Water Managed Sites Tier 1 Audit Report

Overview

The following report is a collection of site data, field measurements, observations, and maintenance recommendations. Through this data gathering, in compliance with The City of Calgary Water Managed Sites Program and the Water Utility Bylaw 40M2006 – Schedule E – Outdoor Water Use Restrictions, a basic irrigation schedule that will assist the site water manager or property owner in managing overall irrigation usage, can be developed.

Criteria and Requirements are subject to change, following up-to-date City of Calgary Water Managed Sites Program and regularly posted recommendations for Distribution Uniformity (DU) results levels, as per industry standards and Best Management Practices (BMPs). Therefore, the Auditor must obtain and adhere to current City of Calgary criteria and requirements.

Catch Can Audit and DU calculations are based on AI Landscape Irrigation Auditor, Current Edition Handbook recommended audit guidelines.

*For recommended assessment and audit guidelines, visit the Canadian Prairie Chapter of the Irrigation Association (CPCIA) website at: Audit Guideline

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Tier 1 Water Managed System Qualifying Criteria, Equipment and Hardware Requirement

Tier 1 Qualifying Criteria and Requirements

Public Spaces, Large ICIs and Multi -family Sites including:

i. Sports Fields, Athletic Fields, Schools/Universities and Golf Courses.
ii. Institutional, Commercial, Industrial, Hospitals, Homeowner Associations, Multi-family Condominiums and Townhouses.

*** A Catch Can Audit, and DU Calculations of representative irrigated areas are strictly required under Tier 1.**

*** One catch can audit (min 24 catch cans) per sports field or per every 0.5 Ha of turf areas**

Equipment and Hardware Requirements

To qualify to be Certified as a Water Managed Site, the irrigation system is required to have the following Equipment and Hardware installed and enabled:

1. Dedicated Water Meter or Totalizer installed at the point of connection.

2. Dedicated Testable Cross Connection Control Assembly installed on the irrigation mainline, downstream from the Water Meter or Totalizer. (ONLY DCVA or RP type devices are accepted.)

3. Flow Sensor installed and enabled downstream from the Cross Connection Control Assembly.

4. Electric Master Valve installed upstream from any irrigation emission components.

5. Local Irrigation Interruption Device installed and enabled, such as: Rain Switch and or, Soil Moisture Sensor and or, Weather Station.

6. Automatic Smart Irrigation Controller with near-real time weather and/or soil moisture adjustment and remote management capability.

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Irrigation Site Information – Tier 1

Irrigation Site Assessment date (YYYY-MM-DD): _____

Site Type (select all that apply):

- Park
- Playground
- Residential lot
- Residential multi-family (apartments and condos)
- Green Space
- Commercial/Industrial/Institutional lot
- Golf course
- Sports field
- Other _____

Name of site (if applicable): _____

Name of registered owner of site: _____

Site Address: _____

Certified Landscape Irrigation Auditor (CLIA) Information

CLIA name:

CLIA phone number:

CLIA email:

Name of employer:

Employer's address:

Note: For Irrigation Site Assessment and Audit results, please refer to the Auditor's Observations section

I Certify the above Irrigation Site has been assessed and audited in accordance with The City of Calgary Water Services Bylaw 40M2006, and the AI Landscape Irrigation Auditor, Current Edition Handbook recommended audit guidelines.

CLIA signature: _____

CLIA/membership expiry date: (yyyy-mm-dd)

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Catch Can Audit DU Results

Distribution Uniformity (DU) Results

Audited Area	**Rotors/Rotary** (DU≥ 0.60 to Pass): **Sprays** (DU≥ 0.50 to pass):
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Equipment and Hardware Checklist

Equipment/Hardware	Installed	Enabled	Qty. on Site
Water Meter/Totalizer			
Cross-connection Control			
Flow Meter/Sensor			
Electric Master Valve			
Rain Switch/Rain Freeze Sensor/Tipping Bucket			
Soil Moisture Sensor			
Weather Station			
Near-real Time Weather Adjustment			
Soil Moisture Adjustment			

Notes

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Equipment and Hardware Information

Water Meter/Totalizer 1

Meter number:

Meter Type:

Unit of measure:

Size of meter (inches):

Meter location:

Meter reading start of season:

Water Meter/Totalizer 2

Meter number:

Meter Type:

Unit of measure:

Size of meter (inches):

Meter location:

Meter reading start of season:

Water Meter/Totalizer 3

Meter number:

Meter Type:

Unit of measure:

Size of meter (inches):

Meter location:

Meter reading start of season:

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Equipment and Hardware Information

Cross Connection Control 1

Type of Assembly:

- DCVA
- RP
- Other:

Manufacturer:

Model number:

Serial number:

Size (inches):

CCC assembly location:

Date installed: (yyyy-mm-dd)

Last Pass Test Date: (yyyy-mm-dd)

Cross Connection Control 2

Type of Assembly:

- DCVA
- RP
- Other:

Manufacturer:

Model number:

Serial number:

Size (inches):

CCC assembly location:

Date installed: (yyyy-mm-dd)

Last Pass Test Date: (yyyy-mm-dd)

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Equipment and Hardware Information

Flow Sensor

Manufacturer	Model Number	Size(inches)	Location

Manufacturer	Model Number	Size(inches)	Location

Manufacturer	Model Number	Size(inches)	Location

Master Valve

Manufacturer	Model Number	Size(inches)	Location

Manufacturer	Model Number	Size(inches)	Location

Manufacturer	Model Number	Size(inches)	Location

Local Irrigation Interruption device

Manufacturer	Model Number	Size(inches)	Location

Manufacturer	Model Number	Size(inches)	Location

Manufacturer	Model Number	Size(inches)	Location

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Equipment and Hardware Information

Soil Moisture Sensor

Manufacturer	Model Number	Size(inches)	Location

Manufacturer	Model Number	Size(inches)	Location

Manufacturer	Model Number	Size(inches)	Location

Automatic Irrigation Controller with Remote Management Capability

Manufacturer	Model Number	Size(inches)	Location

Manufacturer	Model Number	Size(inches)	Location

Manufacturer	Model Number	Size(inches)	Location

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Pump information (only if equipped – Not required to qualify)

Model	Size(in)	Horse-Power	Operating Pressure (psi)	Maximum Flow (GPM)

Notes

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Sprinkler System Review

Abbreviation Key: *S=Spray, R=Rotor, MR=Multi-stream Rotary, D=Drip*

Controller ID/Name					
Station #					
Sprinkler Type					
Station Flow Rate (gpm)					

Sprinkler System Review Checklist	
	No Visible or detected broken/kinked/leaking pipes or fittings
	System Operating Pressure within manufacturer recommended range
	Valves are functioning properly from the controller
	No missing/broken/leaking sprinkler heads
	No low head drainage
	Sprinkler head spacing is even
	No sunken/tilted sprinkler heads and nozzles
	No mismatched sprinkler heads and nozzles
	No missing/broken/clogged/misaligned nozzles
	No spray pattern deflected or blocked
Drip/Micro System Review Checklist	
	No visible or detected broken/kinked/leaking tubing or fittings
	No missing/clogged/broken emitters
	No missing/clogged/broken micro heads/nozzles
	System operating pressure within manufacturer recommended range
	Filter does not need servicing

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Catch Can Test Results

Test Area/Station					
CatchDeviceArea(ACD)		In.^{2}	TestRun Time(t_R)		Min

- It is recommended to use a minimum of 24 catch devices.
- When the use of 24 or more catch devices is not practical, use multiples of 4 with auditor's discretion.

Catch Can volumes

1		17		33		49		65		81	
2		18		34		50		66		82	
3		19		35		51		67		83	
4		20		36		52		68		84	
5		21		37		53		69		85	
6		22		38		54		70		86	
7		23		39		55		71		87	
8		24		40		56		72		88	
9		25		41		57		73		89	
10		26		42		58		74		90	
11		27		43		59		75		91	
12		28		44		60		76		92	
13		29		45		61		77		93	
14		30		46		62		78		94	
15		31		47		63		79		95	
16		32		48		64		80		96	

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Catch Can Test Results

Number of Catch devices		¼ of Number Catch Devices	
Total Catch Volume		Total Low Quarter	
Average Volume [V_{avg}]		Average Low Quarter [V_{lq}]	

Calculate Distribution Uniformity
$$DU_{lq} = \frac{Average\ low\ quarter\ (V_{lq})}{Average\ volume\ (V_{avg})} = \frac{ml}{ml} =$$
Calculate Net precipitation rate
$$PR_{net} = \frac{3.66 \times V_{avg}}{t_R \times A_{CD}} = \frac{3.66 \times (\ ml)}{(\ \min\ ) \times (\ in.^2)} = \frac{x}{x} in/h$$

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Test Area Map

Test Area/Station								
Test Run Time		min	wind		mph	Pressure		psi
Meter start								

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Controller Schedule Settings

- **Controller Run time Schedule**

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Irrigation System Zone Map

Irrigation Zone map

Must include the following

- POC Location
- Controller Location
- Sensor location
- Station Areas
- Station Irrigation Type (Spray/rotor/etc.)

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Auditor’s Observations

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