



**Standard Operating Guideline**

**Canal Structure Operations and Maintenance**

District Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date Prepared: Date Revised:

OBJECTIVE:

* Ensure effective system-wide preventive and predictive maintenance actions.
* Ensure periodic task accomplishment.
* Identify potential/actual system problems.
* Maintain optimum water flow/service to water customers.

RATIONALE/PURPOSE:

* Ensure mission capability.
* Ensure system reliability.
* Develop predictive maintenance programs.
* Determine capital improvement budgeting.
* Develop loss trend analysis.
* Reduce property, liability, and injury/illness loss exposures.
* Reduce revenue loss.

METHODS/PROCEDURES:

**(Note: Listed procedures are intended as guidelines only and may not be applicable for all districts or situations).**

Construction:

* The design should be done by qualified engineers in conjunction with facility operators.

Preventive Maintenance Procedures:

* Regularly inspect canals and levee structures during water run and when dry.
* Inspect for signs of undermining of structures.

**This model form/template must be customized to meet your Agency’s needs.**

* Do complete inspection at end of the season and set priorities for maintenance before the next water season.
* Operate and maintain valves and gates regularly to allow ease of operation.
* Cover valve stem threads to keep clean. Use clear plastic tubing over stems (or painted PVC, with indicator rod on gate blade) to allow observation of valve position.
* Inspect, service, and remove debris from traveling screens to maintain functionality and maximum water flow.

Operation:

* Properly store weir boards for easy access.
* Regularly remove debris from screens to prevent damage and maintain maximum water flow.

SCADA System Maintenance:

* Test all SCADA phone lines.
* Test dial-up paging and alarming, including back-up paging systems.
* Check radio signal quality functions.
* Review alarm summaries for potential system problems.
* Check instrumentation function and calibration.
* Inspect and check U.P.S and battery function and status.

INCIDENT RESPONSE: **See Canal Failure Response SOG**

SAFETY CONSIDERATIONS:

An effective maintenance program can help prevent damage to property, environment, and injury to the public and employees by:

* Preclude system and equipment damage.
* Preclude property and environmental damage.
* Facilitate operations and maintenance personnel safety.
  + Identify safe work practices.
    - Traffic control
    - Fall protection
  + Train employees and document.

COST/ BENEFIT:

* Reduce revenue losses.
* Preventive maintenance and loss trend data would reduce facility, equipment, and system failures.
* Avoid costly liability, property, and injury/illness losses.
* Create a manageable capital improvement budget to support effective O&M practices.

INSPECTION FORMS/CHECKLISTS/DOCUMENTATION:

* Training Log
* Canal Bank/Leve*e* Inspection Form
* Accident/Incident Investigation Form
* LEAK/BREAK/DAMAGEChecklist

REFERENCES:

* [U.S. Army Corps of Engineers, Levee Owner’s Manual for Non-Federal Flood Control Works, March 2006, Section 2.6.](https://www.nae.usace.army.mil/Portals/74/docs/Emergency%20Operations/USACE_NonFed%20Levee%20Owner's%20Manual_Mar06.pdf)
* [U.S. Department of Interior Bureau of Reclamation, Canal Operators Manual, January 2018](https://www.usbr.gov/assetmanagement/docs/Canal%20Operator%20Manual.pdf)