# Commercial Site Assessment™ Tier II

# Prepared for: **Prairie of Village Creek**

20620 Harrow Ct. Lakeville, MN 55044

2021 Season



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### Irrigated Area



### Commercial Site Assessment<sup>™</sup>

Date of Tier I CSA:	October 30, 2021
Certified Technician:	Jake Mathre CLIA, CIC, CIT
Date of Tier II CSA:	June 30, 2021
Certified Technician:	Jake Mathre CLIA, CIC, CIT
Irrigated Acres: Irrigated $ft^2$ :	5.92 258,033 ft <sup>2</sup>



#### **Audit Observations**

#### **Controller and Sensor:**

The property utilizes one Hunter I-Core controller with a Solar Sync weather sensor. This sensor is not a smart controller (weather-based) that is capable of remote monitorization and should be upgraded with a new Hunter Hydrawise controller for proper weather adjustments. The controller programming is incorrect with every zone running for 60 mins every other day. This should be adjusted to a maximum of 40 minutes every other day.

#### Solution:

• Retrofit the controller with Hunter Hydrawise controller and air card and setup the program correctly

#### Zone by Zone:

While walking the property, we found:

- 279 of the 548 Rotors are leaking and need to be replaced
  - These heads all looked original and have failed likely to general wear and tear

#### Solution:

• Replace 279 rotors

There were some rotors in zones that had the wrong nozzle size installed for their area of coverage. Nozzles of rotors should change depending on area of coverage. If all nozzles are the same and the heads turn at a fixed rate, then areas covered by a 90° head will get more water and those covered by a 360° head will get too little.

#### Solution:

• Retrofit the remaining 269 rotors with new heads and correct nozzle sizes

There were a few areas with minor design issues that need to be addressed. These areas either need heads added and/or moved for proper spacing and coverage. Many of the coverage gaps are along the driveways.

#### Solutions:

- Move 12 heads
- Add three heads



Zone 10 has a line leak that needs to be fixed.

• Fix line leak

Zone 20 is a spray zone on the west side of the pine trees. This zone should be eliminated or deactivated prior to turning the system on in the spring. It currently has no purpose and is only watering the back side of the trees.

#### Solution:

• Eliminate zone 20



#### Water Rates:

Meter Reading Interval: Monthly X Quarterly Other								
Units Measured As:	X 1000 gallon	S						
Converted Units:	X 1 unit = 100	)0 gal	lons					
WATER RATES			Irrigation	n Metered System				

Price per unit (per 1,000 gals)	\$5.64
Threshold per quarter	Irrigation Metered System
Sewer Rate per unit (if unmetered):	Does not apply

#### **Historical Water Usage:**

Year	Annual Water Usage (gallons)	Annual Water Cost*
2016	1,950,000	\$11,421.00
2017	2,854,000	\$17,365.56
2018	1,843,000	\$11,240.52
2019	2,335,000	\$14,156.40
2020	1,737,000	\$10,642.68
5 Year Average	2,250,650	\$13,680.67

\*\* Average Taken from months with recorded water. Zero usage removed from average. Assuming if system ran, what would the average be?

#### Plant Water Requirement (ET Data & Average Effective Rainfall):

Eff 04 -	water need	Eff 04 —	1,282,259	- <b>E6 07</b> 04
EJJ 90 —	water use	EJJ 90 -	2,250,650	- 50.97%

Minimum EPA efficiency standard = 75%

#### Water Usage Goals:

Eff = 75%: 1,709,678 gallons used at an annual cost of **\$10,207** 

Eff = 85%: 1,508,540 gallons used at an annual cost of **\$9,072** 

Eff = 95%: 1,349,746 gallons used at an annual cost of **\$8,177** 



### Water Budgeting

	2016	2017	2018	2019	2020	average	Water Budget
Jan-May	34	251	0	81	15	95.25	0.00
June - Aug	1916	2153	1291	1845	1377	1716.4	1400.60
Sept - Dec	0	450	552	409	345	439	309.08
Total	1950	2854	1843	2335	1737	2250.65	1709.68





### Water Source and Backflow Prevention:

	WATER SOURCE													
	Location Address By shrubs on North end of Property on East side of Street													
	Water Source	City	City											
		1	Backflow Device											
	Brand	١	Wilkins		Model									
<b>(</b> )	Туре		RPZ		Size		2"							
	Visual Inspection	Leaks?	No	Notes			Looks Good							
) OC	Date of Last Backflo	ow Test		6/17/2	021 Pass									
			Μ	leter / D	educt Meter	•								
tel	Brand	Ir	ivensy	S	Model									
Ma	Туре		Analog		Size		1.5"							
	Serial Number				39031	L226	i							
	Reading		2	8,762,44	6		Leak Detector Spinning?	No						
	Visual Inspection	Leaks? No Notes												
			Looks Good											



### Controller Data:

					IRRIGATIO		OLLER				
	Location:										
	Brand:			Hunter		Мо	del:	I-C	Core	Zone Count	24
			Program	Program	Program	Program		Sensors:		Rain	Weather
		#	A	В	c	D	Auxiliary	Installed?		Yes	Yes
		1	10:00 PM	10:00 PM				Bypassed	?		No
	Start	2						Tested?			Yes
	Times	3						Functiona	1?		Yes
		4									
		5						Notes		Solar Sync	
		6									
								R	emote Acce	ess Installed	1?
	Wate	r Davs	Even	Odd				Cell Card		Active?	
								WiFi		Active?	
								Hand Held	1	Active?	
	Ohm	Zone	Zone	Zone	Zone	Zone	Zone	Zone	R = Rotor	S = Spray	D = Drip
ο	Reading		Runtime	Runtime	Runtime	Runtime	Runtime	Туре	MP = MP	Rotator B	= Bubbler
Ľ	-	1	60					Rotors	9 Volt	Back-up B	attery
L T		2	60					Rotors	Installed?	lested?	Voltage
		3	60					Rotors	Yes	Yes	
N N		4	60					Rotors	Cont		din a 2
		5	60					Rotors	Boworod		ang:
		7	60					Rotors	Fowered	Buttons	Norking?
0		8	60					Rotors	Op:	Duttons	working:
t:		9	60					Rotors	Yes	Yes	
σ		10	60					Rotors	Se	asonal Adi	ust
		11	60					Rotors			
1		12	60					Rotors	Global A	Adjust %	
		13		60				Rotors			
		14		60				Rotors		ontniy Adji	ist
		15		60				Rotors	Month	Currently	Basammand
		16		60				Rotors	Month	Set As	Recommend
		17		60				Rotors	January		
		18		60				Rotors	February		
		19		60				Rotors	March		
		20		60				Sprays	April		
		21		60				Rotors	May		
		22		60				Rotors	June		
		23		60				Rotors	July		
		24		60				Rotors	August		
		25							Sept		
		26							October		
		27							November	r I	
		28							December	1	



### Zone by Zone Findings:

ZONE DATA											
ZONE	1	2	3	4	5	6	7	8	9	10	Totals
Lateral Line Leak										1	1
TOTAL # of Rotors	23	23	25	27	22	30	29	22	23	30	254
4" Rotor Broken	14	13	17	9	9	20	19	9	7	15	132
Add Heads						1		2			3
Move Heads	4	3	3			2					12
Raise / Straighten											
				Z	ONE DA	TA					
ZONE	11	12	13	14	15	16	17	18	19	20	Totals
TOTAL # of Rotors	28	20	26	26	25	33	35	15	16		224
4" Rotor Broken	10	7	15	12	10	24	18	10	9		115
12" Rotor Broken											
Eliminate Heads										13	13
TOTAL # of Sprays										13	13
	1	h		Z	ONE DA	ТА	1	1			
ZONE	21	22	23	24	25	26	27	28	29	30	Totals
TOTAL # of Rotors	17	21	14	18							70
4" Rotor Broken	6	12	6	8							32
Add Heads											



### **Critical Repairs and Adjustments**

Repairs	Pric	e (each)	Count	Tota	l
Installed Rotor	\$	70.00	279	\$ 19	9,530.00
Lateral line leak	\$	90.00	1	\$	90.00

### **Design Issues**

Repairs	Pric	e (each)	Count	Total
Heads Needing to be Moved	\$	150.00	12	\$ 1,800.00
Heads Needing to be Added	\$	150.00	3	\$ 450.00
Eliminate zone 20 by caping mainline	\$	80.00	1	\$ 80.00

### **Recommended Efficiency Upgrades**

Repairs	Price (each)		Count	Total
Smart Controller Upgrade	\$	2,000.00	1	\$ 2,000.00
Upgrade Remaining (after repairs) Rotors				
w/ Proper Nozzle Size	\$	70.00	269	\$ 18,830.00



In summary, completing the recommended critical repairs and upgrades will result in substantially more efficient water usage and healthier plant material.

#### Next Steps:

- □ Fix critical repair issues
- □ Eliminate zone 20
- □ Move and add heads for proper coverage
- □ Retrofit controllers with smart controller technology
- □ Annually maintain and monitor property