

## **IRRIGATION WATER MANAGEMENT PLAN CRITERIA PRACTICE / ACTIVITY CODE (118) (NO.)**

### **1. Definition of an Irrigation Water Management Plan**

The objective of Irrigation Water Management (IWM) is to control the volume, frequency, and rate of water for efficient irrigation, and for the following purposes:

- Promote desired crop response.
- Optimize the use of available water supplies.
- Improve water quality, by reducing irrigation sources of surface and ground water contamination.
- Minimize irrigation induced soil erosion.
- Improve soil environment for vegetative growth.
- Manage salts in the root zone.
- Improve air quality, by reducing movement of particulate matter.
- Provide appropriate and safe fertigation and chemigation.
- Reduce energy consumption.

The objective of an Irrigation Water Management Plan (IWMP) is to provide the producer a guide for the proper management and application of irrigation water resources. The potential benefits of IWM can be effectively determined by interviewing the producer to identify fields, soils, crops, climate, and available water supply; measuring the volumes of water withdrawn or applied; determining irrigation system uniformity, selecting a method to schedule irrigations, and then combining these components to produce an IWMP for the farm.

### **2. IWMP General Criteria**

This section establishes the minimum criteria to be addressed in the development of Irrigation Water Management Plans.

#### **A. General Criteria**

1. An Environmental Evaluation CPA 52 is to be completed for all activity plans to comply with the National Environmental Policy Act, National Historic Preservation Act, Endangered Species Act, Environmental Justice, and Air Quality compliance in the Environmental Evaluation (EE). The following is abbreviated guidance for preparation of the EE:
  - a. Planners and TSPs should follow the EE guidance delineated in the National Environmental Compliance Handbook.
  - b. The EE describes the existing conditions for all applicable resource concerns.
  - c. The EE will assess the resources potentially impacted by the no action, proposed action and any reasonable alternatives.

- d. Guide sheets will accompany the EE, as needed, to provide information on how to assess and deal with special environmental concerns.
  - e. The findings section of the EE is to identify whether NRCS has determined based on the analysis of the EE: (1) that a site specific environmental assessment (EA) or an environmental impact statement (EIS) should be prepared based on the significance of potential impacts, or (2) the EE can be tiered to a state, regional, national or other programmatic EA or EIS because the proposed effects have been sufficiently analyzed in a state or national programmatic EA or EIS.
  - f. TSP and planners are required to complete NRCS' Level I Environmental Compliance training prior to prepare any EE CPA 52.
2. A Irrigation Water Management Plans shall be developed by certified Technical Service Providers (TSPs). In accordance with Section 1240 (A), the Environmental Quality Incentive Program (EQIP) program provides funding support through contracts with eligible producers to obtain services of certified TSPs for development of Irrigation Water Management Plans. The specific TSP criteria required for Irrigation Water Management Plan development is located on the TSP registry (TechReg) web site at: <http://techreg.usda.gov/>
- B. The planner shall address the following items during the IPM Conservation Plan development process. The IWMP should address the resource concerns identified, and the conservation practices needed to comprise a conservation system for IWM. In addition, the IWMP should be based on the economics of water use, energy consumption, and crop yield. Management may be limited by water (deficit irrigation), or limited by land (unlimited water). The two general management schemes for irrigation water conservation in agriculture are: Demand Management (reducing withdrawals or reducing crop requirements), and Supply Management (increasing water storage, yield, or supplies).

**The technologies available for Demand Management include:**

- Irrigation scheduling
- Increased system uniformity
- Increased irrigation efficiency
- Reduced water evaporation
- Reduced soil evaporation (utilize crop residue or mulch)
- Reduced water use by non-beneficial vegetation
- Limited irrigation (applying less than maximum  $ET_c$ )
- Crop selection (lower  $ET_c$  or drought resistant strains)
- Decision-making models (optimize water, energy, and nutrient use)
- Conversion of irrigated cropland to dry land farming

**The technologies available for Supply Management include:**

- Increased water storage capacity
- Groundwater recharge
- Water harvesting
- Vegetative management for increased watershed runoff
- Reuse of waste or drainage water
- Water transfers

In addition to the information required in Conservation Practice Standard (CPS) 449, Irrigation Water Management, existing irrigation systems and conveyance facilities may require modification, augmentation, or replacement of components.

- C. **IWMP Technical Criteria:** This section establishes the minimum criteria to be addressed in the development and implementation of Irrigation Water Management Plans. The IWMP should include, but not be limited to, the following components:
1. Farm and field information:
    - a. Name of producer
    - b. Farm number
    - c. Field and/or tract number
    - d. Crops grown, and planned rotation by field
    - e. Name of employee or consultant developing plan
    - f. Date of plan development
  2. The objectives of the producer, which should involve one of the purposes listed in CPS 449, Irrigation Water Management.
  3. A soils map that includes field boundaries, with the predominant soils listed and area quantified. If the qualifying acres for the plan are a subset of fields, the boundaries of the IWMP acreage should also be delineated.
  4. An irrigation system map that includes the size, materials, and locations of the mains, laterals, and application systems.
  5. Documentation of past water withdrawals and applications, by crop.
  6. The methods planned to measure or quantify future water withdrawals and irrigation applications.
  7. Planned water application volumes, on a seasonal and/or annual basis, and by crop.
  8. Soil tests, to include nutrient levels and salinity. Water tests, to include nutrients, pathogens, salinity, pH, and trace elements.

9. Estimates of irrigation system uniformity, based on testing, evaluation, or observation. Distribution Uniformity (DU) should be based on the ratio of the average depth infiltrated in the low one-quarter of the field, to the average depth infiltrated over the entire field.
10. Documentation of the scientific method planned for scheduling the timing and amount of irrigation applications, based on the measurement or estimation of soil moisture, and the measurement or prediction of evapotranspiration ( $ET_c$ ) of the crop(s). The proposed irrigation scheduling method should include:
  - a. Estimated volume of water applied, by field, irrigation event, season, and/or year
  - b. Estimated frequency or timing of irrigation applications, by field.
  - c. Estimated application rates and depths of irrigation events
11. Conservation plan (record of decisions) (*Utilizing Customer Service Toolkit – Plug-In or MsWord Document*) to address the identified environmental risks associated with pest suppression activities with implementation specifications and other resource concerns. The record of decisions shall include the planned practice(s), schedule for implementation, and site specific specifications to apply the conservation practice. The site specific specifications can be on an NRCS Jobsheet available for the conservation practice or in a narrative form for the non-engineering type practices. Planned engineering type practices shall include the conservation practice, schedule of implementation, and identified on the plan map. The plan may include, but are not limited to the conservation practices listed below:
  - a. Irrigation Water Management (449)
  - b. Irrigation System, Micro (441)
  - c. Irrigation System, Sprinkler (442)
  - d. Irrigation System, Surface & Subsurface (443)
  - e. Irrigation Pipeline (430)
  - f. Above Ground Multi-Outlet Pipe (431)
  - g. Irrigation Ditch (428)
  - h. Irrigation Field Ditch (388)
  - i. Irrigation Canal or Lateral (320)
  - j. Structure for Water Control (587)
  - k. Irrigation Reservoir (436)
  - l. Irrigation Tailwater Recovery (447)
  - m. Pumping Plant (533)

- n. Irrigation Land Leveling (464)
  - o. Anionic Polyacrylamide (PAM) Application (450)
  - p. Salinity and Sodic Soil Management (610)
  - q. Nutrient Management (590)
  - r. Waste Utilization (633)
12. An Operation and Maintenance plan, to include a check list of items to eliminate non-beneficial system losses.
  13. A signature page, with names, dates and signatures of all contract holders and the person who prepared the plan. The signature page should also contain a space for approval by NRCS.
  14. The IWMP components shall be assembled into one complete plan.

### **Deliverables:**

#### **1. Deliverables for the Client – a hardcopy of the plan that includes:**

- Cover page – name, address, phone of client and TSP; Total Acres of the Plan, signature blocks for the TSP, producer, and a signature block for the NRCS acceptance.
- Soils map and appropriate soil descriptions
- Resource assessment results (wind and water erosion, water availability, soil fertility, and others that may be needed)
- For management practices. The planned practices and the site specific specifications on how each practice will be applied; when the practice will be applied, and the extent (acres or number) that will be applied.
- For engineering/structural practices. The planned practice when it will be applied and extent, and located on the conservation plan map.

#### **2. Deliverables for NRCS Field Office:**

- Complete Hardcopy and Electronic copy of the client's plan (MsWord copy).
- Digital Conservation Plan Map with fields, features, and structural practices located.
- Digital Soils Map.
- Completed CPA 52 and appropriate worksheets.