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राष्ट्रीय समुद्र प्रौद्योगिकी संस्थान
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सूचना का अधिकार
RIGHT TO INFORMATION

"Surging from the silver year in the oceans towards the golden"

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Scientist - F / वैज्ञानिक – एफ & Group Head (i/c)/ समूह प्रधान- प्रभारी

Date/दिनांक:23.07.2020
Place/जगह: Chennai/चेन्नै
NIOT/OSTI/CONSULTANCY/SWQ/2020-2021

To/सेवा में

Shri S. Srinivasa Roa
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Sub./विषय: Proposal for seawater quality survey and brine discharge modeling for the proposed desalination plant at Perur - reg.

Ref./संदर्भ :

1. Letter no. SMEC/Sea Water Sample CP1/ 5061185/066F, dated 12th June 2020.

Sir/महोदय,

With reference to your communication dated 12.06.2020, please find attached NIOT proposal to carry out seawater quality survey at Perur, Nemmeli for providing seawater quality status and identification of suitable location for seawater intake and the brine discharge for your kind perusal. The proposal is being sent with the approval of competent authority.

Thanking you/आपको धन्यवाद,

Yours sincerely/भवदीया

23/7/2020

(G. Dharani/जी. धरणी)

Copy / प्रतिलिपि:

1. Director NIOT, Chennai
2. F&A, NIOT, Chennai
3. CEE, NIOT, Chennai

PMC for 400 MLD SWRO Desalination Plant at Perur, Chennai

Inward No.	
Date:	
Received By:	
Remarks:	

SMEC/NJS/TATA

1.0 INTRODUCTION

The Chennai Metropolitan Area (CMA) is under constant water shortage due to rapid population growth and minimal rainfall. The natural water reservoirs and rivers are not able to keep up with the city's water demand due to frequent drought. Therefore, the state Government of Tamil Nadu and Chennai Metropolitan Water Supply and Sewerage Board (CMWSSB) have decided to construct seawater desalination plants (DSPs). Currently, two desalination plants (100 MLD at Minjur and 100 MLD at Nemmeli) are operational in CMA however; the volume of water generated by these two DSPs is not able to satisfy the water demand of people and industries. Therefore, to fulfill the water demand, CMWSSB has proposed an expansion plan of existing Nemmeli DSP by 150 MLD and construction of a new DSP of 400 MLD capacity at Perur.

The planned DSP at Perur requires up to 1050 MLD seawater to flow from intake establishment at the offshore. The reverse osmosis (RO) process of DSP is supposed to produce brine effluent about 50-60% of the total seawater intake of the plant. The brine effluent would be discharged into the offshore (about 900 m distance from the shore) sea through outfall pipes which may affect the quality and ecosystem in the vicinity. Therefore, the Project Coordinator of SMEC India Pvt., Ltd., has requested to the National Institute of Ocean Technology, Chennai (NIOT) (letter no. SMEC/Sea Water Sample CP1/ 5061185/066F, dated 12th June 2020) to carry out seawater quality survey at Perur (Three locations) and Nemmeli (One location) for providing seawater quality status and suitable location for the brine outfall with the least impact on the coastal environment.

2.0 ACTIVITIES

- The project envisages the seawater quality survey at four locations which include one onshore at the intake pump station of the existing 100 MLD desalination plant, Nemmeli. Whereas, three offshore locations (1140m, 1800m, and 2400m offshore) from proposed 400 MLD DSP at Perur. The proposed activity involves onsite sample collection, analysis of 40 parameters in seawater, interpretation of the data, dispersion studies, and suggestions for locations of intake/outfall.

3.0 SCOPE OF WORK

The objective of the proposed seawater survey would be to determine the environmental viability of the proposed activities and find out the most suitable location for the brine discharge. The scope of work shall consist of:

- To evaluate the brine diffusion model through a mathematical model and concentrate dispersion rate from the point of brine outfall.
- Establishing the size of the zone of initial dilution (ZID) required dissipating the discharge salinity plume to down to within 10% of ambient seawater TDS levels.
- To determine the TDS concentrations at the surface, mid-level of the water column, and at the ocean bottom at the interval of every 100 m from 1000 m to 1800 m alongshore on either side of the pipeline alignment.
- To determine the brine dispersion and concentration plume during the conditions of the static, northeast monsoon, and southwest monsoon and the effect of the outfall position of 400 MLD DSP on the intake salinity of the other two DSPs in the vicinity and vice versa.

4.0 DATA REQUIREMENTS

To enable NIOT to carry out seawater quality survey, the client, the Project Coordinator of SMEC India Pvt., Ltd, needs to provide the following technical data to NIOT:

1. Daily intake of seawater and brine discharge from the existing plant
2. Details of proposed and existing site

5.0 METHODOLOGY

The methodology for carrying out seawater analysis shall be site-specific and is as follows:

1. A desk study of project details, environmental data, and reconnaissance survey.
2. Carrying out primary/secondary data collection for water quality consisting of 40 parameters as per the standard protocol.
3. Assessment of all the sites for the presence of sensitive and/ or ecologically critical habitat such as coral/nesting/breeding ground from background and ground verified data.
4. The impact of project activity shall be evaluated against the baseline data collected from different sites.

6.0 TIME FRAME

The time frame for seawater survey, analysis, and data interpretation shall be two months excluding the monsoon season. The seawater survey will be planned immediately after the receipt of the work order. The draft report will be submitted within a month and the final report will be submitted within the two months after getting input from the client.

7.0 COSTING

Costing assumes that NIOT shall carry out the seawater survey at the proposed site. The advance of 50% shall be paid along with work order to meet field mobilization costs, 30% on submission of a draft final report, and balance 20% on submission of the Final report. The payment should be made in the form of Demand Draft drawn in favor of "National Institute of Ocean Technology" payable at Chennai. The cost estimate for the study is as follows:

Items	Rate (Rs.)
Survey of site characteristics, seawater quality analysis and collection of secondary data.	520000
Dispersion modeling	450000
Total[1]	**9,70000**
Travel costs to statutory bodies for any presentation or discussion or obtaining approvals (if required) to be borne by the Project Coordinator of SMEC India Pvt., Ltd, Chennai.	As per NIOT TA/DA norms

[1]The costing is exclusive of GST. GST charges as applicable from time to time shall be charged extra.

21/7/2022

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