**Detailed Business Specific Requirements:-**

**Theme**: Water Utilization

**Applications**: **Irrigation Management**

**Use Cases:-** Command Area-**IM-CA-02**

**Other linked Use Case :-** Digital Hydro Infrastructure, Forecasted availability, Current Availability, Command area demand, New schemes, Crop production, Irrigation modernization plans, Benchmarking of irrigation projects, Performance Evaluation Studies, Water logging and Salinity, Mobile App for Irrigation Management.

**Description**:- Irrigation project comprises of the head works (storage or diversion dam), canal and distribution network in the command area for irrigation supplies to the command farmers. The size of the command area is worked out on the basis of water availability and water demand based on the cropping pattern approved by the agronomist, which varies from project to project. Efforts are make to optimize to give higher production and to maximize production per drop of water. The boundary of the command area is fixed based on the topography and other factors.

**Used By (End Users):-** Planners, Decision makers, State WRDs, CWC, Farmers Associations

**Priority**:- **High Priority :** This use case is the base for proper implementation of irrigation management for enhancing the food production in the country. Command Area component of an irrigation project governs the irrigation potential. Therefore, higher the coverage of command areas, higher will be the irrigation potential and more will be the enhancement in food security scenario.

**Phase:-** **Phase**  **2:** DSS Development of IWCIMS

**Governance Need (Business Problem):-**

**Issue**:- :During planning and formulation of any irrigation project, the command area so available has to be nearer to the project head works (i.e., source of water) and has also to be suitable for sustained irrigation.

**Approach**:- it is necessary to carry out soil survey and agro meteorological studies in the command area to establish the soil suitability and land irritability classifications at the project planning stage itself so that the farmers can cultivate various types of crops accordingly to derive maximum benefits.

**Output:-** Command area Details- GCA, CCA

**Expected Outcome:-** Command Area Map/Soil Map/ Climate Zone Map.

**Visualization:-**

1. Name of Irrigation Projects/states/Districts

2. Command Area Map on scale 1;50,000

* **Gross Command Area (GCA)**
* Left Bank (GCA) (ha)
* Right Bank (GCA) (ha)
* Total GCA (ha)
* **Culturable Command Area (CCA)**
* Left Bank (CCA) (ha)
* Right Bank CCA (ha)
* Total CCA (ha)
* **Ratio of GCA to CCA (%)**

3. Soil Survey Map of Command Area on Scale 1:50000

* **Type of Soils:**
* **Land Irritability Classifications**
* Class I Land (%)
* Class ll Land (%)
* Class Ill Land (%)
* Class IV Land (%)
* **Command Area Slope (%)**
* **Ground Water Table**
* Pre Monsoon (m)
* Post Monsoon (m)

**Frequency of Up-dation:-** No updation is required

**Measure of Success:-** All canals and canal structures provided in the command area function normally as per design which needs regular monitoring.

**Input Data Required:**

|  |  |  |
| --- | --- | --- |
| **Data** | **Unit** | **Type** |
| 1.Command Area Maps |  | Maps |
| 2.salient features of these structure |  | Text |
| 3.Canal Network Map |  | Decimal |
| * Length of canal | Km | Number |
| * Width of canal | m | Decimal Number |
| * Lined/unlined status of the canal | Lined/Unlined |  |
| * PIN/UGPN | Km |  |
| * Discharge through canal | M3/sec |  |
| 4.Count of conversation structure |  | Decimal Number |
| 5.Type of structure | No. | Text |
| 6. Volume(capacity) of Structure | MCM | Decimal Number |
| 7.Salient features of the conservation structures |  | Text |
| 8.Catchment area |  | Gross Capacity |
| 9.Commond area spatial layer (GIS, maps from NRSC, India WRIS, State WRD,);Hard Copy maps from state WRD/Climatic Zone map | Km2 | Live Capacity |
| 10.Name of Command |  | Dead Storage |
| 11.Type of project (Major/Medium/Minor) |  | Text |
| 12.Types of Project (Storage or Reservoir/Diversion/Lift |  | Decimal Number |
| 13.River Name/Basin transfer. | Major/Medium/Minor | Map |
| 14.Status |  | Text |
| 15.Name of the state involved | Storage | Text |
| 16.Construction under scheme | Reservoir/Diversion/Lift | Text |
| 17.Area |  | Text |
| 18.Gross command Area |  | Text |
| 19.Cultivable command area |  | Decimal Number |
| 20.Tribal Sub-plan/SC sub-plan. |  | Decimal Number |
| 21.Year of Start |  | Decimal Number |
| 22.Cost of development |  | Text |
| 23.AIBP structure like canal etc | Hectare | YYYY |
| 24.AIBP command area | Hectare | Decimal Number |
| 25.Division of schemes(head/middle/tail) | Hectare | Text |
| 26.Command area under Micro-irrigation. | Hectare | Decimal Number |
| 27.No.of WUA formed. | Hectare Middle Tail | Text |

**Process:**

**Algorithm/Tools:-**

1 Topographical survey to prepare Command areas map on 1:50000 scale showing contours at (Process flow 0.5 m interval. along with the

2. Marking Block wise GCA/CCA boundaries on Command Area map algorithm)

3. Soil map of command area to be prepared based on detailed or semi-detailed soil survey.

4. Information on data points of this use case needs to be provided by the project authorities and loaded in the software.

**Data Validation:-** Pre-validation data from irrigation project authorities will be used. No additional validation required.

**Software Technologies:-**  QGIS, QGIS Enterprise

**Dependencies & Risks/Change Management:** Data availability and permission from concerned project authority/state WRD

**User Acceptance Testing (UAT):-** CWC, State Water Resources Depth and concerned project authority

**Development Responsibility:** HARSAC

**References :- nil**

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