Title of the Project: Impact Assessment of Proposed Sheopurkalan & Badoda towns a Group Water Supply Scheme-Parvati River Sub-Project under MPUSIP on Aquatic Fauna, River Hydrology & ecology and its mitigation.

Why this Project:-

This proposed project funded by Madhya Pradesh Urban Development Company Limited intends to carry out a specific study to assess the impact of Weir & intake-well constructed across Parvati River on aquatic fauna, river hydrology & ecology. The requirement and extraction of raw water for Sheopur Kalan & Badoda group water supply scheme from Parvati river is proposed to be 14.70 MLD in the year 2018, 25 MLD in year 2033 and 24.85 MLD in year 2048 and the impacts of this long-term project are to be predicted in reference to the river ecology, existing flora and fauna and their habitat.

Research Methodology:-

The study was performed by adopting nationally and internationally accepted scientific procedures for field surveys in all the three seasons' i. e. rainy, winter and summer on following points

1. **Selection of reference site-**Reference site was considered the stream site with values of hydrological stress = 0.
2. **Collection of secondary data-**Pre-existing data was collected through various secondary sources. Review of previous studies of this area.
3. **Collection of primary data from study area-**
   - Data collection from reference site and 7 sampling sites of the upstream and downstream
   - Inventory of aquatic and terrestrial flora-fauna and their critical habitats.
   - Identification of breeding/nesting sites and their mapping.
   - Movement pattern of major critical endangered species
   - Observation on various hydrological & ecological (rate of discharge, water velocity, river depth) parameters affecting the major faunal species in the river system.
   - Observation on Physico-chemical properties of river water.
   - Assessment the water availability after water abstraction from the intake well in Parvati River for 50% dependable year, 75% dependable Year and Average Year and its impact.
   - Environmental flow (Rate of discharge, Velocity and Depth) and ambient water flow requirements for various species observed in Parvati River with special reference endangered fauna.
   - Study the anthropogenic activities within study area.
   - Recommendation and mitigation measures for the identified impacts.

Study Design:-

- The study area is proposed to cover about 30 km stretch of Parvati River, 15 km either sides of the project site i.e. upstream and downstream from the proposed Weir & intake well located at upstream side of the near Mandi village including 10 km buffer area of the stretch. Field observation will be carried out as per the points mentioned in methodology.

Objectives of Research :

- Preparation of Initial Environment Examination (IEE).
- To study the present status of biological resources, including species distribution their conservation status, migratory bird species and their habitat conditions, breeding/spawning grounds
- To study the river hydrology, morphology, seasonal variations and data collection on historical flow of the study area
- To assess the impacts water extraction on river ecology, and predict the minimum environmental flow required for the survival of the major aquatic fauna
- To suggest the mitigation measures and prepare the management plan to minimize the adverse impacts

Activities Undertaken :-

- Reconnaissance survey and selection of reference site.

- Meeting with MPUDCL team and officials of Municipal Corporation Office, Sheopur Kalan and Badoda
- Study design and preparation of formats
- Selection of Project staff as per requirements.
- Procurement of material / tools/ instruments/ accessories required for study.
- Preparation of Initial Environment Examination (IEE) report
- Collection of primary data on existing biological resources – Faunal – Floral species distribution, migratory bird species, and their habitat conditions, breeding/spawning grounds.
- Collection of primary and secondary data on river hydrology, morphology and its seasonal variations
- Water quality analysis for pH, DO, EC, COD, BOD etc.
- Study human activities like riparian agriculture, fishing, sand mining, raw water abstraction, cattle trampling and other human activity of the water supply project to Parvati River.
- Review of water supply project DPR for year wise water requirement.
- Procurement of last 10 years classified hydrological data from CWC, New Delhi of study site falling in river Parvati.
- Predict the minimum environmental flow required for the survival of the major aquatic fauna
- Mitigation measures to minimize the adverse impacts of water extraction

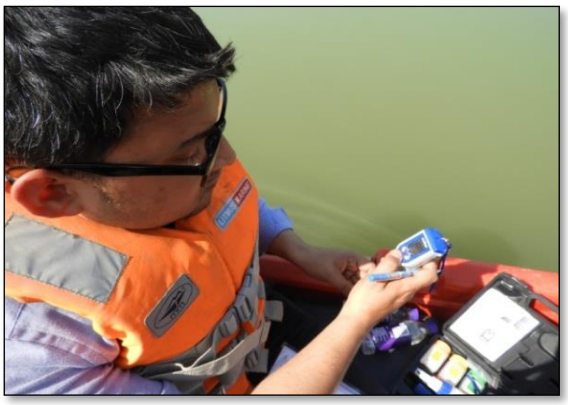
Cost of the project- Rs 67.57 Lakhs

Outcome of research:-

- Delineation of the observation sites and layout of study area and collection of secondary data.
- Data on existing environment of the area.
- Number of aquatic animal species found in the study area.
- List of macro-phytes and terrestrial plant species and their distribution in the study area.
- List of migratory bird species and location of their breeding sites.
- Located the way points on study area map.
- Data on water velocity (Water flow Probe), river depth (Depth finder), width (Range finder and Rope) in each 30 segment of 30 km stretch including reference site in different seasons will obtain.
- Water quality data on pH, DO, EC, COD, BOD, Temperature etc. for each segment in different seasons.
- Estimation of required water volume in MLD for particular area
- Receiving of last 10 years classified hydrological data.
- Limit of water abstraction will be estimated looking to the minimum safer requirement aquatic animals.
- Suggestions measures to minimize the adverse impacts will be based on the finding of the study.

Sample collection of macro-invertebrates and macro-phytes.

Data collection for river velocity from Parvati river, Sheopur, using Water flow Probe



Water quality analysis using portable instuments

Expected Impact of the Project findings:-

- Impact prediction for Sheopur Kalan & Badoda group water supply scheme from Parbati River and construction of weir and intake well on survival of the major aquatic fauna and the estimation of minimum required environmental flow for endangered fauna.
- Output data and project findings will be useful for long term water management and habitat management plan for critical endangered species and other sensitive aquatic animals.