions at the designated placement location have been monitored on the radio and will allow safe and accurate placement of dredged material. Conditions have been recorded on the TPL form.

A14 DGPS navigation system is fully operational, functioning, and installed aboard the transporting vessel.

A15 A radar system is fully operational, functioning, and installed aboard the transporting vessel.

A16 The satellite (or cellular), vessel tracking system on the transport vessel is present and operable.

A17 Radio-control system for container vessel operation (if scowman is not used) is fully operational and functioning.

A18 Radio and backup radio system, for communication between container vessels and transport vessels, are aboard container vessel (if scowman is used), are fully operational and functioning.

A19 Hand-held laser range finder, not more than ten (10) years old, with at least a 1000 foot range, is aboard transport vessel, fully operational and functioning, and available for DMI use, along with a set of backup batteries.

A20 A fully operable cell phone that can send and receive calls is in the possession of the DMI on board the transport vessel.

A21 A protractor, pair of dividers (for map/chart distance scaling), and an up-to-date nautical chart that includes the placement area, are available for use by the DMI aboard the transport vessel.

A22 DMI is provided full access to fathometer, radar, vessel DGPS, and any other equipment/information necessary to conduct DMI duties.

A23 A digital photograph has been taken of the container vessel that documents the position of the plimsoll line relative to the water level.

A24 A digital photograph (close-up) has been taken of the loaded container vessel such that the level and characteristics of material (color, texture, material composition, and approximate grain size) within the container vessel can be determined from the photograph. A digital photograph (overview) has been taken of the loaded container vessel such that the relationships between material and container vessel walls can be determined from the photograph.

A25 The container vessel contains only dredged material (no trash, debris, timbers, tires, etc.) and only dredged material approved for open-water placement.

A26 Digital photograph(s) of the container vessel have been downloaded into the container vessel monitoring software.

A27 DMI activated the container vessel monitoring software at the dredging site.

A28 Time of departure from dredging site has been recorded on the TPL form.

A29 The bin-level, as indicated by the container vessel fore and aft bin sensors, has been entered into the TPL form comments section.

A30 DMI was at the dredging site while Part A, Items 1-30, of the TPL checklist was reviewed and completed.

A31 The container vessel draft (pressure) and bin level sensor values, as displayed by the container vessel monitoring software has been recorded on the TPL form. (This value must be noted approximately five (5) minutes after leaving the dredging site, while being towed, to account for any shifting / settling of the material in the container vessel).

PART B - While Underway to Open-Water Placement Site:

B1 Container vessel draft is being monitored with container vessel monitoring software to detect sudden or gradual changes in draft.

B2 In the vicinity of the Verrazano-Narrows Bridge, radio and backup radios aboard the container vessel (if a scowman is used) have been checked and both are fully functional.

B3 If the DMI is also a NMFS certified marine mammal/endangered species observer, observation and appropriate reporting is conducted.

B4 Container vessel draft and/or bin level varies by less than one (1) foot, or by less than 12 points of pressure (draft only), from the value at the dredging site.

B5 Container vessel does not appear to be listing.

B6 Water behind container vessel has been observed, if possible, to ensure that no turbid water plumes are present.

B7 A fixed reference position, such as a channel marker, has been used to ensure that the transport vessel DGPS and Container vessel DGPS positions agree.

B8 Marine weather and sea conditions present and forecast to be present at the placement location are periodically monitored. The transport vessel captain, after consultation with the DMI, may decide to return to the dredging site based on an updated marine forecast.

PART C - In the Vicinity of the Designated Placement Location:

C1 Water depths were continuously monitored (a reading observed at least every 5 seconds) with the transport vessel fathometer while navigating anywhere within the placement area boundary (transport vessel crew must also monitor water depths).

C2 All water depths observed anywhere within the placement grid were at a depth of at least fifty (50) feet.

C3 If depths less than fifty (50) feet were observed in the placement grid, the latitude, longitude, and depth have been recorded in the TPL form comments section.

C4 Container vessel radio-control equipment operates without any problems.

C5 Placement was initiated in the targeted grid cell and was coordinated with transport vessel crew.

C6 Container vessel draft and/or bin level varies by less than 1.5 feet, or by less than twenty (20) points of pressure (draft only), from the value at the dredging site.

C7 Container vessel draft information immediately prior to container vessel door opening has been recorded on the TPL form.

C8 TPL form was completed using the container vessel monitoring software, or by hand if container vessel monitoring system malfunctions, within 30 minutes of container vessel door opening.

C9 Container vessel monitoring equipment, transportation vessel navigation equipment, and all other equipment related to placement of dredged material worked without any problems.

C10 All activities associated with placement of dredged materials appeared to be conducted in a safe manner.

C11 Nothing occurred that might have resulted in incorrect placement of dredged material.

C12 If a marine mammal or sea turtle was observed, the appropriate NMFS form was completed.

C13 Any item in the checklist that received a "NO" answer was noted in the comments section of the TPL (letter and number).

C14 TPL form submitted within two (2) hours of container vessel door, or hopper bin, opening, for offshore placement.

C15 A copy of the TPL form, with checklist "NO" answer documentation in the comments section, has been signed by the DMI and placed in a file/folder to become part of a permanent record of the trip.

Appendix E. Emergency Procedures

Vessel emergencies not involving dredged material – DMIs should follow in-place emergency procedures of towing vessel and adhere to instructions of captain and crew.

Vessel emergencies involving dredged material - In the case of a sinking scow, DMIs should work with the captain and crew to ensure that the scow is outside of a navigation channel before conducting an emergency dump or attempting a remedy to the situation. The position of the scow at the time of sinking or dumping should be recorded as accurately as possible. The USCG should be notified, along with members of the "Notification List" as soon as possible. If the sinking/dumping occurs in a navigation channel, the USCG will need to put out a Notice to Mariners and possibly mark the position with a buoy.

Personal Illness - If a DMI becomes too ill to perform his/her duties, they should come off the job and be relieved by another DMI. If independently employed by the dredging contractor, he/she should notify the contractor to allow a replacement to be arranged. If the DMI is employed by a company that supplies DMIs for dredging projects, he/she should notify their supervisor to arrange a replacement.

Appendix F: Telephone Notification of Inspector Checklist Violations.

For each “NO” answer on the checklist, DMIs must call (917) 790-8082, (917) 790-8537, or (917) 790-8539 as soon as possible. If the scow has not been towed away from the dredging site, reporting the “NO” answers may allow the problem to be corrected prior to offshore transport. The following information must be reported during the telephone call. This telephone call should be followed up with an email to NYDredging@usace.army.mil as soon as possible.

DMI name
Time of call
Date of call
Name of dredging project
Tug name
Brief description of incident
Brief follow-up activity associated with incident, if any
Telephone number to reach DMI

Appendix G. Description of Scow Contents and Digital Photography

Introduction

Maintenance dredging projects usually involve either mud and/or sand. Providing a description of the material in a scow on these projects is fairly straightforward, with the only variation being the color. In deepening projects, several types of materials are typically encountered: rock, gravel, sand, silt and clay, Pleistocene red clay and glacial till.

- **Rock** is defined as stones larger than 2.5 inches in diameter. A scow load can appear very rocky, without having a large percentage of what is defined as rock.

- **Gravel** is crushed stone or unconsolidated rock fragments consisting of material larger than 2mm in diameter.

- **Sand** is loose granular material consisting of finely divided rock and mineral particles larger than 1/16 mm in diameter.

- **Silt and clay** particles, the dominant components of mud, are smaller than 25 thousandth of an inch in diameter.

- **Pleistocene red clay** dredged during deepening projects usually occurs as very dense material that may even appear dry and form large clumps. Most mud that is dredged in the harbor area is dark gray to black colored. Since Pleistocene red clay is predominantly finer grained (but may contain some sand, gravel, and rocks), the category red clay/mud is used to identify either red clay or conventional dark-colored watery mud.

- **Glacial Till** is sediment deposited by glaciers. The rock fragments are usually angular and may also consist of unsorted, unstratified mixtures of silt, sand, gravel and boulders. It can be red brown in color and may contain significant fines (silt and clay), but does not contain shells. It normally occurs directly above bedrock.

If dark-colored mud is encountered (mostly silt and clay, but can have some sand) during dredging of ocean-suitable materials on a deepening project, it is not suitable for placement in the ocean, and must be removed from a scow before transport to an ocean placement site. This is why it is important for DMIs to be familiar with the dredging project and to know what materials are expected to be dredged. This appendix provides an

explanation of how to describe the material contained in a scow and how photographs must be taken to properly document the scow contents.

Material Classification

The material classification is based on the percentage of the material types described above and the color of the material. If there are several material types in the scow, then the material type with the highest percentage should be listed first with remaining composition to follow in descending order. The material percentages should always add up to 100%.

Each component also includes a basic color. The typical range of colors seen in dredged materials from the New York Harbor area may include: light gray, gray, dark gray, blue gray, black, tan, yellow, brown, light pink, and red. Any material that is less than 5% should just be noted in the comments section of the TPL. For example, a scow might appear to be almost 100% red clay, but a scattered few rocks may be noticeable, so the material would be listed as 100% red clay, but a comment such as “A few rocks were also observed in the scow”, or “Some black mud coated an area of the scow”, would be included with the comments section.

Here are a few example descriptions:

- Example 1: blue grey rock, 100%
- Example 2: gray rock, 75%, gray gravel/sand 25%
- Example 3: red rock, 70%, light gray gravel/sand, 25%, gray clay/mud 5%
- Example 4: light pink gravel/sand, 100%
- Example 5: tan gravel/sand, 90%, light gray clay/mud, 10%
- Example 6: brown clay/mud, 60%, gray rock 25%, gray gravel/sand 15%
- Example 7: red clay/mud, 85%, tan gravel/sand, 15%
- Example 8: dark gray clay/mud, 100%
- Example 9: black clay/mud, 100%
- Example 10: red clay, 100%
- Example 11: glacial till,100%,

The material percentages should be based on information provided by the dredge operator, if available. Since each scow load consists of dozens of bucket loads of material, the dredge operator can provide the best estimate of the percentages of each type of material contained in a scow. However, DMIs must view the loaded scow and judge whether the percentages provided by the dredge operator are reasonable based on the appearance of the loaded scow. If no material percentage estimates are provided to the DMI, the DMI must estimate the percentages themselves.

Dredged material can pile up differently in a scow. Rock and Pleistocene red clay can form very steep mounds. Gravel and sand tend to form lower mounds. Mud and wet sand tend to form a leveled surface in a scow.

If the scow appears to be a huge mountain of rock but the operator reports that it is only 40% rock, then the reason for reporting it as only 40% rock should be determined by speaking with the dredge operator, or someone else familiar with the scow loading. For example, if the scow was initially loaded with sand and gravel, and the remainder loaded with rock, the rock could still form a high mound. Whatever the reason, it should be noted in the comments section of the TPL. The comments section should always be used to explain discrepancies or unusual aspects of each placement trip.

Deepening Projects and Black Clay/Mud

Deepening projects usually involve a first round of dredging with an environmental bucket to remove non-ocean-approved black clay/mud prior to digging harder, ocean-approved dredged materials (red clay, glacial till, rock). The black clay/mud is required to be completely removed, prior to beginning the dredging of the HARS suitable harder materials (glacial till, red clay and/or rock). Scows loaded with more than an incidental quantity of black clay/mud must not be transported to the HARS, offshore borrow areas or a reef. It is possible that small areas will be encountered, during dredging of ocean-approved materials, which contain an unacceptable quantity of black clay/mud. This material must be dredged and placed in a separate scow and brought to an upland facility. It must not be transported to an offshore placement location. **If a loaded scow being readied for transport to an ocean placement location appears to contain more than an incidental quantity of black clay/mud, the dredging contractor should be notified that it must be removed prior to transport offshore**. If the contractor states that it is not more than an incidental quantity of black clay/mud, DMIs should note this on the TPL form, and contact the “Notification List” of this situation.

Digital Photography of Loaded Container vessels

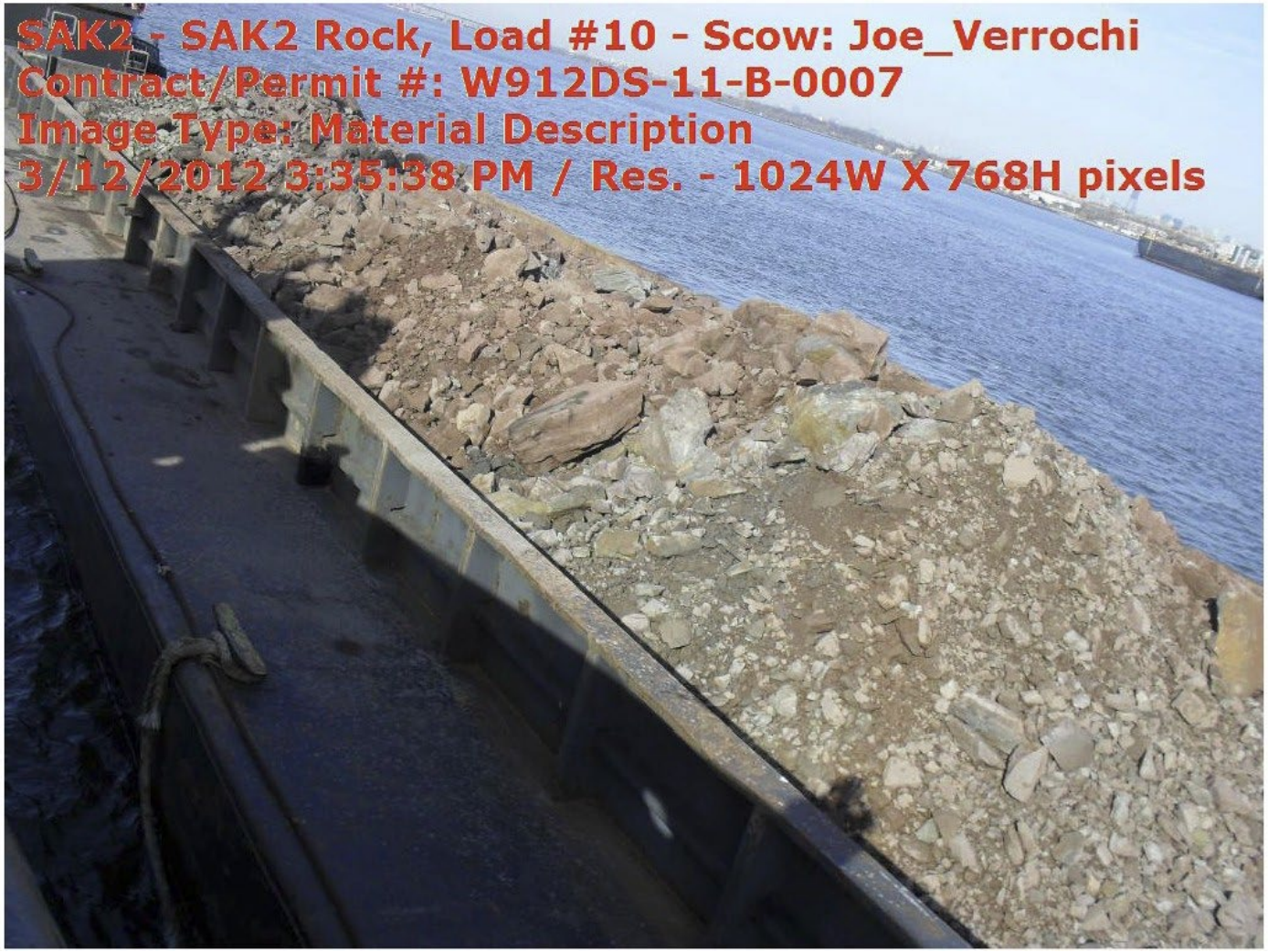
Each scow loaded with dredged material must be clearly photographed with a working digital camera by the DMI after loading and prior to departing the dredging site. The digital camera must be capable of taking wide and narrow angle photographs and provide a minimum resolution of 1200 x 1600 pixels. Each photograph must be digitally imprinted with the date and time of each photograph, the trip number, and the container vessel identification. Flash photography must be used if darkness or other conditions require supplemental illumination. The contractor will be responsible for providing sufficient lighting, so that digital photographs taken by the DMIs clearly show the type of dredged material within the loaded scows, regardless of weather conditions or time of day.

A minimum of three photographs are required: a) one digital photo must show the entire contents of each scow; and b) a second photo should be a close-up of the material; and c) third photograph of the plimsoll. If the camera strobe and/or facility lighting does not allow collection of properly illuminated photographs, then supplemental lighting, in the form of additional strobe lights (flash units) must be used. Each clearly visible digital photograph taken by DMIs of every loaded scow prior to it leaving the dredging site, must be submitted to the container vessel monitoring contractor (ADISS) for posting on the container vessel monitoring website.

NOTE: Digital photography is a critical component of the documentation of each placement trip. The scow must not be transported from the dredging site, unless a satisfactory digital photo is taken of the dredged material. A satisfactory photograph will be in focus and illuminated well enough to determine material colors and other aspects.

This is a good scow photo that shows almost the entire length of the scow. However, it appears to have been incorrectly classified on the TPL form as clay with 30% rock. Based on just the photograph, it appears to be at least 50% rock, and therefore the load should be classified as rock, with clay. It appears that what is considered clay may actually be a mixture of sand, clay, and gravel. It is possible the dredging operator indicated the scow was loaded with the clayey/sandy material first, with rock added last, but it seems unlikely that the entire length of the scow would have been loaded with one type of material, and then the entire length covered with rock. A reasonable classification for this load would be: brown rock 60%, brown gravel/sand 20%, brown clay/mud 20%.

This is a very good photograph of a scow loaded with rock. Most of the scow is visible, the material is well illuminated, and in focus. The classification would be brown rock 80%, brown gravel/sand 20%.



This excellent scow photo was classified as 100% rock. It appears to be in the 50-75% rock range, with the rest gravel/sand/clay. A reasonable classification would be: brown rock 60%, brown gravel/sand 35%, brown clay/mud 5%.

Photos are also required for hopper dredge projects. This is an excellent photo of a loaded hopper. In this case, it's 100% sand. It appears to have a light pink hue. The material classification would be light pink gravel/sand 100%.

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Another excellent scow photo. It was listed as 30% rock, but appears to be closer to 50% or more. A reasonable classification would be brown rock 50%, brown gravel/sand 45%, and brown mud/clay 5%.

This is not a bad scow photograph and is considered acceptable. However, the DMI reported this load to be 100% rock, and it clearly is not. It looks like it could contain between 30-50% non-rock material (clay, sand, gravel). A reasonable material description would be brown rock 55%, brown gravel/sand 25%, brown clay/mud 20%.

This scow was listed as gravel with 60% rock. If the rock percent was truly 60%, then the material should be classified as rock. It appears that there is probably less than 50% rock, so the classification as gravel is probably correct. Based on this photo, a reasonable classification would be brown gravel/sand 50%, brown rock 40%, brown clay/mud 10%. It is difficult to know if the finest material is sand or clay. The photo is on the low side of the illumination scale, making it difficult to discern what is in the scow.

This photograph is a little blurry and low on the illumination scale. It was listed as clay with 0% rock, but there is clearly a significant quantity of rock. A reasonable classification would be red clay/mud 50%, red rock 30%, gray gravel/sand 20%.

Had this photo been taken with different camera settings, or from a different angle, it would have been excellent, since the entire scow and contents are visible.

This is a typical photo of a scow loaded with maintenance mud. It would be better to have more of the scow included with the photograph, but this is acceptable. The classification would be gray clay/mud 100%.

Another load listed as 0% rock! Perhaps it was just a DMI getting careless in filling out the form, but this load appears to have at least 30% rock, and perhaps as much as 50% rock. Most of the rock is red colored, but the larger stones appear to be gray colored. A reasonable classification would be red gravel/sand 40%, red rock 40%, red clay/mud 20%.

This is a marginally acceptable photograph. It documents the material in the scow well, but doesn't show quite enough of the entire scow contents. The material description is easy; red rock 100%.

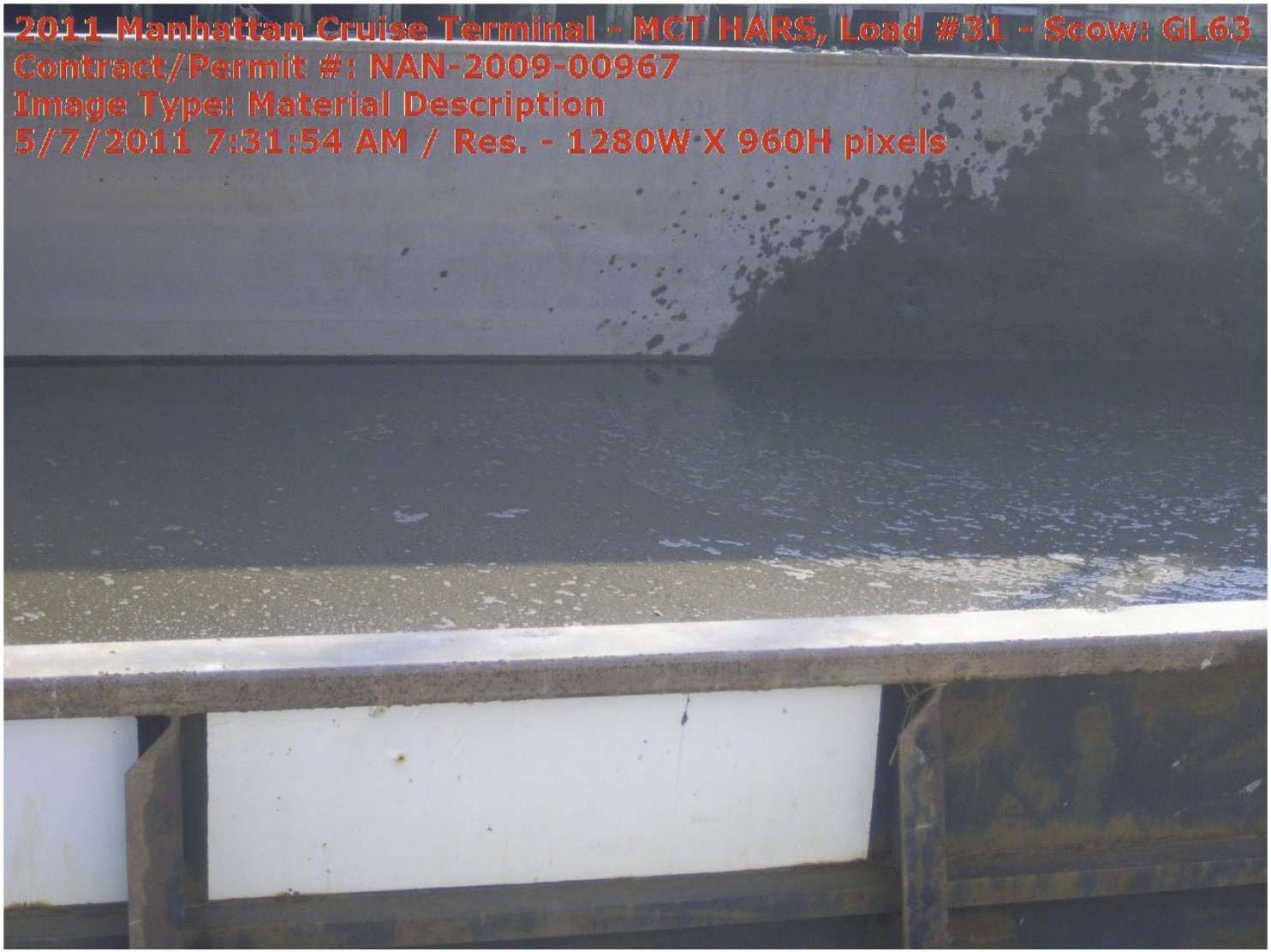
This is a good close-up photo, but needed to show more of the scow load. The TPL listed this as 60% rock. Depending on what the large red colored pieces are (clay or rock), it appears this load could be 80% rock, or 10% rock.

Another good close-up photo. This was listed as red clay with 0% rock. There are clearly larger stones within the load, along with sand and gravel. Based on this photo, a reasonable classification would be: red clay/mud 80%, gray gravel/sand 15%, red rock 5%. Note that some of the rocks are gray colored, but most appear to be red.

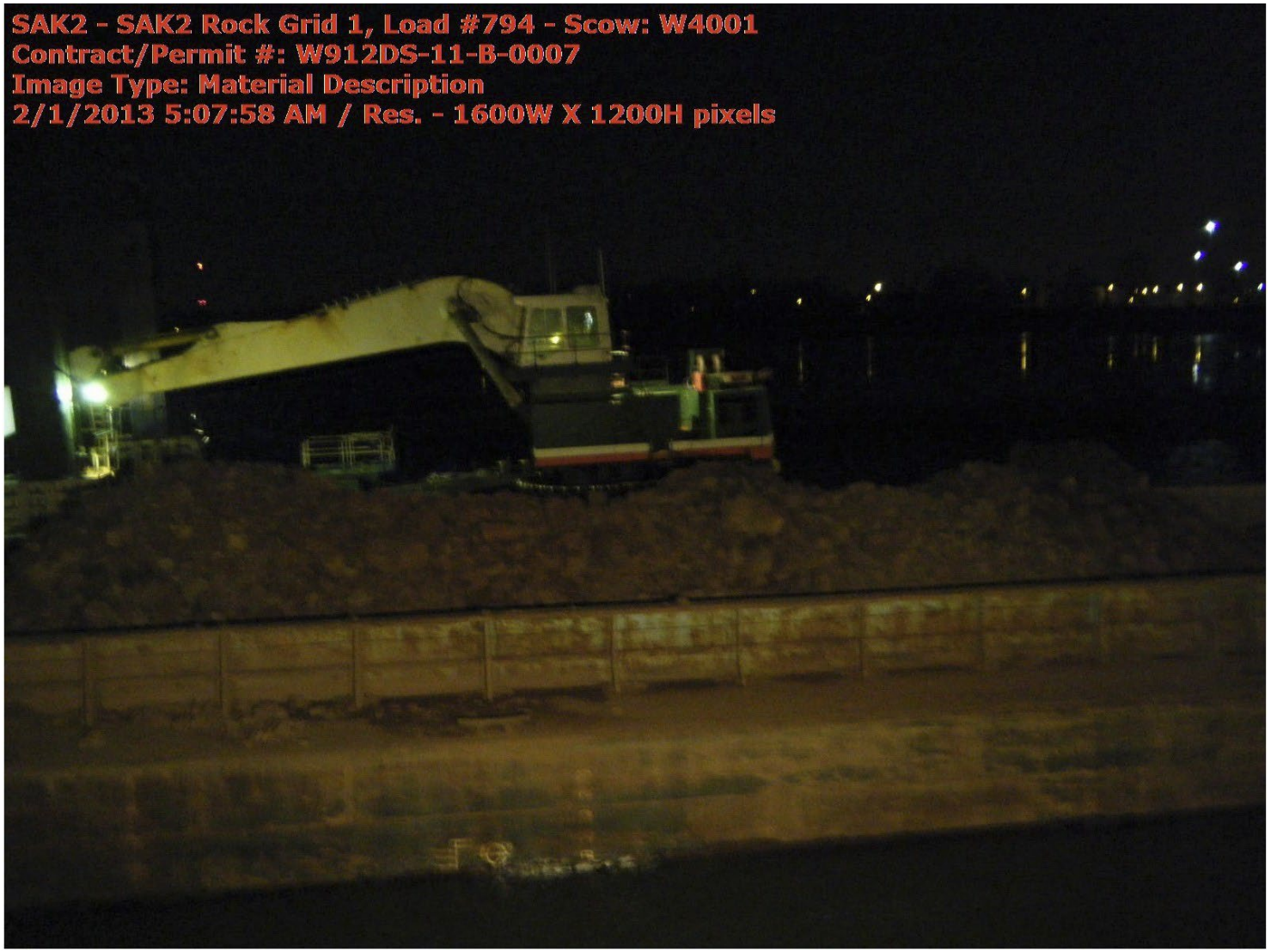
This is an unacceptable scow photo due to the limited scow area included within the photo. It is well illuminated, and in focus, but fails the three part test. It appears to be 100% red clay/mud. It's possible there are a few stones larger than 2.5 inches in diameter, which would be worthy of a comment on the TPL form.

This photo is from a maintenance project. Again, too narrow of a view. Note the rocks along the edge of the scow. These were left over from the use of the scow on a deepening project. They should have been cleared off before using the scow on this project.

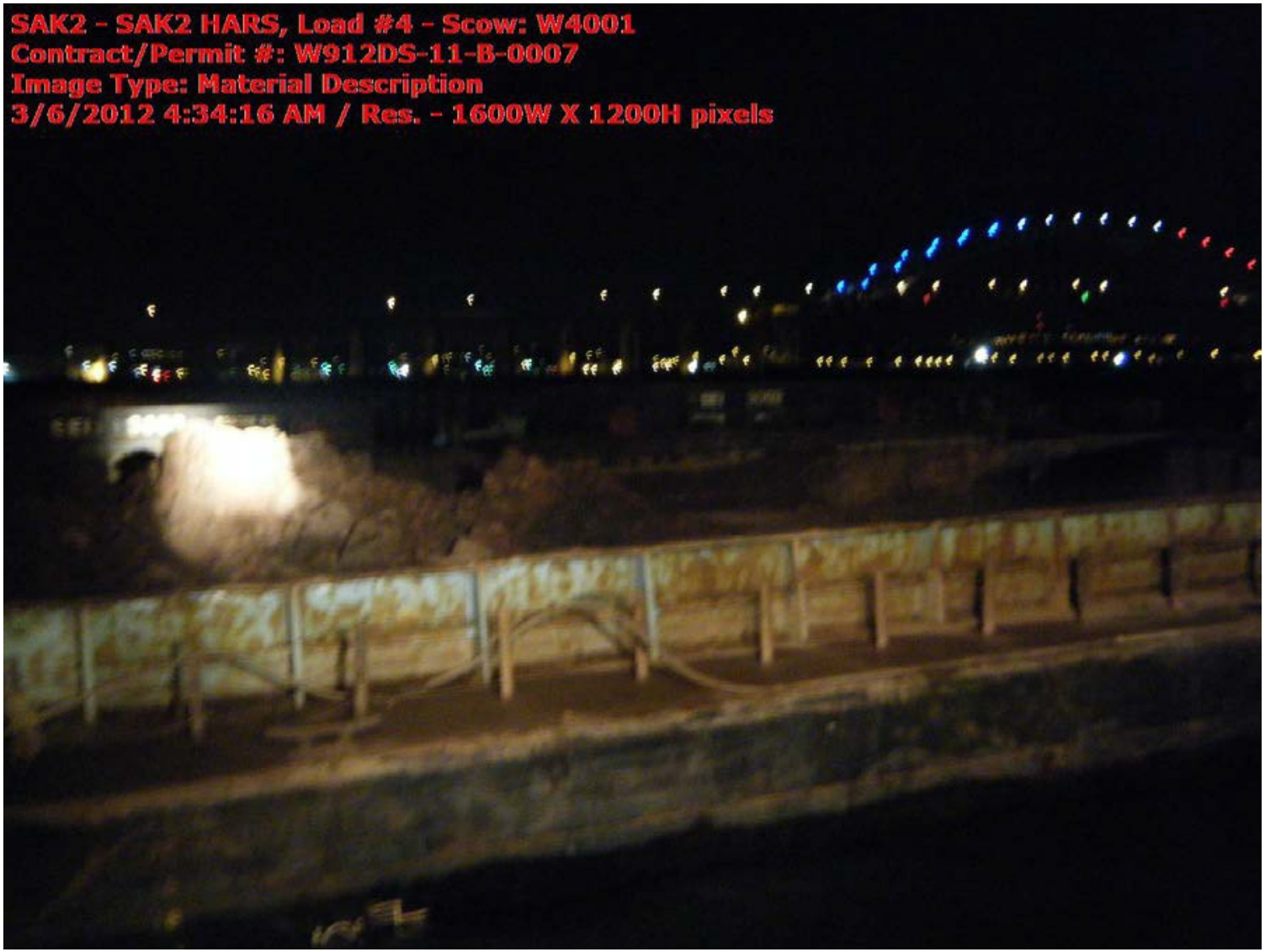
Another photo that would have been excellent if most of the scow was included, rather than just a small portion. This is the same maintenance dredging project as the previous photo, showing that the mud can appear a little chunky even from the high-water content maintenance dredging projects on the Hudson River. Based on the green color, this material may have been sitting in the scow for at least a day, allowing algae to grow. The apparent algae should have been included with the comments section of the TPL.



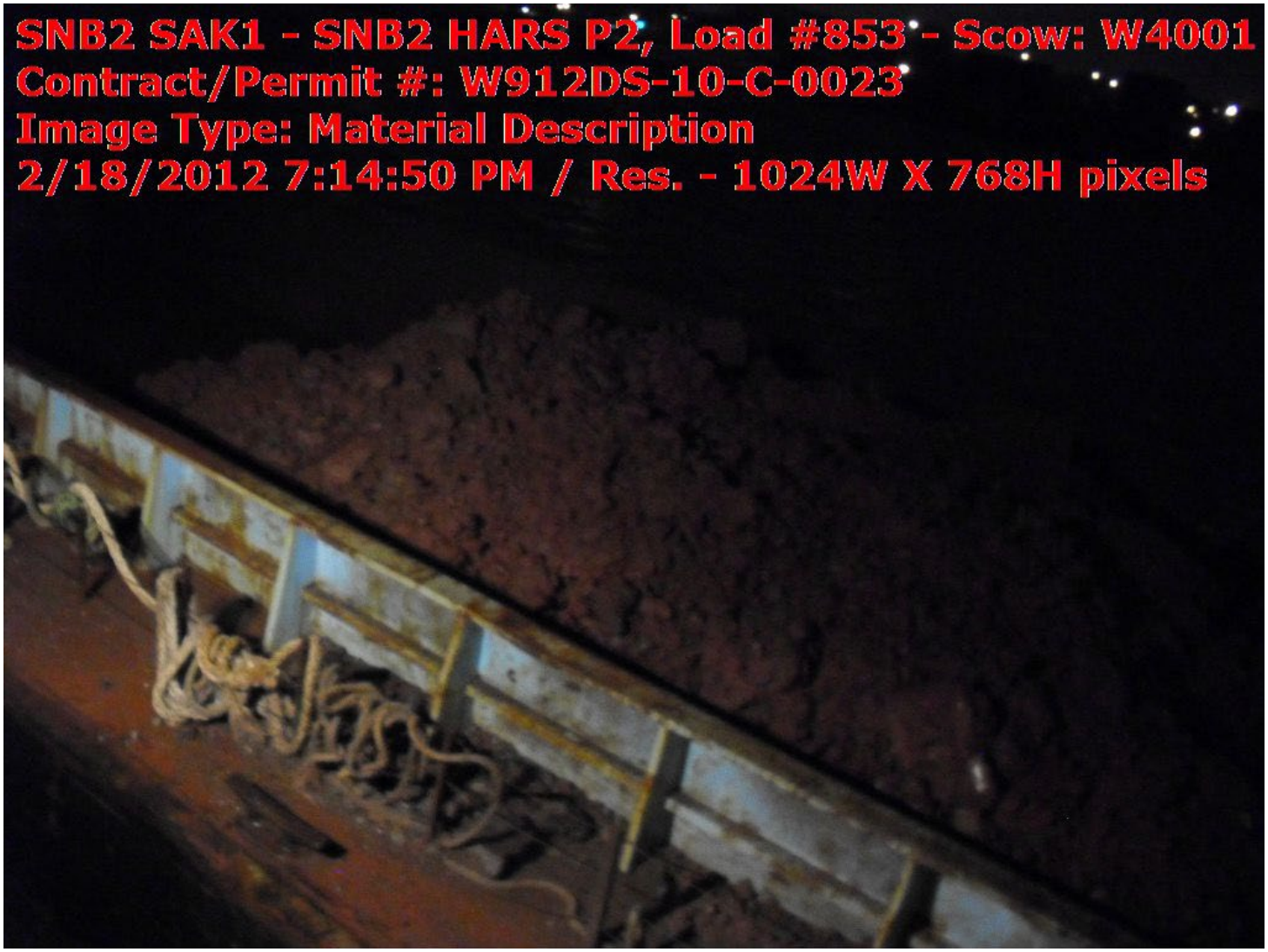
This would have been an excellent photo if a wider view of the scow was used.



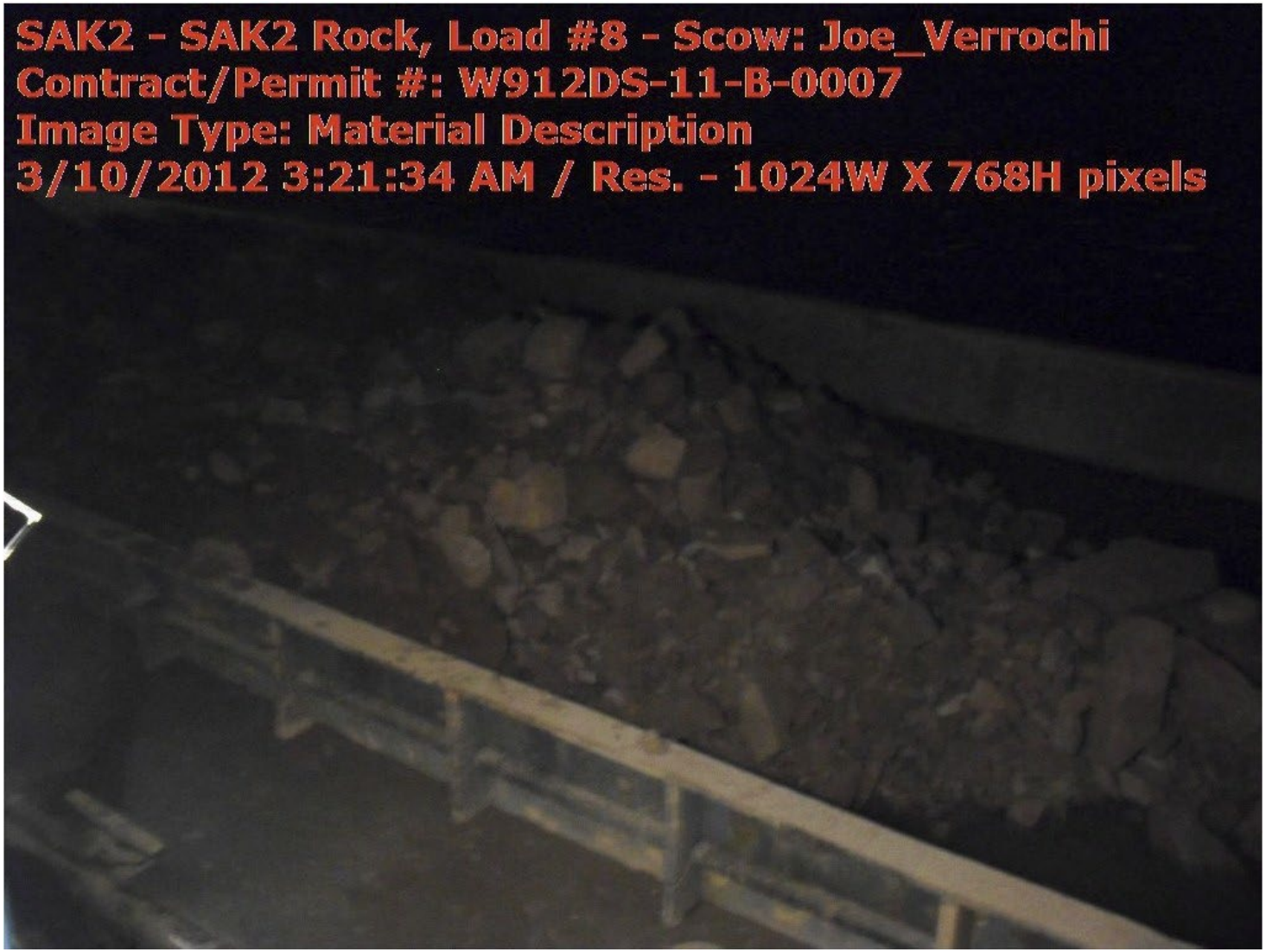
This is a photo that did not include proper illumination, and is therefore unacceptable. It appears to be a load of rock, but it could be clay. Without the proper illumination, it isn't possible to identify what is in the scow.



This is another example of an unacceptable photo due to poor illumination at night. Spotlights from the dredge do not provide enough light, resulting in minimal illumination and blurriness. The load was listed as 100% clay, but the photo appears to show a significant percentage of rock.

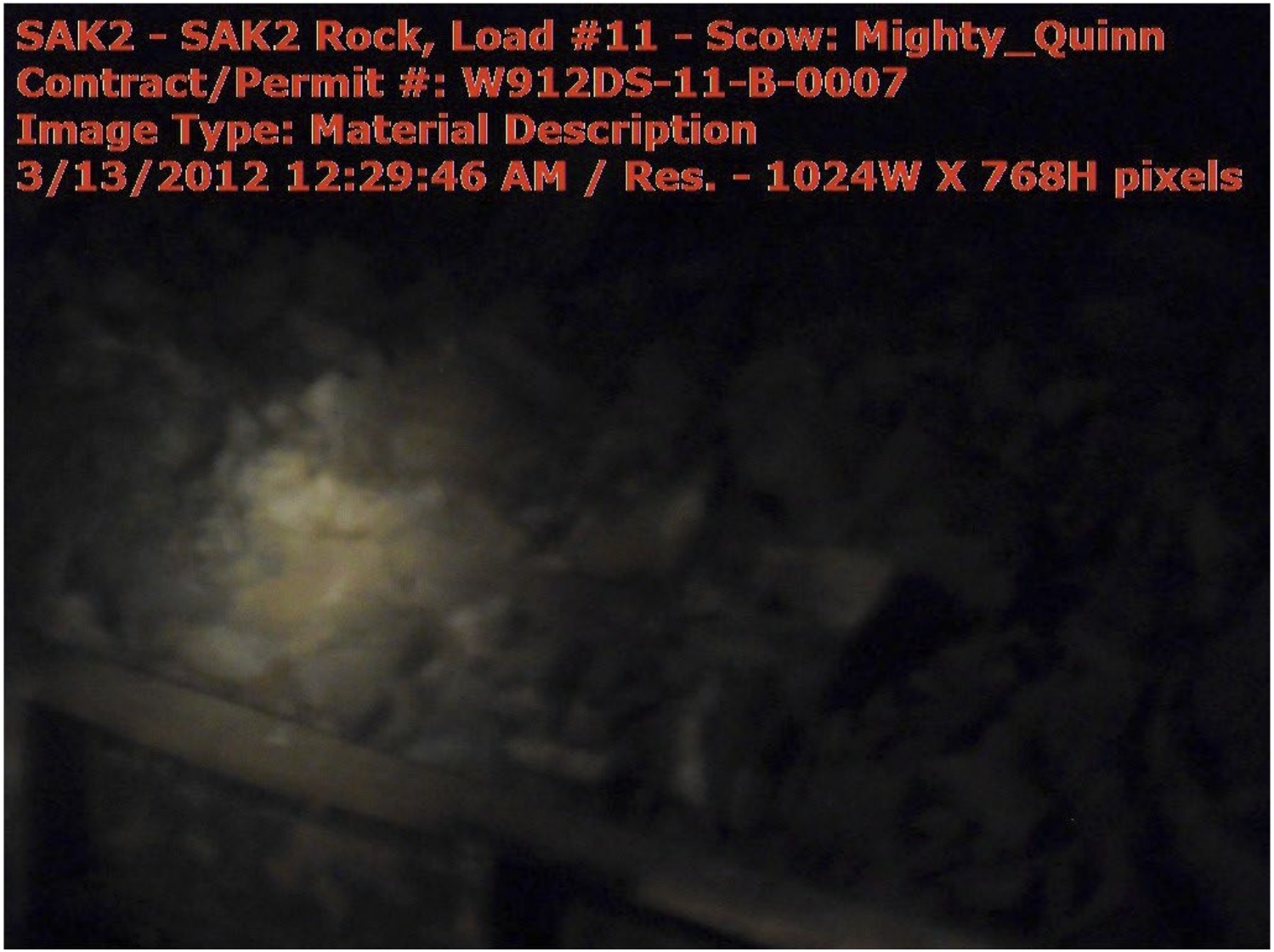


Unacceptable night photo. This load was listed as 60% rock, but this photo doesn't reveal what is really in the scow.



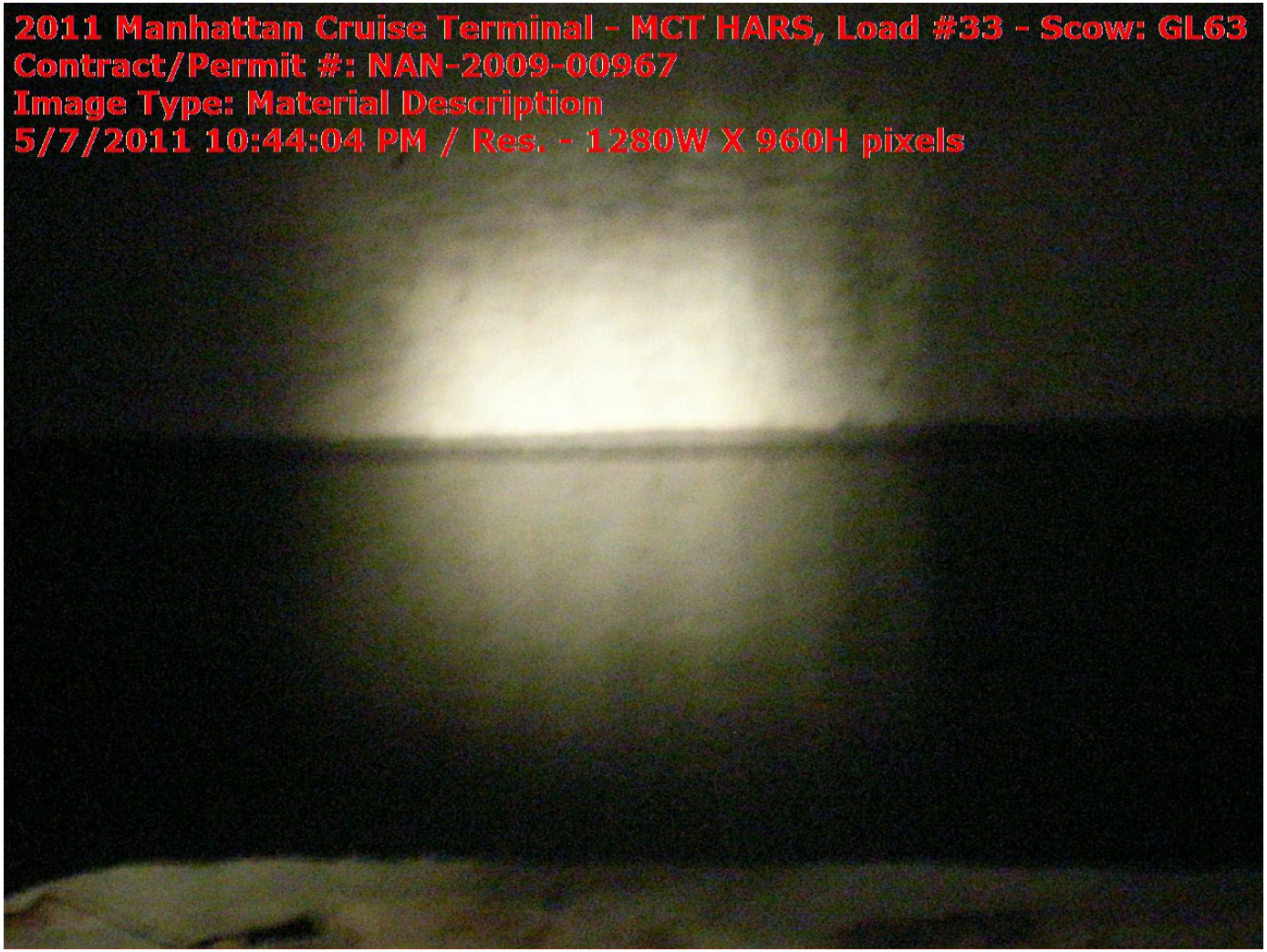
Unacceptable night photo. The general nature of the material is documented, but it is too small an area, not illuminated enough, and slightly out-of-focus.

This load was listed as 80%rock, but appears to have significantly less. It is an unacceptable photo due to the poor illumination, blurriness, and limited scow coverage.



Another terrible night photo. This should be reviewed and retaken.

Another bad photo, showing just a small, poorly illuminated patch of a scow. Once again, it was listed as 100% clay, but if the large object at the top is a rock, along with other lighter colored objects, there is a significant percentage of rock.



This is an example of a bad photograph from a maintenance project. Scow loads on these projects often appear to be loads of dark water, but the photograph still needs to clearly show what is in the scow. This is also another example of why using just the spotlight from a dredge will not provide enough illumination.