

**CHARTER TOWNSHIP OF GARFIELD  
TOWN BOARD STUDY SESSION  
September 26, 2017 at 5:00 p.m.**

**AGENDA**

**ORDER OF BUSINESS**

**Call meeting to order**

**Roll call of Board Members**

- 1. Business to come before the Board**
  - a. Discussion regarding the 2018 Township Budget**
- 2. Public Comment**
- 3. Adjournment**

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Lanie McManus, Township Clerk  
Charter Township of Garfield  
3848 Veterans Drive  
Traverse City, MI 49684

The Garfield Township Board will provide necessary reasonable auxiliary aids and services, such as signers for hearing impaired and audio tapes of printed materials being considered at the meeting to individuals with disabilities upon the provision of reasonable advance notice to the Garfield Township Board. Individuals with disabilities requiring auxiliary aids or services should contact the Garfield Township Board by writing or calling Lanie McManus, Clerk, Ph: (231) 941-1620, or TDD #922-4412.



Gourdie-Fraser	
Developer's Escrow Fund	\$ 5,080.00
Utility Receiving Fund	18,692.50
Total	\$ 23,772.50

(Recommend Approval)

- c. Grand Traverse County 2017 Equalization Report (Receive and File)
- d. Change Order No. 2 for Oak Terrace SAD to D.J. McQuestion and Sons, Inc. in the amount of \$ -3.859.52 (Recommend Approval)

**4. Items Removed from the Consent Calendar**

**5. Correspondence**

**6. Reports**

- a. Construction Report
- b. GT Metro Fire Report
- c. County Commissioner's Report
- d. Personnel Committee Report
  - (i) Consideration of hiring Amy Simon for Office Coordinator position
- e. Clerk's Report

**7. Unfinished Business**

- a. Consideration of Resolution No. 2017-23-T, a resolution adopting the 2017 Standard Technical Specifications and Construction Details for the Design and Construction of Water and Sewer Lines for the Charter Township of Garfield
- b. U.S. 31 (Siphon) Trunkline Sanitary Sewer Flow Metering Report

**8. New Business**

**9. Public Comment**

**10. Other Business**

**11. Adjournment**

\_\_\_\_\_  
Lanie McManus, Clerk

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**CHARTER TOWNSHIP OF GARFIELD  
TOWN BOARD MEETING  
September 12, 2017**

Supervisor Chuck Korn called the Town Board Meeting to order on September 12, 2017 at 6:00 p.m. at the Garfield Township Hall, 3848 Veterans Drive, Traverse City, Michigan.

**Pledge of Allegiance**

**Roll Call of Board Members**

Present: Denise Schmuckal, Jeane Blood Law, Steve Duell, Dan Walters, Lanie McManus, Molly Agostinelli and Chuck Korn

**1. Public Comment (6:00)**

None

**2. Review and Approval of the Agenda - Conflict of Interest (6:01)**

Korn restated his conflict with Agenda Item 7b.

*Agostinelli moved and Duell seconded to approve the agenda as presented.*

*Yeas: Agostinelli, Duell, Schmuckal, Blood Law, McManus, Walters, Korn*

*Nays: None*

**3. Consent Calendar (6:0)**

**a. Minutes**

August 22, 2017 Regular Meeting Minutes (Recommend Approval)

**b. Bills**

General Fund	\$252,317.55
(Recommend Approval)	

**c. MTT Update (Receive and File)**

**d. Consideration of Resolution No. 2017-23-T, a resolution adopting the 2017 Standard Technical Specifications and Construction Details for the Design and Construction of Water and Sewer Lines for the Charter Township of Garfield (Recommend Approval)**

**e. 2017 Tax Rate Request – Introduce and schedule for public hearing on September 26, 2017**

**f. Acceptance of North Bay Produce Close-Out Documents (Recommend Approval)**



Walters asked to remove Consent Calendar item d. and place it under agenda item 4.

*Schmuckal moved and Agostinelli seconded to adopt the consent calendar as amended.*

*Yeas: Schmuckal, Agostinelli, Walters, Duell, Blood Law, McManus, Korn*

*Nays: None*

**4. Items Removed from the Consent Calendar (6:04)**

**a. Consideration of Resolution No. 2017-23-T, a resolution adopting the 2017 Standard Technical Specifications and Construction Details for the Design and Construction of Water and Sewer Lines for the Charter Township of Garfield (Recommend Approval)**

Korn explained that the specifications have been in draft form for about a year and deal with construction design and specifications for water and sewer lines. Board members asked to review the specifications and construction details before voting.

*Schmuckal moved and Duell seconded to postpone action on this item until the next board meeting for further review by board members.*

*Yeas: Schmuckal, Duell, McManus, Blood Law, Walters, Agostinelli, Korn*

*Nays: None*

**5. Correspondence (6:08)**

**a. Grand Traverse Conservation District Report for August**

**b. Letter from Fred Curow regarding Heritage Way entry road rebuild**

**c. MTA's Medical Marijuana Facilities Licensing Resources**

Township Attorney Scott Howard gave board members some information regarding the changes to the Medical Marijuana Act and said that this legislation deals with licensing control over the commercial aspect of medical marijuana. The legislation is opt-in legislation meaning if the township chooses to do nothing, medical marijuana facilities will not be allowed, however, Howard said to make it clear, the township can take formal action to make its decision clear. Existing facilities would have to shut down and reapply to the state and township. Board members asked questions and discussed the new legislation and how it would affect the township.

**6. Reports**

**a. Construction Report**

No report

**b. Sheriff's Report (6:42)**

Chris Barsheff said that calls decreased by 98 calls since last month in the non-criminal category yet Garfield still had 41.6% of the total county case load. He added that traffic complaints were up over the summer and the department is

looking into purchasing an additional sign for speed control. He noted that the department has been investigating a fatal accident involving a bicycle. Barsheff said that people are trying to capitalize on the hurricanes and swindling money from people and the public should beware. On October 28<sup>th</sup> from 10-2, the Grand Traverse Mall will host a drug take back day.

**c. County Commissioner's Report (6:45)**

County Commissioner Cheryl Gore Follett said that the new county administrator has been on the job one week. The county recently paid \$5.6 million to MERS. Commissioners will be meeting with an ad hoc committee on animal control and a campaign will be started to encourage people to license their dogs to provide funds for animal control.

**d. Personnel Committee Report (6:49)**

Schmuckal reported that there were 34 applications for the office coordinator position. Eight candidates will be interviewed next Monday. If a candidate is chosen, a special meeting may be needed to approve the new hire.

**e. Treasurer's Report (6:50)**

Blood Law said that there has been a 4.82% increase in state shared revenue over last year.

**d. Clerk's Report (6:50)**

McManus said that her report was submitted in writing and she is excited that the new election equipment will arrive at the end of the month.

**e. Supervisor's Report (6:51)**

Korn reported that the Boardman Lakes Trail will use more of the rail bed and less of a structure over the lake and the funding of a maintenance program for the trail is being discussed. The Great Wolf Lodge plans to add a meeting room and more hotel rooms.

**7. Unfinished Business**

**a. Public Hearing – 2018 Grand Traverse Metro Fire Department Budget – the property tax millage rate proposed to be levied to support the proposed budget will be the subject of this hearing**

The Grand Traverse Metro Board has requested 2.35 mills as they did last year. The two other townships in the authority have approved the millage.

Korn opened the Public Hearing at 6:54pm and seeing no one wishing to speak, the Public Hearing was closed at 6:55.

**b. Consideration of Resolution 2017-21-T, the 2018 Budget Resolution for Grand Traverse Emergency Services Authority Charter Township of Garfield, County of Grand Traverse, Michigan**

*Agostinelli moved and Walters seconded to adopt Resolution 2017-21-T, the 2018 Budget Resolution for Grand Traverse Emergency Services Authority Charter Township of Garfield, County of Grand Traverse, Michigan to levy an assessment of 2.35 mills for the Grand Traverse Emergency Services Authority.*

*Yeas: Agostinelli, Walters, Blood Law, McManus, Schmuckal, Duell, Korn*

*Nays: None*

**c. Public Hearing – Consideration of Resolution 2017-19-T(b), a resolution regarding the Special Assessment District for Reconstruction of Heritage Way Entry Road (6:56)**

Chair Korn excused himself for this item and Agostinelli briefed board members on the proposed road resurfacing SAD. Board members asked questions regarding costs of the project. Jim Cook, Grand Traverse County Road Commission Manager said the estimate for the project is about \$86,560. He reiterated that standards need to be met in terms of roads. The township paid \$1,000 for the estimate and will be considered a deposit on the project.

Agostinelli opened the Public Hearing at 7:03 pm.

*Josh Lovendusky* of Heritage Park Place said the process has been done very well and is in favor of the SAD.

*Jeff Heron* of Heritage Way asked about the estimate and Jim Cook explained the bid process and if bids came in too high, another Public Hearing would have to be held.

*AJ Saddle* expressed reservations with the proposed SAD.

*Jennifer Michelson* said she is in favor of the proposed SAD.

Agostinelli closed the Public Hearing at 7:14pm.

*Walters moved to adopt Resolution 2017-19-T(b), a resolution regarding the Special Assessment District for Reconstruction of Heritage Way Entry Road. Duell seconded the motion.*

*Yeas: Walters, Duell, McManus, Agostiinelli, Blood Law*

*Nays: Schmuckal*

**d. PD 2017-90 – Consideration of Resolution 2017-20-T, a resolution adopting Amendment No. 8 to Ordinance No. 68 rezoning properties at the intersection of LaFranier Road and Hammond Road from A – Agricultural to R-3 Multiple Family Residential (7:16)**

*Schmuckal moved and Duell seconded to adopt Resolution 2017-20-T, a resolution adopting Amendment No. 8 to Ordinance No. 68 rezoning*

*properties at the intersection of LaFranier Road and Hammond Road from A – Agricultural to R-3 Multiple Family Residential.*

**8. New Business**

**a. Consideration of Resolution 2017-22-T, a budget amendment to the Garfield Township 2017 Maintenance & Operations budget for the current year**

Korn said this item is related to the settlement costs over negotiations for the wastewater treatment percentage. The retroactive flow was adjusted retroactively covering several years. This is a one time payment to come out of the receiving fund and is a budget adjustment of \$349,283.00 which includes \$5,593 for Blair Township's share.

*Agostinelli moved and Schmuckal supported to adopt Resolution 2017-22-T, a budget amendment to the Garfield Township 2017 Maintenance & Operations budget for the current year.*

*Yeas: Agosintelli, Schmuckal, Duell, Walters, Blood Law, McManus, Korn  
Nays: None*

**b. Consideration of a request to add delinquent Special Assessments to the Winter Tax Roll (7:21)**

Blood Law said that every year, the treasurer must direct the Supervisor to add the delinquent Special Assessments to the winter tax roll.

*Duell moved and Walters seconded to direct the Township Supervisor to add the delinquent Special Assessments to the winter tax roll.*

*Yeas: Duell, Walters, Schmuckal, Agostinelli, Blood Law, McManus, Korn  
Nays: None*

**c. Board Appointment Policy (7:23)**

Korn presented the new Board Appointment Policy under which any board or commission members can indicate their preferences for the upcoming year. All board and commission members should be asked to fill out the attached form to determine any vacancies. Board members discussed conflicts of interest and Township Attorney Scott Howard answered questions pertaining to the subject.

**9. Public Comment: (7:58)**

None

**10. Other Business (7:58)**

A budget workshop was set for 5:00pm on September 26<sup>th</sup>.

**11. Adjournment**

*Korn adjourned the meeting at 8:02pm.*

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Chuck Korn, Supervisor  
Charter Township of Garfield  
3848 Veterans Drive  
Traverse City, MI 49684

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Lanie McManus, Clerk  
Charter Township of Garfield  
3848 Veterans Drive  
Traverse City, MI 49684

CHECK DISBURSEMENT REPORT FOR QUARTER TOWNSHIP OF GARFIELD  
 CHECK DATE FROM 09/07 - 09/19/2017  
 Banks

Check Date	Bank	Check #	Payee	Description	GL #	Amount
09/07/2017	GEN	36277	FIFTH THIRD BANK	EDUCATION & TRAINING	101-171-960.000	250.00
09/07/2017	GEN	36278	FIFTH THIRD BANK	ADVERTISING	101-101-901.000	70.00
		36278		ADVERTISING	101-171-901.000	100.82
		36278		DUES & PUBLICATIONS	101-171-965.000	32.27
						<u>203.09</u>
09/07/2017	GEN	36279	AMERICAN WASTE	MAINTENANCE - MISC, EQUIP	308-000-935.000	266.98
09/07/2017	GEN	36280	AMERICAN WASTE	RUBBISH REMOVAL	101-265-935.604	79.00
09/07/2017	GEN	36281	AMY DEHAAN	MILEAGE - ASSESSOR	101-171-860.201	21.03
09/07/2017	GEN	36282	BRENDA BURROWS	CONTRACTED AND OTHER SERVICES	101-101-805.000	240.00
09/07/2017	GEN	36283	CITY OF TRAVERSE CITY		101-448-920.005	28.34
09/07/2017	GEN	36284	CONSUMERS ENERGY		101-448-920.005	101.75
09/07/2017	GEN	36285	CONSUMERS ENERGY		101-000-084.861	1,432.00
		36285			101-448-920.005	5,181.94
						<u>6,613.94</u>
09/07/2017	GEN	36286	DTE ENERGY		101-265-920.601	198.54
09/07/2017	GEN	36287	DTE ENERGY		101-265-920.601	44.22
09/07/2017	GEN	36288	GRAND TRAVERSE COUNTY DPW		101-265-920.602	780.30
09/07/2017	GEN	36289	GRAND TRAVERSE COUNTY DPW	MAINTENANCE - MISC, EQUIP	308-000-935.000	11.77
09/07/2017	GEN	36290	JEANE BLOOD LAW	MILEAGE - TREASURER	101-253-860.500	184.04
09/07/2017	GEN	36291	KLM LANDSCAPE	LAWN MAINTENANCE	101-265-935.602	631.25
09/07/2017	GEN	36292	KLM LANDSCAPE	COM. PROM. - SILVER LAKE PARK	308-000-880.001	2,175.00
09/07/2017	GEN	36293	LAND INFORMATION ACCESS ASSOC	COM. PROM. - TV BOARD	101-747-880.017	90.00
09/07/2017	GEN	36294	NORTHERN OFFICE EQUIP	SUPPLIES - COPIER MAINTENANCE	101-101-726.002	433.43
09/07/2017	GEN	36295	OHEARN PEST CONTROL LLC	MAINTENANCE-OTHER	101-265-935.608	500.00
09/07/2017	GEN	36296	RUBY CLEANING SERVICE	MAINTENANCE - MISC, EQUIP	308-000-935.000	225.00
09/07/2017	GEN	36297	RUBY CLEANING SERVICE	CLEANING SERVICE	101-265-935.603	1,150.00
09/07/2017	GEN	36298	SPECTRUM BUSINESS		101-258-935.016	75.00
09/07/2017	GEN	36299	STAPLES	SUPPLIES	101-101-726.000	93.67
09/07/2017	GEN	36300	STATE OF MICHIGAN (P)	STATE TAXES PAYABLE	101-000-228.000	3,513.88

**3. b.**



Check Date	Bank	Check #	Payee	Description	GL #	Amount
09/07/2017	GEN	36301	TRAVERSE CITY CHAMBER	DUES & PUBLICATIONS -TOWNBOAR	101-101-965.101	750.00
09/14/2017	GEN	36302	BLUE CROSS BLUE SHIELD OF MICHIGAN	INSURANCE - EMPLOYEE HEALTH	101-851-873.030	14,614.69
09/14/2017	GEN	36303	BRENDA BURROWS	CONTRACTED AND OTHER SERVICES	101-101-805.000	180.00
09/14/2017	GEN	36304	CITY OF TRAVERSE CITY	DUE FROM #861 STREET LIGHTS	101-000-084.861	182.07
		36304			101-448-920.005	484.71
						<u>666.78</u>
09/14/2017	GEN	36305	GARFIELD CHARTER TOWNSHIP	HSA (FORMERLY FLEX)	101-000-237.000	155.00
09/14/2017	GEN	36306	GRID4 COMMUNICATIONS, INC.	TELEPHONE	101-265-850.000	1,050.25
09/14/2017	GEN	36307	NORTHERN OFFICE EQUIP	CAPITAL OUTLAY - COMPUTER	101-900-970.003	1,601.00
09/14/2017	GEN	36308	NORTHWOODS BUSINESS FORMS	SUPPLIES	101-171-726.000	32.99
09/14/2017	GEN	36309	OLSON, BZDOK, & HOWARD	LEGAL SERVICES	101-410-801.000	87.00
09/14/2017	GEN	36310	SONDEE, RACINE, DOREN	LEGAL SERVICES - TOWNBOARD	101-101-801.002	80.00
09/14/2017	GEN	36311	SURFACES, INC.	CAPITAL OUTLAY - TOWNSHIP HAL	101-900-970.002	58,696.00
09/14/2017	GEN	36312	TRAVERSE CITY RECORD EAGLE	ADVERTISING	101-101-901.000	474.50
		36312			101-410-901.000	242.00
						<u>716.50</u>
09/14/2017	GEN	36313	UNITED WAY	UNITED WAY	101-000-238.000	90.00
09/14/2017	GEN	36314	VERIZON	TELEPHONE	101-265-850.000	221.28
09/14/2017	GEN	36315	VOYA INSTITUTIONAL TRUST COMPANY	DEFERRED COMP	101-000-227.000	2,150.00
09/19/2017	GEN	36316	AFLAC	AFLAC	101-000-227.001	591.98
09/19/2017	GEN	36317	CITY OF TRAVERSE CITY	STREET LIGHTS TOWNSHIP	101-448-920.005	10.61
09/19/2017	GEN	36318	FIFTH THIRD BANK	EDUCATION & TRAINING	101-101-960.000	17.75
		36318		EDUCATION & TRAINING	101-253-960.000	13.51
						<u>31.26</u>
09/19/2017	GEN	36319	ICC	DUES & PUBLICATIONS	101-371-965.000	98.00
09/19/2017	GEN	36320	NORTHERN OFFICE EQUIP	SUPPLIES - COPIER MAINTENANCE	101-101-726.002	125.56
09/19/2017	GEN	36321	TEAMSTERS LOCAL 214	UNION DUES	101-000-239.000	41.00
09/19/2017	GEN	36322	GRAND TRAVERSE COUNTY	COM. PROM. - KIDS CREEK PARK	308-000-880.016	400.00

TOTAL - ALL FUNDS 100,300.13  
 TOTAL OF 46 CHECKS

Check Date      Bank      Check #      Payee      Description      GL #      Amount

--- GL TOTALS ---

101-000-084.861			DUE FROM #861 STREET LIGHTS			1,614.07
101-000-227.000			DEFERRED COMP			2,150.00
101-000-227.001			AFLAC			591.98
101-000-228.000			STATE TAXES PAYABLE			3,513.88
101-000-237.000			HSA (FORMERLY FLEX)			155.00
101-000-238.000			UNITED WAY			90.00
101-000-239.000			UNION DUES			41.00
101-101-726.000			SUPPLIES			93.67
101-101-726.002			SUPPLIES - COPIER MAINTENANCE			558.99
101-101-801.002			LEGAL SERVICES - TOWNBOARD			80.00
101-101-805.000			CONTRACTED AND OTHER SERVICES			420.00
101-101-901.000			ADVERTISING			544.50
101-101-960.000			EDUCATION & TRAINING			17.75
101-101-965.101			DUES & PUBLICATIONS -TOWNBOAR			750.00
101-171-726.000			SUPPLIES			32.99
101-171-860.201			MILEAGE - ASSESSOR			21.03
101-171-901.000			ADVERTISING			100.82
101-171-960.000			EDUCATION & TRAINING			250.00
101-171-965.000			DUES & PUBLICATIONS			32.27
101-253-860.500			MILEAGE - TREASURER			184.04
101-253-960.000			EDUCATION & TRAINING			13.51
101-258-935.016			COMPUTER NETWORK			75.00
101-265-850.000			TELEPHONE			1,271.53
101-265-920.601			HEATING / GAS			242.76
101-265-920.602			WATER / SEWER			780.30
101-265-935.602			LAWN MAINTENANCE			631.25
101-265-935.603			CLEANING SERVICE			1,150.00
101-265-935.604			RUBBISH REMOVAL			79.00
101-265-935.608			MAINTENANCE-OTHER			500.00
101-371-965.000			DUES & PUBLICATIONS			98.00
101-410-801.000			LEGAL SERVICES			87.00
101-410-901.000			ADVERTISING			242.00
101-448-920.005			STREET LIGHTS TOWNSHIP			5,807.35
101-747-880.017			COM. PROM. - TV BOARD			90.00
101-851-873.030			INSURANCE - EMPLOYEE HEALTH			14,614.69
101-900-970.002			CAPITAL OUTLAY - TOWNSHIP HAL			58,696.00
101-900-970.003			CAPITAL OUTLAY - COMPUTER			1,601.00
308-000-880.001			COM. PROM. - SILVER LAKE PARK			2,175.00
308-000-880.016			COM. PROM. - KIDS CREEK PARK			400.00
308-000-935.000			MAINTENANCE - MISC, EQUIP			503.75
			TOTAL			100,300.13





September 20, 2017

**SUMMARY OF AUGUST 13TH THROUGH SEPTEMBER 16, 2017  
BILLINGS FOR APPROVAL FROM GARFIELD TOWNSHIP**

**I. Developer's Escrow Fund**

1. Engineering services for plan review, Part 41 permit assistance and construction services. <b>North Bay Produce Campus Development - Sewer Extension</b> Project# 16219 Invoice No. 1621905	1,250.00
2. Engineering consulting services for storm water site plan review <b>The Ridges at 45, Phase 3, Escrow #214.842</b> Project# 17029C Invoice No. 17029332	112.50
3. Engineering consulting services for private road plan review and final approval letter <b>2900 / 2914 Cass Road (Contractors Drive), Escrow #214.803</b> Project# 17029C Invoice No. 17029329	600.00
4. Engineering consulting services for preliminary storm water review and approval <b>Traverse City Cold Storage, Escrow #214.837</b> Project# 17029C Invoice No. 17029330	855.00
5. Engineering consulting services for storm water site plan review and final approval letter <b>Stone Real Estate - MMC Parking Lot, Escrow #214.817</b> Project# 17029C Invoice No. 17029336	430.00
6. Engineering consulting services for storm water site plan review <b>Villa at Traverse Point, Escrow #214.834</b> Project# 17029C Invoice No. 17029337	90.00
7. Engineering services for storm water review and final approval letter. <b>Hammond Industrial D (1414 Trade Center), Escrow #215.808</b> Project# 17029C Invoice No. 17029334	395.00
8. Engineering services for storm water review and final approval letter. <b>Serra Auto - Toyota, Escrow #214.874</b> Project# 17029C Invoice No. 17029331	772.50
9. Engineering services for storm water, private road review and final approval letter. <b>4822 Cedar Run Road (January Drive) Escrow #214.854</b> Project# 17029C Invoice No. 17029333	575.00
Total	5,080.00

**II. Utility Receiving Fund**

1. Engineering services for final design, bidding, construction services. <b>NW Service District Water System Improvements (Water Storage Tank)</b> Project# 16037 Invoice No. 1603709	16,550.00
2. Engineering consulting services. <b>Cass Road Drainage District Improvements</b> Project# 17029C Invoice No. 17029328	250.00
3. Engineering consulting services for summary memo and bullet items. <b>Lafranier Tank Upgrades</b> Project# 17029C Invoice No. 17029339	250.00
4. Engineering consulting services for sanitary flow monitoring and analysis <b>SAW Grant - US 31</b> Project# 17029C Invoice No. 17029335	1,225.00
5. Engineering services for research, cost estimate for water/sewer extension <b>Eaglehurst Drive &amp; Heritage Estates (entrance only)</b> Project# 17029C Invoice No. 17029338	417.50
Total	18,692.50
<b>GRAND TOTAL</b>	<b>\$23,772.50</b>

**Invoice**



Gourdie-Fraser, Inc.  
123 West Front Street  
Traverse City, MI 49684  
Phone: 231-946-5874, Fax: 231-946-9634  
VISA/MASTERCARD Accepted, Due Upon Receipt  
A/R email: melanic@gfa.tc

MR CHUCK KORN  
CHARTER TWP OF GARFIELD  
3848 VETERANS DR  
TRAVERSE CITY, MI 49684

September 20, 2017  
Project No: 16219  
Invoice No: 1621905

Re: North Bay Produce Campus Development - Sewer Extension

Services Performed: Engineering services plans review and Part 41 permit assistance. Construction observation and administration. Project turnover to review drawing, reports, close out documents and turnover documentation to township as detailed in letter dated July 1, 2016 to Garfield Township Board of Trustees.

Project Location: Traverse City, Garfield Township, Grand Traverse County, Michigan.

Professional Services from May 19, 2017 to September 16, 2017  
Fee

Billing Phase	Fee	Percent Complete	Earned	Previous Fee Billing	Current Fee Billing
Engineering Review	1,500.00	100.00	1,500.00	1,500.00	0.00
Construction Observation/Inspection	3,500.00	100.00	3,500.00	3,500.00	0.00
Construction Administration	750.00	100.00	750.00	0.00	750.00
Close Out Services	500.00	100.00	500.00	0.00	500.00
<b>Total Fee</b>	<b>6,250.00</b>		<b>6,250.00</b>	<b>5,000.00</b>	<b>1,250.00</b>
		<b>Total Fee</b>			<b>1,250.00</b>
				<b>Total this Invoice</b>	<b>\$1,250.00</b>

**Invoice**



Gourdie-Fraser, Inc.  
123 West Front Street  
Traverse City, MI 49684  
Phone: 231-946-5874, Fax: 231-946-9634  
VISA/MASTERCARD Accepted, Due Upon Receipt  
A/R email: melanie@gfa.tc

MR CHUCK KORN  
CHARTER TWP OF GARFIELD  
3848 VETERANS DR  
TRAVERSE CITY, MI 49684

September 20, 2017  
Project No: 17029C  
Invoice No: 17029332

Re: Ridges @ 45 - Phase 3, Escrow #214.842

Services Performed: Engineering services for storm water review and final approval letter.

Professional Services from August 13, 2017 to September 16, 2017

**Professional Personnel**

	<b>Hours</b>	<b>Amount</b>
Design Engineer	1.25	
Totals	1.25	
<b>Total Labor</b>		<b>112.50</b>
<b>Total this Invoice</b>		<b>\$112.50</b>

**Invoice**



Gourdie-Fraser, Inc.  
123 West Front Street  
Traverse City, MI 49684  
Phone: 231-946-5874, Fax: 231-946-9634  
VISA/MASTERCARD Accepted, Due Upon Receipt  
A/R email: mclanie@gfa.tc

MR CHUCK KORN  
CHARTER TWP OF GARFIELD  
3848 VETERANS DR  
TRAVERSE CITY, MI 49684

September 20, 2017  
Project No: 17029C  
Invoice No: 17029329

Re: 2900 / 2914 Cass Road (Contractors Drive) Escrow #214.803

Services Performed: Engineering services for private road review and final approval letter.

Professional Services from August 13, 2017 to September 16, 2017

Professional Personnel

	Hours	Amount	
Sr. Project Manager	3.00		
Design Engineer	2.50		
Totals	5.50		
<b>Total Labor</b>		<b>600.00</b>	
		<b>Total this Invoice</b>	<b>\$600.00</b>

**Invoice**



Gourdie-Fraser, Inc.  
123 West Front Street  
Traverse City, MI 49684  
Phone: 231-946-5874, Fax: 231-946-9634  
VISA/MASTERCARD Accepted, Due Upon Receipt  
A/R email: melanie@gfa.tc

MR CHUCK KORN  
CHARTER TWP OF GARFIELD  
3848 VETERANS DR  
TRAVERSE CITY, MI 49684

September 20, 2017  
Project No: 17029C  
Invoice No: 17029330

Re Traverse City Cold Storage, Escrow #214.837

Services Performed: Engineering services for preliminary storm water review, concept and design change. Coordination with owners representative and township. Final review and approval.

Professional Services from August 13, 2017 to September 16, 2017

**Professional Personnel**

	<b>Hours</b>	<b>Amount</b>	
Design Engineer	9.50		
Totals	9.50		
<b>Total Labor</b>		<b>855.00</b>	
		<b>Total this Invoice</b>	<b>\$855.00</b>



Invoice



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MR CHUCK KORN  
CHARTER TWP OF GARFIELD  
3848 VETERANS DR  
TRAVERSE CITY, MI 49684

September 20, 2017  
Project No: 17029C  
Invoice No: 17029336

Re: Stone Real Estate - MMC Parking Lot, Escrow #214.817

Services Performed: Engineering services for second storm water review and final approval letter.

Professional Services from August 13, 2017 to September 16, 2017

**Professional Personnel**

	Hours	Amount
Sr. Project Manager	2.00	
Design Engineer	2.00	
Totals	4.00	
Total Labor		430.00
<b>Total this Invoice</b>		<b>\$430.00</b>

Invoice



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MR CHUCK KORN  
CHARTER TWP OF GARFIELD  
3848 VETERANS DR  
TRAVERSE CITY, MI 49684

September 20, 2017  
Project No 17029C  
Invoice No: 17029337

Re: Villa @ Traverse Point, Escrow #214.834

Services Performed: Engineering services for second storm water review and final approval letter.

Professional Services from August 13, 2017 to September 16, 2017

**Professional Personnel**

	Hours	Amount
Design Engineer	1.00	
Totals	1.00	
<b>Total Labor</b>		<b>90.00</b>
<b>Total this Invoice</b>		<b>\$90.00</b>

**Invoice**



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MR CHUCK KORN  
CHARTER TWP OF GARFIELD  
3848 VETERANS DR  
TRAVERSE CITY, MI 49684

September 20, 2017

Project No: 17029C

Invoice No: 17029334

Re: Hammond Industrial D (1414 Trade Center), Escrow #215.808

Services Performed: Engineering services for storm water review and final approval letter.

Professional Services from August 13, 2017 to September 16, 2017

Professional Personnel

	Hours	Amount	
Sr. Project Manager	1.00		
Design Engineer	3.00		
Totals	4.00		
Total Labor		395.00	
		Total this Invoice	\$395.00



**Invoice**



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MR CHUCK KORN  
CHARTER TWP OF GARFIELD  
3848 VETERANS DR  
TRAVERSE CITY, MI 49684

September 20, 2017  
Project No: 17029C  
Invoice No: 17029331

Re: Serra Auto – Toyota, Escrow #214.874

Services Performed: Engineering services for storm water review and final approval letter.

Professional Services from August 13, 2017 to September 16, 2017

**Professional Personnel**

	<b>Hours</b>	<b>Amount</b>	
Sr. Project Manager	1.50		
Design Engineer	6.50		
Totals	8.00		
<b>Total Labor</b>		<b>772.50</b>	
		<b>Total this Invoice</b>	<b>\$772.50</b>

Invoice



Gourdie-Fraser, Inc.  
123 West Front Street  
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Phone: 231-946-5874, Fax: 231-946-9634  
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MR CHUCK KORN  
CHARTER TWP OF GARFIELD  
3848 VETERANS DR  
TRAVERSE CITY, MI 49684

September 20, 2017  
Project No: 17029C  
Invoice No: 17029333

Re: 4822 Cedar Run Road (January Drive), Escrow #214.854

Services Performed: Engineering services for storm water and private drive review and final approval letter.

Professional Services from August 13, 2017 to September 16, 2017

Professional Personnel

	Hours	Amount	
Sr. Project Manager	1.00		
Design Engineer	5.00		
Totals	6.00		
Total Labor		575.00	
		Total this Invoice	\$575.00



**Invoice**

MR CHUCK KORN  
CHARTER TWP OF GARFIELD  
3848 VETERANS DR  
TRAVERSE CITY, MI 49684

Gourdie-Fraser, Inc.  
123 West Front Street  
Traverse City, MI 49684  
Phone: 231-946-5874, Fax: 231-946-9634  
A/R email: melanie@gfa.tc

September 20, 2017  
Project No: 16037  
Invoice No: 1603709

Re: NW Service District Water System Improvements

Services Performed: Engineering and construction services for final design, bidding, construction staking, observation and administration, close out and record drawings for watermain extension.

Project Location: Harris Road and Cedar Run Road, Garfield Township, Grand Traverse County, Michigan.

Professional Services from August 13, 2017 to September 16, 2017

**Fee**

Billing Phase	Fee	Percent Complete	Earned	Previous Fee Billing	Current Fee Billing
WATER STORAGE TANK	0.00	0.00	0.00	0.00	0.00
Research	15,000.00	100.00	15,000.00	15,000.00	0.00
Engineering Design	25,000.00	100.00	25,000.00	25,000.00	0.00
Topographic Survey	5,000.00	100.00	5,000.00	5,000.00	0.00
Bidding	5,000.00	100.00	5,000.00	5,000.00	0.00
Construction Staking	5,000.00	100.00	5,000.00	2,500.00	2,500.00
Construction Administration	10,000.00	65.00	6,500.00	5,000.00	1,500.00
Construction Inspection	25,000.00	15.00	3,750.00	0.00	3,750.00
Record Drawings/Close Out	3,500.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00
WATERMAIN EXTENSIONS	0.00	0.00	0.00	0.00	0.00
Prop. Acquisition/Utility Research	10,000.00	85.00	8,500.00	8,500.00	0.00
Final Design/Permitting	50,000.00	72.00	36,000.00	32,500.00	3,500.00
Topographic Survey	15,000.00	52.00	7,800.00	7,500.00	300.00
Bidding	6,500.00	2.00	130.00	130.00	0.00
Construction Staking	20,000.00	0.00	0.00	0.00	0.00
Construction Administration	25,000.00	0.00	0.00	0.00	0.00
Construction Inspection	120,000.00	0.00	0.00	0.00	0.00
Record Drawings/Close Out	9,500.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00
INFRASTRUCTURE UPGRADE/BOOSTER STATION	0.00	0.00	0.00	0.00	0.00
Research	25,000.00	50.00	12,500.00	7,500.00	5,000.00
Final Design/Permitting	69,100.00	10.00	6,910.00	6,910.00	0.00
Topographic Survey	15,000.00	0.00	0.00	0.00	0.00
Bidding	6,850.00	0.00	0.00	0.00	0.00
Construction Staking	5,000.00	0.00	0.00	0.00	0.00
Construction Administration	30,000.00	0.00	0.00	0.00	0.00
Construction Inspection	20,350.00	0.00	0.00	0.00	0.00
Record Drawings/Close Out	6,500.00	0.00	0.00	0.00	0.00
Total Fee	527,300.00		137,090.00	120,540.00	16,550.00
		<b>Total Fee</b>			<b>16,550.00</b>
				<b>Total this Invoice</b>	<b>\$16,550.00</b>

**Invoice**



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CHARTER TWP OF GARFIELD  
3848 VETERANS DR  
TRAVERSE CITY, MI 49684

September 20, 2017  
Project No: 17029C  
Invoice No: 17029328

Re: Cass Road Drainage District Improvement Project

Services Performed: Engineering services for status update and meeting attendance.

Professional Services from August 13, 2017 to September 16, 2017

**Professional Personnel**

	<b>Hours</b>	<b>Amount</b>
Sr. Project Manager	2.00	
Totals	2.00	
<b>Total Labor</b>		<b>250.00</b>
<b>Total this Invoice</b>		<b>\$250.00</b>

**Invoice**



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MR CHUCK KORN  
CHARTER TWP OF GARFIELD  
3848 VETERANS DR  
TRAVERSE CITY, MI 49684

September 20, 2017  
Project No: 17029C  
Invoice No: 17029339

Re: Lafranier Tank Upgrades

Services Performed: Engineering services for preparation of brief summary memo and bullet items for discussion topics related to the project including design and cost considerations and need.

Professional Services from August 13, 2017 to September 16, 2017

**Professional Personnel**

	Hours	Amount
Sr. Project Manager	2.00	
Totals	2.00	
Total Labor		250.00
Total this Invoice		\$250.00

**Invoice**



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MR CHUCK KORN  
 CHARTER TWP OF GARFIELD  
 3848 VETERANS DR  
 TRAVERSE CITY, MI 49684

September 20, 2017  
 Project No: 17029C  
 Invoice No: 17029335

Re: SAW Grant - US 31 Sanitary Flow Monitoring & Analysis (Siphon)

Services Performed: Flow monitoring of 15-inch sanitary sewer upstream of siphon for a period of 6 weeks in spring to account for wet weather and potential I&I. Evaluation of flow data to determine actual peak and average flow for service area. Evaluate impacts to system and update hydraulic model with actual flow data including available remaining capacity. Establish a capitol improvement plan including 2 to 3 options and associated benefits and costs. Prepare information in a report for presentation to board.

Professional Services from August 13, 2017 to September 16, 2017  
 Fee

Billing Phase	Fee	Percent Complete	Earned	Previous Fee Billing	Current Fee Billing
O&M, Equip. Rental, Field Research	8,500.00	100.00	8,500.00	8,500.00	0.00
Flow Evaluation, Model Update, Analysis	3,500.00	100.00	3,500.00	2,275.00	1,225.00
Total Fee	12,000.00		12,000.00	10,775.00	1,225.00
		<b>Total Fee</b>			<b>1,225.00</b>
				<b>Total this Invoice</b>	<b>\$1,225.00</b>



**Invoice**



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MR CHUCK KORN  
CHARTER TWP OF GARFIELD  
3848 VETERANS DR  
TRAVERSE CITY, MI 49684

September 20, 2017  
Project No: 17029C  
Invoice No: 17029338

Re: General Utilities

Services Performed: Engineering services for research and cost estimated to extend water and sewer along Eaglehurst Drive and Heritage Estates (entrance only).

Professional Services from August 13, 2017 to September 16, 2017

**Professional Personnel**

	<b>Hours</b>	<b>Amount</b>
Sr. Project Manager	1.00	
Design Engineer	3.25	
Totals	4.25	
<b>Total Labor</b>		<b>417.50</b>
<b>Total this Invoice</b>		<b>\$417.50</b>

# GRAND TRAVERSE COUNTY 2017 EQUALIZATION REPORT







## GRAND TRAVERSE COUNTY EQUALIZATION DEPARTMENT

400 BOARDMAN AVENUE STE 103  
TRAVERSE CITY, MI 49684-2577  
Phone: 231.922.4772  
Fax: 231.922.4447  
[www.co.grand-traverse.mi.us](http://www.co.grand-traverse.mi.us)

April 11, 2017

Honorable Board of Commissioners  
Grand Traverse County  
Governmental Center  
400 Boardman Ave  
Traverse City, MI 49684

Ladies and Gentlemen:

The Grand Traverse County Equalization Department has prepared this equalization report as authorized by the County Board of Commissioners. I recommend that the Grand Traverse County Board of Commissioners adopt the proposed County equalized values in this report.

This report is a result of an equalization study in every class of real property and of the total personal property in all fourteen (14) assessing units of Grand Traverse County.

This report does not embrace any property taxed under P.A. 77 of 1951; P.A. 68 of 1963; P.A. 199 of 1974; P.A. 385 of 1994; P.A. 224 of 1995; P.A. 147 of 1992 or Section 5 of Article IX of the Constitution of the State of Michigan.

All County equalized values are subject to review and change by the Michigan State Tax Commission until the fourth Monday in May, when the final order is issued.

The resolution adopting the 2017 Grand Traverse County Equalization Report is located on the pages following.

Respectfully submitted,

James D. Baker, MMAO  
Director  
Grand Traverse County Equalization Department

# Equalization 2017

April 11, 2017

By Grand Traverse County Board of Commissioners:

WHEREAS, The Grand Traverse County Equalization Department has established the various valuations of each of the units of government of Grand Traverse County, and

WHEREAS, each of the thirteen (13) townships, two (2) villages and one (1) City have had the opportunity to review the equalization factors with the Equalization Department, and

WHEREAS, this Board of Commissioners feels that these valuations are in order,

NOW, THEREFORE, BE IT RESOLVED, that the Grand Traverse County Board of Commissioners has adopted the 2017 equalized valuations for each city, village, and township recommended by the Grand Traverse County Equalization Director, as contained in this report, pursuant to Sec. 211.34 MCL 1948, as amended.

## ACKNOWLEDGEMENTS

In facilitating the completion of a project of this nature and magnitude, the support of a number of organizations and individuals was absolutely necessary, and I am grateful to all the participants.

The burden of maintaining a county-wide property information network while meeting impending statutory deadlines was carried out extraordinarily well by the staff of the Grand Traverse County Equalization Department. I would like to thank the Grand Traverse County Board of Commissioners for providing the Department with the resources to accomplish these duties. Also, I would like to express my gratitude to the Assessors of the cities, townships, and villages of Grand Traverse County for their prompt assistance in the assembling and reporting of data for this analysis.

## FOREWORD

The State Constitution commands the legislature to establish a system of property taxation and a system of equalization of assessments. The rationale underlying this approach is that the cost of municipal services, such as police and fire protection, and education should be borne through taxation imposed upon the general public. Taxation is required to be uniform and fair to all taxpayers. County equalization is required to ensure that property taxes are uniform and fair within each County and within the State.

# GRAND TRAVERSE COUNTY EQUALIZATION DEPARTMENT

## REPORTS TO BOARD OF COMMISSIONERS

Carol Crawford – Chair  
Ron Clous – Vice-Chair

Addison “Sonny” Wheelock  
Dr. Bob Johnson  
Dr. Dan Lathrop  
Cheryl Gore Follette  
Tom Mair

## ADMINISTRATOR

Administrator - Thomas Menzel  
Deputy Administrator - Jennifer DeHaan

## DEPARTMENT OF EQUALIZATION

James D. Baker – Director, MMAO (4)  
Warren Parrish – Deputy Director, MAAO (3)  
Chris Fieldhouse – Appraiser II, MCAO  
Joel Bremer - Appraiser II, MCAO  
Matthew Town - Appraiser I, MCAT

Susan Karakos – Senior Appraiser, MAAO (3)  
Russ Casselman – Appraiser II, MCAO

Mike Steffes - GIS Analyst  
Rob Herman - GIS Technician, MCAT

# SUPERVISORS, ASSESSORS, PRESIDENTS, & MANAGERS

## GRAND TRAVERSE COUNTY 2017

<u>LOCAL UNIT</u>	<u>SUPERVISOR</u>	<u>ASSESSOR</u>
Acme Township (01)	Jay B. Zollinger	Dawn Kuhns
Blair Township (02)	Nicole Blonshine	Wendy Witkop
East Bay Township (03)	Beth Friend	James D. Baker
Fife Lake (04)	Linda Forwerck	Dawn Kuhns
Garfield Charter Township (05)	Chuck Korn	Amy DeHaan
Grant Township (06)	Douglas E. Moyer	Michelle Englebrecht
Green Lake Township (07)	Marvin D. Radtke	William Muha
Long Lake Township (08)	Karen J. Rosa	Angela Friske
Mayfield Township (09)	John E. Ockert	David Brown
Paradise Township (10)	Rob Lajko	Dawn Kuhns
Peninsula Township (11)	Rob Manigold	Sally Akerley
Union Township (12)	Doug Mansfield	Debra Johnson
Whitewater Township (13)	Ron Popp	Dawn Kuhns
	<u>PRESIDENT</u>	
Fife Lake Village (41)	David C. McGough	Dawn Kuhns
Kingsley Village (42)	Rodney Bogart	Dawn Kuhns
	<u>MANAGER</u>	
City of Traverse City (51)	Marty Colburn	Polly Cairns

**2017 GRAND TRAVERSE COUNTY - ALL AD VALOREM PROPERTY**

TOWNSHIPS & CITY	Parcel Count 2016	Parcel Count 2017	Parcel Count % Change	CEV 2016	CEV 2017	County Equalized % Change	TAXABLE 2016	TAXABLE 2017	Taxable % Change
Acme	3,494	3,483	-0.31%	\$395,365,400	\$405,047,600	2.45%	\$323,318,171	\$331,302,712	2.47%
Blair	4,588	4,598	0.22%	\$306,176,085	\$323,377,950	5.62%	\$257,385,537	\$265,875,290	3.30%
East Bay	8,217	8,226	0.11%	\$632,969,800	\$661,622,400	4.53%	\$525,222,076	\$541,699,402	3.14%
Fife Lake	1,303	1,301	-0.15%	\$66,137,500	\$70,688,200	6.88%	\$50,967,921	\$52,291,829	2.60%
Garfield	8,292	8,095	-2.38%	\$983,362,600	\$1,022,599,100	3.99%	\$841,651,950	\$866,712,296	2.98%
Grant	1,099	1,099	0.00%	\$69,274,668	\$73,774,251	6.50%	\$51,354,491	\$53,058,162	3.32%
Green Lake	4,009	4,015	0.15%	\$311,903,300	\$332,663,100	6.66%	\$265,547,623	\$275,352,377	3.69%
Long Lake	5,012	5,014	0.04%	\$560,776,750	\$596,824,500	6.43%	\$460,754,761	\$479,931,652	4.16%
Mayfield	1,090	1,094	0.37%	\$71,292,810	\$75,151,100	5.41%	\$56,148,780	\$57,103,647	1.70%
Paradise	2,567	2,580	0.51%	\$142,111,900	\$150,857,500	6.15%	\$119,395,352	\$123,919,343	3.79%
Peninsula	4,208	4,216	0.19%	\$855,176,200	\$894,743,800	4.63%	\$651,129,296	\$674,055,682	3.52%
Union	437	436	-0.23%	\$27,969,200	\$28,547,100	2.07%	\$23,484,746	\$24,332,755	3.61%
Whitewater	2,003	2,011	0.40%	\$244,420,200	\$255,020,300	4.34%	\$190,168,489	\$194,509,181	2.28%
Traverse City	8,708	8,781	0.84%	\$1,094,436,100	\$1,186,260,675	8.39%	\$881,758,060	\$928,294,158	5.28%
<b>TOTALS</b>	<b>55,027</b>	<b>54,949</b>	<b>-0.14%</b>	<b>\$5,761,372,513</b>	<b>\$6,077,177,576</b>	<b>5.48%</b>	<b>\$4,698,287,253</b>	<b>\$4,868,438,486</b>	<b>3.622%</b>

## 2017 GRAND TRAVERSE COUNTY - REAL PROPERTY

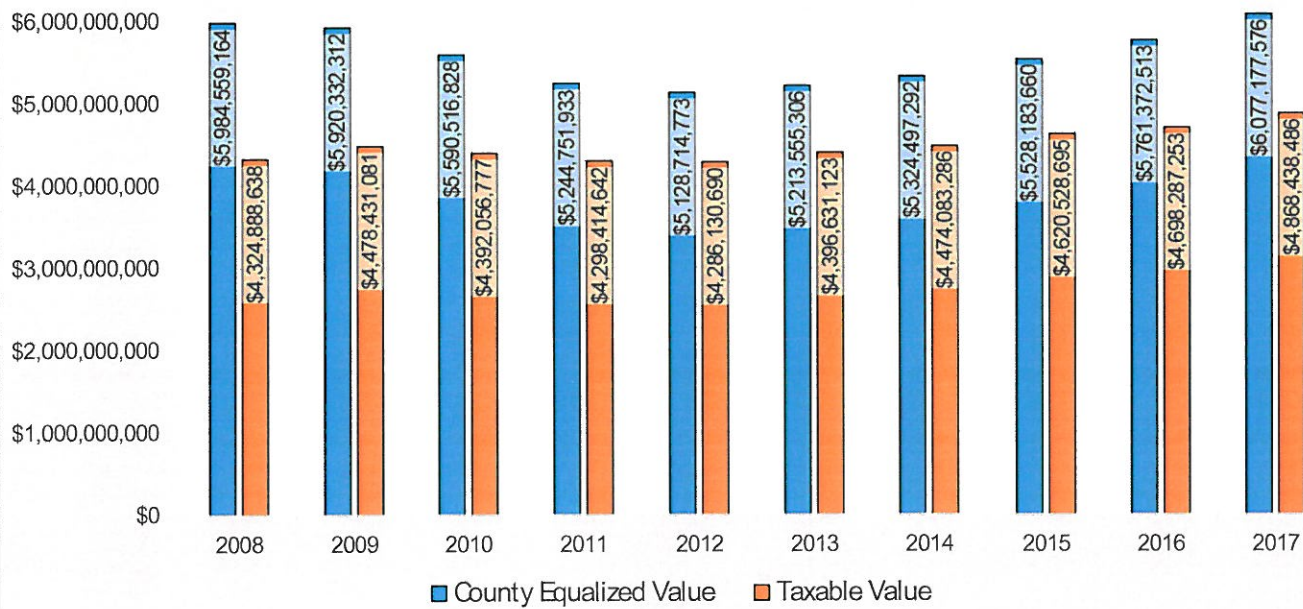
TOWNSHIPS & CITY	Parcel Count 2016	Parcel Count 2017	Parcel Count % Change	CEV 2016	CEV 2017	County Equalized % Change	TAXABLE 2016	TAXABLE 2017	Taxable % Change
Acme	3,319	3,319	0.00%	\$370,739,500	\$381,185,500	2.82%	\$298,692,271	\$307,440,612	2.93%
Blair	4,258	4,260	0.05%	\$289,663,985	\$307,526,750	6.17%	\$240,873,437	\$250,065,778	3.82%
East Bay	7,599	7,615	0.21%	\$610,368,600	\$638,911,000	4.68%	\$502,620,876	\$518,988,002	3.26%
Fife Lake	1,248	1,248	0.00%	\$63,785,700	\$68,459,300	7.33%	\$48,616,121	\$50,062,929	2.98%
Garfield	6,606	6,609	0.05%	\$902,120,500	\$944,031,100	4.65%	\$760,409,850	\$788,144,296	3.65%
Grant	1,039	1,038	-0.10%	\$63,058,668	\$67,649,310	7.28%	\$45,138,491	\$46,933,221	3.98%
Green Lake	3,814	3,816	0.05%	\$303,008,700	\$323,600,300	6.80%	\$256,653,023	\$266,289,577	3.75%
Long Lake	4,852	4,860	0.16%	\$552,568,550	\$588,866,300	6.57%	\$452,546,561	\$471,973,452	4.29%
Mayfield	1,028	1,034	0.58%	\$67,329,710	\$71,386,200	6.02%	\$52,185,680	\$53,338,747	2.21%
Paradise	2,469	2,487	0.73%	\$136,453,200	\$144,689,700	6.04%	\$113,736,652	\$117,757,443	3.54%
Peninsula	4,089	4,101	0.29%	\$846,345,800	\$885,797,500	4.66%	\$642,307,896	\$665,109,382	3.55%
Union	395	393	-0.51%	\$26,168,500	\$26,562,300	1.50%	\$21,700,027	\$22,347,955	2.99%
Whitewater	1,906	1,914	0.42%	\$236,544,000	\$247,571,300	4.66%	\$182,300,530	\$187,060,358	2.61%
Traverse City	6,990	7,018	0.40%	\$1,036,672,000	\$1,134,083,675	9.40%	\$823,991,460	\$876,117,158	6.33%
<b>TOTALS</b>	<b>49,612</b>	<b>49,712</b>	<b>0.20%</b>	<b>\$5,504,827,413</b>	<b>\$5,830,320,235</b>	<b>5.91%</b>	<b>\$4,441,772,875</b>	<b>\$4,621,628,910</b>	<b>4.05%</b>

## 2017 GRAND TRAVERSE COUNTY - PERSONAL PROPERTY

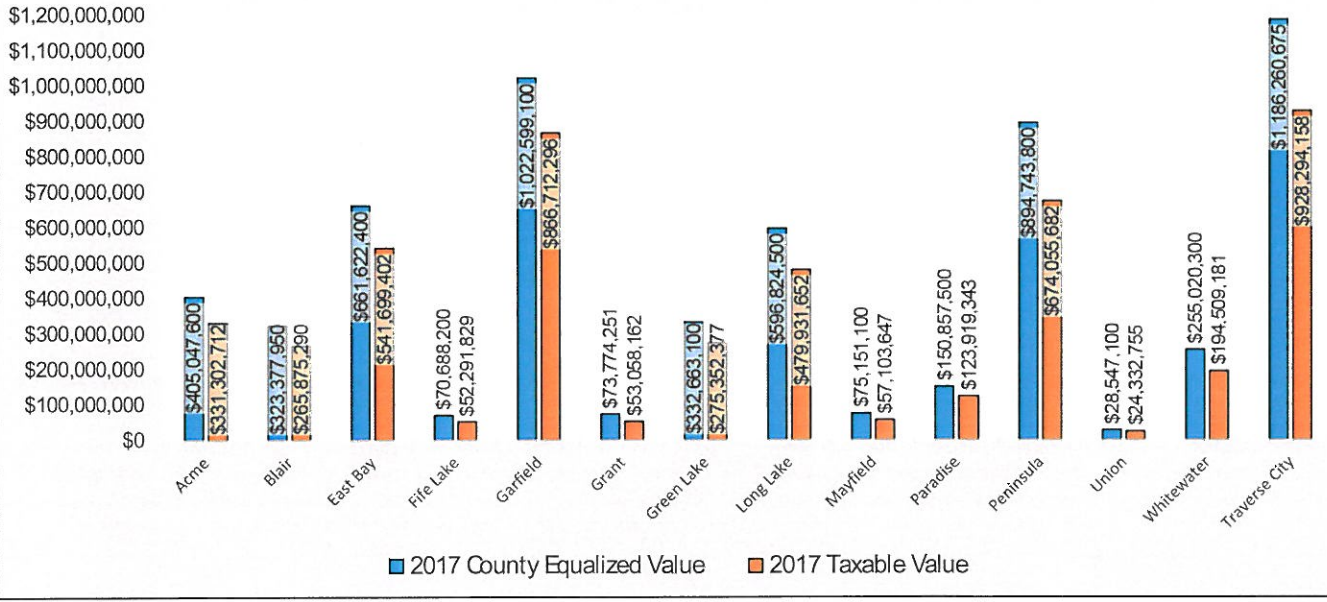
TOWNSHIPS & CITY	Parcel Count 2016	Parcel Count 2017	Parcel Count % Change	CEV 2016	CEV 2017	County Equalized % Change	TAXABLE 2016	TAXABLE 2017	Taxable % Change
Acme	175	164	-6.29%	\$24,625,900	\$23,862,100	-3.10%	\$24,625,900	\$23,862,100	-3.10%
Blair	330	338	3.03%	\$16,512,100	\$15,851,200	-4.00%	\$16,512,100	\$15,809,512	-4.25%
East Bay	618	611	-1.13%	\$22,601,200	\$22,711,400	0.49%	\$22,601,200	\$22,711,400	0.49%
Fife Lake	55	53	-3.64%	\$2,351,800	\$2,228,900	-5.23%	\$2,351,800	\$2,228,900	-5.23%
Garfield	1,686	1,486	-11.33%	\$81,242,100	\$78,568,000	-3.29%	\$81,242,100	\$78,568,000	-3.29%
Grant	60	61	1.67%	\$6,216,000	\$6,124,941	-1.46%	\$6,216,000	\$6,124,941	-1.46%
Green Lake	195	199	2.05%	\$8,894,600	\$9,062,800	1.89%	\$8,894,600	\$9,062,800	1.89%
Long Lake	160	154	-3.75%	\$8,208,200	\$7,958,200	-3.05%	\$8,208,200	\$7,958,200	-3.05%
Mayfield	62	60	-3.23%	\$3,963,100	\$3,764,900	-5.00%	\$3,963,100	\$3,764,900	-5.00%
Paradise	98	93	-5.10%	\$5,658,700	\$6,167,800	9.00%	\$5,658,700	\$6,161,900	8.89%
Peninsula	119	115	-3.36%	\$8,830,400	\$8,946,300	1.31%	\$8,821,400	\$8,946,300	1.42%
Union	42	43	2.38%	\$1,800,700	\$1,984,800	10.22%	\$1,784,719	\$1,984,800	11.21%
Whitewater	97	97	0.00%	\$7,876,200	\$7,449,000	-5.42%	\$7,867,959	\$7,448,823	-5.33%
Traverse City	1,718	1,763	2.62%	\$57,764,100	\$52,177,000	-9.67%	\$57,766,600	\$52,177,000	-9.68%
<b>TOTALS</b>	<b>5,415</b>	<b>5,237</b>	<b>-3.29%</b>	<b>\$256,545,100</b>	<b>\$246,857,341</b>	<b>-3.78%</b>	<b>\$256,514,378</b>	<b>\$246,809,576</b>	<b>-3.78%</b>



10 - YEAR  
 GRAND TRAVERSE COUNTY  
 COUNTY EQUALIZED & TAXABLE VALUES

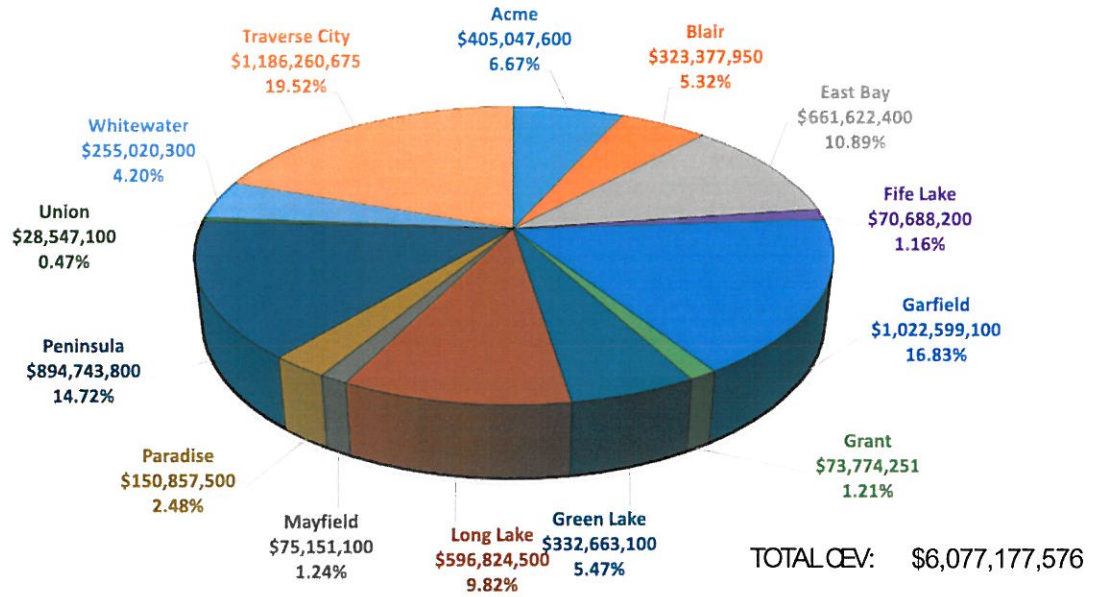


2017 COUNTY EQUALIZED & TAXABLE VALUES BY UNIT

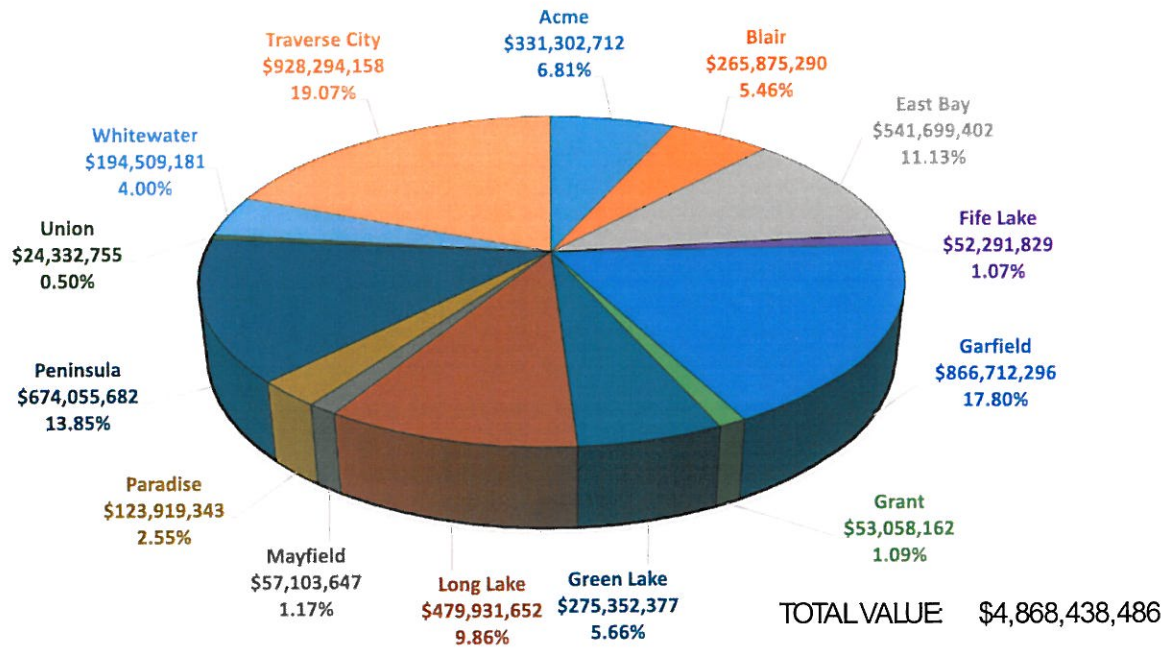




FRACTIONAL UNIT  
2017 COUNTY EQUALIZED VALUES



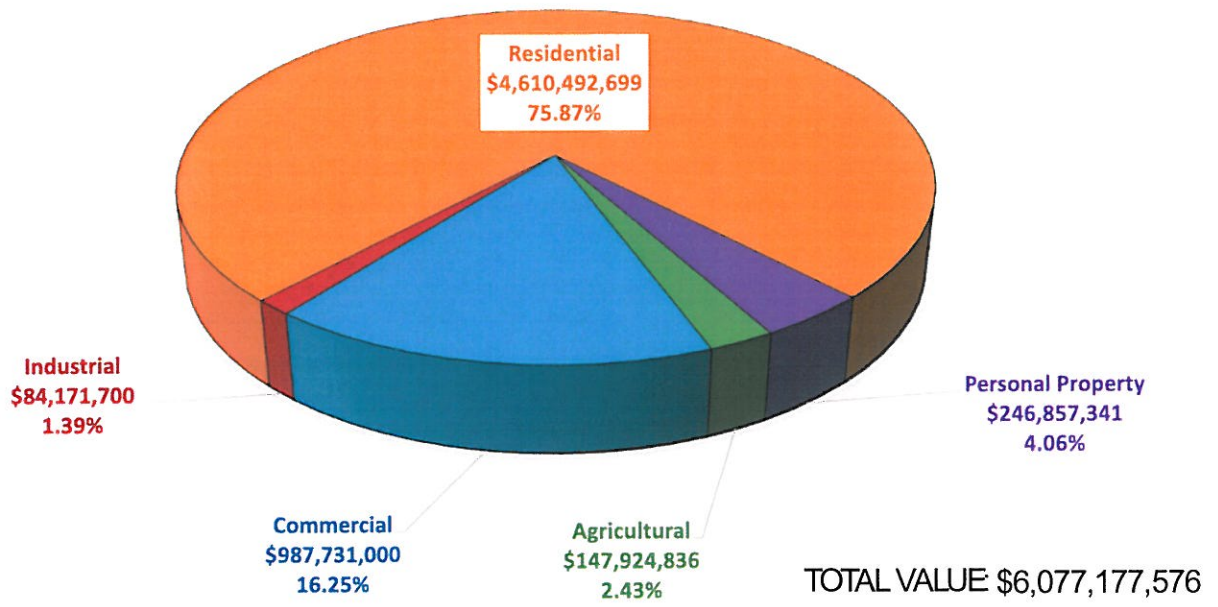
FRACTIONAL UNIT  
2017 COUNTY TAXABLE VALUES



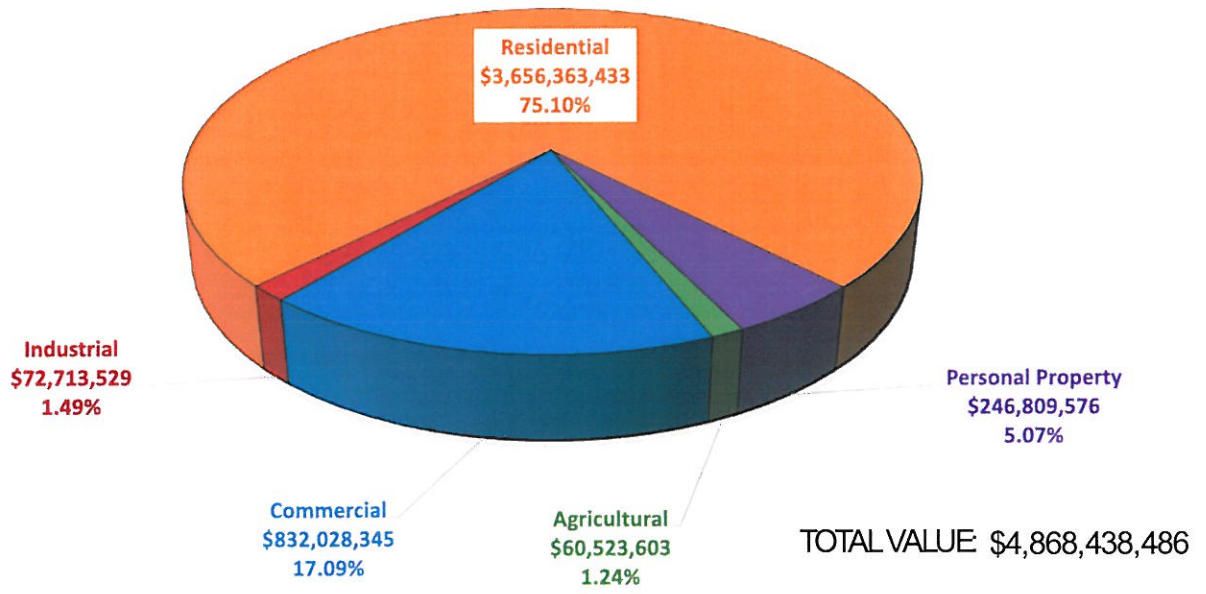
2017 COUNTY EQUALIZED & TAXABLE VALUE  
ONE YEAR CHANGE PERCENTAGES BY UNIT



GRAND TRAVERSE COUNTY  
2017 COUNTY EQUALIZED VALUES  
BY CLASSIFICATION



GRAND TRAVERSE COUNTY  
2017 TAXABLE VALUES  
BY CLASSIFICATION



County: 28- GRAND TRAVERSE

Governmental Unit	Real							Personal					Grand		
	Ag	Comm	Ind	Res	T-C	Dev	Total	Ag	Comm	Ind	Res	Util	Total	Exempt	Total
ACME TWP (01)	78	209	11	3021	0	0	3319	0	149	7	0	8	164	65	3548
BLAIR TWP (02)	40	331	16	3873	0	0	4260	0	300	6	0	32	338	43	4641
EAST BAY CHTR TWP (03)	28	184	45	7358	0	0	7615	0	549	24	0	38	611	145	8371
FIFE LAKE TWP (04)	27	46	2	1173	0	0	1248	0	43	3	0	7	53	71	1372
GARFIELD CHTR TWP (05)	0	1006	75	5528	0	0	6609	0	1428	53	0	5	1486	179	8274
GRANT TWP (06)	146	9	19	864	0	0	1038	0	28	1	0	32	61	23	1122
GREEN LAKE TWP (07)	0	159	13	3644	0	0	3816	0	182	8	0	9	199	94	4109
LONG LAKE TWP (08)	44	104	3	4709	0	0	4860	0	137	6	5	6	154	47	5061
MAYFIELD TWP (09)	149	28	4	853	0	0	1034	0	42	0	0	18	60	18	1112
PARADISE TWP (10)	78	90	7	2312	0	0	2487	0	72	1	0	20	93	86	2666
PENINSULA TWP (11)	227	77	4	3793	0	0	4101	0	111	0	2	2	115	126	4342
UNION TWP (12)	0	4	5	384	0	0	393	0	12	0	0	31	43	43	479
WHITEWATER TWP (13)	77	43	8	1786	0	0	1914	0	58	6	0	33	97	84	2095
TRAVERSE CITY (51)	0	1036	46	5936	0	0	7018	0	1711	47	0	5	1763	316	9097
Totals	894	3326	258	45234	0	0	49712	0	4822	162	7	246	5237	1340	56289



Assessment it	Assessed Real	Ratio	Equalized Real	Factor	Assessed Personal	Ratio	Equalized Personal	Assessed Total	Equalized Total	% County Total
-- ACME TWP (01) --										
Agricultural	13,823,100	49.15	13,823,100	1.000000						
Commercial	52,881,900	49.75	52,881,900	1.000000						
Industrial	3,165,900	49.92	3,165,900	1.000000						
Residential	311,314,600	49.61	311,314,600	1.000000						
Timber-Cutover	0	50.00	0	1.000000						
Developmental	0	50.00	0	1.000000						
Totals	381,185,500		381,185,500		23,862,100	50.00	23,862,100	405,047,600	405,047,600	6.67
-- 02 BLAIR TWP (02) --										
Agricultural	5,032,800	49.65	5,032,800	1.000000						
Commercial	58,321,000	49.90	58,321,000	1.000000						
Industrial	3,157,000	49.82	3,157,000	1.000000						
Residential	241,015,950	49.99	241,015,950	1.000000						
Timber-Cutover	0	50.00	0	1.000000						
Developmental	0	50.00	0	1.000000						
Totals	307,526,750		307,526,750		15,851,200	50.00	15,851,200	323,377,950	323,377,950	5.32
-- 03 EAST BAY CHTR TWP (03) --										
Agricultural	4,329,300	49.62	4,329,300	1.000000						
Commercial	65,582,700	50.00	65,582,700	1.000000						
Industrial	11,607,300	49.97	11,607,300	1.000000						
Residential	557,391,700	49.26	557,391,700	1.000000						
Timber-Cutover	0	50.00	0	1.000000						
Developmental	0	50.00	0	1.000000						
Totals	638,911,000		638,911,000		22,711,400	50.00	22,711,400	661,622,400	661,622,400	10.89
-- 04 FIFE LAKE TWP (04) --										
Agricultural	2,950,700	49.10	2,950,700	1.000000						
Commercial	4,358,100	49.74	4,358,100	1.000000						
Industrial	598,400	49.43	598,400	1.000000						
Residential	60,552,100	49.95	60,552,100	1.000000						
Timber-Cutover	0	50.00	0	1.000000						
Developmental	0	50.00	0	1.000000						
Totals	68,459,300		68,459,300		2,228,900	50.00	2,228,900	70,688,200	70,688,200	1.16

Assessment	Assessed Real	Ratio	Equalized Real	Factor	Assessed Personal	Ratio	Equalized Personal	Assessed Total	Equalized Total	% County Total
GARFIELD CHTR TWP (05) --										
Agricultural	0	50.00	0	1.000000						
Commercial	368,340,500	49.77	368,340,500	1.000000						
Industrial	26,757,000	49.62	26,757,000	1.000000						
Residential	548,933,600	49.81	548,933,600	1.000000						
Timber-Cutover	0	50.00	0	1.000000						
Developmental	0	50.00	0	1.000000						
Totals	944,031,100		944,031,100		78,568,000	50.00	78,568,000	1,022,599,100	1,022,599,100	16.83
-- 06 GRANT TWP (06) --										
Agricultural	14,588,636	49.81	14,588,636	1.000000						
Commercial	597,800	49.41	597,800	1.000000						
Industrial	564,800	49.21	564,800	1.000000						
Residential	51,898,074	49.44	51,898,074	1.000000						
Timber-Cutover	0	50.00	0	1.000000						
Developmental	0	50.00	0	1.000000						
Totals	67,649,310		67,649,310		6,124,941	50.00	6,124,941	73,774,251	73,774,251	1.21
-- 07 GREEN LAKE TWP (07) --										
Agricultural	0	50.00	0	1.000000						
Commercial	15,065,900	49.66	15,065,900	1.000000						
Industrial	4,296,200	49.36	4,296,200	1.000000						
Residential	304,238,200	49.23	304,238,200	1.000000						
Timber-Cutover	0	50.00	0	1.000000						
Developmental	0	50.00	0	1.000000						
Totals	323,600,300		323,600,300		9,062,800	50.00	9,062,800	332,663,100	332,663,100	5.47
-- 08 LONG LAKE TWP (08) --										
Agricultural	7,310,600	49.33	7,310,600	1.000000						
Commercial	11,712,600	49.79	11,712,600	1.000000						
Industrial	960,000	49.92	960,000	1.000000						
Residential	568,883,100	49.66	568,883,100	1.000000						
Timber-Cutover	0	50.00	0	1.000000						
Developmental	0	50.00	0	1.000000						
Totals	588,866,300		588,866,300		7,958,200	50.00	7,958,200	596,824,500	596,824,500	9.82

Assessment	Assessed Real	Ratio	Equalized Real	Factor	Assessed Personal	Ratio	Equalized Personal	Assessed Total	Equalized Total	% County Total
MAYFIELD TWP (09) --										
Agricultural	16,303,100	49.67	16,303,100	1.000000						
Commercial	3,481,100	49.82	3,481,100	1.000000						
Industrial	100,800	49.95	100,800	1.000000						
Residential	51,501,200	49.81	51,501,200	1.000000						
Timber-Cutover	0	50.00	0	1.000000						
Developmental	0	50.00	0	1.000000						
Totals	71,386,200		71,386,200		3,764,900	50.00	3,764,900	75,151,100	75,151,100	1.24
-- 10 PARADISE TWP (10) --										
Agricultural	7,865,600	49.84	7,865,600	1.000000						
Commercial	8,111,100	49.68	8,111,100	1.000000						
Industrial	126,500	49.43	126,500	1.000000						
Residential	128,586,500	49.87	128,586,500	1.000000						
Timber-Cutover	0	50.00	0	1.000000						
Developmental	0	50.00	0	1.000000						
Totals	144,689,700		144,689,700		6,167,800	50.00	6,167,800	150,857,500	150,857,500	2.48
-- 11 PENINSULA TWP (11) --										
Agricultural	61,813,800	49.92	61,813,800	1.000000						
Commercial	17,187,100	49.32	17,187,100	1.000000						
Industrial	702,200	49.94	702,200	1.000000						
Residential	806,094,400	49.97	806,094,400	1.000000						
Timber-Cutover	0	50.00	0	1.000000						
Developmental	0	50.00	0	1.000000						
Totals	885,797,500		885,797,500		8,946,300	50.00	8,946,300	894,743,800	894,743,800	14.72
-- 12 UNION TWP (12) --										
Agricultural	0	50.00	0	1.000000						
Commercial	602,800	49.38	602,800	1.000000						
Industrial	50,000	49.44	50,000	1.000000						
Residential	25,909,500	49.20	25,909,500	1.000000						
Timber-Cutover	0	50.00	0	1.000000						
Developmental	0	50.00	0	1.000000						
Totals	26,562,300		26,562,300		1,984,800	50.00	1,984,800	28,547,100	28,547,100	0.47

Assessment t	Assessed		Equalized		Assessed		Equalized		Assessed	Equalized	% County
	Real	Ratio	Real	Factor	Personal	Ratio	Personal	Total			
WHITWATER TWP (13) --											
Agricultural	13,907,200	49.29	13,907,200	1.000000							
Commercial	4,803,900	49.88	4,803,900	1.000000							
Industrial	2,470,800	49.36	2,470,800	1.000000							
Residential	226,389,400	49.91	226,389,400	1.000000							
Timber-Cutover	0	50.00	0	1.000000							
Developmental	0	50.00	0	1.000000							
Totals	247,571,300		247,571,300		7,449,000	50.00	7,449,000	255,020,300	255,020,300		4.20
-- 51 TRAVERSE CITY (51) --											
Agricultural	0	50.00	0	1.000000							
Commercial	376,684,500	49.94	376,684,500	1.000000							
Industrial	29,614,800	49.90	29,614,800	1.000000							
Residential	727,784,375	49.37	727,784,375	1.000000							
Timber-Cutover	0	50.00	0	1.000000							
Developmental	0	50.00	0	1.000000							
Totals	1,134,083,675		1,134,083,675		52,177,000	50.00	52,177,000	1,186,260,675	1,186,260,675		19.52

Grand Totals	Assessed Real	Equalized Real	% Real Total	Assessed Personal	Equalized Personal	Assessed % County	Equalized % County	Assessed Total	Equalized Total
Agricultural	147,924,836	147,924,836	2.54			2.43	2.43		
Commercial	987,731,000	987,731,000	16.94			16.25	16.25		
Industrial	84,171,700	84,171,700	1.44			1.39	1.39		
Residential	4,610,492,699	4,610,492,699	79.08			75.87	75.87		
Timber-Cutover	0	0	0.00			0.00	0.00		
Developmental	0	0	0.00			0.00	0.00		
Personal				246,857,341	246,857,341	4.06	4.06		
	5,830,320,235	5,830,320,235	100.00	246,857,341	246,857,341	100.00	100.00	6,077,177,576	6,077,177,576

Personal and Real Property - TOTALS

L-4024

Grand Traverse County

Statement of acreage and valuation in the year 2017 made in accordance with Sections 209.1 - 209.8 of the Michigan Compiled Laws.

Township or City	Number of Acres Assessed	Total Real Property Valuations		Personal Property Valuations		Total Real Plus Personal Property	
	(Col. 1) Acres Hundredths	(Col. 2) Assessed Valuations	(Col. 3) Equalized Valuations	(Col. 4) Assessed Valuations	(Col. 5) Equalized Valuations	(Col. 6) Assessed Valuations	(Col. 7) Equalized Valuations
Acme	13,261.37	381,185,500	381,185,500	23,862,100	23,862,100	405,047,600	405,047,600
Blair	22,746.58	307,526,750	307,526,750	15,851,200	15,851,200	323,377,950	323,377,950
East Bay	28,192.41	638,911,000	638,911,000	22,711,400	22,711,400	661,622,400	661,622,400
Fife Lake	22,539.35	68,459,300	68,459,300	2,228,900	2,228,900	70,688,200	70,688,200
Garfield	13,769.73	944,031,100	944,031,100	78,568,000	78,568,000	1,022,599,100	1,022,599,100
Grant	22,795.37	67,649,310	67,649,310	6,124,941	6,124,941	73,774,251	73,774,251
Green Lake	18,943.23	323,600,300	323,600,300	9,062,800	9,062,800	332,663,100	332,663,100
Long Lake	19,419.70	588,866,300	588,866,300	7,958,200	7,958,200	596,824,500	596,824,500
Mayfield	23,110.94	71,386,200	71,386,200	3,764,900	3,764,900	75,151,100	75,151,100
Paradise	30,965.18	144,689,700	144,689,700	6,167,800	6,167,800	150,857,500	150,857,500
Peninsula	17,157.17	885,797,500	885,797,500	8,946,300	8,946,300	894,743,800	894,743,800
Union	23,034.16	26,562,300	26,562,300	1,984,800	1,984,800	28,547,100	28,547,100
Whitewater	30,307.36	247,571,300	247,571,300	7,449,000	7,449,000	255,020,300	255,020,300
Traverse City	8,789.80	1,134,083,675	1,134,083,675	52,177,000	52,177,000	1,186,260,675	1,186,260,675
<b>Totals for County</b>	<b>295,032.35</b>	<b>5,830,320,235</b>	<b>5,830,320,235</b>	<b>246,857,341</b>	<b>246,857,341</b>	<b>6,077,177,576</b>	<b>6,077,177,576</b>

OFFICE OF THE COUNTY BOARD OF COMMISSIONERS OF GRAND TRAVERSE COUNTY

WE HEREBY CERTIFY that the foregoing is a true statement of the number of acres of land, the value of the real property and of the personal property, the aggregate valuation of the real property and personal property, the equalized and assessed valuations of real property classifications in each township and city in said county as equalized by the Board of Commissioners in April of the reporting year, at a meeting of said board held in pursuant to the provisions of sections 209.1 - 209.8, MCL. I further certify that said statement does not embrace any property taxed under P.A. 77 of 1951; P.A. 68 of 1963; P.A. 198 of 1974; P.A. 225 of 1978; P.A. 385 of 1984; P.A. 224 of 1985; P.A. 147 of 1992 or Section 5 of Article IX of the Constitution of the State.

Dated April 11, 2017

James S. Baker  
Equalization Director

Bonnie Scheele  
Clerk of the Board of Commissioners

Carol J. Crawford  
Chairperson of Board of Commissioners



Equalized Valuations - REAL

L-4024

Grand Traverse County

Statement of acreage and valuation in the year 2017 made in accordance with Sections 209.1 - 209.8 of the Michigan Compiled Laws.

Real Property Equalized by County Board of Commissioners							
Township or City	(Col. 1) Agricultural	(Col. 2) Commercial	(Col. 3) Industrial	(Col. 4) Residential	(Col. 5) Timber-Cutover	(Col. 6) Developmental	(Col. 7) Total Real Property
Acme	13,823,100	52,881,900	3,165,900	311,314,600	0	0	381,185,500
Blair	5,032,800	58,321,000	3,157,000	241,015,950	0	0	307,526,750
East Bay	4,329,300	65,582,700	11,607,300	557,391,700	0	0	638,911,000
Fife Lake	2,950,700	4,358,100	598,400	60,552,100	0	0	68,459,300
Garfield	0	368,340,500	26,757,000	548,933,600	0	0	944,031,100
Grant	14,588,636	597,800	564,800	51,898,074	0	0	67,649,310
Green Lake	0	15,065,900	4,296,200	304,238,200	0	0	323,600,300
Long Lake	7,310,600	11,712,600	960,000	568,883,100	0	0	588,866,300
Mayfield	16,303,100	3,481,100	100,800	51,501,200	0	0	71,386,200
Paradise	7,865,600	8,111,100	126,500	128,586,500	0	0	144,689,700
Peninsula	61,813,800	17,187,100	702,200	806,094,400	0	0	885,797,500
Union	0	602,800	50,000	25,909,500	0	0	26,562,300
Whitewater	13,907,200	4,803,900	2,470,800	226,389,400	0	0	247,571,300
Traverse City	0	376,684,500	29,614,800	727,784,375	0	0	1,134,083,675
<b>Total for County</b>	<b>147,924,836</b>	<b>987,731,000</b>	<b>84,171,700</b>	<b>4,610,492,699</b>	<b>0</b>	<b>0</b>	<b>5,830,320,235</b>

OFFICE OF THE COUNTY BOARD OF COMMISSIONERS OF GRAND TRAVERSE COUNTY

WE HEREBY CERTIFY that the foregoing is a true statement of the number of acres of land, the value of the real property and of the personal property, the aggregate valuation of the real property and personal property, the equalized and assessed valuations of real property classifications in each township and city in said county as equalized by the Board of Commissioners in April of the reporting year, at a meeting of said board held in pursuant to the provisions of sections 209.1 - 209.8, MCL. I further certify that said statement does not embrace any property taxed under P.A. 77 of 1951, P.A. 68 of 1963; P.A. 198 of 1974; P.A. 225 of 1978; P.A. 385 of 1984; P.A. 224 of 1985; P.A. 147 of 1992 or Section 5 of Article IX of the Constitution of the State.

Dated April 11, 2017

James S. Baker  
Equalization Director

Bonnie Scheele  
Clerk of the Board of Commissioners

Carol J. Crawford  
Chairperson of Board of Commissioners

Assessed Valuations - REAL

L-4024

Grand Traverse County

Statement of acreage and valuation in the year 2017 made in accordance with Sections 209.1 - 209.8 of the Michigan Compiled Laws.

Real Property Assessed Valuations Approved by Boards of Review							
Township or City	(Col. 1) Agricultural	(Col. 2) Commercial	(Col. 3) Industrial	(Col. 4) Residential	(Col. 5) Timber-Cutover	(Col. 6) Developmental	(Col. 7) Total Real Property
Acme	13,823,100	52,881,900	3,165,900	311,314,600	0	0	381,185,500
Blair	5,032,800	58,321,000	3,157,000	241,015,950	0	0	307,526,750
East Bay	4,329,300	65,582,700	11,607,300	557,391,700	0	0	638,911,000
File Lake	2,950,700	4,358,100	598,400	60,552,100	0	0	68,459,300
Garfield	0	368,340,500	26,757,000	548,933,600	0	0	944,031,100
Grant	14,588,636	597,800	564,800	51,898,074	0	0	67,649,310
Green Lake	0	15,065,900	4,296,200	304,238,200	0	0	323,600,300
Long Lake	7,310,600	11,712,600	960,000	568,883,100	0	0	588,866,300
Mayfield	16,303,100	3,481,100	100,800	51,501,200	0	0	71,386,200
Paradise	7,865,600	8,111,100	126,500	128,586,500	0	0	144,689,700
Peninsula	61,813,800	17,187,100	702,200	806,094,400	0	0	885,797,500
Union	0	602,800	50,000	25,909,500	0	0	26,562,300
Whitewater	13,907,200	4,803,900	2,470,800	226,389,400	0	0	247,571,300
Traverse City	0	376,684,500	29,614,800	727,784,375	0	0	1,134,083,675
<b>Total for County</b>	<b>147,924,836</b>	<b>987,731,000</b>	<b>84,171,700</b>	<b>4,610,492,699</b>	<b>0</b>	<b>0</b>	<b>5,830,320,235</b>

OFFICE OF THE COUNTY BOARD OF COMMISSIONERS OF GRAND TRAVERSE COUNTY

WE HEREBY CERTIFY that the foregoing is a true statement of the number of acres of land, the value of the real property and of the personal property, the aggregate valuation of the real property and personal property, the equalized and assessed valuations of real property classifications in each township and city in said county as equalized by the Board of Commissioners in April of the reporting year, at a meeting of said board held in pursuant to the provisions of sections 209.1 - 209.8, MCL. I further certify that said statement does not embrace any property taxed under P.A. 77 of 1951; P.A. 68 of 1963; P.A. 198 of 1974; P.A. 225 of 1978; P.A. 385 of 1984; P.A. 224 of 1985; P.A. 147 of 1992 or Section 5 of Article IX of the Constitution of the State.

Dated April 11, 2017

James A. Baker  
Equalization Director

Bonnie Scheele  
Clerk of the Board of Commissioners

Carol J. Crawford  
Chairperson of Board of Commissioners



3. d.

"Our mission is to upgrade and maintain a safe and efficient road system"

September 13, 2017

Change Order No. 2  
Oak Terrace Drive SAD Project  
GTCRC# 16E010

Grand Traverse County Road Commission  
1881 LaFranier Road  
Traverse City, MI 49696

D.J. McQuestion and Sons, Inc.  
17708 18 Mile Road  
LeRoy, MI 49655

RE: Additional Items

Original Contract Amount (Base Bid)	\$	450,136.86
Net Change Previous	\$	+ 4,334.48
Previous Contract Amount	\$	454,471.34
Net Change this Change Order	\$	- 3,859.52
New Contract Amount	\$	450,611.82

ACCEPTED BY: D.J. McQuestion and Sons, Inc.

Thomas F. Canfield

Digitally signed by Thomas F. Canfield  
Date: 2017.09.14 07:00:45 -04'00'

\_\_\_\_\_  
Tom Canfield, Project Managers

\_\_\_\_\_  
Date

RECOMMENDED BY: Grand Traverse County Road Commission

\_\_\_\_\_  
James P. Johnson, P.E. County Highway Engr.

\_\_\_\_\_  
Date

RECOMMENDED BY: Gourdie-Fraser, Inc. (GFA)

\_\_\_\_\_  
Jennifer Hodges, P.E.

\_\_\_\_\_  
Date

RECOMMENDED BY: Garfield Township

\_\_\_\_\_  
Date



## Contract Modification

Grand Traverse County Road Commission

09/13/2017 1:00 PM

FieldManager 5.3a

**Contract: \_ 16E010, Oak Terrace Drive - Garfield Twp SAD**

Cont. Mod. Number	Revision Number	Cont. Mod. Date	Electronic File Created	Net Change	Awarded Contract Amount
2		09/13/2017	No	\$-3,859.52	\$450,136.86
<b>Route</b>		<b>Managing Office</b>		<b>District</b>	<b>Entered By</b>
		Grand Traverse County Road Commissi		0	Gary L Swanson
<b>Contract Location</b>					
0.34 Miles West of Garfield on Oak Terrace					

### Short Description

Request approval to balance the following items of work at the "As Constructed" quantities.

### Description of Changes

- A. Original Contract Amount: \$450,136.86
- B. Current Contract Value (including this revision): \$450,611.82
- C. Net Total Change (B-A): + \$474.96
- D. Net Percent Change (C/A\*100): + 0.11%
- E. Administered by the Grand Traverse County Road Commission

These items will not effect the contract time or open to traffic

### Increases / Decreases

Item Description	Item Code	Prop. Line	Proj. Line	Project	Catg.	Item Type	Quantity Change	Unit	Unit Price	Dollar Value
_ 1-inch Water Service Lead, Type "K" Copper	8237001	0610	0305	_16E010-Cat.2	0002	Original	-33.000	Ft	33.00000	\$-1,089.00
_ 2-inch Water Service Lead, Type "K" Copper	8237001	0715	0360	_16E010-Cat.2	0002	Extra	-32.000	Ft	40.75000	\$-1,304.00
_ 6-inch Sewer Lead, PVC	8257001	0690	0345	_16E010-Cat.2	0002	Original	-89.000	Ft	24.00000	\$-2,136.00
_ 8-inch Ductile Iron Water Main, CI 52	8237001	0600	0300	_16E010-Cat.2	0002	Original	-17.000	Ft	52.00000	\$-884.00
_ 8-inch Sanitary Sewer, PVC, SDR 26	8257001	0680	0340	_16E010-Cat.2	0002	Original	-7.000	Ft	48.00000	\$-336.00



## Contract Modification

Grand Traverse County Road Commission

09/13/2017 1:00 PM

FieldManager 5.3a

### Increases / Decreases

Item Description	Item Code	Prop. Line	Proj. Line	Project	Catg.	Item Type	Quantity Change	Unit	Unit Price	Dollar Value
_ Corporation, 2"	8237050	0720	0365	_16E010-Cat.2	0002	Extra	1.000	Ea	500.72000	\$500.72
_ Curb Stop and Box, 2"	8237050	0725	0370	_16E010-Cat.2	0002	Extra	1.000	Ea	1,388.76000	\$1,388.76

**Total Dollar Value: \$-3,859.52**

### Project / Category Summary

Project/Catg	Project/Category Description	Federal Number	Project Status	Finance System	Control Section	Dollar Value
_16E010-Cat.2	0.34 Miles West of Garfield on Oak Terrace - Utility Work	0	CNST			
0002	0.34 Miles West of Garfield on Oak Terrace - Utility Work					\$-3,859.52

**Total: \$-3,859.52**

**Total Net Change Amount: \$-3,859.52**

If authorized, the contractor agrees to do the work outlined above under the direction of the Engineer, and to accept as payment in full the basis of payment as indicated. Prime Contractor, you are authorized and instructed as the contractor to do the work described herein in accordance with the terms of your contract.

Prime Contractor: D. J. McQuestion & Sons, Inc.  <b>Thomas F. Canfield</b> <small>Digitally signed by Thomas F. Canfield Date: 2017.09.14 06:56:14 -04'00'</small>	James P. Johnson, P.E., County Highway Engr.  <hr style="border: 0; border-top: 1px solid black;"/>
Signature _____ Date _____	Signature _____ Date _____

**Charter Township of Garfield****Construction Update****September 21, 2017****I. Water Projects****Northwest Service District – Water System Improvements**

Status below:

Division I: GFA completed all shop drawing reviews and City approval and DEQ permits were issued at the end of August. DN Tanks and subcontractor Elmer's are currently installing below ground pipes and preparing the forms to pour the tank walls. GFA is onsite performing full time inspection and testing services. A preconstruction meeting was held last month and GFA is currently reviewing shop drawings.

Division II: Watermain route has been finalized and plans submitted to DEQ for permitting. Potential SAD road improvement project within Heritage Estates is pending (currently petitions are being solicited). Watermain project may be delayed to next Spring to include SAD work to consolidate projects and save money.

Division III: Booster Station / Mechanical Upgrade design is being finalized with permits to be solicited this fall and early 2018 Spring construction

**II. Sewer Projects****SAW Grant – US 31 Siphon Flow Monitoring**

The study has been completed and report submitted to the Township board for review and discussion on September 26<sup>th</sup>.

**III. General Utilities****GTCRC – Oak Terrace Road Improvements**

Project has been substantially completed. Contractor is currently finalizing punchlist items and closeout documents. GFA and Road Commission are preparing record drawings. Change Order #2 reflecting utility quantity unit price adjustment are in packet for approval

**Sewer / Water City Contracts**

GFA continues to assist the Township and DPW on negotiations with the City of Traverse City on the Bulk Water and Sewer Agreements.

GFA continues to assist the Township on the proposed Lafranier Water Tank Rehabilitation Project that the City is conducting. See note in Division I (NW Tank)



### **GIS Mapping**

GFA has been working with the DPW to create an asset management program for the Township with respect to the Water and sewer Infrastructure. The 1<sup>st</sup> step of this process which includes creation of a GIS map that includes all record drawing information has been completed. GFA / DPW are now pursuing forward to inventory and GPS the locations of each.

### **Drainage District Improvements / Cass Road 20" Watermain (exposed)**

GFA continues to assist the Drain Commission and Township. Final Design plans were reviewed back in November as completed by Spicer Group. A status update meeting was held last week with the Drain Commission and their engineer to discuss the outstanding work items / project schedule. A meeting with the property owners along the corridor is schedule for September 26<sup>th</sup> to discuss the project. Bidding is slated for February 2018 with spring construction following.

### **Boardman Valley Nature Preserve Site Improvements**

GFA contract was approved to provide testing, survey and closeout services at the July meeting. We are currently awaiting project bid award and will begin work upon notification from Township.

## **IV. Utility Plan Reviews**

### **North Bay Produce**

Township approval and utility acceptance was completed on September 12th

### **Hammond / Commerce Lot 24 & Commons**

Utility installation completed and awaiting on final walkthrough, closeout documents from contractor.

### **Traditions**

Submitted to DEQ for permits last month. Once received will coordinate with developer on construction schedule

### **Ridges at 45- Phase 2**

Still waiting on final closeout documents from developer with intentions to provide to Township for approval at next meeting.

### **Ridges at 45- Phase 3**

Plan review has been initiated to review for sewer and water extension to service this next phase. Anticipated spring construction.

### **Contractors Drive (Cass Road)**

Plan review has been initiated to review for water extension to service this next phase. Anticipated spring construction

**Windy Hills (60 Acre Herkner Parcel)**

Preliminary Plans have been reviewed by GFA. Been having discussions regarding utility ownership / fees. Awaiting final submittal set for review / DEQ permit processing

**Chelsea Park – Final Phase**

Remaining portions of utilities are being constructed along Chelsea Lane as part of the 2015 review / permit. Construction anticipated to be completed in August. GFA is representing the Township in construction oversight / closeout.

**V. Stormwater Plan Reviews**

<b>PROJECT NAME</b>	<b>STATUS</b>
Silver Lake Elementary	approved
Pets Naturally	approved
Opperman Properties Unit #13	pending 2nd review
Villa at Traverse Point	approved
City Church	approved
Belle Tire Building Addition	approved
Image 360 Building Addition	approved
AutoZone	approved
Ridges at 45 - 2nd Phase	approved
Life Story Funeral Home	approved
Beers Family Dentistry	Final Review letter sent out to engineer on 8/16
Traverse Self Storage/Cockfield	Approved
Stone Ridge/MMC Parking Lot	approved
Hammond Industrial D (1414 Trade Center)	approved
Soils and Structures (1428 Trade Center)	approved
Driveway Permit -4822 Cedar Run Road	Review letter sent out to engineer on 8/23
Stormwater -4822 Cedar Run Road	Review letter sent out to engineer on 9/11
Driveway Permit - 2900 & 2914 Cass Road	Review letter sent out to engineer on 8/24
Serra Auto - Toyota (Garfield Road)	approved



**GTMESA 2017**  
**September Report**

**Training Items**

Fire — Truck and ladder operations, NFPA pump drills 9 & 10

EMS—Behavioral emergencies, backboard protocol, orthopedic injuries

**August 25, Silver Lake Rd Garfield Twp** – A vehicle traveling at a high rate of speed lost control and left the roadway rolling over several times and ejecting the driver. The driver was found injured but conscious on the side of the road upon North Flight and Metro's arrival and stated they did not want to be transported. The patient was loaded and transported due to the mechanism of injury and altered level of consciousness. Metro provided a driver so two NF medics could work on the patient. The driver died shortly after arriving at Munson.

**August 25, E Hammond Rd East Bay Twp** – Crews responded to a three car crash on Hammond Hill. Upon arrival of Metro and 9A a patient was found unresponsive and not breathing in one of the vehicles. The patient was removed and transported to MMC. During transport Narcan was administered to the patient and he was revived. The driver of the same vehicle was arrested by GTSO on scene and another driver involved did not have a license or legally licensed auto.

Truck 1 cleared this scene and while returning to the station pulled up on a single vehicle crash into a tree on Hammond near 4 Mile. The vehicle had a small fire in the engine compartment and was extinguished. The patient reported to have possibly blacked out before the crash.

**Sept 5, Silver Pines and McRae Hill, Garfield** – A 54-year-old male was struck while riding a bicycle on Silver Pines. GTSO is investigating and believes that it may have been caused by the sunset blinding the vehicle driver. The patient was transported and pronounced dead at MMC.

**Sept 8, Grand Traverse Resort, Acme** – a intoxicated driver driving through the GT Resort crashed into a retaining wall and finally stopped when she struck a tree.

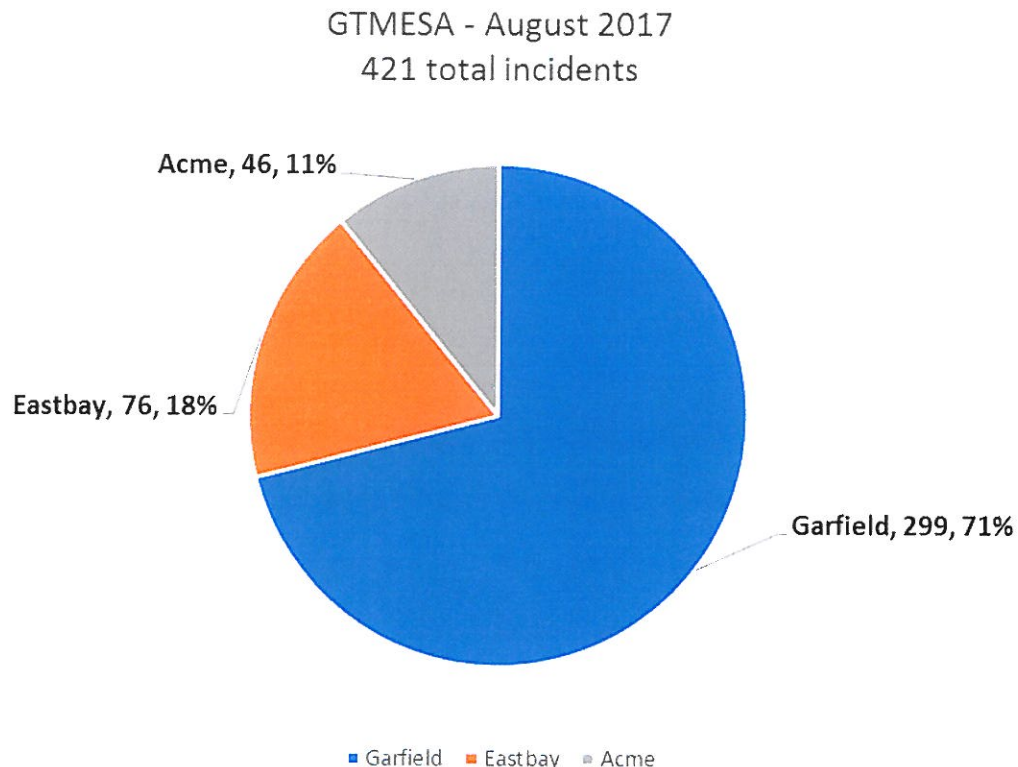
**Sept 8, Sugar Beach Resort, East Bay** – Due to power issues an elevator became stuck near the third floor. The normal practice of opening the door was not working and crews had to lower the elevator to the ground floor to release the couple that had been trapped. While in the property crews also noticed that some

of the emergency egress lighting was not properly working. The prevention bureau was notified to consider looking into these issues.

**Sept 13, Veterans Drive, Garfield** – Workers at an office building arrived to work to find an electrical fire which appeared to be at an outlet that had a tortoise terrarium nearby. The area was overhauled to assure no extension and Lt Scanlon was on scene to investigate.

### Vehicle maintenance information – numbers and discussion

	2016	2017 (as of Sept 15)
<b>Labor Cost</b>	<b>66,000</b>	<b>53,000</b>
<b>Parts Cost</b>	<b>46,000</b>	<b>50,000</b>



# Amy Simon

5882 Donna Ct.  
Traverse City, MI 49685  
(231)-631-5302  
asimon180@gmail.com

## SKILLS

- |                                |                   |
|--------------------------------|-------------------|
| Excellent interpersonal skills | Willing to learn  |
| Strong work ethic              | Adaptable         |
| Problem solving                | Critical Thinking |
| Responsive                     | Integrity         |
| Flexible                       |                   |

## EXPERIENCE

### **Smith Haughey Rice & Roegge, Traverse City - Central Services / Reception**

January 2003 - July 31, 2017

- Managed all central services for the Traverse City office
- Organized and maintained 27 years of closed files
- Assisted with attorney and staff onboarding and offboarding
- Office supply purchasing
- Answered multiple phone lines
- Maintained conference room calendar
- Provided highly accurate cost data entry in billing system
- Maintained the law library with current updates

### **Smith Haughey Rice & Roegge, Traverse City - Reception**

1993 - 1997

- Answered phones and greeted clients
- Maintained the conference room calendar
- Updated files

## EDUCATION

**Northwestern Michigan College** Completed some classes

**Traverse City Central High School** High School Diploma

## References

Kerry McFarlane, 901 S. Garfield Ave, Suite 200, Traverse City MI 49686  
231-486-4516

Peter Boyles, 901 S. Garfield Ave, Suite 200, Traverse City Mi 49686  
231-486-4511

**CHARTER TOWNSHIP OF GARFIELD  
GRAND TRAVERSE COUNTY, MICHIGAN**

**RESOLUTION NO. 2017-23-T**

**RESOLUTION ADOPTING THE *2017 STANDARD TECHNICAL SPECIFICATIONS AND CONSTRUCTION DETAILS* FOR THE DESIGN AND CONSTRUCTION OF WATER AND SEWER LINES FOR THE CHARTER TOWNSHIP OF GARFIELD**

**WHEREAS** the Charter Township of Garfield owns a water distribution and/or wastewater collection system and the Grand Traverse County Department of Public Works (DPW) operates the same; and

**WHEREAS** the Township has existing minimum standards for the design and construction of water and sewer lines; and

**WHEREAS**, it has been determined by the DPW that the existing minimum standards for the design and construction of water and sewer lines do not provide adequate protections to the Township and its water and sewer systems; and

**WHEREAS** the DPW has developed the *2017 Standard Technical Specifications and Construction Details*; and

**WHEREAS** the Charter Township of Garfield finds that the adoption of these Standards is necessary and proper to the continued management, growth and protection of the Township water and wastewater system.

**NOW THEREFORE, BE IT RESOLVED BY THE CHARTER TOWNSHIP OF GARFIELD THAT:**

1. The Charter Township of Garfield adopts the *2017 Standard Technical Specifications and Construction Details*.
2. Any resolution, resolution section, policy, or directive in conflict with this Resolution is repealed or amended to reflect and achieve the purposes stated herein.

Motion:

Seconded:

Yes:

No:

Absent and Excused:



**RESOLUTION 2017-23-T DECLARED ADOPTED.**

By: \_\_\_\_\_  
Chuck Korn, Supervisor  
Charter Township of Garfield

**CERTIFICATE**

I, Lanie McManus, Clerk of the Charter Township of Garfield, do hereby certify that the above is a true and correct copy of a Resolution which was adopted by the Township Board of the Charter Township of Garfield on the 12<sup>th</sup> day of September, 2017.

Dated: \_\_\_\_\_

\_\_\_\_\_  
Lanie McManus, Clerk  
Charter Township of Garfield



**US-31 (Siphon) Trunkline  
Sanitary Sewer Flow Metering Report**

**September 2017**  
**GFA Job No. 17029C**

**US 31 North  
Sanitary Sewer Flow Metering Report  
Charter Township of Garfield**

**TABLE OF CONTENTS**

**SECTION PAGES**

Executive Summary .....	1-4
Introduction and Purpose.....	1-2
Results and Findings .....	3-6
Recommendations.....	7-8

**SUPPLEMENTAL DATA**

APPENDIX A: Flow Monitoring Charts for MH#717 and #3A

APPENDIX B: District Map

## **EXECUTIVE SUMMARY**

### **General**

As the Townships' Engineer, part of our role is to review the impact of this growth as it pertains to the capacity of the water and sanitary sewer infrastructure. The last capacity evaluation specific to the sanitary sewer system was completed in 2006 and has been utilized as the baselines to analysis available capacity as additional discharge was introduced. The need for obtaining updated actual flow data became prevalent following the recent growth trends on the west side of town and the potential that continues to present itself.

The area metered encompasses the sewage flows from US-31, Wyatt Road, Cedar Run Road, and Silver Lake Road. GFA performed an evaluation of the flow data, impact to available remaining capacity along with establishing a capitol improvement plan to address the short and long term limitations. As the sewer system expands it is wise of the Township Board to commence planning for future needs The intent of this report is to identify the deficiency (if applicable) along with alternatives and respective cost estimates.

### **History**

The sanitary collection system comprises of approximately 400,000 linear feet (75 miles) within the Township, ranging in size from 8" to 18" and mostly constructed of polyvinyl chloride (PVC) pipe. These gravity pipes are used to designate and divide up the Township into eight (8) distinct service districts, and they are: (1) the Cedar Run Road District, (2) the Barnes Road District, (3) the Wyatt Road District, (4) the Silver Lake Road District, (5) the North US-31 District, (6) the South US-31 District, (7) the Cass Road District, and (8) the Garfield Road District. The names have been designated based upon the main sewer trunk line that services them. A map illustrating the service districts is provided in the appendices.

The location identified as the Meijer Master is one (1) of the 3 primary discharge points into the City of Traverse City's Wastewater Treatment Facility. The trunk line that captures all this flow crosses Kids Creek via a siphon near Meijer and then discharges into the City's sewer system. This location handles flow from six (6) of the eight (8) districts and is comprised of flows from a mix of residential and commercial to industrial customers including Blair Township.

The existing sanitary sewer trunk line in the Township was installed in 1977 and connected to the eductor system that originally was in place to facilitate the transfer of sewer under Kids Creek. The date of the eductor predates our records and is unknown. In simplicity terms, an eductor was a form a form of vacuum pump; Air was introduced into the system (aspirator) to suction the sewage to force it to move. Over the years, the volume of flows increased and clogging issues were presenting themselves rendering the system obsolete. In 1992 the eductor was abandoned and a 12" / 8" parallel siphon pipe system was installed alongside. Although unlike a conventional siphon that requires the use of a pump to initiate, this siphon functions like an inverted one similar to a "P" Trap. Liquid flowing in one end simply forces liquid up and out the other end.

**Sanitary Sewer System Capacity**

In recent years it has been understood that the trunkline upstream of the siphon near the Meijer Meter may be approaching capacity or even over capacity. This was further confirmed based upon increased DPW observations and increased reports of clogging and frequency to clean the line. This trunk line services the developments of Copper Ridge, Traverse City West Senior High School, The Crown Golf Course Community, Stone Ridge, Northern Blue Star Estates on McRae Hill, commercial businesses along US-31 North, and Harbor Ridge Apartments on Veterans Drive. Recent major developments which have been permitted in these districts include Lone Tree Estates, Brookside Apartments and the YMCA. Furthermore, new developments are continuing to be proposed and are seeking to connect to the sanitary sewer system in this region and if / when occur will contribute significant additional flows.

In response, the Township Board approved Gourdie-Fraser to monitor and collect data on the sewer flows for a 6 week period from May 5<sup>th</sup> through August 12<sup>th</sup> using a continuously monitoring and data collection flow meter installed within a manhole immediately upstream (#717) and downstream (#3A) of the siphon. The data obtained from the flow meter during this period was analyzed for average day flow rate, maximum day flow rate, and peak four flow rate. This data was compiled and is contained in Table 1 below:

Flows in two sanitary manholes were monitored simultaneously, one upstream of the siphon at manhole #717, one downstream of the siphon at manhole #3A. The data obtained from the flow meter during this period was analyzed for average day flow rate, maximum day flow rate, and peak four flow rate to include a peaking factor. This data was compiled and is contained in Table 1 below.

Table 1

Flow Type	Upstream (#717)	Downstream (#3A)
	Flow Value (GPM)	Flow Value (GPM)
Pipeline Rated Capacity	1,011	775
Average Day	519	376
Maximum Day	553	548
Peak Hour	960	787
Peaking Factor	1.84	2.09

Review of the information and comparison of peak flow to available capacity the results indicate the trunkline is currently operating at 95% of it's capacity.

**SUMMARY**

Several improvements were discussed in the Section 3 of the report for consideration and are summarized below. As recommended from the findings in the report, an immediate solution is to reroute flows which would eliminate some of the flows through the trunkline. It is also strongly suggested the Township consider evaluating the long-term conditions of the service area and perform a more in depth review of the short term options within the next couple years.

In addition, continued monitoring DPW personnel with a regular visual observation of the sewer depth in the trunk line along with routine maintenance of the siphon is recommended.



**Table 2**

PROJECT	Cost	ADVANTAGE	DISADVANTAGE
<b>Immediate</b>			
Reroute PS#6 Flows to PS#2	\$1,000	1)Cost effective 2)Immediate solution to provide additional 3-5 years capacity in trunkline 3)Operational and all work can be completed by staff 4) No permits needed	1)Clogging still potentially an issue with siphon 2)Increased operational costs with PS#2 (running more frequent)
<b>Short Term (3 – 5 Year)</b>			
Option 1: Upsize Siphon and Gravity Sewer Restrictions	\$150,000	1)Most Cost effective	1)Clogging still potentially an issue with siphon 2)Requires routine maintenance 3) Does not provide means to monitor flows to City WWTP
Option 2: Abandon Siphon and Install Pump Station / Forcemain and Upsize Gravity Sewer Restrictions	\$450,000	1)Ideal for longer term solution to handle higher flow rates 2) Provides more reliability for SCADA monitoring, battery backup, etc. 3) Allow use of flowmeter to monitor flows discharging to City WWTP 3)Eliminates long term clogging problems	1)Clogging still potentially an issue with siphon 2)Requires routine maintenance 3) More expensive

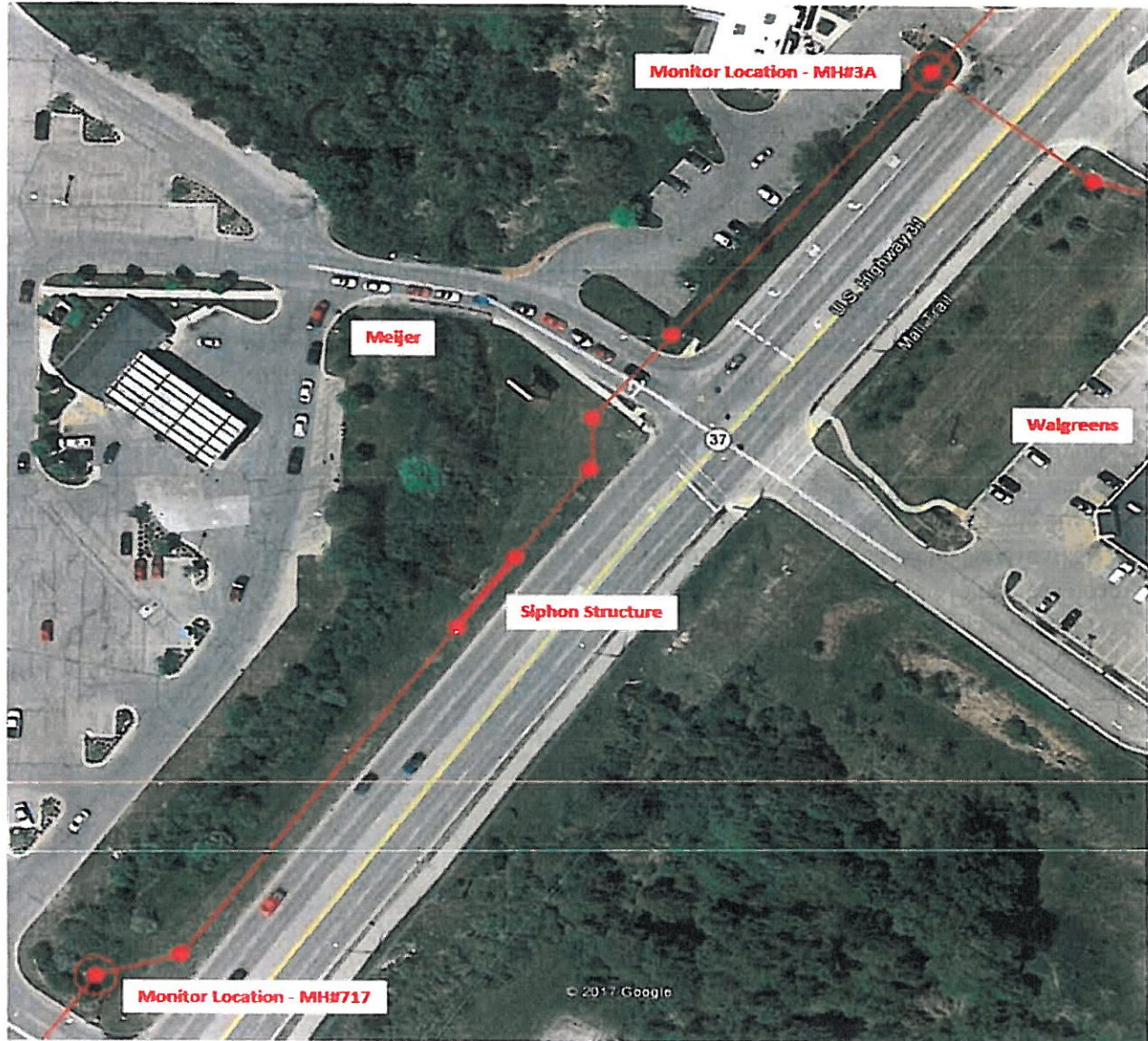


## **1.0 INTRODUCTION & PURPOSE**

The siphon is located along US-31 North in front of Meijer Grocery to convey flow under Kids Creek. It is just upstream of The Meijer Master Meter and serves the sewer districts of Barnes Road, Wyatt Road, Silver Lake Road, South US-31, and the majority of North US-31. Receiving flow from such a large service area makes this section of sewer a potential bottleneck between the service districts and the outfall to The City system. GFA conducted inspection and flow monitoring in this area to determine how much of the trunk line capacity is being utilized, and how much is available for future users.

The metering equipment consisted of an Isco Model 2150 Area Velocity Flow Meter with a pipe insert to hold the meter head in the incoming water stream. Data was obtained at 15-minute intervals measuring depth of flow, flow velocity, rate of flow in gallons per minute (gpm), and total flow in gallons. Data from the module was processed by Flowlink software by Teledyne Isco. Monitoring began on May 5<sup>th</sup> and continued around the clock through August 12<sup>th</sup>. Figure 1-1 illustrates the sewer configuration in this area, as well as the location of monitored structures. Two manholes were monitored simultaneously to provide not only flow monitoring data but to observe the current operations of the siphon. The first manhole was #717 just upstream of the siphon where a 12-inch inlet increases to an 18-inch line. The second manhole was #3A just downstream of the siphon, near the Meijer Master Meter that discharges into the City to the Wastewater Treatment Facility. These two (2) locations were chosen for placement of the metering equipment because of the shallow slope of the sewer, accessibility and DPW recommendations. The shallow slope allows for a greater level for more accurate analysis and accessibility is important to facilitate daily inspections.

Figure 1-1



## 2.0 FINDINGS & DATA

### General

Sanitary sewer flows vary throughout the day in repeating patterns termed “diurnal patterns”. Flows are generally lower in the late night to early morning and peak in late morning to early afternoon, typically corresponding with water usage. The variations in the measured flows are described with the terms outlined below.

**Minimum** – Defined as minimum flow conveyed by the system expressed as a flow rate in gallon per minute (gpm).

**Maximum** – Defined as maximum flow conveyed by the system expressed as a flow rate in gallon per minute (gpm).

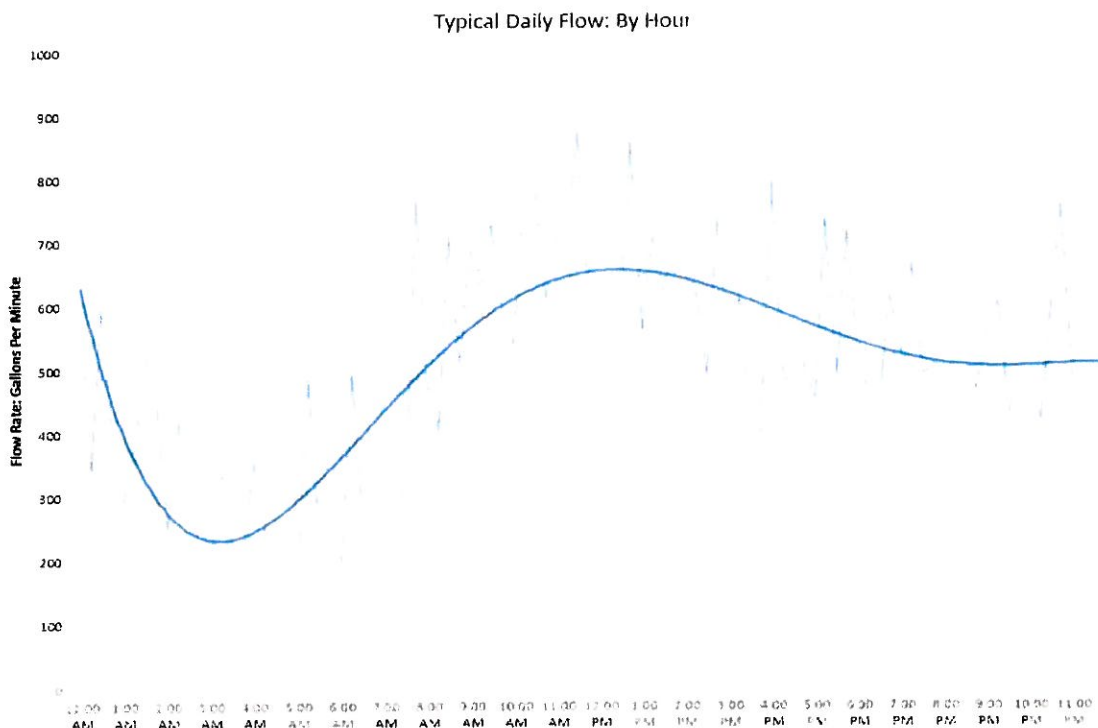
**Average Day** – Defined as the total volume of sewer discharged into the system over the monitoring period divided by the total minutes monitored. Expressed as a rate in gallon per minute (gpm).

**Maximum Day** – Defined as the maximum volume of sewer discharged into the system in any single day during the monitoring period, expressed as a rate in gallons per minute (gpm).

**Peak Hour** – Defined as the maximum volume of sewer discharged into the system in any single hour during the monitoring period, expressed as a rate in gallons per minute (gpm).

Data collected and illustrated in Graph 2-1 shows the typical diurnal pattern as was observed for the MH #717 as an example. The raw data shown consists of multiple peaks and valleys with significant variation at each 15-minute measurement. The bold trend line shows more clearly that minimum flows of 250 – 350 gpm as expected from 2:00 am to 5:00 am, with maximum flows of 550 – 650 gpm occurring between 10:00 am and 3:00 pm.

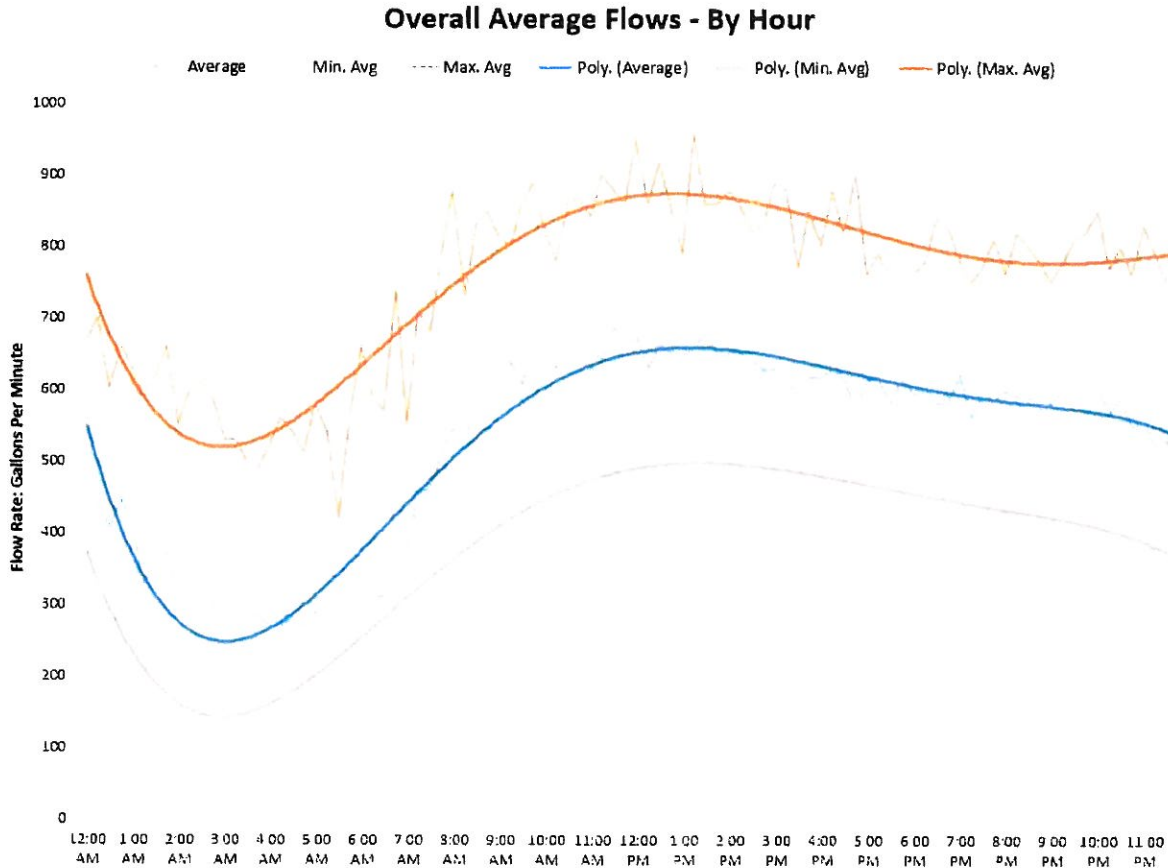
**Graph 2-1 – Typical Daily Sewer Flow Patterns by Hour – MH #717**





Variations in sewer flows also occur day-to-day and month-to-month. Graph 2-2 illustrates these variations by plotting the average maximum, average minimum and overall average flows observed at any given hour of the day during the monitoring period for the same structure. From the graph below we are able to observe that at the 8:00am hour the approximate average maximum flow, average minimum flow, and overall average flow was 750 gpm, 375 gpm, and 525 gpm, respectively.

**Graph 2-2 – Variation in Sewer Flows during the Monitoring Period, By Hour – MH #717**



**Flow Data Findings**

The below Tables 2-1 and 2-2 detail the flow characteristics currently being experienced by the siphon as well as the upstream and downstream structures. Calculations using record drawing information were utilized to determine the available capacity of the sanitary sewer both upstream and downstream. The existing inlet sewer is limited by the 12" PVC pipe at 0.4% slope equating to an available capacity of 1,010 gpm near MH#717. The existing outlet sewer is limited by the 15" vitrified clay pipe at 0.07% slope equating to an available capacity of 775 gpm near MH #3A. Review of the graphs in comparison to available capacity the following is observed: **The overall average flow experienced upstream and downstream of the siphon is utilizing 50% of the available trunk line capacity, and the Peak Hour Flows are utilizing 95% of available capacity.**

**Table 2-1 MH #717: Breakdown of Flow Received Upstream of Siphon (12" PVC Inlet)**

Statistic	Level (in)	% Full Depth	Flow Rate (GPM)	Velocity (ft/s)
Minimum	2.8	23%	160	0.45
Maximum	8.8	73%	960	2.72
Average Day	5.9	49%	519	1.47
*Maximum Day (Avg. Max Flow)	8.4	70%	553	1.57
**Peak Hour	8.1	68%	960	2.40

\* Maximum Day calculations using data from May 28, 2017 as the day where maximum conditions were obtained.

\*\* Peak Hour calculations using data from May 28, 2017 12:30pm – 1:30pm as the hour where maximum conditions were obtained.

**Table 2-2 MH #3A: Breakdown of Flow Received Downstream of Siphon (15" VCP Inlet)**

Statistic	Level (in)	% Full Depth	Flow Rate (GPM)	Velocity (ft/s)
Minimum	4.2	28%	82	0.14
Maximum	14.0	93%	787	1.29
Average Day	8.4	56%	376	0.62
*Maximum Day (Avg. Max flow)	10.4	70%	548	0.99
**Peak Hour	13.7	91%	787	1.17

\* Maximum Day calculations using data from June 7, 2017 as the day where maximum conditions were obtained.

\*\* Peak Hour calculations using data from June 7, 2017 10:00am – 11:00am as the hour where maximum conditions were obtained.

There are some variations in the flow rates measured between the two (2) locations despite the fact that both are the single inlet and outlet source; there is no additional sewer line connecting in between the two (2) monitoring locations. The discrepancy is attributed to flow attenuation which is a common occurrence. A reduction in peak flow is experienced attributed to friction loss, internal storage and diffusion along the sewer line or in this case siphon. The net volume is the same but variations in the rate can be experienced such is the case here.

## Regulations

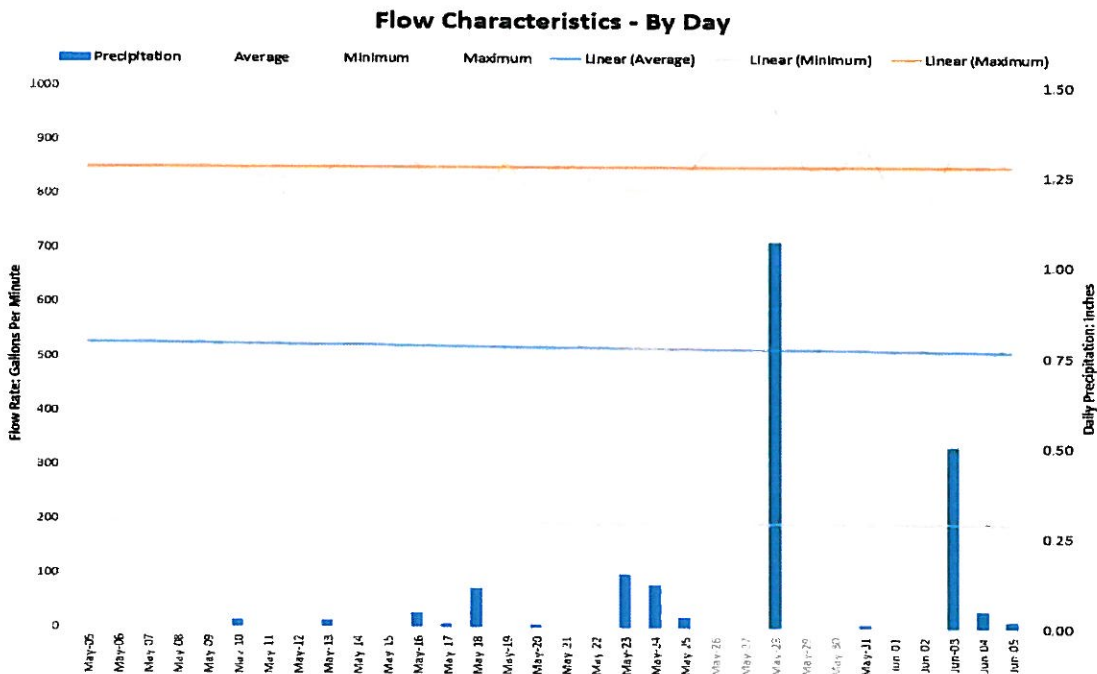
In compliance with DEQ 10 State Standards and the Grand Traverse County DPW Design guidelines, adequate sizing of the sanitary system requires minimum 2 feet per second flow velocities be maintained to prevent sediments from depositing and accumulating, as well as have capacity to transmit peak hour flows received with additional 50% capacity for future growth. GFA conducted a Flow Study of the entire Garfield Township Sanitary Sewer System in 2006. At the time of the report, this area experienced Average Day Flows of 398gpm and Peak Hour Flows of 755gpm. Current monitoring indicates this area has seen an increase in approximately 200 gpm in the past 10 years.

Adequate sizing and flow are also necessary to ensure successful operation of an inverted siphon as well. The current flow rates experienced upstream of the siphon are creating varying depth ranges in the pipe from 50 to 95% which are providing opportunity for solids to form into balls that clog the siphon. In addition, when operating at or near full capacity, air in the pipe is limited which is what the siphon uses to function (atmospheric pressure) to facilitate transportation.

## Pipe Material / Performance

Furthermore, in conjunction with this study, evaluation of rainfall events to analyze this existing sewer trunk line for Inflow/Infiltration (I/I) was conducted. The existing 12-inch diameter inlet piping is PVC however outlet is vitrified clay predating the 1960s. The findings found little, to no evidence supporting the occurrence of excessive I/I as a cause for the capacity problems. Graph 2-2 illustrates the sewer flow rates throughout the monitoring period. The maximum flow rate shows some variation over time, however the overall trend is relatively consistent showing negligible reaction during rain events. Precipitation can contribute to sanitary flows through cross sewer connection, infiltration and inflow. The daily precipitation overlaid on the graph does not indicate a significant effect on the observed flows.

**Graph 2-2 – Variation in Sewer Flows during the Monitoring Period, By Hour – MH #717**



### 3.0 RECOMENDATIONS

The sewer trunkline immediately upstream and downstream of the siphon have a rated capacity of 1,011 gpm and 775 gpm respectively and are currently operating at or 95% of the capacity during peak hour demands. Currently the siphon itself is experiencing increased clogging and need for maintenance as attributed to amount of flow in the upstream trunk line. To compound this, once capacity is exceeded, surcharging of the trunk line will likely become a frequent occurrence and immediate improvements will be necessary. To date the DPW has already increased their monitoring of this area out of concern to help manage and mitigate potential problems. However based upon the increased development and additional benefits to be served by this primary trunk line it is estimated that improvements should be implemented within the next year. The following recommendations and/or suggested improvements.

#### Immediate

1. Reroute the flows south of South Airport including Blair Township that is captured by Pump Station #6 to Pump Station #2 located near Logans Landing. In 2005 GFA and the Township performed capitol improvements to upgrade the existing station to accommodate Blair Township. This included the installation of gate valves to allow the Township the flexibility to reroute flows in the future if needed. The station capacities are as follows:

~Pump Station #6 is rated at 700 GPM and experiences approximately 350 gpm peak hour currently.

~Pump Station #2 is rated at 1400 gpm and experiences a peak hour rate of 600 gpm

Therefore Station #2 has approximately 800 gpm reserve capacity and should be more able to accommodate Station #6 peak hour flows. It is requested that a more in detailed review of the historical pump data be completed for both stations to confirm, however it is an extremely viable option to alleviate some flow and free up some capacity (~25%) at the siphon for a projected 3 to 5 year time period.

Budgetary costs are limited to GFA staff time and DPW time to coordinate ~\$1,000.00

#### Short Term (3-5 Year)

Growth will continue and the reroute will provide a significant relief for the short term however future considerations and planning for the 3 to 5 year period should be accounted for. The Township should consider evaluating the long-term as it is inevitable the system would be extended/expanded due to developments along Cedar Run, Silverlake, Long Lake, US-31 South including Blair Township and other distribution options should be explored that would extend beyond a 3-year period.

In addition, despite the reroute, clogging of the siphon may still continue as they rely on adequate pipe slopes, flow and atmospheric pressure to operate. Siphons work in certain applications and has at this location since 1992 but routine maintenance is mandatory; latency with this causes small problems to become worse. Two (2) viable options exists to address both problems:

1. Install a larger siphon and corresponding piping upstream and downstream. This will potentially address both the clogging and the segments of piping that have capacity restrictions to sustain the system another 20 + years. Inverted siphons are historically



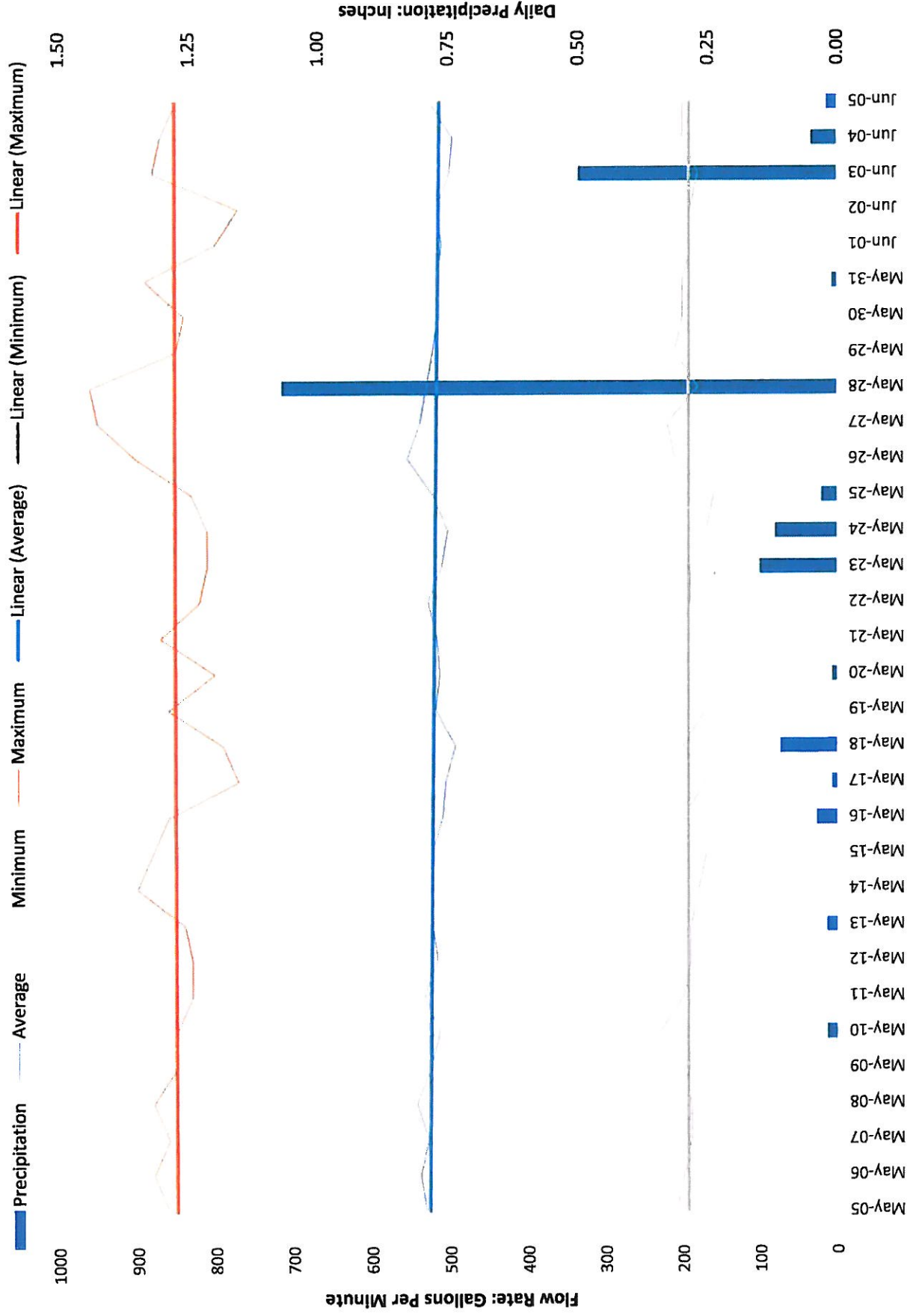
known to be labor intensive requiring routine maintenance. This is especially becoming more true as the type of solids now introduced into the system by users have changed. They are stringy and ball up easily creating a perfect plug for a siphon. Further discussions with DPW staff are warranted to make the decision to abandon. Budgetary costs for the upgrade is estimated to be \$150,000.00

2. Install a sanitary sewer pump station, forcemain to replace the siphon. This work would still include upsizing the segments of piping that have capacity restrictions due to size. The forcemain would be installed by method of directional drilling and the upsizing would be completed by method of pipe burst. This is a very expensive alternative and would alleviate the routine maintenance of the siphon but add the maintenance and operational costs of a new pump station. This may be considered a better option to consider in the long term when substantially more growth / sewer flow rates are experienced. A pump station provides the ability for remote monitoring, backup power and reliability that a static siphon cannot provide. Budgetary costs for the upgrade is estimated to be at \$450,000

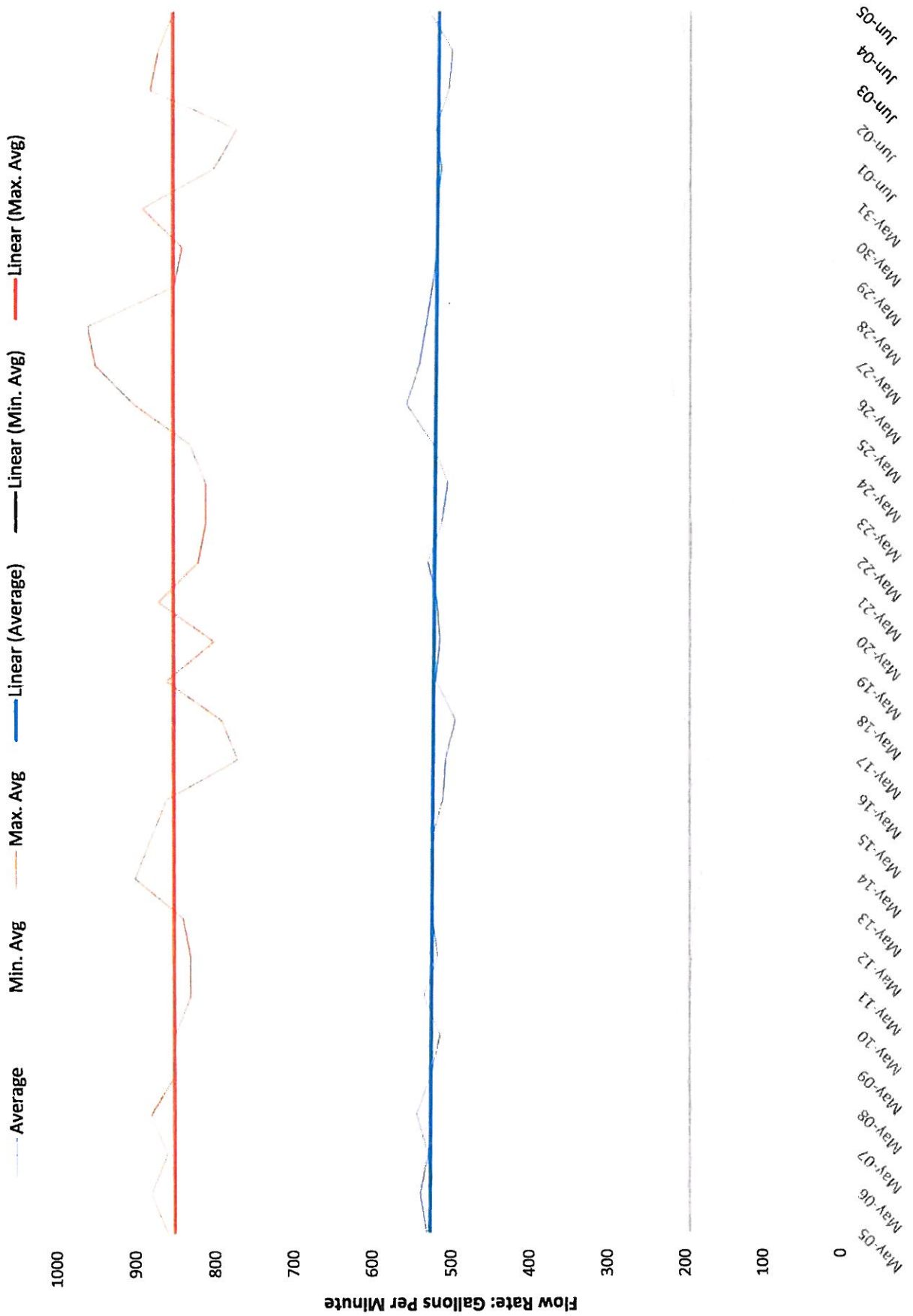
**APPENDIX A**  
**Flow Meter Charts**

## **MH #717 Flow Monitoring Charts**

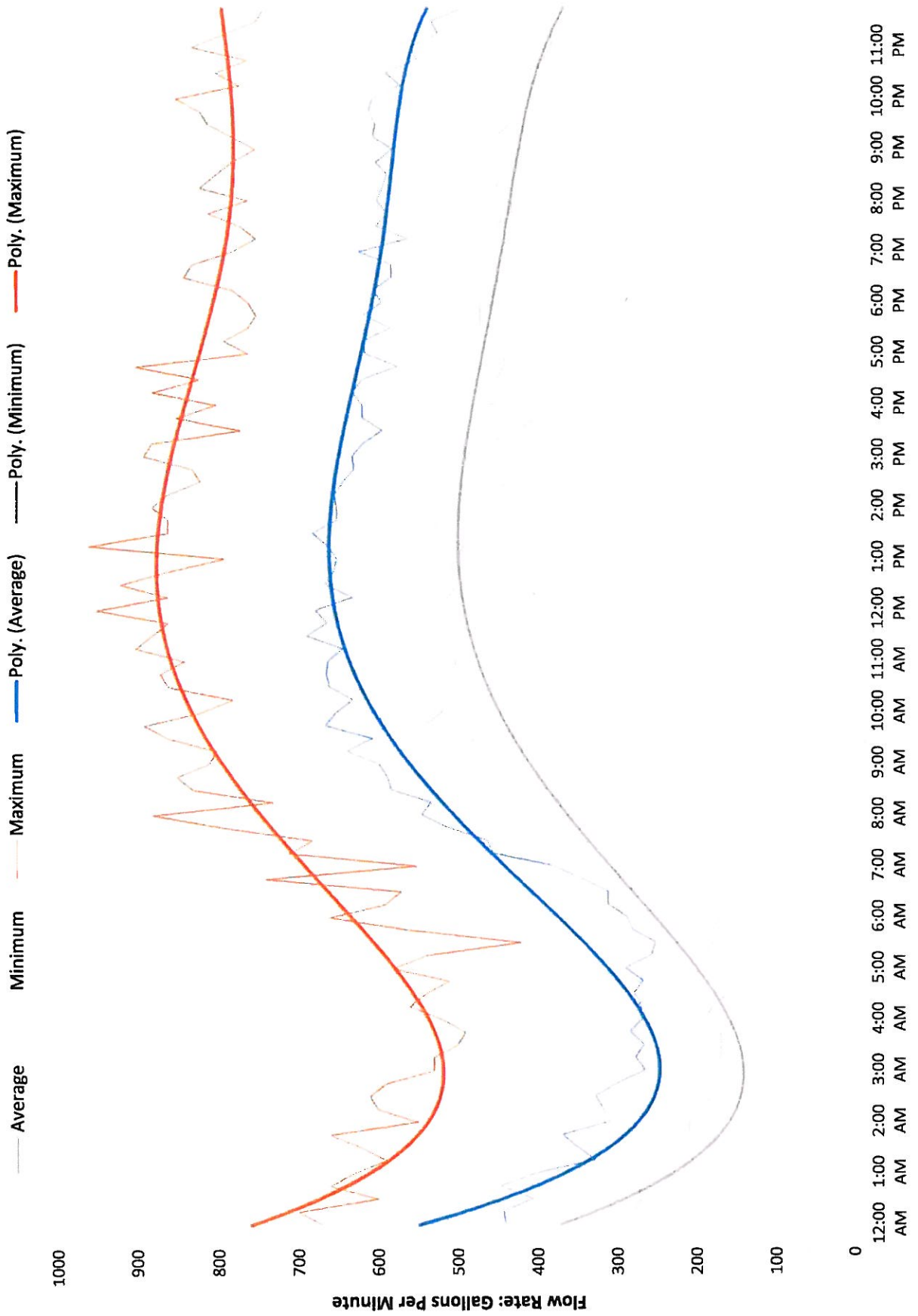
# Flow Characteristics - By Day



# Overall Average Flows - By Day



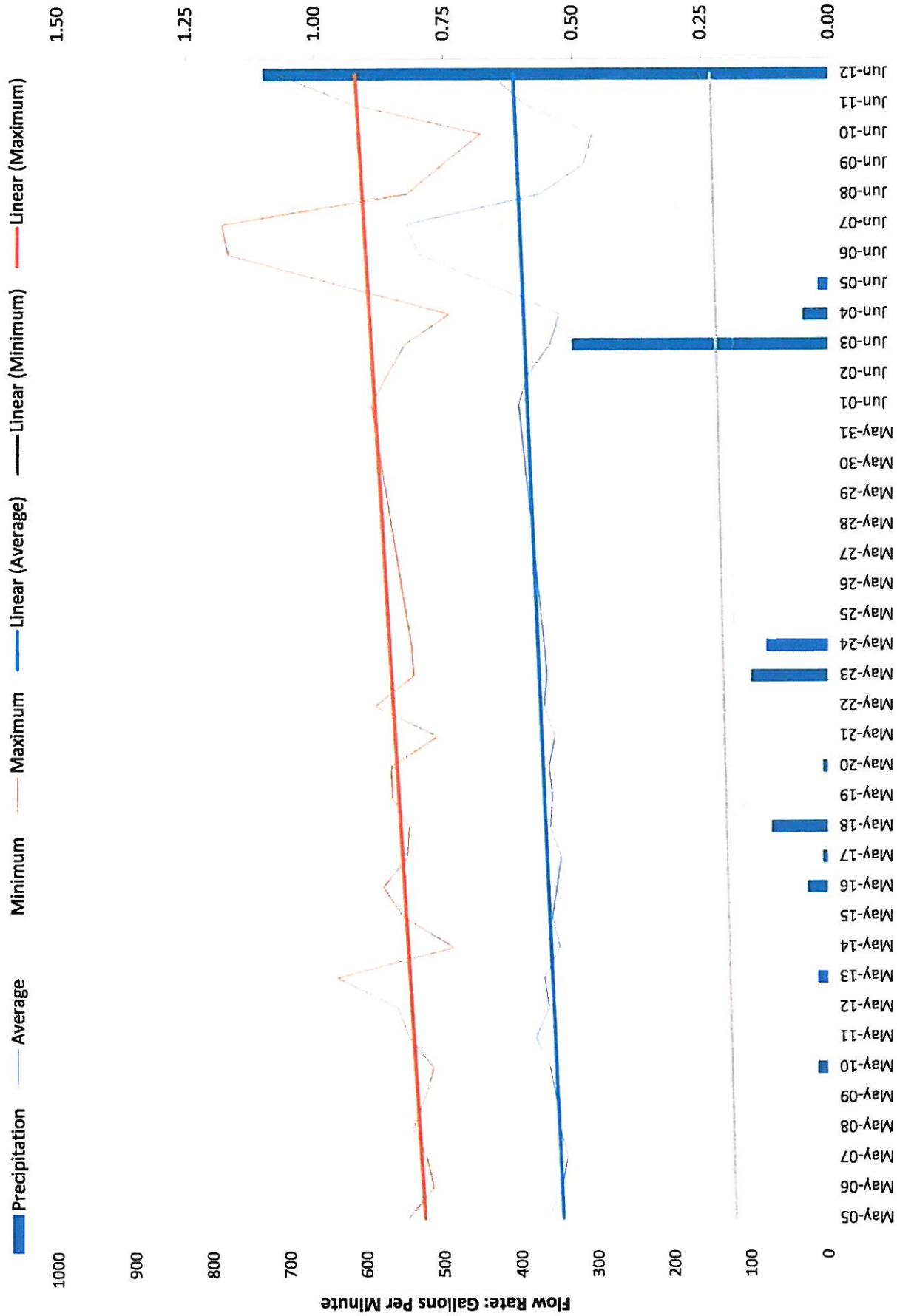
# Overall Average Flows - By Hour



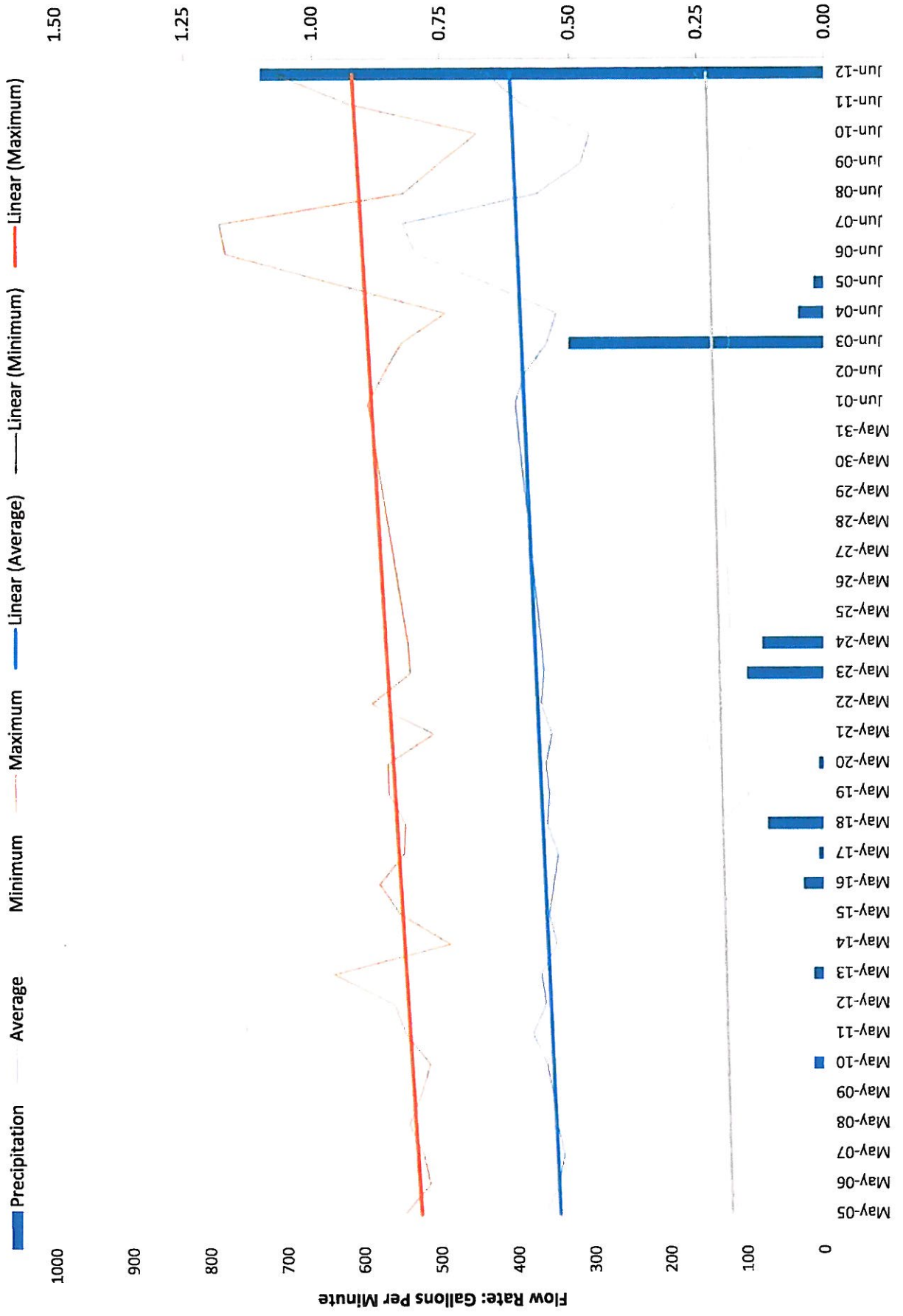
## **MH #3A Flow Monitoring Charts**



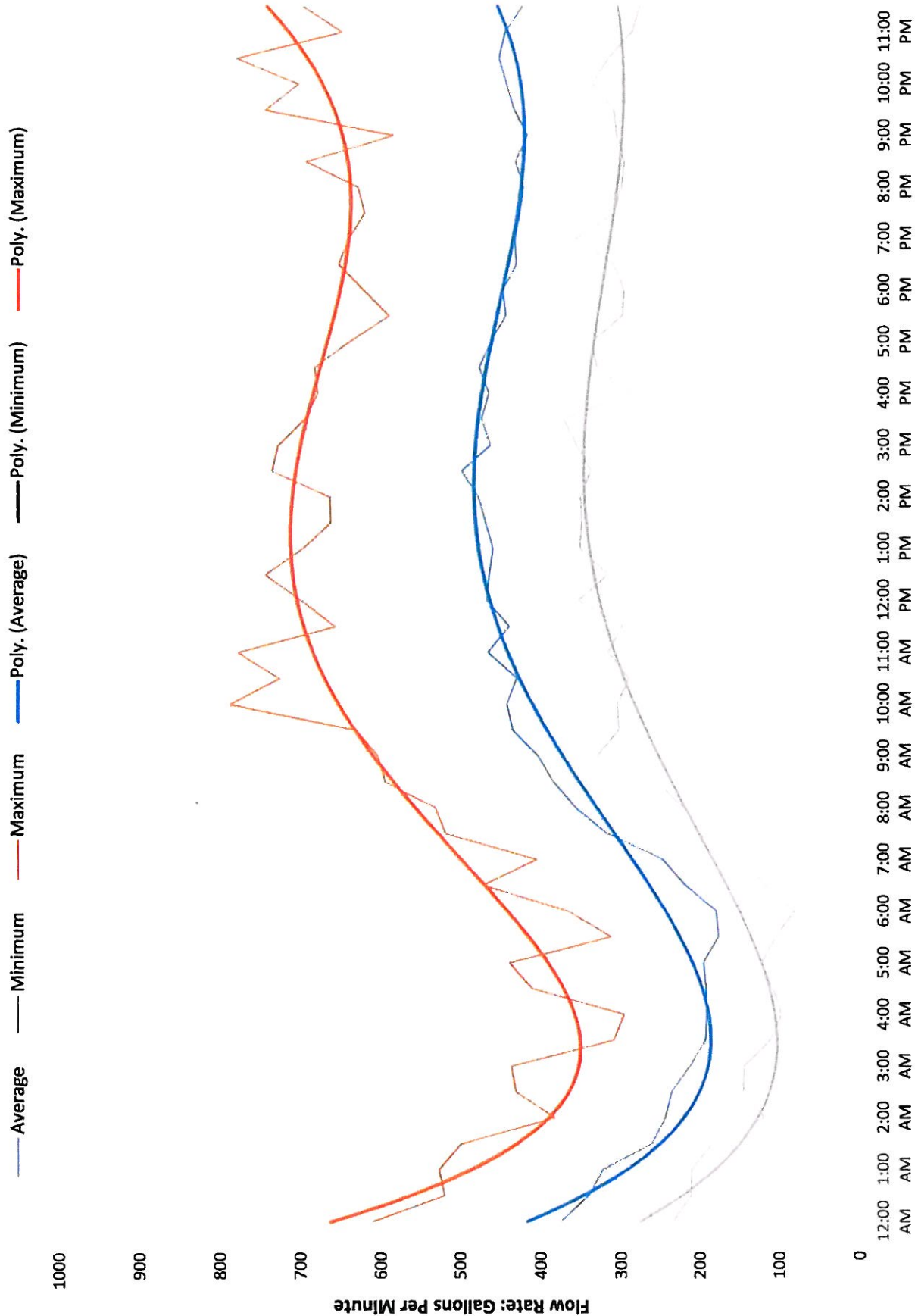
# Overall Average Flows - By Day



# Overall Average Flows - By Day



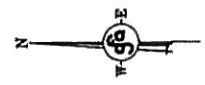
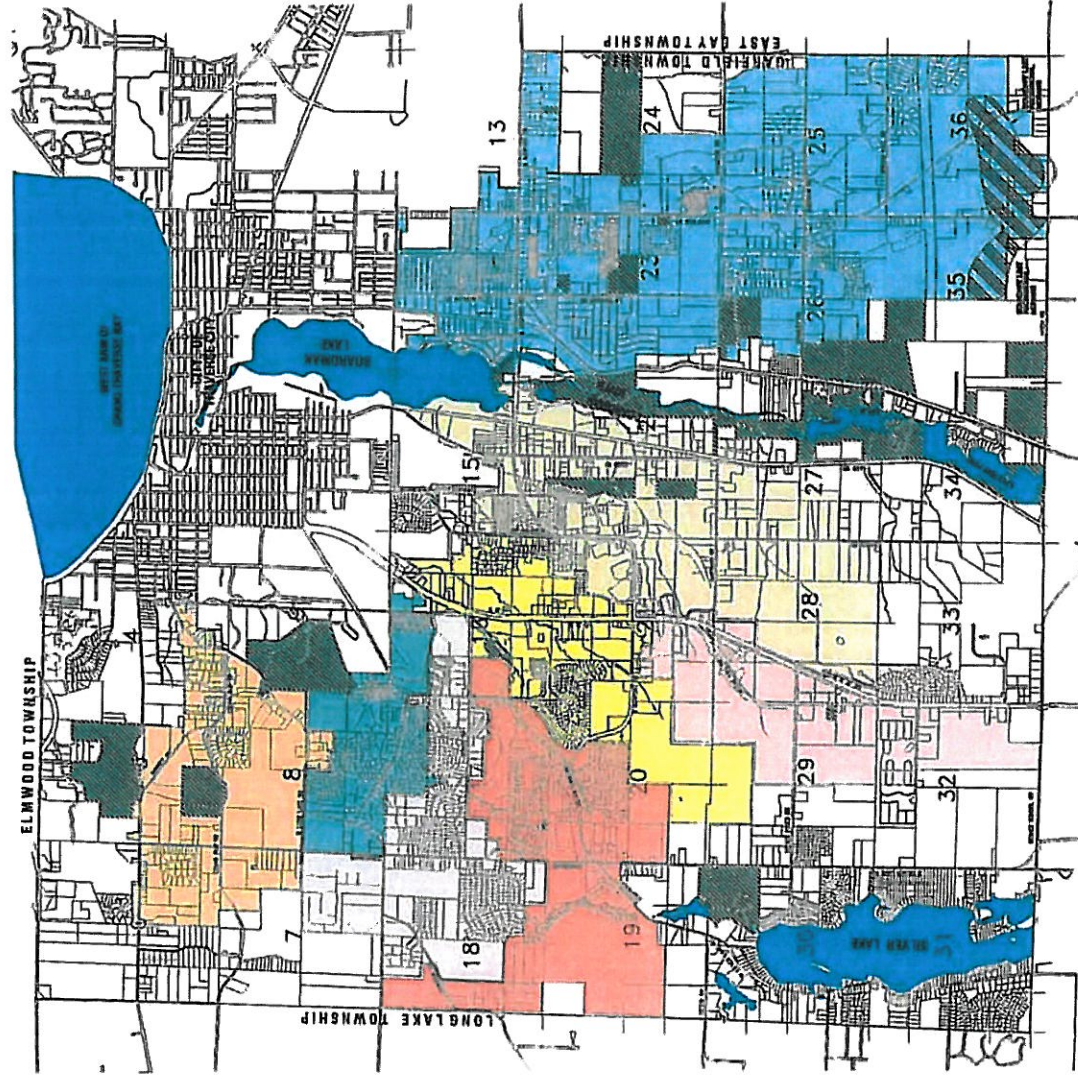
# Overall Average Flows - By Hour



**APPENDIX B**  
**Overall Sewer District Map**



Sanitary Sewer Service District Map  
 Garfield Township, Grand Traverse County



SCALE: 1"=4,000'

**LEGEND**

DISTRICT NAME	Color/Pattern
CEDAR RUI ROAD	Orange
BARNES ROAD	Blue with diagonal hatching
WYATT ROAD	White
SILVER LAKE ROAD	Red
NORTH U.S.-31	Yellow
SOUTH U.S.-31	Pink
CASS ROAD	White
GARFIELD ROAD	Light Blue
PARCELS IN PUBLIC TRUST	Green

FIGURE VIII