18 Sept 2014

GENERAL GUIDELINES ON THE REQUIREMENTS FOR APPLICATION ON DREDGING AND DUMPING WORKS

These general guidelines are applicable for dumping of dredged materials at any of the **MPA managed sites, ie** i) offshore dumping grounds, ii) land reclamation sites and iii) Offshore Disposal Sites (ODS). Any reference to dredged materials in these guidelines shall refer to materials to be dredged from Singapore Port Waters and to be dumped at any of the **MPA managed sites.**

PART 1: INFORMATION REQUIRED

The applicant shall submit the following to MPA's Committee for Marine Projects (COMET):

1 SITE LOCATION

a. General description of the project; and

b. The location of the dredging area or areas indicating the coordinates in Survey 21 grids. The location shall be plotted onto MPA's navigational chart with an appropriate scale.

2. SAMPLING SIZE AND LOCATION

a. A chartlet/plan showing the number and location of the soil sampling points for chemical testing proposed by the applicant. The following information shall be included:

   i) Location/coordinates of soil samples and their sampling depths;

   ii) Sampling method; and

   iii) Sampling quantity.

b. The applicant shall ensure that the sampling locations and number of sampling points are sufficient to provide a good representation of the materials at the dredging areas to ensure that a clear assessment on whether the dredged materials are contaminated or otherwise can be determined from the results of the chemical tests of the soil samples. The recommended sampling and monitoring procedures are given in Part 2 of this document.

3 METHOD OF DREDGING

The applicant shall indicate the dredging equipment and method to be deployed.

4 PHYSICAL CHARACTERISTICS OF DREDGED MATERIALS

a. Total quantity of materials to be dredged;

b. Soil characteristics of the dredged material, such as type of material, bulk density, SPT value, plastic limit, liquid limit, water content; and

c. Breakdown of quantity of dredged materials into the soil type and hardness/stiffness (i.e. SPT N value) of the soil.

5 CHEMICAL CHARACTERISTICS OF DREDGED MATERIALS

a. The chemical tests shall be carried out by an accredited laboratory for the following metals and their limits (in mg/kg dry weight) are given below:

Contaminants	Limit in mg/kg dry weight
Arsenic (As)	30
Copper (Cu)	55
Cadmium (Cd)	1
Chromium (Cr)	50
Lead (Pb)	65
Mercury (Hg)	0.8
Zinc (Zn)	150
Nickel (Ni)	35

b. The sample preparation and laboratory tests shall follow approved methods (latest revision) from the United States - Environmental Protection Agency, EPA methods 3051 / 6010B.

c. Dredged materials may be exempted from full chemical tests if any of the criteria listed below are met:

   i) Dredged materials are composed of sand, gravel and/or rock; or

   ii) Dredged materials are composed of previously undisturbed geological materials. A competent geologist engaged by the applicant shall certify that the dredged materials are previously geologically undisturbed.

PART 2: RECOMMENDED SAMPLING AND MONITORING PROCEDURES

1. SAMPLING INTERVAL

It is the applicant's responsibility to determine the adequate number and location of the soil samples. The following are general guidelines for the applicant's reference:

a. In areas unlikely to be contaminated, such as navigational channels/fairways:

   i) Seabed surface samples are to be taken at a grid spacing of up to 200m x 200m subject to a minimum of 3 seabed samples.

   ii) Should the chemical test results of the samples show that there is contamination, the applicant is required to:

   - Take additional seabed surface samples at grids of up to 100m x 100m from the location(s) where the test results showed that the soil is contaminated; and
   - Take vertical profile of samples as given in (c) below at all locations with contaminated soil.

b. In areas expected to be contaminated:

   i) Vertical profile of soil samples should be taken at grid spacing of up to 100m X 100m for shipyard basins, harbour basins, rivers, etc;

   ii) Vertical profile of soil samples should be taken at grid spacing of up to 50m X 50 m for areas near outfalls or river mouths and industrial sites; and

   iii) Where the dredging area is too small to follow the grid spacing in (i) and (ii) above, at least 3 sampling locations shall be chosen for vertical profile of soil samples.

c. Vertical Profile of Samples

   Where vertical profiles of samples are to be taken, samples should be continuous and samples for testing shall be at least 100mm long. The top of the samples for testing should be at the seabed level, 0.9m, 1.9m, 2.9m below the seabed, and every 3m until either 1m below the depth to be dredged to or up to the previously undisturbed geological materials or up to the soil layer which is of sand, gravel and/or rock, whichever is the case.

2. SAMPLING PROCEDURE

The sampling procedure shall be as follows:

a. The sampling shall only commence upon approval by MPA (COMET) of the location and number of soil samples to be taken at the site. The applicant must indicate the dates and time when the samples are to be taken to the Senior Port Inspector, MPA's Marine Environment & Safety

Department (Fax: 63252454). MPA's port inspectors may carry out unannounced checks on the applicant's samplings. The sample extraction must be witnessed and certified by the Client's representative (i.e. resident engineer, clerk of works). If the samplings are not carried out in accordance with MPA's requirements, the applicant will be liable to penalties and may be required to repeat the samplings and tests.

b. The soil sample preparation and testing shall be performed by an independent accredited laboratory. The test results together with the client's memo to certify that he has witnessed the soil sampling shall be sent to MPA (COMET).

c. For materials to be dumped at land reclamation sites and ODS managed by MPA, audit soil sampling would be carried out by the applicant for testing by an independent accredited laboratory as directed by MPA before the commencement of the dredging operations. The recommended number of the audit tests shall not be less than 1% of the total number of tests required by the Guidelines.

3. USE OF DREDGED MATERIALS

If the dredged materials are exempted from the chemical tests or MPA has assessed that the dredged materials are non-contaminated from the chemical tests results, applicants shall approach the reclamation agencies on the beneficial use of the dredged materials for reclamation projects. Notwithstanding MPA's assessment of the chemical test results, it is the applicant's responsibility to ensure that the materials are non-contaminated.

If the dredged materials are assessed to be contaminated from the chemical tests results, the applicant shall approach technological companies on the possibility to accommodate the contaminated materials for recycling to useful products.

4. MONITORING PROCEDURE

During the course of the dredging and dumping, random checks by the developer is required to ensure that the dredging activities are carried out in accordance with the application, i.e. the dredging is carried out within the areas specified in the application and the dredging depth does not exceed 1.0m of the specified dredging depth.

If the dredging area and dredging depth need to be revised, a new application should be submitted.

****