

“Diversion of 186.96 ha of Reserved Forest Land for acquisition of forest land for the proposed Bhadbhut Barrage Project across River Narmada near Bhadbhut Village in Bharuch district in favour of Executive Engineer, Gulf of Khambhat Development Project (WR) Project Implementation Unit-2, Vadodara, Gujarat”.

GoI, MoEF & CC, New Delhi Letter No.8-50/2017-FC Dt. 21/12/2017 MoEF (Principle approval)

Sr. No.	Details of Conditions	Action taken	Remarks
1	Legal status of the diverted forest land shall remain unchanged.	Noted.	
2	Compensatory afforestation shall be raised over 186.96 ha non-forest land. The plantation shall be carried out by planting 1000 plants per ha (186.96 hectares x 1000=186960 plants) with in a period of 3 year from the date of Stage-II approval at the cost of User Agency. If it is not possible to plant all 186960 plants over the given non forest land then the left over plants shall be planted over degraded forest land as per working plan prescription.	Compensatory afforestation has been processed on E-portal as per prescribed procedure/norms laid. Compensatory afforestation shall be duly done.	
3	Approved CAT plan for the area shall be submitted prior to stage II. The respective cost of CAT plan shall be deposited in the account of	Approved the Catchment Area Treatment (CAT) Plan vide letter No. KLP/102016/335/ Kalpasar dated 13/10/2017 has been	

	Ad-hoc CAMPA of the concerned State through online portal.	submitted. Copy of this letter is attached as ANNEXURE-I .	
4	Compliance of Scheduled Tribe and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 for 187.00 ha of forest land has not been submitted in prescribe format along with the supporting documents. The complete compliance of the FRA 2006 shall be submitted at the time of final approval (Stage-II) approval.	No such schedule tribe and other traditional forest dwellers exists in 187 ha land, accordingly compliance of FRA 2006 is submitted herewith as ANNEXURE-II .	
5	It is reported in Site inspection report that there are 24454 trees. Prosopis is the main species. DSS analysis and report of State Forest Department suggests that babool trees are in plenty and at places mangrove species are spotted. Accordingly, State Government shall take utmost care to allow, only minimum numbers of trees which is unavoidable, to be felled.	Utmost care shall be taken by in such a way that only minimum numbers of trees in unavoidable circumstance shall be removed during course of execution of Bhadbhut Barrage Project.	
6	The permission from National Coastal Zone Management Authority (NCZMA) shall be obtained wherever applicable. The mangrove will be managed as per the existing guidelines.	The permission from the Gujarat Coastal Zone Management Authority (GCZMA), authority having jurisdiction, has been obtained vide letter dated 31/08/2017. Copy is attached herewith as ANNEXURE-III .	

7	<p>For the protection of aquatic fauna parallel channel along the river will be made. A comprehensive study shall be conducted by the state government and submitted before the Stage-II approval and the same will be implemented at the cost of the user agency. The NOC from the wildlife department may be obtained before execution of the project.</p>	<p>User Agency (Kalpasar Department, Government of Gujarat) has appointed NEERI, Nagpur and CIFRI, Kolkata for conducting comprehensive study for protection of aquatic fauna.</p> <p>All the approved Interim and Final Reports submitted by NEERI, Nagpur and CIFRI, Kolkata shall be submitted before Stage-II approval and same shall be implemented at the cost of the User Agency.</p> <p>The NOC from the Wildlife Department shall also be obtained before execution of the Bhadbhut Barrage Project if applicable.</p>	
8	<p>The non-forest land identified for raising compensatory afforestation shall be transferred and mutated in favour of the State Forest Department before issue of the Stage-II clearance.</p>	<p>Land identified for Compensatory afforestation has been transferred and mutated in favor of the state Forest Department 31-40-00 Ha at Tol Saladi Chotili of Taluka Jesar in Dist Bhavnagar and 157-34-24 Ha at Nani Dhufi Ta: Abadasa in Kachchh District. Total 188-74-24 H. Are. Sqmt Land handed over to Forest Department for Compensatory afforestation.</p>	

9	Non-forest land to be transferred and mutated in favour of the State Forest Department for raising Compensatory Afforestation shall be notified as reserved Forest under Section-4 or Protected Forest under Section-29 of the Indian Forest Act, 1927 or under the relevant Section(s) of the local Forest Act;	Necessary action shall be taken by concerned State Forest Department office as per Indian Forest Act-1927 or under the relevant Section(s) of the local Forest Act as applicable.	
10	The land identified for the purpose of CA shall be clearly depicted on a Survey of India topo sheet of 1:50,000 scale;	The land identified for the purpose Compensatory Afforestation has been depicted on a Survey of India (SOI) topo sheet of 1:50,000 scale. Copy of the Sheet is attached as ANNEXURE-IV.	
11	The User Agency shall transfer the cost of raising and maintaining the compensatory afforestation at the current wage rate in consultation with State Forest Department in the account of Ad-hoc CAMPA of the concerned State through online portal. The scheme may include appropriate provision for anticipated cost increase for works scheduled for subsequent years.	The Kalpasar Department (User Agency) has transferred the cost of raising and maintaining the Compensatory Afforestation at the current wage rate in consultation with the Gujarat State Forest Department. Rs.22,39,60,324/- (CA- Rs. 5,80,91,324/- + NPV Rs. 16,58,69,000/-) is transferred in the account of Ad-hoc GUJARAT CAMPA of the concerned State through online E-Portal on 03-03-2018. Copy of such transaction has been attached herewith as ANNEXURE-V.	

12	The User Agency shall transfer the funds for the Net Present Value (NPV) of the forest land being diverted under this proposal from the User Agency as per the orders of the Hon'ble Supreme Court of India dated 28.03.2008, 24.04.2008 and 09.05.2008 in Writ Petition (Civil) No.202/1995 and the guidelines issued by this Ministry vide its letter No. 5-3/2007-FC dated 05.02.2009 through online portal of Ad-hoc CAMPA account of the State Concerned.	The NPV for the forest land for Rs. 16.5869 Crore, Cost of scheme of Government Land transferred to Forest offices in Kachchh & Bhavnagar districts for Rs.4.96 Crore. Rs.0.84 Crore respectively has been deposited through e-portal.	
13	At the time of payment of the Net Present Value (NPV) at the then prevailing rate, the User Agency shall furnish an undertaking to pay the additional amount of NPV, if so determined, as per the final decision of the Hon'ble Supreme Court of India;	Necessary undertaking to pay the additional amount by the User Agency (Kalpasar Department, Government of Gujarat) is attached herewith as ANNEXURE VI .	
14	Any fund received form the user agency under the project, except the funds realized for regeneration/ demarcation of safety zone, shall be transferred to Ad-hoc CAMPA through online portal of Ad-hoc CAMPA account of the State Concerned;	Noted and shall be followed.	
15	The User Agency shall provide fuels preferably alternate fuels to the labourers and the staff working at the	Noted and shall be followed.	

	site so as to avoid any damage and pressure on the nearby forest areas;		
16	The boundary of the diverted forest land, mining lease and safety zone, as applicable, shall be demarcated on ground at the project cost, by erecting four feet high reinforced cement concrete pillars, each inscribed with its serial number, forward and back bearing, distance from pillar to pillar and GPS co-ordinate;	Noted and shall be followed. Table incorporating details is attached herewith as ANNEXURE-VII .	
17	The layout plan of the proposal shall not be changed without the prior approval of the Central Government;	Noted and shall be followed.	
18	The forest land shall not be used for any purpose other than that specified in the proposal;	Noted and shall be followed.	
19	The forest land proposed to be diverted shall under no circumstances be transferred to any other agency, department or person without prior approval of the Central Government;	Noted and shall be followed.	
20	The State Government shall maintain the character of the project as an irrigation project and to ensure continued benefit to the farmers in the command area;	The proposed project is not under an exclusive category of the Irrigation Project.	
21	The water shall be provided from the reservoir to the Forest Department for raising	Noted and shall be followed.	

	and maintenance of plantations and nurseries around the site whenever required, free of charge. The quantity and time of supply of water shall be as decided by the Forest Department.		
22	The User Agency shall undertake afforestation along the periphery of the reservoir and canals (as applicable).	Noted. The User Agency shall undertake afforestation along the periphery of the reservoir as applicable.	
23	The User Agency shall carry out muck disposal at pre-designated sites in such a manner so as to avoid its rolling down.	Noted and shall be followed.	
24	The dumping area for muck disposal shall be stabilized and reclaimed by planting suitable species by the User Agency at the cost of project under the supervision of State Forest Department. Retaining walls and terracing shall be carried out to hold the dumping material in place. Stabilization and reclamation of such dumping sites shall be completed before handing over the same to the State Forest Department in a time bound manner as per Plan.	Noted and shall be followed. Necessary provisions shall be made under the technical specifications of the Tender Documents to be prepared for Bhadbhut Barrage Project during detailed engineering by the User Agency (Kalpasar Department, Government of Gujarat).	
25	The user agency shall implement the R&R Policy of State Government in consonance with National R&R Policy, Government of India before the commencement of the project	As present, R & R is not applicable for Bhadbhut Barrage Project. However, the User Agency (Kalpasar Department, Government of Gujarat)	

	work. The said R&R Plan will be monitored by the State Government/concerned Regional Office of MoEF&CC along with indicators for monitoring and expected observable milestones.	shall follow the said directions in case R&R issue is required to be dealt with.	
26	The State Government and the User Agency shall ensure that the trees available between full reservoir level (FRL) and FRL-4 meters are not felled;	Noted and shall be followed. The State Government and the User Agency (Kalpasar Department, Government of Gujarat) shall take due care that the trees available between full reservoir level (FRL) and FRL-4 meters are not felled.	
27	The User Agency shall submit the annual self-compliance report in respect of the above conditions to the State Government and to the concerned Regional Office of the Ministry regularly:	Noted and shall be followed. The User Agency (Kalpasar Department, Government of Gujarat) shall submit the annual self-compliance report in respect of the above conditions to the State Government and to the concerned Regional Office of the Ministry regularly.	
28	Any other condition that the concerned Regional Office of this Ministry may stipulate, from time to time, in the interest of conservation, protection and development of forest & wildlife; and	Any other conditions other than stipulated by the concerned Regional Office of the Ministry from time to time, in the interest of conservation, protection and development of forest & wildlife shall be honored and followed by the User Agency (Kalpasar Department, Government of Gujarat).	

29	The User Agency and the State Government shall ensure compliance to provisions of the all Acts, Rules, Regulations, Guidelines, NGT order(s) and relevant Hon'ble Court Order (s), if any, pertaining to this project for the time being in force, as applicable to the project.	Noted and shall be followed.	
30	User Agency should ensure that the Compensatory levies (CA cost, NPV, etc.) are deposited through challan generated online on web portal and deposited in appropriate bank online only. Amount deposited through other mode will not be accepted as compliance of the Stage-I clearance.	User Agency (Kalpasar Department, Government of Gujarat) has deposited the Compensatory levies Rs.22,39,60,324/- (CA cost - Rs. 5,80,91,324/- + NPV Rs. 16,58,69,000/- etc.) through challan generated online on web portal and deposited in appropriate bank online on 03/03/2018. Copy of Challan of such online transaction is attached as ANNEXURE-V .	



Deputy Executive Engineer
Gulf of Khambhat Development Project(WR)
Project Implementation Unit-2
Vadodara



Executive Engineer
Gulf of Khambhat Development Project(WR)
Project Implementation Unit-2
Vadodara

ANNEXURE-I

No. KLP/102016/335/Kalpsar
N.W.R.W.S. & K. Deptt
Block No. 8/7, New Sachivalay
Gandhinagar
Dt. /10/2017

13 OCT 2017

To,

✓
Superintending Engineer
Project Implementation Unit No.2
Vadodara

Sub : Environmental approval to forest land for 187 hectors

- Approval to catchment area treatment plan for Bhadbhut Barrage Project

Ref. : Your office letter No. PIU-2/PB-2/Online Forest/464 of 2017, Dt.
25/9/2017

Catchment Area Treatment Plan submitted vide letter under reference is hereby

approved.

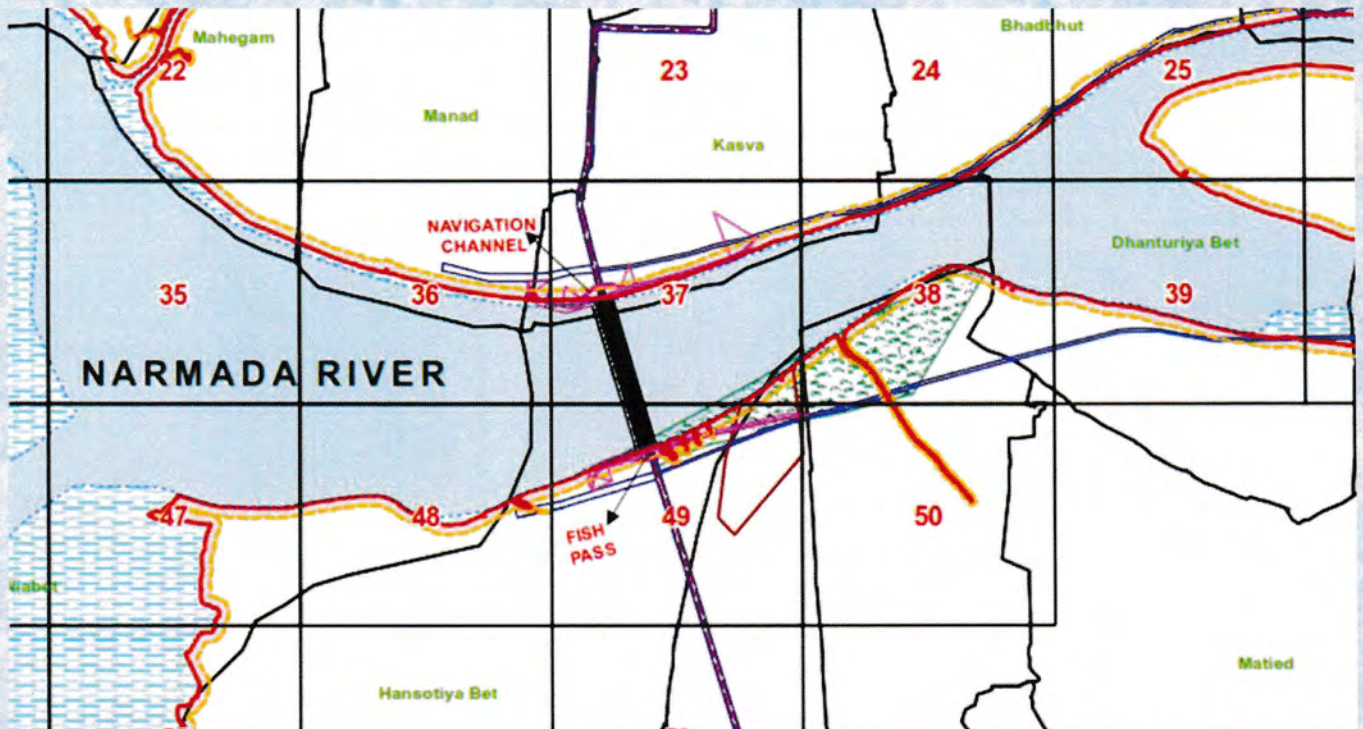
20/10/17
Under Secretary (Tech)
N.W.R.W.S. & K. Deptt.
Gandhinagar

S.E.	
E.E.-1	A
E.E.-2	
P.S.	
Dy. Accl.	H.J. Shah.
BRANCH	PB-3, Sh.B.S. Patel
INWARD No.	738
DATE	8-10-17

Sh.B.S. Patel
D.O.

KALPASAR DEPARTMENT

(GOVERNMENT OF GUJARAT)



CATCHMENT AREA TREATMENT STUDY FOR BHADBHUT BARRAGE PROJECT, GUJARAT

CAT REPORT



WAPCOS LIMITED

(A Government of India Undertaking)

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Tel. 0124 2397396, Fax. 0124 2397392

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DECEMBER 2017

CATCHMENT AREA TREATMENT PLAN

CATCHMENT AREA TREATMENT - INTRODUCTION

It is a well-established fact that reservoirs formed by dams and barrages on rivers are subjected to sedimentation. The process of sedimentation embodies the sequential processes of erosion, entrainment, transportation, deposition and compaction of sediment. The study of erosion and sediment yield from catchments is of utmost importance as the deposition of sediment in reservoir reduces its capacity, and thus affecting the water availability for the designated use. The eroded sediment from catchment when deposited on streambeds and banks causes braiding of river reach. The removal of top fertile soil from catchment adversely affects the agricultural production. Thus, a well-designed Catchment Area Treatment (CAT) Plan is essential to ameliorate the above-mentioned adverse process of soil erosion. Soil erosion may be defined as the detachment and transportation of soil. Water is the major agent responsible for this erosion. In many locations, winds, glaciers, etc. also cause soil erosion. In a hilly catchment area, as in the present case erosion due to water is a common phenomenon and the same has been studied as a part of the Catchment Area Treatment (CAT) Plan. The Catchment Area Treatment (CAT) plan highlights the management techniques to control erosion in the catchment area. Life span of a reservoir in case of a seasonal storage dams and barrages is greatly reduced due to erosion in the catchment area.

The catchment area intercepted at the Bhadbhut barrage site is 8,660.48 km² in the downstream of the Sardar Sarovar Project. Water availability has also been computed as per the intercepted catchment area though the spillover discharge from the Sardar Sarovar Dam is going to augment the designed water availability.

As Sardar Sarovar Dam has been constructed much earlier, detailed study for the entire basin have been carried out which have led to a compilation of very useful and essential data and the same has been used here for the extension of the work.

The catchment area treatment involves -

- Understanding of the erosion characteristics of the terrain

- Suggesting remedial measures to reduce the erosion rate

In the present study 'Silt Yield Index' (SYI), method has been used. In this method, the terrain is subdivided into various watersheds and the erodibility is determined on relative basis. SYI provides a comparative erodibility criteria of catchment (low, moderate, high, etc.) and do not provide the absolute silt yield. SYI method is widely used mainly because of the fact that it is easy to use and has lesser data requirement. Moreover, it can be applied to larger areas like sub-watersheds, etc.



Figure – 1 Basin Map of Lower Reach of Narmada

Annual water availability at 75% dependability is 1648.25 MCM. Storage of fresh river water of approximately 600 MCM for meeting domestic and industrial water supply has been designed. Controlling salinity ingress and deterioration of ground water quality in upper reaches of Narmada has been the main objective.

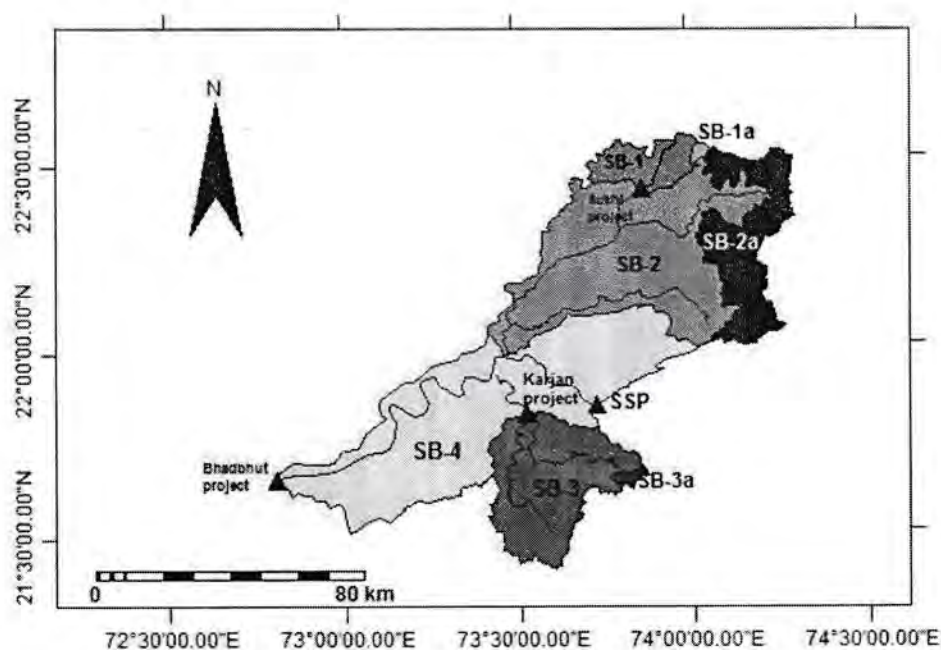


Figure – 2 Narmada Basin Map in the Downstream of Sardar Sarovar Project

Table - 1

Description of various sub-basins in free catchment below SSP

Sub-basin ID/ Color	Sub-basin Area (sq. km)	Sub-basin description
SB1	385.91	Area of Sukhi dam catchment within Gujarat State.
SB1a	25.9	Area of Sukhi dam catchment within MP State.
SB2	2699.91	Area of Orsang catchment below Sukhi dam within Gujarat State.
SB2a	968.66	Area of Orsang catchment below Sukhi dam within MP State.
SB3	1372	Area of Karjan dam catchment within Gujarat State.
SB3a	31	Area of Karjan dam catchment within Maharashtra State.
SB4	3177.1	Area of free catchment below SSP, Sukhi dam, Karjan dam, and Orsang catchment up to Bhadbhut

APPROACH FOR THE STUDY

A detailed database on natural resources, terrain conditions, soil type of the catchment area, socio-economic status, etc. is a pre-requisite to prepare treatment plan keeping in view the concept of sustainable development. Various thematic maps have been used in preparation of the CAT plan. Due to the spatial variability of site parameters such as soils, topography, land use

and rainfall, not all areas contribute equally to the erosion problem. Several techniques like manual overlay of spatially index-mapped data have been used to estimate soil erosion in complex landscapes. Geographic Information System (GIS) is a computerized resource data base system, which is referenced to some geographic coordinate system. In the present study, real coordinate system has been used. The GIS is a tool to store, analyze and display various spatial data. In addition, GIS because of its special hardware and software characteristics, has a capacity to perform numerous functions and operations on the various spatial data layers residing in the database. GIS provides the capability to analyze large amounts of data in relation to a set of established criteria. In order to ensure that latest and accurate data is used for the analysis, satellite data has been used for deriving land use data and ground truth studies too have been conducted. The various steps covered in the study are as follows:

- Data acquisition
- Data preparation
- Output presentation

The requirement of the study was first defined and the outputs expected were noted. The various data layers of the catchment area used for the study are as follows:

- Slope Map
- Soil Map
- Land use Classification Map
- Current Management Practices
- Catchment Area Map

The data available from various sources was collected. The ground maps, contour information, etc. were scanned, digitized and registered as per the requirement. Data was prepared depending on the level of accuracy required and any corrections required were made. All the layers were geo-referenced and brought to a common scale (real coordinates), so that overlay could be performed. A computer programme was used to estimate the soil loss. The formats of outputs from each layer were firmed up to match the formats of inputs in the program. The grid size to be used was also decided to match the level of accuracy required, the data availability and the software and time limitations. The format of output was finalized. Ground truthing and data

collection was also included in the procedure. For the present study Resourcesat-2 LISS III digital satellite data was used for interpretation and classification.

Table - 2
Landuse pattern of the catchment area

Category	Area in km ²
Dense Vegetation	1147.57
Open Vegetation	1388.18
Barren/ Open Land	250.85
Agricultural Land	4785.58
River/ Water Body	118.35
Settlements	969.95
Total	8,660.48

ESTIMATION OF SOIL LOSS USING SILT YIELD INDEX (SYI) METHOD

The Silt Yield Index Model (SYI), considering sedimentation as product of erosivity, erodibility and arial extent was conceptualized in the All India Soil and Land Use Survey (AISLUS) as early as 1969 and has been in operational use since then to meet the requirements of prioritization of smaller hydrologic units. The erosivity determinants are the climatic factors and soil and land attributes that have direct or reciprocal bearing on the unit of the detached soil material. The relationship can be expressed as:

Soil erosivity = f (Climate, physiography, slope, soil parameters, land use/land cover, soil management)

Silt Yield Index

The Silt Yield Index (SYI) is defined as the Yield per unit area and SYI value for hydrologic unit is obtained by taking the weighted arithmetic mean over the entire area of the hydrologic unit by using suitable empirical equation.

Prioritization of Watersheds/Subwatersheds

The prioritization of smaller hydrologic units within the vast catchments are based on the Silt Yield Indices (SYI) of the smaller units. The boundary values or range of SYI values for

different priority categories are arrived at by studying the frequency distribution of SYI values and locating the suitable breaking points. The watersheds/ sub-watersheds are subsequently rated into various categories corresponding to their respective SYI values. The application of SYI model for prioritization of sub watersheds in the catchment areas involves the evaluation of:

- a) Climatic factors comprising total precipitation, its frequency and intensity
- b) Geomorphic factors comprising land forms, physiography, slope and drainage characteristics
- c) Surface cover factors governing the flow hydraulics
- d) Management factors.

The data on climatic factors can be obtained for different locations in the catchment area from the meteorological stations whereas the field investigations are required for estimating the other attributes. The various steps involved in the application of model are:

- Preparation of a framework of sub-watersheds through systematic delineation
- Rapid reconnaissance surveys on 1:50,000 scale leading to the generation of a map indicating erosion-intensity mapping units.
- Assignment of weightage values to various mapping units based on relative silt-yield potential.
- Computing Silt Yield Index for individual watersheds/sub watersheds.
- Grading of watersheds/sub watersheds into very high, high medium, low and very low priority categories.

The area of each of the mapping units is computed and silt yield indices of individual sub watersheds are calculated using the following equations:

a. Silt Yield Index

$$SYI = \sum (A_i \times W_i) \times 100 ;$$

where $i = 1$ to n Where A_i = Area of i th unit (EIMU) W_i = Weightage value of i th mapping unit

n = No. of mapping units A_w = Total area of sub-watershed.

The SYI values for classification of various categories of erosion intensity rates are given in Table – 3.

Table – 3
Criteria for erosion intensity rate

Priority Categories	SYI Value
Very high	> 1300
High	1200-1299
Medium	1100-1199
Low	1000-1099
Very Low	<1000

WATERSHED MANAGEMENT – AVAILABLE TECHNIQUES

Watershed management is the optimal use of soil and water resources within a given geographical area so as to enable sustainable production. It implies changes in land use, vegetative cover, and other structural and non-structural action that are taken in a watershed to achieve specific watershed management objectives. The overall objectives of watershed management programme are to:

- increase infiltration into soil; - control excessive runoff
- Manage and utilize runoff for useful purpose

Following Engineering and Biological measures have been suggested for the catchment area treatment.

1. Engineering measures

- Step drain
- Angle iron barbed wire fencing
- Stone masonry
- Check dams

2. Biological measures

- Development of nurseries
- Plantation/afforestation
- Pasture development
- Social forestry

The basis of site selection for different biological and engineering treatment measures under CAT is the final objective. Basis for selection of catchment area treatment measures Treatment measure Basis for selection Social forestry, fuel wood and fodder grass development Near settlements to control tree felling Contour Bunding Control of soil erosion from agricultural fields. Pasture Development Open canopy, barren land, degraded surface Afforestation Open canopy, degraded surface, high soil erosion, gentle to moderate slope Barbed wire fencing In the vicinity of afforestation work to protect it from grazing etc.

Step drain to check soil erosion in small streams, steps with concrete base are prepared in sloppy area where silt erosion in the stream and bank erosion is high due to turbidity of current. Nursery Centrally located points for better supervision of proposed afforestation, minimize cost of transportation of seedling and ensure better survival.

Table - 4

Basis for selection of catchment area treatment measures

Treatment measure	Basis for selection
Social forestry, fuel wood and fodder grass development	Near settlements to control tree felling
Contour Bunding	Control of soil erosion from agricultural fields.
Pasture Development	Open canopy, barren land, degraded surface
Afforestation	Open canopy, degraded surface, high soil erosion, gentle to moderate slope
Barbed wire fencing	In the vicinity of afforestation work to protect it from grazing etc.
Step drain	To check soil erosion in small streams, steps with concrete base are prepared in sloppy area where silt erosion in the stream and bank erosion is high due to turbidity of current.
Nursery	Centrally located points for better supervision of proposed afforestation, minimize cost of transportation of seedling and ensure better survival.

CATCHMENT AREA TREATMENT MEASURES

The total catchment area is 8,660.48 km². The erosion category of various watersheds in the catchment area as per a SYI index is given in Table – 5.

Table – 5
Erosion intensity categorization as per SYI classification

Watershed Number	Area in km²	SYI value	Category
SB1	385.91	1110	Medium
SB1a	25.9	1050	Low
SB2	2699.91	1170	Medium
SB2a	968.66	1230	High
SB3	1372	1020	Low
SB3a	31	1020	Low
SB4	3177.1	1130	Medium

COST ESTIMATE

Measure	Year-1		Year-2		Year-3		Total	
	Physical	Financial	Physical	Financial	Physical	Financial	Physical	Financial
Gap Plantation	60 ha	Rs. 15 Lack	90 ha	Rs. 22 Lack	60 ha	Rs. 15 Lack	210 ha	Rs. 52 Lack
Afforestation	40 ha	Rs. 40 Lack	-	-	-	-	40 ha	Rs. 40 Lack
Nursery development	-	-	-	-	2 No.	Rs. 40 Lack	2 No.	Rs. 40 Lack
Maintenance of nursery	-	-	-	-	-	-	-	-
Barbed wire fencing	3 km	Rs. 15 Lack	-	-	-	-	3 km	Rs. 15 Lack
Watch and ward for 3 years for 5 persons	36 man month	Rs. 3.6 Lack	36 man month	Rs. 3.6 Lack	36 man month	Rs. 3.6 Lack	108 man month	Rs. 10.8 Lack
Contour bunding	6 No.	Rs. 6 Lack	8 No.	Rs. 8 Lack	-	-	14 No.	Rs. 14 Lack
Check dam	4 No.	Rs. 8 Lack	4 No.	Rs. 8 Lack	4 No.	Rs. 8 Lack	12 No.	Rs. 24 Lack
Total		Rs. 87.6 Lack		Rs. 41.6 Lack		Rs. 66.6 Lack		Rs. 195.8 Lack



WAPCOS LIMITED

(A Government of India Undertaking)

76 C, Sector 18, Gurgaon 122015, Haryana
website: www.wapcos.co.in

FORM-II

(For projects other than linear projects)

Government of Gujarat

Office of District Collector, Bharuch

No.: FOR/WS/ 7135

Dated. 21/9/2017

TO WHOM SO IT MAY CONCERN

In compliance of the Ministry of Environment and Forests (MoEF), Government of India letter No.11-9/98-FC (pt.) dated 3rd August 2009 where in the MoEF issued guidelines rights under the scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights Act 2006 (FRA, for short) on the forest land proposed to be diverted for non-forest purpose, it is certified that 187 hectares of forest land proposed to be diverted in favour of behalf of Government of Gujarat, N.W.R.W.S & Kalpasar Department through Executive Engineer, Gulf of Khambhat Development Project (W.R.), Project Implementation Unit-2, Vadodara for the Construction of Bhadbhut Barrage, Approach road and Flood Protection works across the river Narmada near village-Aliabet, Taluka : Vagra and Utraj village, Taluka : Hansot, Dist : Bharuch falls within the jurisdiction Vagra and Hansot Taluka.

It is further certified that:

- (a) the complete process for identification and settlement of rights under the FRA has been carried out for the entire 187 hectares of forest land proposed for diversion. A copy of records of all consultation and meetings of the Forest Rights Committee(s), Gram Sabha(s), Sub-Division Level Committee(s) and the District Level Committee are enclosed as annexure to annexure.
- (b) the proposal for such diversion of Forest land for facilities managed by the Government is required under section 3(2) of the FRA have been completed and the Gram Sabha have given their consent to it;
- (c) the each of concerned Gram Sabha(s), has certified that all formalities/processes under the FRA have been carried out, and that they have given their consent to the proposed diversion and the compensation and ameliorative measures, if any, having understood the purpose and details of proposed diversion. A copy of certificate issued by the Gram Sabha of villages(s) is enclosed as annexure to annexure
- (d) the discussion and decisions on such proposals had taken place only when there was a quorum of minimum 50% of the members of Gram Sabha present.
- (e) the diversion of forest land for facilities managed by the Government as required under section 3 (2) of the FRA have been completed and the Gram Sabhas have given their consent to it;
- (f) the rights of Primitive Tribal Groups and Pre-Agricultural Communities, as certified by the District Administration, Bharuch where applicable have been specifically safeguarded as per section 3 (1) (e) of the FRA.

Not
Applicable



(Sandip J Sagale)
Collector Bharuch

D. T. VASAVADA, IFS
MEMBER SECRETARY
SEIAA (GUJARAT)



STATE LEVEL ENVIRONMENT
IMPACT ASSESSMENT
AUTHORITY
GUJARAT

Government of Gujarat

No. SEIAA/GUJ/CRZ/839/2017

Date **31 AUG 2017** By R P A D

Sub: CRZ Clearance for the proposed construction of Barrage at Village: Bhadbhut, Dist: Bharuch by Narmada, Water Resources, Water Supply & Kalpasar Department.....In CRZ Notification, 2011. Time Limit

Dear Sir,

This has reference to your application for CRZ clearance along with Form-I dated 23/07/2012 seeking CRZ clearance submitted to the Forests & Environment Department (F&ED), Gujarat.

The proposal is for CRZ Clearance for the proposed construction of Barrage at Village: Bhadbhut, Dist: Bharuch by Narmada, Water Resources, Water Supply & Kalpasar Department. Total length of barrage will be 1663 meter.

The GCZMA vide their letter dated 22/08/2017 & 22/09/2014 had recommended to the SEIAA, Gujarat, to grant the CRZ Clearance for the above-mentioned project based on its meeting held on 11/06/2013. The proposal was considered by SEIAA, Gujarat in its meeting held on 24/08/2017 at Gandhinagar. After careful consideration, the SEIAA hereby accords CRZ Clearance to above project under the provisions of CRZ Notification, 2011 subject to the compliance of the following conditions.

A. CONDITIONS :

A. 1 SPECIFIC CONDITION :

1. The diversion of forest land for proposed barrage project shall not exceed 187 ha.
2. The NWR&WS&KD shall not carry out any activity in forests area unless they obtained clearance under FCA, 1980.
3. The provisions of the CRZ notification of 2011 shall be strictly adhered to by the NWR&WS&KD. No activity in contradiction to the provisions of the CRZ Notification shall be carried out by the NWR&WS&KD.
4. Necessary permissions, from different departments/ agencies under different laws/ acts shall be obtained before commencing any construction activity including permission under Forests (Conservation) Act, 1980.
5. The NWR&WS&KD shall carry out the construction activities either in the CRZ area or into the sea / estuary only after having the detailed study with respect to chances of erosion / accretion due to the proposed activities conducted through the NIO or any such reputed organization and shall implement all necessary suggestions / actions as may be suggested by this institute for mitigating the potential negative impacts including the checking of erosion and/or accretion in the region. Further, the NWR&WS&KD shall have to have the construction drawings approved for this purpose through a competent agency before undertaking any construction and/or enabling activities at the site.
6. The NWR&WS&KD shall have to implement the outcome of the study carried out by the NIO and NIOT on siltation.
7. The NWR&WS&KD shall have to ensure that the local people shall not be deprived of their right.
8. The NWR&WS&KD shall have to ensure that adequate passages and fish ladders are provided for movement of boats of the local fishermen.
9. The detailed study shall have to be taken by the NWR&WS&KD through the Institutes of the national repute like NIOT and NIO for erosion on the both side of the river Narmada in the downstream of the barrage.
10. The NWR&WS&KD shall have to take adequate measures to ensure that there shall not be adverse impact of the proposed structure on Allyabet and shall ensure that existing mangroves are protected.
11. The NWR&WS&KD shall have to carry out massive plantation including mangrove plantation in 50 ha of land in consultation with the GEC/Forests Department and submit an action taken report in this regard to Forests and Environment Department/MOEF&CC, GOI.
12. All the recommendations and suggestions given by the NEERI, Nagpur in their Environment Impact Assessment and Risk Assessment report shall be implemented strictly by the NWR&WS&KD.
13. The NWR&WS&KD shall ensure that proper Environment flow is always maintain in downstream side of the river Narmada from the proposed Bhadbhut barrage.
14. Comprehensive Environment Impact Assessment report shall be submitted to this department and the recommendations/suggestions given in it shall be implemented.
15. The construction debris and sewage generated during the construction phase shall not be discharged into the creek, sea, estuary or into the CRZ area. The debris shall be removed from the construction site immediately after the construction is over and shall be disposed of as per the guidance of the GPCB.

MEMBER SECRETARY
State Level Environment
Impact Assessment Authority
(SEIAA) Gujarat
Gujarat Pollution Control Board,
"Paryavaran Bhawan"
Sector-10-A, Gandhinagar-10

Office: Gujarat Pollution Control Board, "Paryavaran Bhawan", Sector-10 A, Gandhinagar-382010
Phone No.:- (079) 232-32152, 232-41514 Fax No.:- (079) 232-22784
E-mail:- mssiaaapi@gmail.com Website:- www.seiaa.gujarat.gov.in

Page 1 of 4

16. The construction camps shall be located outside the CRZ area and the construction labours shall be provided with the necessary amenities, including sanitation, water supply and fuel and it shall be ensured that the environmental conditions are not deteriorated by the construction labours.
17. The groundwater shall not be tapped to meet with the water requirements during construction or operation phase in any case.
18. The traditional rights of local communities shall not be affected. In sort, they shall not deprive of their livelihood for the purpose of the project.
19. A Disaster Management Plan to meet with any eventualities that may arise during construction and/or operation phase shall be prepared implemented.
20. A separate Environmental Cell with qualified personnel shall be created to implement the Environmental Management Plan and a separate budget shall be provided for this purpose.
21. The cost of the external agency that may be appointed by this department for supervision / monitoring of the project activities during construction/ operational phases shall be borne by the NWR&WS&KD.
22. A large scale socio-economic upliftment program in consultation with the District Collector/ DDO shall be carried out. A separate budget shall be provided for this purpose and details be furnished to this Department from time to time.
23. Environmental Audit report shall be submitted every year. The report shall also cover the change in the coastal and marine environment due to proposed project.
24. A six monthly progress reports regarding the compliance of the conditions shall be submitted to F&ED, GoG/SEIAA.
25. Any additional condition that may be imposed by MOEF,GOI/ F&ED GoG / SEIAA from time to time shall have to be complied with by the NWR&WS&KD.

A. 2 CONSTRUCTION PHASE:

26. The construction debris and / or any other type of waste / wastewater shall not be disposed of into the sea, creek or in the CRZ areas. The debris shall be removed from the construction site immediately after the construction is over.
27. It shall be ensured that there is no adverse impact on the drainage of the area due to the construction activities.
28. Solid waste likely to be generated from construction site and labour camps during construction phase will be collected and disposed off as per the Solid Waste Management Rules – 2016.
29. Vessels operating during construction phase such as dredger shall be equipped with spill response kits.
30. Topsoil excavated during construction activities shall be stored for use in horticultural / landscape development within the project site.
31. Ready Mix Concrete should be used so far as possible. Water demand during construction should be reduced by use of curing agents, plasticizers and other best practices.
32. The Diesel Generator Set, if to be provided during the construction phase shall be of enclosed type and conforming to the EPA Rules for air and noise emission standards.
33. The overall noise level in and around the project area shall be kept well within the standards by providing noise control measures including engineering controls on all sources of noise generation. The ambient noise level shall conform to the standards prescribed under The Environment (Protection) Act 1986 & Rules.
34. Vehicles hired for bringing construction material at site should be in good conditions and conform to applicable air and noise emission standards and should be operated only during non-peak hours.
35. Fly ash should be used as building material in the construction as per provisions of Fly Ash Notification under EPA.

A. 3 OPERATION PHASE:

A. 3.1 WATER:

36. The water meter shall be installed and records of monthly water consumption shall be maintained regularly.
37. The domestic wastewater shall be disposed off through septic tank - soak pit.

A. 3.2 AIR:

38. The fugitive emission in the work area shall be monitored. The emission shall conform to the standards prescribed by the concerned authorities from time to time (e.g. Directors of Industrial Safety & Health).

A. 3.3 SOLID / HAZARDOUS WASTE:

39. NWR&WS&KD Department shall strictly comply with the rules and regulations with regards to handling and disposal of Hazardous waste in accordance with the Hazardous and Other Wastes (Management and Transboundary Movement) Rules 2016, as may be amended from time to time. Authorization of the GPCB must be obtained for collection / treatment / storage / disposal of hazardous wastes & other wastes.
40. Hazardous wastes shall be dried, packed and stored in separate designated hazardous waste storage facility with pucca bottom and leachate collection facility, before its disposal.
41. Oil spills if any shall be properly collected and disposed as per the prevailing Rules.
42. Necessary arrangements shall be made for safe disposal of municipal solid wastes as per the provisions of the Solid Wastes Management Rules, 2016 as amended from time to time and solid wastes shall not be released in marine water / coastal area in any case.
43. Used oil shall be sold only to the registered recyclers.

MEMBER SECRETARY
State Level Environment

44. Any non-hazardous waste shall be disposed off as per the Hazardous and Other Wastes (Management and Transboundary Movement) Rules 2016.

A. 3.4 SAFETY:

45. Necessary emergency lighting system along with emergency power back up system shall be provided
46. Personal Protective Equipments (PPEs) shall be provided to workers and its usage shall be ensured and supervised
47. First Aid Boxes shall be provided in adequate quantity at strategic locations
48. Training shall be given to all workers on safety and health aspects of handling chemicals
49. The project management shall prepare a comprehensive Disaster Management Plan (DMP) for the project as per the guidelines from Directorate of Industrial Safety and Health. Detailed DMP prepared shall be implemented to bring down risk involved / hazards / accidents as low as reasonably practicable
50. Transportation of materials shall be as per the Motor Vehicle Act & Rules
51. The project management shall ensure to comply with all the environment protection measures, risk mitigation measures and safeguards mentioned in the Disaster Management Plan (DMP)
52. Occupational health surveillance of the workers shall be done and its records shall be maintained. Pre-employment and periodical medical examination for all the workers shall be undertaken as per the prevailing norms.
53. Tie up shall be done with nearby health care unit / doctor for seeking immediate medical attention in the case of emergency.

A. 3.5 NOISE:

54. The overall noise level in and around the plant area shall be kept well within the prescribed standards by providing noise control measures including acoustic insulation, hoods, silencers, enclosures vibration dampers etc on all sources of noise generation. The ambient noise levels shall conform to the standards prescribed under the Environment (Protection) Act and Rules. Workplace noise levels for workers shall be as per the Factories Act and Rules

B. OTHER CONDITIONS:

55. The applicant shall inform the public that the project has been accorded environmental/CRZ clearance by the SEIAA and that the copies of the clearance letter are available with the GPCB and may also be seen at the Website of SEIAA/ SEAC/ GPCB. This shall be advertised within seven days from the date of the clearance letter, in at least two local newspapers that are widely circulated in the region, one of which shall be in the Gujarati language and the other in English. A copy each of the same shall be forwarded to the concerned Regional Office of the Ministry
56. In the event of failure of any pollution control system adopted by the unit, the unit shall be safely closed down and shall not be restarted until the desired efficiency of the control equipment has been achieved.
57. Environmental Audit report indicating the changes, if any, with respect to the baseline environmental quality in the coastal and marine environment shall be submitted every year by NWR&WS&KD to F&ED.
58. A separate budget shall be earmarked for environmental management and socio-economic activities including the greenbelt / mangrove plantation and details thereof shall be furnished to F&ED, SEIAA as well as MoEF, GoI. The details with respect to expenditure from this budget head shall also be furnished along with compliance report
59. A separate environmental management cell with qualified personnel shall be created for environmental monitoring and management during construction and operational phases of the project.
60. The project shall be implemented in such a manner that there shall be no any hindrance to movement of fishing vessels or fishermen.
61. NWR&WS&KD shall bear the cost of the external agency that may be appointed by SEIAA or Forests & Environment Department [F&ED], Gujarat for supervision / monitoring of proposed activities and the environmental impacts of the proposed activities.
62. Any other condition that may be stipulated by the SEIAA / F&ED from time to time for environmental protection / management purpose shall have to be complied with by NWR&WS&KD.
63. The project authorities must strictly adhere to the stipulations made by the Gujarat Pollution Control Board (GPCB), State Government and any statutory authority.
64. No further expansion or modifications in the plant likely to cause environmental impacts shall be carried out without obtaining prior Environment & CRZ Clearance from the concerned authority.
65. The above conditions will be enforced, inter-alia under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, the Hazardous and Other Wastes (Management and Transboundary Movement) Rules 2016 and the Public Liability Insurance Act, 1991 along with their amendments and rules.
66. The company shall undertake socio-economic developmental / community welfare activities as per the CSR Rules 2014.
67. The project authorities shall earmark adequate funds to implement the conditions stipulated by SEIAA as well as GPCB along with the implementation schedule for all the conditions stipulated herein. The funds so provided shall not be diverted for any other purpose.
68. The project proponent shall also comply with any additional condition that may be imposed by the SEAC or the SEIAA or any other competent authority for the purpose of the environmental protection and management.

MEMBER SECRETARY Gujarat Pollution Control Board, "Paryavaran Bhavan", Sector-10 A, Gandhinagar-382010
State Level Environment
Impact Assessment Authority
(SEIAA) (Gujarat)
Gujarat Pollution Control Board,
Phone No.:- (079) 232-32152, 232-41514 Fax No.:- (079) 232-22784
E-mail: mce@seiaa.gujarat.gov.in Website: www.seiaa.gujarat.gov.in

69. It shall be mandatory for the project management to submit half-yearly compliance report in respect of the stipulated CRZ clearance terms and conditions in hard and soft copies to the regulatory authority concerned, on 1st June and 1st December of each calendar year.
70. Concealing factual data or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of Environment (Protection) Act, 1986.
71. The project authorities shall also adhere to the stipulations made by the Gujarat Pollution Control Board.
72. The SEIAA may revoke or suspend the clearance, if implementation of any of the above conditions is not found satisfactory.
73. The company in a time bound manner shall implement these conditions. The SEIAA reserves the right to stipulate additional conditions, if the same is found necessary.
74. The project authorities shall inform the GPCB, Regional Office of MoEF and SEIAA about the date of financial closure and final approval of the project by the concerned authorities and the date of start of the project.
75. This CRZ clearance is valid for seven years from the date of issue.
76. Any appeal against this CRZ clearance shall lie with the National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.
77. Submission of any false or misleading information or data which is material to screening or scoping or appraisal or decision on the application makes this environment/CRZ clearance cancelled.

With regards,
Yours sincerely,

MEMBER SECRETARY
State Level Environment
Impact Assessment Authority
(SEIAA - Gujarat)
Gujarat Pollution Control Board,
"Paryatara Bhawan"
Sector-10-A, Gandhinagar-10

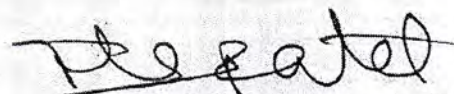
Issued to:

The Secretary,
Narmada, Water Resources,
Water Supply and Kalpsar Department,
Block No. 8, 7th Floor, Sardar Bhavan,
Sachivalaya, Gandhinagar- 382010

Demand Note For E-Portal

Government of India E- Portal	1	Name of Regional Office	Bhopal
	2	State/District/Forest Division to which the proposal relates	Gujarat
	3	Name of User Agency, Nature of proposal	Executive Engineer, Gulf of Khambhat
	4	Extend of Forest area involved	187 Ha.
	5	Whether original, or extension	Original
	6	If extension of lease, pl clarify if proposal involves additional forest area, and if so, specify	-
	7	Date of 1st stage clearance	21-12-2017
	8	Extend of CAMPA charges, head wise via	-
		(a) Compensatory Afforestation	5,80,91,324/-
		(b) Additional CA	
		© Penal CA	-
		(d) Catchment Area Treatment	-
		(e) Wildlife Management plan	-
		(f) Additional charges for diversion of area falling under notified/protected areas	-
		(g) Net present Value	16,58,69,000/-
		(h) Any other Charges/Levies (pl specify)	-
Total for Government of India			22,39,60,324/-

* Kindly Go to E- Portal and fill up the amount


Asstt. Conservator of Forests
Sub-Division-Bharuch

Online Submission & Monitoring of Environmental, Forest and Wildlife Clearances -A Single Window Clearance System

User Name: [Vivek]
State: [Gujarat]
Role : [Applicant]

My Account ▾ My Proposals Environment Clearance ▾ My Proposals Forest Clearance ▾ My Proposals Wildlife Clearance ▾ Help ▾

Online payment history made by User Agency under CAMPA

Help

Sno.	Proposal Detail	Application_No	Application No (New)	Date of IN-PRINCIPLE	Amount to be Paid / Amount Paid (in Rs.)	Payment Status	Payment Detail	Demand Letter
1	PP/G/IRRIG/27326/2017 Bhadbhut Barrage across Namada River	IRRIG273262017714	5727326714	21 Dec 2017	CA: 58091324/- Addl CA : 0/- PCA: 0/- CAT : 0/- Safety Zone: 0/- Addl PA : 0/- NPV: 165869000/- Other Charges : 0/- Other Charges1 : 0/- Other Charges2 : 0/- Other Charges3 : 0/- Total : 223960324/-	Paid	Fund Demand Verified by : 03 Mar 2018 Nodal Officer On : Corporation Bank Bank Name : NEFT/RTGS Mode of Payment : (Challan) Challan Generated On : 02 Mar 2018 Transaction Date : 12 Mar 2018	Demand Letter Generated Challan

An Innovative e-Governance Initiative of MoEFCC for Transparent and Responsive Governance.
For any clarification, kindly contact at 011-24695407 or may send E-Mail monitoring-(t@t)nic(dot)in.

પાણી નં - ૨

ખાતેની વિગતો / પે.ન. વિગતો/સ્ટેટ/રિઝર્વ બેન્ક ઓફ ઇન્ડિયામાં ભરેલી રોકડ રકમનું સવાળ

આ તથા બેન્ક દ્વારા ભરવાનું

ખાતાના અમલદારે કે વિગતોની ભરવાનું

Bharuch

ખેતના વારકુશી નાણાં	કાન્યાવાલક મંજુબેરબી, બંભોતના વિકાસની પરિયોજના
ભરવામાં આવ્યા હોય	(નજી સંપત્તી) અમલીકરણ એકમ - ૨, વડોદરા
તે આકેતનું નામ	
(અથવા કોદો) અને	
સરનામું	માદનીશ વન સંરક્ષક
	ભરૂચ ક્ષેત્રિય વન પેટા વિભાગ, ભરૂચ
ભાડામૂલ બોરેલ પ્રોજેક્ટ એકોસ રીવર નર્મદા વન ભરૂચ ડીસ્ટ્રીક્ટ	રકમ
કોરેલ બીયરબસ માટે દરખાસ્તના પ્રોસેસ ફી અને રજીસ્ટ્રેશન ફી	
પ્રતિ લેક.ના રૂ. ૩૨૩૫/- * ૧૮૦ લેક.	પોસેસીંગ ફી
	રજીસ્ટ્રેશન ફી
(સાહેબ) ફુલ	
(સરનામું) સહે સુમિયા છ વાજ દશ હજાર પૂરા	
રૂ.	મળ્યા
(રજીસ્ટ્રેશન)	
ખાતેની	કિસ્તાબનીશ

કિસ્તાબનું સહર 8782 Forest Remittance
Asstt. Conservator of Forest
Bharuch Region Sub Division
Bharuch. **Cardex No. 505**
D.D.O. Code No. 983

મજૂર કર્યું.

મજૂર કરનાર અધિકારીની સહી
[Signature]
કોદો માદનીશ વન સંરક્ષક,
ભરૂચ ક્ષેત્રિય વન પેટા વિભાગ, ભરૂચ

તારીખ:
આજો ભરવાનો હુકમ કરનાર અધિકારીની સહી તથા
પૂરપૂરો કોદો
તારીખ:

વિગતો અધિકારી એવરડ
P.F.No.5759943 INITIAL
RAM CHECKED BY
(મહાન વુઝી)
21 NOV 2017
CASH / TRANSFER
QUEUE No.5BI BHARUCH BR 00339

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Undertaking to Pay the additional amount of Net Present Value (NPV)

Certified that the applicant i.e. Government of Gujarat, Kalpasar Department under the jurisdiction of its Gujarat area, agrees to make payment of the additional amount of Net Present Value (NPV) to the Forest Department, if so determined, as per the final decision of the Hon'ble Supreme Court of India over the payment of the NPV made at the then prevailing rate.



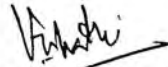
Deputy Executive Engineer
Gulf of Khambhat Development Project (W.R)
Project Implementation Unit-2
Vadodara

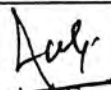


Executive Engineer
Gulf of Khambhat Development Project (W.R)
Project Implementation Unit-2
Vadodara

**Statement showing the details of Boundry Stone of Diverted Forest Land for
Bhadbhut Barrage as per Condition No.16 of Stage - I Clearance**

STATION	LATITUDE (N)	LONGITUDE (E)	FORE BEARING	BACK BEARING	LINE	DISTANCE (M)
SURVEY NUMBER 1 OF ALIABET						
A	21°38'56.11"	72°48'10.59"	73°2'2"	253°2'2"	A TO B	61.68
B	21°38'56.72"	72°48'12.63"	69°5'10"	249°5'10"	B TO C	299.75
C	21°39'0.33"	72°48'22.31"	63°29'56"	243°29'56"	C TO D	401.15
D	21°39'6.30"	72°48'34.70"	59°13'24"	239°13'24"	D TO E	420.17
E	21°39'13.47"	72°48'47.15"	155°59'26"	335°59'26"	E TO F	371.11
F	21°39'2.51"	72°48'52.56"	250°32'50"	70°32'50"	F TO G	249.23
G	21°38'59.73"	72°48'44.42"	259°24'55"	79°24'55"	G TO H	201.43
H	21°38'58.42"	72°48'37.58"	264°57'27"	84°57'27"	H TO I	101.92
I	21°38'58.08"	72°48'34.05"	250°43'8"	70°43'8"	I TO J	299.82
J	21°38'54.73"	72°48'24.25"	244°11'44"	64°11'44"	J TO K	303.24
K	21°38'50.30"	72°48'14.83"	162°48'46"	342°48'46"	K TO L	2294.46
L	21°37'39.37"	72°48'39.46"	252°28'28"	72°28'28"	L TO M	59.77
M	21°37'38.77"	72°48'37.50"	342°46'47"	162°46'47"	M TO N	2401.66
N	21°38'53.02"	72°48'11.66"	248°46'24"	68°46'24"	N TO O	499.92
O	21°38'46.92"	72°47'55.55"	343°11'29"	163°11'29"	O TO P	100.28
P	21°38'50.01"	72°47'54.47"	68°46'24"	248°46'24"	P TO A	499.92
SURVEY NUMBER 379 OF UTARAJ						
Q	21°39'32.20"	72°49'14.30"	60°37'15"	240°1'6"	Q TO R	792.68
R	21° 39' 45.2"	72° 49' 38.1"	39°30'28"	219°30'28"	R TO S	147.76
S	21° 39' 49.0"	72° 49' 41.3"	64°4'12"	244°4'12"	S TO T	306.19
T	21° 39' 53.5"	72° 49' 50.8"	65°21'28"	245°21'28"	T TO U	312.05
U	21° 39' 57.8"	72° 50' 0.6"	104°24'55"	284°24'55"	U TO V	293.23
V	21° 39' 55.6"	72° 50' 10.5"	198°42'47"	18°42'47"	V TO W	1084.49
W	21° 39' 22.0"	72° 49' 58.9"	243°39'8"	63°39'8"	W TO X	437.03
X	21° 39' 15.5"	72° 49' 45.4"	254°46'21"	74°46'21"	X TO Y	727.31
Y	21° 39' 09.0"	72° 49' 21.1"	345°30'55"	165°30'55"	Y TO Q	739.01


 Deputy Executive Engineer
 Project Implementation Unit-2
 Vadodara


 Executive Engineer
 Project Implementation Unit-2
 Vadodara