MEMORANDUM FOR EMPOWERED STEERING COMMITTEE (ESC) ON THE PROPOSAL FOR SETTING UP A SEWAGE TREATMENT PLANT (STP) AT RAMANA- VARANASI (DISTRICT "3"), U.P." UNDER NGRBA (NATIONAL GANGA RIVER BASIN AUTHORITY) PROGRAMME.

1. STATEMENT OF PROPOSAL

The approval of the Empowered Steering Committee (ESC) is sought for the proposal of setting up a Sewage Treatment Plant (STP) at Ramana- District "3" Varanasi, U.P.' using the Advanced Integrated Wastewater Pond System (AIWPS) on pilot / demonstration basis under the Centrally sponsored National Ganga River Basin Authority (NGRBA) programme under the Non-EAP component.

2. BACKGROUND

a) Earlier in the 4th meeting of the Empowered Steering Committee (ESC) held on 11th March 2011, a proposal of "40 MLD STP at Ramana, Varanasi based on AIWPS technology under the NGRBA programme was put up before the Committee for approval. After the deliberations the Committee has decided the followings (Copy of the ESC memo and minutes enclosed as **annex-1 & 2**), as reproduced:

- "It is recognized that innovative technology is required to be taken up on a pilot basis for high treated effluent quality which would be suitable for unrestricted irrigation or any other beneficial reuse.
- A meeting may be held between SMF/GO_2 -Water, IIT-Kanpur, IIT-Delhi, CPCB & CPHEEO to address the various technical & financial issues relating to the project proposal, including the issue relating to costs & technology, and the proposal re-submitted based on the reviewed appraisal report."

b) In pursuance of above decision, a meeting was held on 15th March 2011 wherein it was agreed that Sankat Mochan Foundation (SMF)/GO_2-Water would submit a detailed life cycle cost comparison of AIWPS technology for the Ramana STP viz-a-viz other existing technologies based on Indian conditions and rates, so that the IITs could examine the same and submit their review report. (**annex-3**).

c) During the meeting of NGRBA Expert Members taken by the then MEF on 14-6-2011, Prof. V B Mishra requested for approval of 40 MLD STP based on AIWPS technology

at Ramana, Varanasi (**annex. -4**). After the discussions it was decided that SMF will submit a revised DPR through UP government for 20 MLD STP at Ramana based on AIWPS technology as pilot/demonstration project. Government of Uttar Pradesh has however, requested for the STP capacity of 37 MLD as the works for interception & diversion of Nagwa Nala has already been completed and shall remain unutilized due to non-availability of treatment facility. Land for the STP is also available.

d) The SMF accordingly, furnished the life cycle cost of AIWPS STP at Hilmar, California, USA in February, 2012, which is however a cost estimate of this technology in USA rather than cost comparison in Indian condition. Therefore, the UP Jal Nigam was asked to compare the life cycle cost of AIWPS with other technologies. Based on the cost comparison for 30 years life cycle and analysis submitted by the UP Jal Nigam in March, 2012, it was observed that AIWPS is costlier technology option, mainly due to large requirement of land and resultant cost (**annex-5 & 6)**.

e) In order to take final decision on this issue, it was decided with the approval of the MEF that the matter may be referred to IIT- Delhi for an expert opinion on the technology as well as life cycle cost comparisons and then to refer the same to the Empowered Steering committee for appraisal and appropriate recommendation to the competent authority.

f) Prof. Mittal, IIT Delhi pointed out that i) as per cost data provided by GO_2-water, very high end sewage treatment technology like Membrane Bio Reator (MBR) and commonly used mechanized aerobic process (Oxidation Ditch) based systems are 6.98 and 2.79 times costlier compared to the AIWPS technology and ii) In India, ratio of the cost of mechanicsed systems and AIWPS technology ranges between 0.70 and 0.93 (actual data from U P Jal Nigam). It shows that there iis huge variation in the difference between AIWPS cost and other sewage treatment technology costs in India and USA. It seems, in India, cost of AIWPS technology is very high as compared to other peer technologies.

g) Finally, IIT, Delhi recommended that in absence of Indian primary capital cost data and O&M data for AIWPS, it is desirable to evaluate a pilot plant first, which will help in developing a better understanding of the installation and operation of AIWPS technology in Indian environment. He also recommended that a pilot plant of 3 mld based on AIWPS technology could be installed, which will help in assimilating the AIWPS technology in Indian context and its O&M related issue as well as also resolve the financial aspects of the AIWPS technology (**annex-7**).

3. POINTS FOR DECISION:

The Empowered Steering Committee is requested to consider the proposal on the following;

1. Based on recommendation of IIT Delhi, setting up of a pilot sewage treatment plant of 3 mld capacity at Ramana, Varanasi based on Advanced Integrated Waste Water Pond System (AIWPS) technology may be considered. Also, the Committee may consider that the remaining sewage treatment capacity of 37 mld out of 40 mld is created by the Govt. of UP for utilization of the I&D infrastructure already created under GAP-II.
2. In order to meet the above requirement, the pilot scale project (3 mld) may be fully funded by the Central Govt. and remaining capacity (37 mld) will follow the NGRBA funding pattern i.e. 70:30 between central and state Governments.
3. The Empowered Steering Committee may also consider preparation of DPR for the pilot project within the approved project preparation activity (s) under the centrally sponsored National Ganga River Basin Authority (NGRBA) programme by the State Government.