

CASCADE CHARTER TOWNSHIP

2865 Thornhills SE Grand Rapids, Michigan 49546-7192



Date: March 1, 2021

To: Supervisor Grace Lesperance (Vice Chair)
Trustee Tom McDonald
Trustee John Shipley (Chair)

From: Ben Swayze, Township Manager

Subject: Infrastructure Committee Meeting Agenda – March 3, 2021 (9:00 am)

The Infrastructure Committee is to meet in the Conference Room of the Township Office (also accessible via Zoom) to discuss the following:

1. **Minutes of the 1.6.21 Meeting** – The Committee is responsible for appointing the minutes of the previous meeting

Recommended Action – Approve the minutes

2. **Township Server Replacements** – The Township servers are on a 4 year replacement cycle. Director of Inspections Brian Wilson (whom also serves as the Township IT manager) has prepared the attached memo for consideration of the committee and will be available to answer any questions the committee may have.

Recommended Action – Recommendation to the Township Board regarding the server replacements.

3. **Buildings and Grounds Equipment Replacement** – Several pieces of Buildings and Grounds equipment are scheduled for replacement this year. CDD Peterson has prepared the attached memo for your review and will be available to answer any questions the committee may have.

Recommended Action – Recommendation to the Township Board regarding the Buildings and Grounds equipment replacement

4. **Updated on the 2021 Pathways Extensions** – CDD Peterson and the Fishbeck engineers will be in attendance to review additional information on the following pathway extensions:

- Cascade Road from Macnider to Watermark
- Burton Street Pedestrian Bridge over I-96
- Laraway Lake

Documentation regarding these pathways are attached for your review

Recommended Action – No Action, review and staff direction only

5. **2021 Gypsy Moth Contract** - The results of the fall 2020 Gypsy Moth survey are attached for your review. The survey has shown that while significant spraying is still required, the program is working and the spray area has been significantly reduced from what had to be sprayed in 2018 and 2019. The recommended spray area for 2020 is 755 acres, which is an increase of 19 acres from 2020 but a reduction of 1,134 acres from 2019. Attached are the relevant documents for the 2020 Gypsy Moth Spray Program. 2020 was the final year of the 3-year contract for spraying. It is anticipated that the price per acre for 2021 will be similar to the 2020 rate, but I am awaiting confirmation from the spray applicator.

Recommended Action – Recommendation to the Township Board regarding the 2021 Gypsy Moth Spray Program.

6. **2021 Local Road Program** – Attached for your review are the proposed work orders for the 2021 Township Local Streets program, based on our review of the Township PASER maps at the 1.6.21 Meeting. The Personnel and Finance Committee met and have recommended the Township Board pursue bond financing (...in partnership with bond financing for the Fire Station project) to cover costs not budgeted in the FY21 budget.

Recommended Action – Recommendation to the Township Board regarding the 2021 Local Road program

CASCADE CHARTER TOWNSHIP
INFRASTRUCTURE COMMITTEE MEETING
January 6, 2021 at 9:00am
Held via Zoom Remote Conferencing Software &
Large Conference Room at Township Hall
2865 Thornhills SE, Grand Rapids, MI 49546

Members Present: Supervisor Lesperance, Trustee McDonald, Trustee Shipley

Others Present: Township Manager (TM) Ben Swayze, Community Development Director (CDD) Steve Peterson, Fishbeck Engineers Mike Berrevoets and Greg Whittle

Call to Order: Trustee McDonald called the meeting to order at 9:00 a.m.

Business: The Infrastructure Committee discussed the following items:

1. Officers of the Committee

TM Swayze explained that per the committee policy, the committee is responsible for electing a Chair and a Vice Chair.

Motion by Trustee McDonald, supported by Trustee Shipley to appoint Trustee Shipley to Chair and Supervisor Lesperance as Vice Chair. Motion carried.

2. Pathway Construction Update

CDD Peterson reviewed the current issues with the Burton Street bridge pathway. The condo association have expressed some concerns with the pathway placement they would like addressed prior to approving the required easements. Concerns include:

- Want pathway moved further away from Burton Street
- Want center turn land on Burton
- Would like enhanced tree replacement/landscaping

Fishbeck engineers and CDD walked through the issues. Discussion ensued. IT was generally agreed that the center turn land should not be a condition of the project. Township will offer the 1 for 1 replacement program for landscaping. Township will continue to review options for moving the pathway further away from Burton Street, including looking at moving existing utility poles.

CDD Peterson and Fishbeck engineers reviewed the issues with the Cascade road pathway near the entrance to Watermark. The original pathway was supposed to go all the way to Watermark, but construction stopped at McNider due to easement issues. Fishbeck engineers reviewed the pathway layout alternatives. Discussion ensued. It was agreed that Township should approach Watermark one last time, but if they aren't willing to offer easement Township should move on.

Trustee McDonald brought up the Laraway Lake pathway issue. Discussion ensued. Committee asked staff to return to the committee with further information on a possible pathway extension from Cascade road north to where it currently ends.

No action, discussion only

3. 2021 – 2026 Capital Improvements Plan

TM Swayze reviewed the proposed 21-26 CIP. Discussion ensued. Conversation was had regarding the merits of the Gathering Space project in the DDA section. Supervisor Lesperance indicated she is interested in pursuing the property on Wycliff with the church that is currently for sale.

Motion by Trustee McDonald, supported by Supervisor Lesperance to forward the 21-26 Capital Improvements Plan to the Planning Commission for consideration. Motion carried

****Trustee Shipley excused himself from the meeting****

4. Updated Cascade Township PASER Map

TM Swayze reviewed the updated PASER map with the committee. Discussion ensued regarding investigating areas for improvements for FY21. TM Swayze indicated that areas of work for 2021 will be back to the committee at the next meeting.

No action, discussion only

Adjournment: Motion by Trustee McDonald, supported by Supervisor Lesperance to adjourn the meeting. Motion carried. Meeting adjourned at 11:18 am



CASCADE CHARTER TOWNSHIP

2865 Thornhills SE Grand Rapids, Michigan 49546-7140

Date: January 25th, 2021
To: Ben Swayze
From: Brian Wilson, Director of Inspections
Subject: Server replacement

CURRENT ISSUE:

As part of the Technology replacement schedule, the exchange and application servers are scheduled to be replaced in 2021.

ANALYSIS AND CONCLUSIONS:

The application (BSA) server is designed to provide performance and reliability for township operations. Total replacement and installation cost is **\$13,197.48**. There are no cloud-based options that will run BSA programs.

The exchange server handles our domain and email functions. Two options were presented. First, a completely online (cloud based) solution. Installation and subscription costs are \$8,874.50 year one and \$4896.00 each (year 2-4). This method is becoming more popular and does allow some additional functions when paired with office 365. Office 365 is a monthly service for Microsoft Office products (excel, word, power point). We currently purchase this software with each new computer (4-year replacement schedule).

The second option is to continue with a local exchange server (current method). Hardware, license and installation costs total **\$18,096.25**. Our IT provider believes that this is the last version of exchange that we will be available for a local server. Future versions will be online only.

The financial considerations below illustrate that an organization our size can take advantage of lower total costs when implementing a local exchange server (as we have always done). We are currently developing a plan to integrate both office and exchange into an online monthly subscription service in anticipation of Microsoft changing available formats in the future.

FINANCIAL CONSIDERATIONS:

Application server has no alternatives at this point. Total Cost \$13,917.48

Exchange:

Option 1 – online \$8,874.50 initial cost plus \$4,896 yearly

Assuming 4-year life: total cost = \$23,562.50 (\$8874.50 + \$4896 + \$4896 + \$4896)

Option 2 – local exchange \$18,096.25 initial cost (no additional yearly licenses)

$\$23,562.50 - \$18,096.25 = \mathbf{\$5466.25}$ cost savings for 4-year life

**Assuming 5-year life: Total savings = \$10,362.25 (\$5466.25 + \$4896)

RECOMMENDED ACTION:

Approve the replacement of the application server and local exchange server. Total budgeted cost of \$32,031.73.



Information Technology Solutions that Work for Local Government

5815 East Clark Rd Suite G
Box 160
48808 Bath
United States

QUOTE

Number ITRQ18153

Date Jan 21, 2021

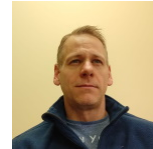
Sold To

Cascade Township
Brian Wilson
2865 Thornhills SE
49546 Grand Rapids

Ship To

Cascade Township
Brian Wilson
2865 Thornhills SE
49546 Grand Rapids

From The Desk Of



RAllen
855-487-4448 ext 5
rallen@itright.com

Phone (616) 949-3765
Fax

Phone (616) 949-3765
Fax

Here is the quote you requested.

Table with 3 columns: Terms, P.O. Number, Ship Via

Main quote table with columns: Line, Qty, Description, Unit Price, Ext. Price. Includes item 2: SuperServer 6029P-WTR with detailed specifications.

* For orders over \$5000, payment for the hardware/software is required prior to processing the order.

Line	Qty	Description	Unit Price	Ext. Price
		6.0Gb/s Solid State Drive RAID 1 (Data) -> 2 x 4.0TB SATA 6.0GB/s 7200RPM - 3.5" - Seagate Exos 7E8 Series (512n)		
		ConfigID: 69176		
3	1	Microsoft SQL Server 2019 Standard - License - 2 Core - Volume, Local Government, Microsoft Qualified - Microsoft Open License for Government - English - PC	\$3,503.73	\$3,503.73
4	12	Project Labor for installing, configuring, and implementing the new Server.	\$150.00	\$1,800.00
5		20.0% Loyalty Discount		-\$360.00

SubTotal	\$13,917.48
Tax	\$0.00
Shipping	\$0.00
Total	\$13,917.48

Please contact me if I can be of further assistance.

* For orders over \$5000, payment for the hardware/software is required prior to processing the order.



Information Technology Solutions that Work for Local Government

5815 East Clark Rd Suite G
Box 160
48808 Bath
United States

QUOTE

Number ITRQ18154

Date Jan 21, 2021

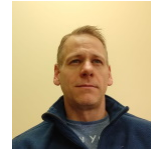
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Phone (616) 949-3765
Fax

Terms

P.O. Number

Ship Via

Table with 5 columns: Line, Qty, Description, Unit Price, Ext. Price. Row 1: New Local Exchange Server (rackmount). Row 2: SuperServer 6019P-WTR with detailed specifications and pricing.

* For orders over \$5000, payment for the hardware/software is required prior to processing the order.

Line	Qty	Description	Unit Price	Ext. Price
3	1	MS MBG EXCH SRV STD 2019....Electronic distribution - NO MEDIA	\$700.00	\$700.00
4	102	MS MBG EXCH STD UCAL 2019..Electronic distribution - NO MEDIA	\$70.00	\$7,140.00
5		<i>* Based on current Mailbox count.</i>		
		<i>** If you feel this count is higher than actual, the helpdesk can send you an email audit so you can review the accounts and we can adjust the quote to actual.</i>		
6		<i>*** Client would need to ensure they are on Outlook 2016 or above. Anyone on Outlook 2013 or older would need upgraded as well.</i>		
7	20	Project Labor for installing, configuring, and implementing new Exchange Server.	\$150.00	\$3,000.00
8		20.0% Loyalty Discount		-\$600.00
9		<i>In this option, we would install DC2 VM on this server, as well. Same as before.</i>		
10		<i>* Payment for the hardware/software is required prior to processing the order.</i>		

SubTotal	\$18,096.25
Tax	\$0.00
Shipping	\$0.00
Total	\$18,096.25

** For orders over \$5000, payment for the hardware/software is required prior to processing the order.*

MEMORANDUM

To: Ben Swayze, Township Manager
From: Steve Peterson, Planning Director
Subject: BG equipment
Date: February 17, 2021

The Buildings and Grounds Department has some large equipment planned for replacement this year. These items have already been approved in your budgeting process for this year. The items are as follows:

Item	Budgeted amount	Quote
Bobcat	\$61,000	\$60,870.29
Grandstand x2	\$16,000	\$17,930
Groundsmaster	\$20,000	\$17,844.33

These quotes were obtained using the State bid program to obtain the best process possible. Once replaced, the old Bobcat will be given to the Fire Dept and the others will be traded in on the purchases of the new equipment. The price for the grandstands does not reflect the trade in price. The groundsmaster does.

If you would like Jim to attend the meeting to answer any questions please let me or him know.

Attached to this memo are the quotes.



B&B Truck Equipment
 8505 Piedmont Industrial Park Drive SW
 Byron Center, MI 49315-9356
 P: (616) 878-1120
 F: (616) 878-1288

B & B Truck
 8505 Piedmont Industrial Drive SW
 Byron Center, MI 49315-9356
 Phone: (616) 878-1120

PROPOSAL

Proposal ID	Date
4822	2/11/2021
Sales Person	Page
DYONKER	1 of 1

Proposal To:

Cascade Charter Township
 2865 Thornhills SE
 Grand Rapids, MI 49546
 Phone: (616) 318-8784
 Contact: Jason

Ship To:

Pickup

Decision Maker	Ship Date	Ship Via	Description	Terms	
		Pickup	Bid Price, Grandstand 25hp Kohler EFI 52" Turbo Fo	Net 30 days	
Quantity	Product ID		Description	Unit	Amount
2.00	TO-72519		Bid Price, Grandstand 25hp Kohler EFI 52" Turbo Force Deck, 5 year warranty or 1200 hours	8,965.00	17,930.00

ACCEPTANCE OF PROPOSAL

The above prices, specifications, and conditions are satisfactory and are hereby accepted.

Proposal is valid until Saturday, March 13, 2021

Signature _____

Date _____

Subtotal	17,930.00
Sales Tax	Exempt
TOTAL	17,930.00



January 20, 2021

487 W Division Street
PO Box 246
Sparta, MI 49345
616.887.7301
Fax: 616.887.6288

1050 Opdyke Road
Auburn Hills, MI 48326
248.373.8800
Fax: 248.373.8899

Cascade Township
Attn: Jim Macdonald
3865 Thornhills Dr
Grand Rapids, MI 49546

We are pleased to provide a quote on the following equipment:

(1) TORO Groundsmaster 3200 4WD (#31901)	\$ 20,102.70
<ul style="list-style-type: none"> • (1) 72" Side Discharge Deck (#31972) • (1) Recycler Kit (#31978) • (1) Air Ride Suspension Seat (#31982) • (2) Weight Kit (42lbs) (#114-4096) 	
Optional Accessories	
<ul style="list-style-type: none"> • (2) 8" Foam Filled Caster Wheel Assembly (#93-5974) 	\$ 241.63
	Less Trade In \$ -2,500.00
<ul style="list-style-type: none"> • (1) Toro Groundsmaster 228-D 4WD w/62" SD Deck 	

Pricing is firm for 30 days from date of quotation.

DELIVERY: As Arranged

TERMS: Net 30 Days

Thank you for your interest in our line of equipment. If you have any questions, please feel free to call me at 800-822-2216.

Sincerely,

Bob Most

Bob Most
Commercial Sales

BM/jgm





Bobcat

Product Quotation

Quotation Number: HMM-25012
Date: 2021-01-19 10:55:18

Customer Name/Address:	Bobcat Delivering Dealer	ORDER TO BE PLACED WITH: Contract Holder/Manufacturer
CASCADE CHARTER TOWNSHIP Attn: JIM MACDONALD 2865 THORNHILLS AVE SE GRAND RAPIDS, MI 49546	Carleton Eq. Bobcat of Grand Rapids, Byron Center, M 343 100TH STREET SW BYRON CENTER MI 49315 Phone: (616) 877-3388 Fax: (616) 877-4737	Clark Equipment Co dba Bobcat Company 250 E Beaton Dr, PO Box 6000 West Fargo, ND 58078 Phone: 701-241-8719 Fax: 855-608-0681 Contact: Heather Messmer Heather.Messmer@doosan.com

Description	Part No	Qty	Price Ea.	Total
Bobcat 5600	M1221	1	\$45,393.40	\$45,393.40
Deluxe Road Package	M1221-P01-C01	1	\$1,973.70	\$1,973.70
Backup Alarm	Side Mirrors			
Turn Signals	Horn			
Flashers	Lower Engine Guard			
Tail Lights	Rear Work Lights			
Brake Lights	Headlights			
Rear View Mirror				
Cab Enclosure with Heater & Air Conditioning	M1221-R02-C03	1	\$4,134.40	\$4,134.40
High Flow Package	M1221-R03-C02	1	\$1,475.60	\$1,475.60
29 X 12.5 Turf Tires	M1221-R05-C05	1	\$668.10	\$668.10
Keyless Ignition	M1221-R06-C02	1	\$285.60	\$285.60
Heavy Duty Battery	M1221-R07-C02	1	\$82.45	\$82.45
Attachment Control	M1221-R08-C02	1	\$200.60	\$200.60
Power Bob-Tach	M1221-R12-C02	1	\$934.15	\$934.15
Radio Option	M1221-R15-C02	1	\$453.05	\$453.05
Traction Control	M1221-R16-C02	1	\$463.25	\$463.25
Engine Block Heater	M1221-A01-C02	1	\$110.50	\$110.50
Interior Trim	M1221-A01-C05	1	\$174.25	\$174.25
SB200 Snowblower - 60" Width	M7001	1	\$3,565.92	\$3,565.92
--- 9.6 Hyd Motor Package (25 - 31 gpm)	M7001-R01-C04	1	\$955.32	\$955.32

Total of Items Quoted	\$60,870.29
Dealer Assembly Charges	\$0.00
Other Charges: Bobcat Material Surcharge	\$0.00
Quote Total - US dollars	\$60,870.29

Notes:

***Prices per the Michigan State Contract – 071B7700088**
***Terms Net 30 Days. Credit cards accepted.**
***FOB Destination within the 48 Contiguous States.**
***Delivery: 60 to 90 days from ARO.**

***State Sales Taxes apply. Must include a Tax Exempt Certificate with order placed.**

***TID# 38-0425350**

***Orders Must be Placed With: Clark Equipment dba Bobcat Company, Govt Sales, 250 E Beaton Drive, West Fargo, ND 58078.**

Cascade Charter Township

Cascade Charter Township, Kent County, Michigan

Pathway 2 Phase 2 Millage

REVISIONS

Drawn By MTD
Designer
Reviewer
Manager MLB

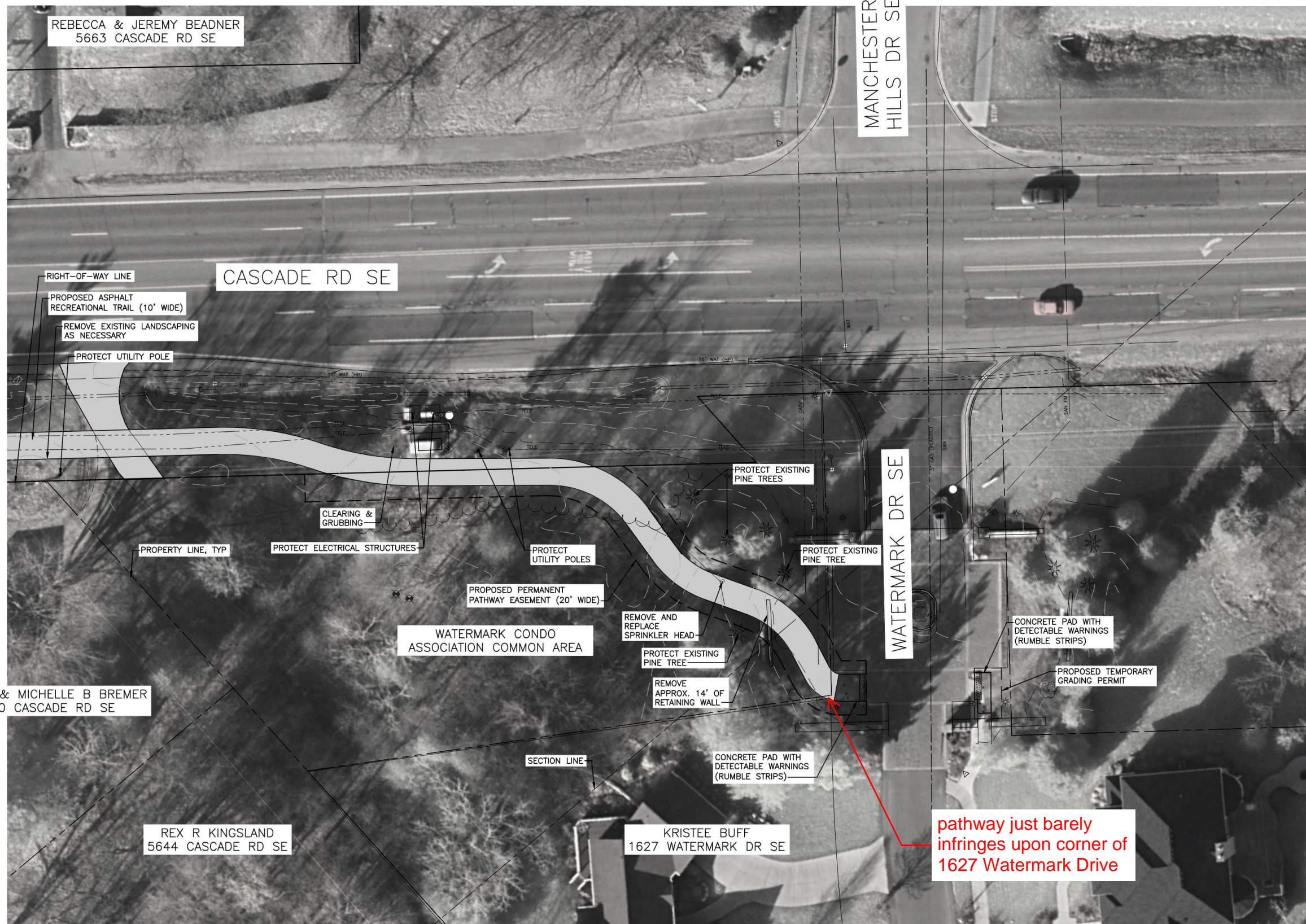
Hard copy is intended to be 22"x34" when plotted. Scale(s) indicated and graphic quality may not be accurate for any other size.

PROJECT NO.
181734

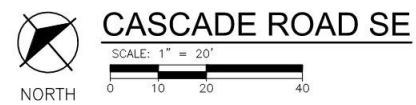
SHEET NO.

8

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pathway just barely
infringes upon corner of
1627 Watermark Drive



Opinion of Probable Project Cost

Fishbeck

1515 Arboretum Drive S.E., Grand Rapids, MI 49546

Telephone: (616) 575-3824 FAX: (616) 464-3993

CASCADE TOWNSHIP - PATHWAY 2 EXTENSION CONCEPTUAL ESTIMATE (02/16/21)

Option #1 Best Case Scenario - Cascade Road (Watermark Drive to Walden Hill SE)

Total Length 1100 ft

- Assumes EGLE will not require a boardwalk
- Assumes owner of 5806 Cascade Road will grant Temporary Grading Permits

Item	Length	Price	Unit	Item Cost
Base Pathway	1100	\$80	LF	\$88,000
Medium Grading (cut/fill)	850	\$24	LF	\$20,400
Large Tree Clearing	5	\$1,500	EA	\$7,500
Storm Sewer (replace ditch)	400	\$70	LF	\$28,000
Utility Pole Relocation	1	\$6,000	EA	\$6,000
Construction Cost				\$168,900
Engineering and Contingency (30%)				\$50,670
Conceptual Project Cost Estimate				\$219,570

Option #1 Worst Case Scenario - Cascade Road (Watermark Drive to Walden Hill SE)

Total Length 1100 ft

- Assumes EGLE will require a boardwalk
- Assumes owner of 5806 Cascade Road will not grant Temporary Grading Permits

Item	Length	Price	Unit	Item Cost
Base Pathway	600	\$80	LF	\$48,000
Short Boardwalk (< 6 ft)	500	\$350	LF	\$175,000
Large Tree Clearing	5	\$1,500	EA	\$7,500
Storm Sewer (replace ditch)	400	\$70	LF	\$28,000
Utility Pole Relocation	1	\$6,000	EA	\$6,000
Retaining Wall (< 6 ft)	650	\$300	LF	\$195,000
Construction Cost				\$459,500
Engineering and Contingency (30%)				\$137,850
Conceptual Project Cost Estimate				\$597,350

Option #1B Add-On Best Case - Cascade Road (Walden Hill SE to Forest Shores SE)

Total Length 1400 ft

- Assumes owners of 5918 Cascade Road, 1801 Forest Shores Drive, and 1855 Forest Shores Drive will grant Temporary Grading Permits

Item	Length	Price	Unit	Item Cost
Base Pathway	1400	\$80	LF	\$112,000
Medium Grading (cut/fill)	200	\$24	LF	\$4,800
Heavy Grading (cut/fill)	600	\$50	LF	\$30,000
Large Tree Clearing	10	\$1,500	EA	\$15,000
Storm Sewer (replace ditch)	750	\$70	LF	\$52,500
Utility Pole Relocation	2	\$6,000	EA	\$12,000
Retaining Wall (< 6 ft)	230	\$300	LF	\$69,000
Construction Cost				\$295,300
Engineering and Contingency (30%)				\$88,590
Conceptual Project Cost Estimate				\$383,890

Option #1B Add-On Worst Case - Cascade Road (Walden Hill SE to Forest Shores SE)

Total Length 1400 ft

- Assumes owners of 5918 Cascade Road, 1801 Forest Shores Drive, and 1855 Forest Shores Drive will not grant Temporary Grading Permits

Item	Length	Price	Unit	Item Cost
Base Pathway	1400	\$80	LF	\$112,000
Medium Grading (cut/fill)	770	\$24	LF	\$18,480
Large Tree Clearing	10	\$1,500	EA	\$15,000
Storm Sewer (replace ditch)	750	\$70	LF	\$52,500
Utility Pole Relocation	2	\$6,000	EA	\$12,000
Retaining Wall (< 6 ft)	470	\$300	LF	\$141,000
Retaining Wall (> 6 ft)	260	\$450	LF	\$117,000
Construction Cost				\$467,980
Engineering and Contingency (30%)				\$140,394
Conceptual Project Cost Estimate				\$608,374



Aquatic Consulting Services

P.O. Box 530, Sanford, MI 48657
www.aquaticremedies.com

989-689-0223

January 14, 2021

**Mr. Ben Swayze, Manager
Cascade Charter Township
2865 Thornhills, S.E.
Grand Rapids, MI 49546**

Dear Mr. Swayze:

We have completed the gypsy moth egg mass surveys, maps, and report for the 2021 season in Cascade Charter Township. I have included JPG and PDF map files of the results for you to review and to post on the city website as needed. Both JPG and PDF files are printable for your purposes although the PDF file will be more user friendly on your website. I have also included a short report on the conditions in each recommended spray block. An 18 x 24-inch map may be sent in a separate package for display purpose if desired.

Overall, I have somewhat good news for Cascade Township. Gypsy moth egg mass numbers continue to trend downward on average across much of the township, but a few areas where our suppression efforts have been paying off have started to show signs of rebound already. In the attached report, you will see the conditions in each spray block explained as well as an explanation of how Integrated Pest Management (IPM) programs operate from a monitoring standpoint. Largely, we feel we were correct in holding off on unnecessary spraying as indicated by low resident complaints and low defoliation observed in our 2020 post-spray survey. Unfortunately, weather conditions in summer 2020 appear to have allowed the gypsy moths to regain a foothold. Egg mass densities are still way down overall, but we must recommend an increase of 19 acres for a total of 755 acres for spring 2021. We should continue to see much reduced nuisance and defoliation, but we may need to be prepared for an uptick in residential complaints in summer 2021. Judging from observations this fall, Cascade Township is still in **much** better shape than other areas in Michigan, but we will need to maintain an intensive monitoring protocol to avoid losing the ground we have gained so far.

I will hold off on digitizing the spray blocks for the pilot's use until you have had a chance to review the maps. Once we get closer to spray time and you have selected an aerial applicator, I will provide the pilot with spray maps and digitized files.

Thank you for the opportunity to work for Cascade Township again this season. Please let me know if I can help with anything further, 989-689-0223 or gypsymoth@aquaticremedies.com.

Sincerely,

Neal Swanson
Owner/Biologist

Cascade Charter Township
Recommended Gypsy Moth Spray Areas 2021

By
Aquatic Consulting Services
January 2021

Block #	Acres	Reason for Spray
Cas01	59	An established population in good habitat. Population has been largely suppressed for a few years but does show signs of rebound. Population is continuous with untreated Ada Township, so reinfestation is a concern. Nuisance is primary concern due to successive years of infestation. Spray to inhibit reinfestation and mitigate potential nuisance.
Cas02	17	A persistent remnant population in good habitat. Population does show some signs of rebound. Tree damage is primary concern due to successive years of infestation. Spray to limit further tree damage, further suppress population, and inhibit rebound.
Cas03	69	A persistent remnant population in prime habitat. Nuisance is primary concern and was confirmed by resident reports. Tree damage is a secondary concern, particularly in heavily previously heavily infested trees along Thornapple River Dr. Some spreading to uninfested habitat is also notable. Spray to contain spreading and limit further tree damage and nuisance.
Cas04	16	A persistent remnant population in prime habitat. Population has been largely suppressed but does show signs of rebound. Nuisance has been high in past years and tree damage is a concern in previously stressed trees. Spray to inhibit rebound, further tree damage, and mitigate potential nuisance.
Cas05	67	A persistent remnant population in prime habitat. Population has been suppressed over most of the area but does show signs of rebound throughout. Nuisance was very high at peak infestation, and tree damage is also a concern in previously stressed trees. Spray to inhibit rebound, mitigate potential nuisance, and limit further tree damage.
Cas06	17	A remnant population in very good habitat. Rebound in population is evident. Some trees in the area were heavily defoliated in successive years, so tree damage is primary concern, particularly along 30 th St. Spray to limit further tree damage and inhibit rebound.
Cas07	24	A rising population in good habitat. Tree damage is primary concern particularly in trees overhanging 28 th St. Nuisance is secondary concern but is low according to resident reports. Spray to suppress population and limit tree damage.
Cas08	38	A rising population in very good habitat. Nuisance is primary concern but is currently low confirmed by resident reports. Potential for nuisance in coming seasons is much higher according to egg mass densities in the area. Spray to limit potential nuisance and suppress population.

Cas09	30	A persistent sustained population in very good habitat. Nuisance has been an issue in past years, and historical tree damage was quite high, especially in heavily infested trees along Cascade Rd. Population does show some signs of rebound in a few areas. Spray to inhibit population rebound and limit further tree damage and potential nuisance.
Cas10	69	A persistent remnant population in prime habitat. Population was largely suppressed but does show some signs of rebound. Tree damage is primary concern, especially in previously heavily infested trees along Cascade Rd. Spray to inhibit rebound and limit further tree damage.
Cas11	156	Habitat quality and population trends are very similar to block Cas10, however the western portion of block shows signs of more dramatic upward trend. Tree damage is primary concern, particularly in previously heavily infested trees. Spray to inhibit population rebound, mitigate potential nuisance, and limit further tree damage.
Cas12	23	A sustained population in very good habitat. Nuisance is primary concern and is confirmed by resident reports. Tree damage in stressed trees along Whitneyville Rd is a secondary concern. Spray to limit further tree damage and nuisance.
Cas13		A persistent remnant population in very good habitat. Population was largely suppressed but does show some signs of rebound. Tree damage is primary concern, particularly in previously stressed trees. Population is adjacent to untreated Caledonia Township, so reinfestation is a concern. Spray to inhibit rebound, reduce chances of reinfestation, and limit further tree damage.
Cas14		A sustained population in good habitat. Population does show some signs of rebound, particularly in northwestern portion of block. Nuisance is primary concern and is confirmed by resident reports. Spray to inhibit rebound and reduce nuisance.
Cas15	116	A persistent remnant population in prime habitat. Nuisance is primary concern, but tree damage is also a concern especially in previously heavily infested trees. Population is continuous with populations in adjacent Lowell and Caledonia Townships, so reinfestation is possible. Spray to inhibit reinfestation, mitigate nuisance, and limit further tree damage.

Total Acreage = **755 acres**

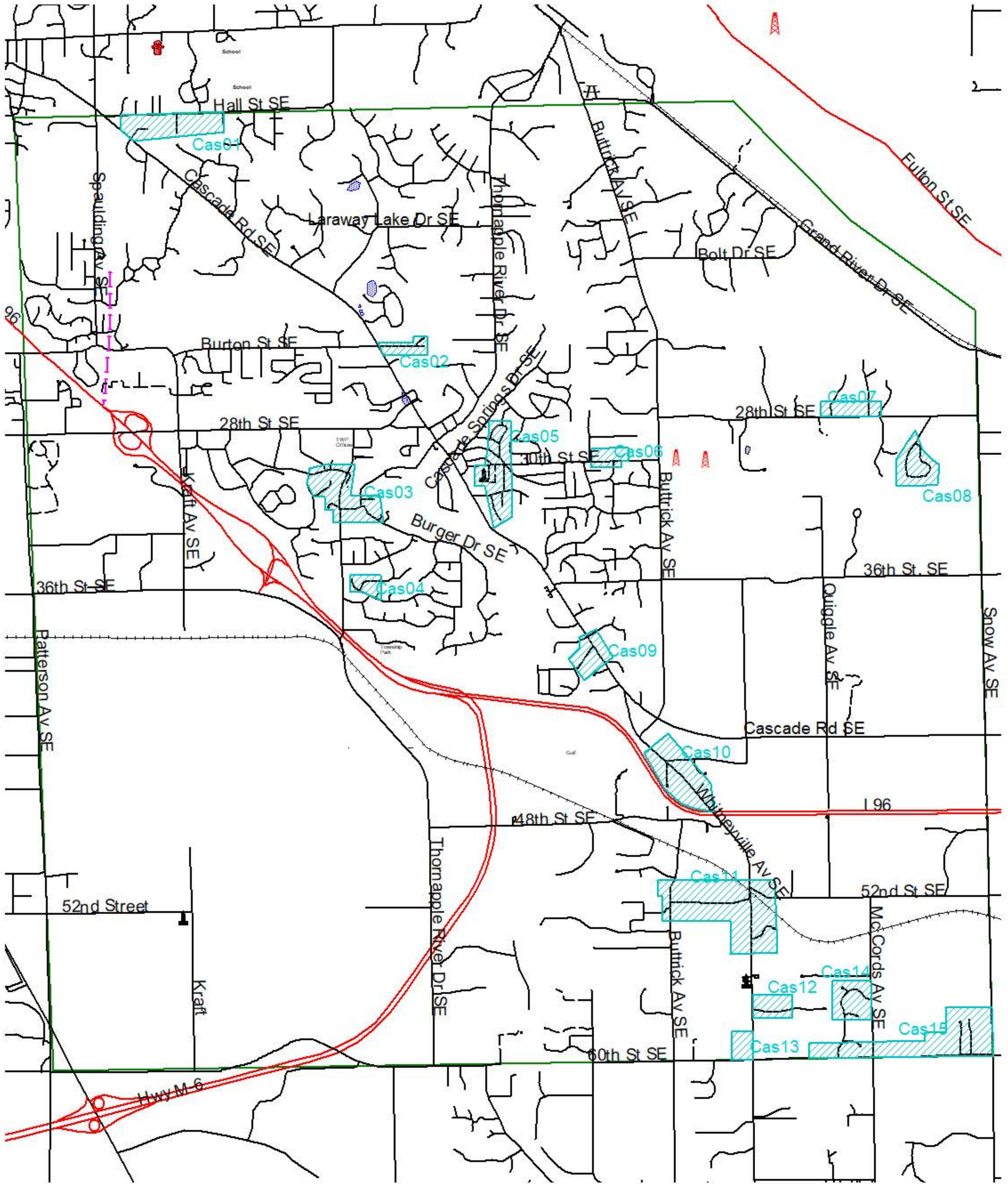
As stated in previous reports to Cascade Township, gypsy moth suppression programs in Michigan generally follow an Integrated Pest Management (IPM) strategy which is focused on low environmental impact and economic awareness. Further, an IPM strategy intends to mitigate exponential population growth with treatment only until latent environmental controls begin to limit populations sufficiently. This approach requires that a monitoring period be commenced once environmental controls begin to act on populations sufficiently where tree damage is expected to be minimal and nuisance levels will be tolerable in the coming season. Egg mass surveys for the 2020 season (fall 2019) showed that environmental controls had begun to act in various areas, so monitoring activities commenced in lieu of suppressive efforts. Considering the low number of complaints, and low defoliation levels observed in the 2020 post-spray survey, we are confident this was the correct approach. Several of these monitoring areas have continued a downward trend, but frustratingly a few have already started to rebound in number. In addition, some areas where environmental controls were not sufficiently active in the 2020 survey

continue to show high enough egg mass densities to warrant treatment in spring 2021. We have also found a few rising populations scattered around the township. When we combine all of these scenarios, **we feel we must recommend an increase of 19 acres for a total of 755 acres indicated above.** The current population cycle continues to be challenging, but we are headed the right direction (downward). We will just have to continue to stay on top of monitoring and treating remnant populations and small rebounds as we continue to reduce numbers in wait of mother nature's assistance. Accordingly, we advise that all recommended areas are treated with *Bacillus thuringiensis kurstaki* (B.t.k.) in Spring 2021.

The term "nuisance" is subjective and relates to the likelihood that the feeding behavior and number of caterpillars in the area will impact a property owner's quality of life. Some property owners may experience heavy infestation yet go unbothered. Other property owners may view 5-10 caterpillars visible on a barn door as a nuisance. Field experience during gypsy moth infestation suggests that the number of egg masses found in an area may yield a widespread nuisance situation. The term "tree damage" is more literal, but relative to environmental and historical factors as well. Any level of defoliation should be considered damaging, but otherwise healthy trees are generally much more resilient, even after consecutive years of defoliation. Other environmental stressors such as drought or disease are additive factors that will contribute to greater risk of tree degradation and/or mortality. Defoliation levels of >60% are also very stressful to trees, although most trees can survive 3+ years of >60% defoliation if few other stressors are present. Habitat quality relates to the species composition, density, distribution, understory, and topography of an area. Mixed forest type consisting primarily of oaks, neatly groomed understory, mixed age-class, and low topographic variability are the ideal conditions for persistent infestation, and so this habitat is designated as "prime" with very good, good, and marginal habitat in decreasing suitability. Trends in populations are designated by the egg mass residues in the area. Rising populations show a high new/old egg mass ratio, with established, sustained, and remnant populations extending toward a high old/new egg mass ratio.

Spray areas are recommended based on historical data, habitat suitability, population dynamics, and field experience in gypsy moth management. Other areas within the township may also contain some level of gypsy moth infestation, but such areas are either show a significant downward trend or habitat conditions do not exhibit high likelihood of a vigorous infestation. The level of damage and/or nuisance can be difficult to predict given the interaction of unpredictable environmental factors. Additionally, gypsy moth suppression program managers are often tasked with balancing high potential for damaging gypsy moth numbers with high community benefit. Areas where these considerations overlap are generally the areas that are treated first with available funds and areas of diminishing return are treated as funds are depleted. Our treatment recommendations take this into account, and we try to limit recommended spray areas to these top-tier areas. Accordingly, it is possible that some residents may observe low level gypsy moth activity outside of recommended treatment areas. These areas may have simply not met the requirements to warrant treatment this season but may qualify for treatment in coming seasons.

Cascade Township Gypsy Moth Survey Report Map for 2021 Season



Shaded areas are recommended for
aerial B.t. spray in Spring 2021



— Township Border
2021 Aquatic Consulting Services

KENT COUNTY ROAD COMMISSION
WORK ORDER

DATE 1/19/2021
WORK ORDER _____
PROJECT 2021 Cascade Local Roads Program
MUNICIPALITY Cascade Township IF OTHER: _____
ROAD TYPE Local
LENGTH 2.45 Miles
TYPE OF WORK Reconstruction
LOCATION Local Roads In Cascade TWP.
See attached List
CATEGORY Reconstruction
ACTIVITY 489
PROJECT YEAR 2021
UTILITIES No

BUDGET

WORK TYPE 000030 - Full Depth Mill and Fill
WORK TYPE _____
WORK TYPE _____
WORK TYPE _____
WORK TYPE _____
WORK TYPE _____
WORK TYPE _____
WORK TYPE _____

TOTAL \$ 1,000,000

ESTIMATED COST VALID UNTIL _____

FUNDING

% KCRC	<u>50.00%</u>	<u>\$ 500,000</u>
% TOWNSHIP	<u>50.00%</u>	<u>\$ 500,000</u>
		TOTAL <u>\$ 1,000,000</u>

NOTES _____

TOWNSHIP SIGNATURE _____ DATE _____

FINANCE USE ONLY

CUSTOMER # _____ AR _____
PROJECT _____ REV _____

2021 Cascade Township Local Roads -List

LOCATION	LENGTH
Arbor Tree Court: Burton Street to End	850
Beard Drive: Cascade Road to End	3275
Boxthorn Court: Beard Drive to End	420
Chamonix Court: Mont-Rue Drive to End	345
Champagne Court: Mont-Rue Drive to End	495
Forest Shores Drive: Cascade Road to End	985
Galbraith Avenue: Cascade Road to End	1405
Kitzbuhl Court: Mont-Rue Drive to End	420
Linson Court: Mont-Rue Drive to End	490
MacNider Avenue: Cascade Road to End	615
Mont-Rue Drive: Cascade Road to Beard Drive	3645
Total	12945

KENT COUNTY ROAD COMMISSION
WORK ORDER

DATE 1/21/2021
WORK ORDER _____
PROJECT Centennial Park Streets
MUNICIPALITY Cascade Township IF OTHER: _____
ROAD TYPE Local
LENGTH 3.12 Miles
TYPE OF WORK Full Depth Mill & Fill
LOCATION Local Roads In Cascade TWP.
See attached List
CATEGORY Reconstruction
ACTIVITY 489
PROJECT YEAR 2021
UTILITIES No

BUDGET

WORK TYPE 000030 - Full Depth Mill and Fill
WORK TYPE _____
WORK TYPE _____
WORK TYPE _____
WORK TYPE _____
WORK TYPE _____
WORK TYPE _____

TOTAL \$ 1,340,000

ESTIMATED COST VALID UNTIL Dec-21

FUNDING

% KCRC 50.00% \$ 670,000
% TOWNSHIP 50.00% \$ 670,000
TOTAL \$ 1,340,000

NOTES _____

TOWNSHIP SIGNATURE _____ DATE _____

FINANCE USE ONLY

CUSTOMER # _____ AR _____
PROJECT _____ REV _____

Centennial Park Streets

LOCATION	LENGTH
Coach Road: Kraft Ave to Foremost Dr	535
Foremost Drive: 28th St to Charlevoix Dr	1795
Orchard Vista Drive: Foremost Dr to Charlevoix	2225
Charlevoix Drive: 28th St to Tahoe Dr	6670
Lucerne Drive: Tahoe Dr. to 28th St	1320
Tahoe Drive: Charlevoix Dr to Thornhills Dr	3920
Total	16465

KENT COUNTY ROAD COMMISSION
WORK ORDER

DATE 1/20/2021
WORK ORDER _____
PROJECT Kraft Industrial Park Streets
MUNICIPALITY Cascade Township IF OTHER: _____
ROAD TYPE Local
LENGTH 2.53 Miles
TYPE OF WORK Full Depth Mill & Fill
LOCATION Cascade TWP
See Attached Street List
CATEGORY Reconstruction
ACTIVITY 489
PROJECT YEAR 2021
UTILITIES No

BUDGET

WORK TYPE 000030 - Full Depth Mill and Fill
WORK TYPE _____
WORK TYPE _____
WORK TYPE _____
WORK TYPE _____
WORK TYPE _____
WORK TYPE _____

TOTAL \$ 1,150,000

ESTIMATED COST VALID UNTIL Dec-21

FUNDING

% KCRC 50.00% \$ 575,000
% TOWNSHIP 50.00% \$ 575,000
TOTAL \$ 1,150,000

NOTES _____

TOWNSHIP SIGNATURE _____ DATE _____

FINANCE USE ONLY

CUSTOMER # _____ AR _____
PROJECT _____ REV _____

Kraft Industrial Park

LOCATION	LENGTH
Glenwood Hills Parkway: Kraft Avenue to End	2200
Eagle Drive: Kraft to End	1350
33rd Street: Patterson Avenue to Kraft Avenue	5280
Raleigh Drive: 36th Street to 33rd Street	2070
Innovation Court: 33rd Street to End	650
Sysco Court: 36th Street to End	600
Kraft Avenue: 36th Street to End	1210
Total	13360