



## Executive Summary

As a member of the Livingston County Board of Commissioners whose jurisdiction covers Hartland and Tyrone Townships, several citizens have approached me with their concerns about traffic safety along M-59 in Hartland Township. Specifically, they mentioned the high number of traffic accidents from Hartland Woods Drive to Old US 23 (this portion of M-59 will be referred to as “M-59 in Hartland.”) Located along M-59 in Hartland are an assisted living facility, a senior center, a public school, and a school administration building.



*Wes Nakagiri - Commissioner, District 3*

While the Board of Commissioners does not have jurisdiction over state highways such as M-59, I conveyed to citizens that I would look into this issue. As part of my investigation I requested, and recently received authorization to access the Michigan State Police Traffic Crash Reporting System (TCRS). The TCRS hosts data about all traffic accidents in the State of Michigan.

Using the TCRS I compiled 10 years of crash statistics for Livingston County. I then analyzed these statistics in an attempt to quantify the magnitude of the traffic safety problem reported to me by concerned citizens.

An initial examination of 10 years of data showed that there is an elevated level of crashes in this area. This area ranked anywhere from the 17<sup>th</sup> to the 26<sup>th</sup> highest in the amount of crashes during the period from 2009-2018 in Livingston County. While these rankings are of concern, an alternate examination of the data indicates accident rates are even higher.

As illustrated later in this report, the alternate analysis shows this problematic area has nearly twice the rate of traffic accidents compared to a nearby stretch of M-59, between Latson Road and Eager Road. (This stretch of M-59 will be referred to as M-59 in Oceola.) What is significant about M-59 in Oceola is that TCRS data indicates this stretch of roadway has the 2<sup>nd</sup> highest crash rate in Livingston County.

How was this alternate analysis performed? This analysis used “crashes per mile of roadway” as the measurement statistic. Because of its shorter distance, M-59 between Hartland Woods Drive and Old US 23 has a rate of between 388 to 420 crashes/mile, while M-59 between Latson and Eager a rate of 217 crashes per mile. When measured by crashes/mile, the magnitude of the problem is nearly double that of the stretch of road having the second highest crash rate in Livingston County.

Another analysis supports the conclusion that M-59 in Hartland has a crash rate which is greater than that of M-59 in Oceola.

Crash statistics associated with M-59 in Hartland are reported as two separate stretches of roadway, while crash statistics associated with M-59 in Oceola are reported as a single stretch of roadway.

Crash statistics for the 0.3 mile stretch of M-59 between Hartland Woods Drive and Oak Brooke Drive are reported separately from the 0.4 mile stretch of M-59 between Andover Boulevard and Old US 23. A total



of 126 accidents were reported in the 0.3-mile stretch, while 155 accidents were reported in the 0.4-mile stretch.

Combining crash statistics from these two stretches of M-59 into a single 0.7-mile stretch, one sees there are a total of 281 crashes on M-59 in Hartland. Compared to the 260 crashes on the 1.2 mile stretch of M-59 in Oceola, it is easy to see that there are more total crashes along M-59 in Hartland.

Over the past 10 years, whether measuring crashes/mile or total crashes, M-59 in Hartland exhibits more crashes than the 2<sup>nd</sup> ranked location in Livingston County. By either measure, the TCRS data indicates a closer look at M-59 in Hartland is likely warranted.

The findings presented suggests that Michigan Department of Transportation officials should consider the following:

- Conduct an independent analysis of TCRS data, and any other pertinent data to corroborate the findings presented in this report. A traffic safety professional will likely have access to additional data and evaluation tools.
  - If warranted by the independent analysis, elevate the priority for addressing traffic safety issues along M-59 between Hartland Woods Drive and Old US 23.
  - If warranted by the independent analysis, expedite the implementation of any countermeasures which would mitigate the number of traffic accidents along M-59 between Hartland Woods Drive and Old US 23.

It would be optimum if MDOT would provide periodic updates regarding progress toward any short-term or long-term crash mitigation plans.

Questions regarding this report should be directed to:

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**Analysis and Methodology**

Multiple citizens have expressed concerns about the number of traffic accidents on M-59 near the Village Manor Assisted Living Facility, the Hartland Senior Center, and Charyl Stockwell Academy. This stretch of M-59 is referred to as M-59 in Hartland.

In an attempt to quantify the degree of traffic safety, TCRS crash statistics were compiled for the 10-year period from 2009 to 2018. Statistics from M-59 in Hartland were compared to statistics from the stretch of M-59 from Latson Road to Eager Road, also known as M-59 in Oceola. This specific comparison was undertaken because TCRS statistics showed M-59 in Oceola had the second highest number of crashes in Livingston County (260 total crashes). Further, it was thought that the similarity in traffic volumes between these different stretches of M-59 enhances the usefulness and validity of any conclusions.

The TCRS reports the location of all traffic accidents in the State of Michigan. M-59 in Hartland contains two TCRS locations while M-59 in Oceola contains one TCRS location. These three TCRS locations are labeled as:

- A. HIGHLAND RD BETWEEN ANDOVER BLVD AND N OLD US 23
- B. E HIGHLAND RD BETWEEN HARTLAND WOODS DR AND OAKBROOKE DR
- C. E HIGHLAND RD BETWEEN N EAGER RD AND N LATSON RD

The first two TCRS locations (Segments A and B) are associated with M-59 in Hartland, while the third TCRS location (Segment C) is associated with the second highest number of crashes in Livingston County. The crash statistics from these three TCRS locations are shown in Table 3.

Segment	TCRS Location	M-59 in Hartland	# of Crashes <sup>1</sup>	Ranking in County	Length (miles) <sup>2</sup>	Traffic Volume <sup>3</sup>
A	HIGHLAND RD BETWEEN ANDOVER BLVD AND N OLD US 23	yes	155	17	0.4	20,239
B	E HIGHLAND RD BETWEEN HARTLAND WOODS DR AND OAKBROOKE DR	yes	126	26	0.3	20,239
C	E HIGHLAND RD BETWEEN N EAGER RD AND N LATSON RD	no	260	2	1.2	20,744

Table 1 - Traffic Statistics

When examining the three TCRS locations as individual locations one could conclude that Segment C has significantly more traffic accidents than Segments A or B. However, if you combine Segments A and B together one could draw the opposite conclusion. Table 2 below shows this combined comparison.

<sup>1</sup> Number of crashes and ranking in county are from TCRS, 2009 – 2018, High Crash Report by County - Displays a ranking of high crash locations by either intersection or segment of road for up to 5 counties.

<sup>2</sup> From Google Maps

<sup>3</sup> From MDOT, Average Daily Traffic (2017)



Segment	TCRS Location	M-59 in Hartland	# of Crashes	Length (miles)	Daily Traffic Volume
A + B	HIGHLAND RD BETWEEN ANDOVER BLVD AND N OLD US 23 plus E HIGHLAND RD BETWEEN HARTLAND WOODS DR AND OAKBROOKE DR	yes	281	0.7	20,239
C	E HIGHLAND RD BETWEEN N EAGER RD AND N LATSON RD	no	260	1.2	20,744

Table 2 - Analysis after Combining Segments A and B

After combining the two locations along M-59 in Hartland an analyst would draw a different conclusion with respect to the severity of the traffic concerns. Specifically, Segment A + B (M-59 in Hartland) exhibits more traffic accidents than Segment C (M-59 in Oceola). Recall that M-59 in Oceola is the Livingston County location with the 2nd highest number of crashes during the 10-year period from 2009 to 2018.<sup>4)</sup>

Other conclusions from this combined data are:

- The length of Segment A + B is about half the length of Segment C, yet there are more crashes in the Segment A + B. When compensating for the difference in length, a comparison of Segment A + B vs. Segment C shows the former having 401 crashes/mile and the latter 217 crashes/mile.
- The traffic volume in each segment is approximately equal. Therefore, traffic volume does not explain the difference in the number of crashes/mile between Segment A + B vs. Segment C.

Segment	TCRS Location	M-59 in Hartland	# of Crashes	Length	Crashes/mile
A	HIGHLAND RD BETWEEN ANDOVER BLVD AND N OLD US 23	yes	155	0.4 miles	388
B	E HIGHLAND RD BETWEEN HARTLAND WOODS DR AND OAKBROOKE DR	yes	126	0.3 miles	420
A + B	HIGHLAND RD BETWEEN ANDOVER BLVD AND N OLD US 23 plus E HIGHLAND RD BETWEEN HARTLAND WOODS DR AND OAKBROOKE DR	Yes	281	0.7 miles	401
C	E HIGHLAND RD BETWEEN N EAGER RD AND N LATSON RD	no	260	1.2 miles	217

Table 3 - Analysis Using Individual Segments

In addition to examining the combined segments as shown in Table 2, it is also informative to compare each individual segment in terms of the number of crashes per mile. This individual segment comparison is shown in Table 3.

When compared to the second worst area for crashes in Livingston County, the two locations along M-59 in Hartland have crash/mile rates that are nearly twice as high. The data in Table 3 suggests that citizen

<sup>4</sup> The TCRS location with the most crashes is E I 96/GRAND RIVER RAMP AND W GRAND RIVER AVE in Brighton Township. This location had 354 crashes. This location is near Exit 145 of I96 in Brighton.



concerns about traffic safety along M-59 in Hartland are well founded. Further adding to the safety concerns is the fact that Village Manor Assisted-Living Facility, the Hartland Senior Center, and the Hartland Consolidated Schools Administration building are located along the north side of M-59 in Hartland, while Charyl Stockwell Public Academy is located along the south side of M-59 in Hartland.

### **Data**

Data was downloaded from the TCRS database for analysis. Ten years of data were downloaded in one-year increments. The data were then consolidated into a single Microsoft Excel spreadsheet for analysis.

This spreadsheet has been embedded into this report below. Click on the Excel icon to view the data.



**FACTS AND FIGURES**

**1. Facts with respect to M-59 between Hartland Woods Drive and Old US 23, also known as M-59 in Hartland**

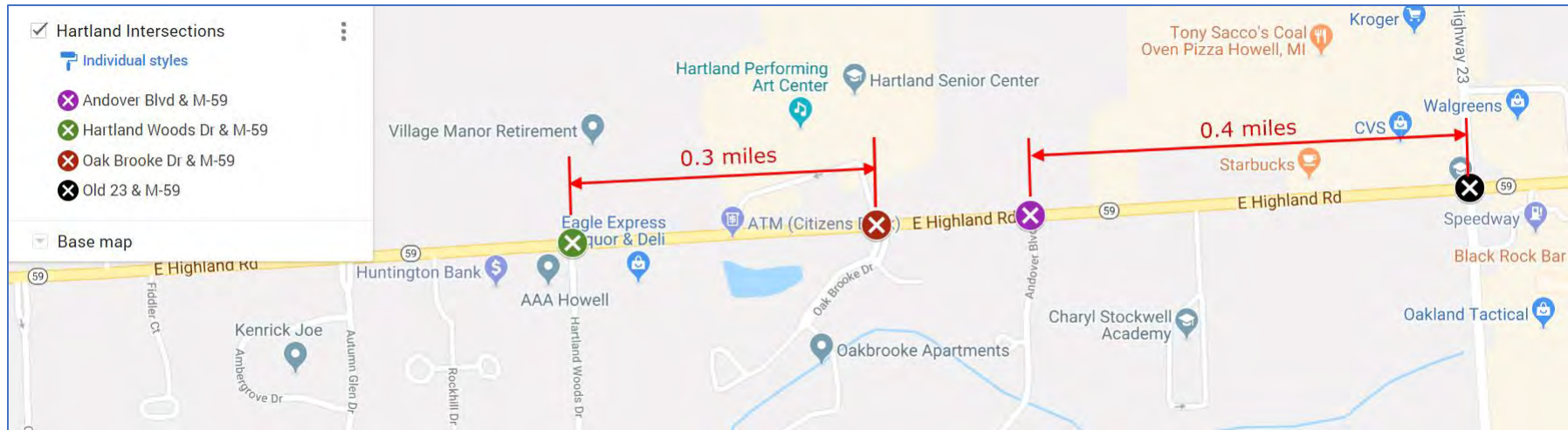


Figure 1 – Google Map, M-59 from Hartland Woods Drive to Old 23. This report refers to this stretch of road as M-59 in Hartland.

Citizens have expressed concerns regarding traffic safety along M-59 between Hartland Woods Dr. and Old 23. Below are pertinent statistics.

Segment	Start Point	End Point	Distance <sup>1</sup>	# of Crashes (2009-2018) <sup>2</sup>	Average Annual Daily Traffic (AADT) <sup>3</sup>
Village Manor Retirement Home and Hartland Senior Center	Hartland Woods Dr & M-59	Oak Brooke Dr. & M-59	0.3 miles	126	20,239
unnamed	Oak Brooke Dr. & M-59	Andover Blvd. & M-59	0.1 miles	0	20,239
Charyl Stockwell Academy	Andover Blvd. & M-59	Old US 23 & M-59	0.4 miles	155	20,239

Table 4 - Traffic Statistics for M-59 in Hartland

<sup>1</sup> Google Map was used to calculate distances, <sup>2</sup> Traffic crash statistics obtained from Traffic Crash Reporting System (TCRS) from Michigan State Police

<sup>3</sup> Average Annual Daily Traffic statistics obtained from MDOT, (most recent data is from 2017)



2. Facts with respect to M-59 between Latson Road and Eager Road, also known as M-59 in Oceola

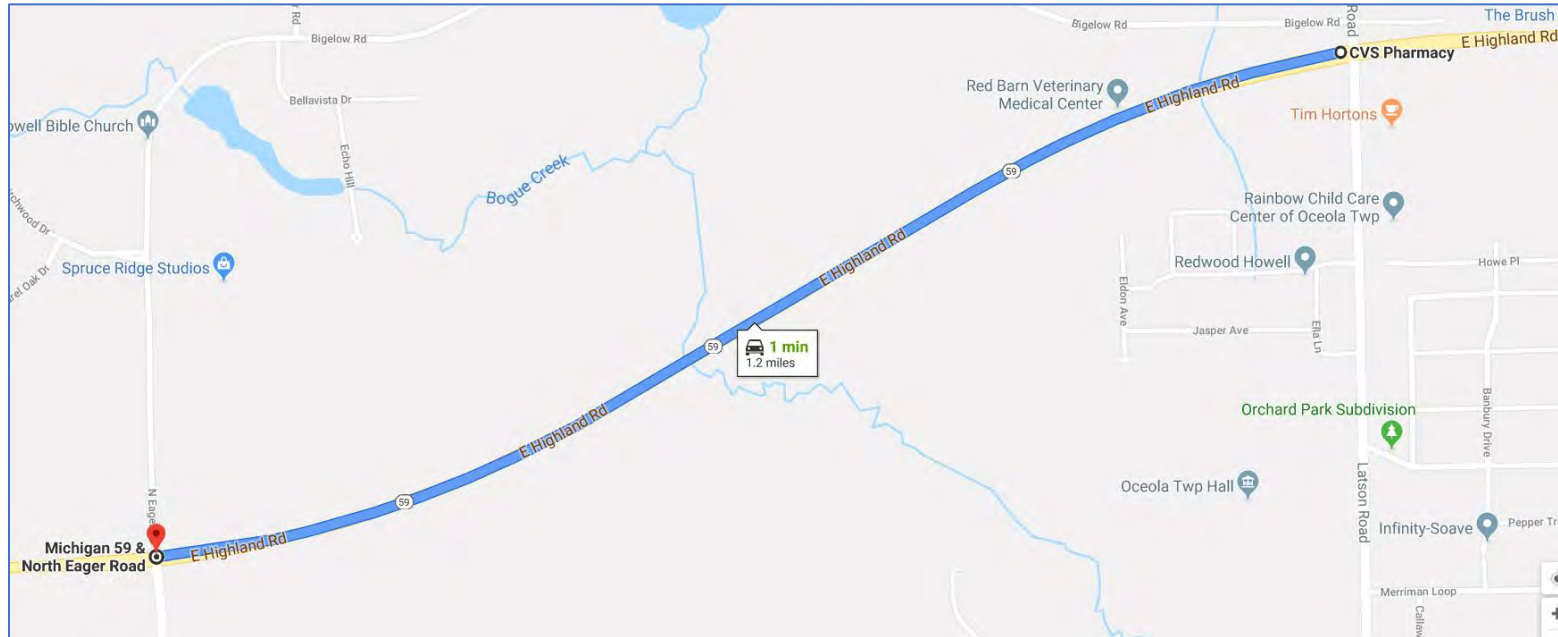


Figure 2 - Distance along M59 between Latson and Eager Roads is 1.2 miles according to Google Maps

For the period 2009-2018, the stretch of M-59 between Latson Road and Eager Road had the 2<sup>nd</sup> highest number of crashes in Livingston County.

Segment	Start Point	End Point	Distance <sup>1</sup>	# of Crashes (2009-2018) <sup>2</sup>	Average Annual Daily Traffic (AADT) <sup>3</sup>
2 <sup>nd</sup> Highest Crash Rate	Latson Rd & M-59	Eager Rd & M-59	1.2 miles	260	20,744

Table 5 - Traffic Statistics from M-59, between Latson and Eager

<sup>1</sup> Google Map was used to calculate distances

<sup>2</sup> Traffic crash statistics obtained from Traffic Crash Reporting System (TCRS) from Michigan State Police

<sup>3</sup> Average Annual Daily Traffic statistics obtained from MDOT, (most recent data is from 2017)



### 3. Facts with respect to Figure 3

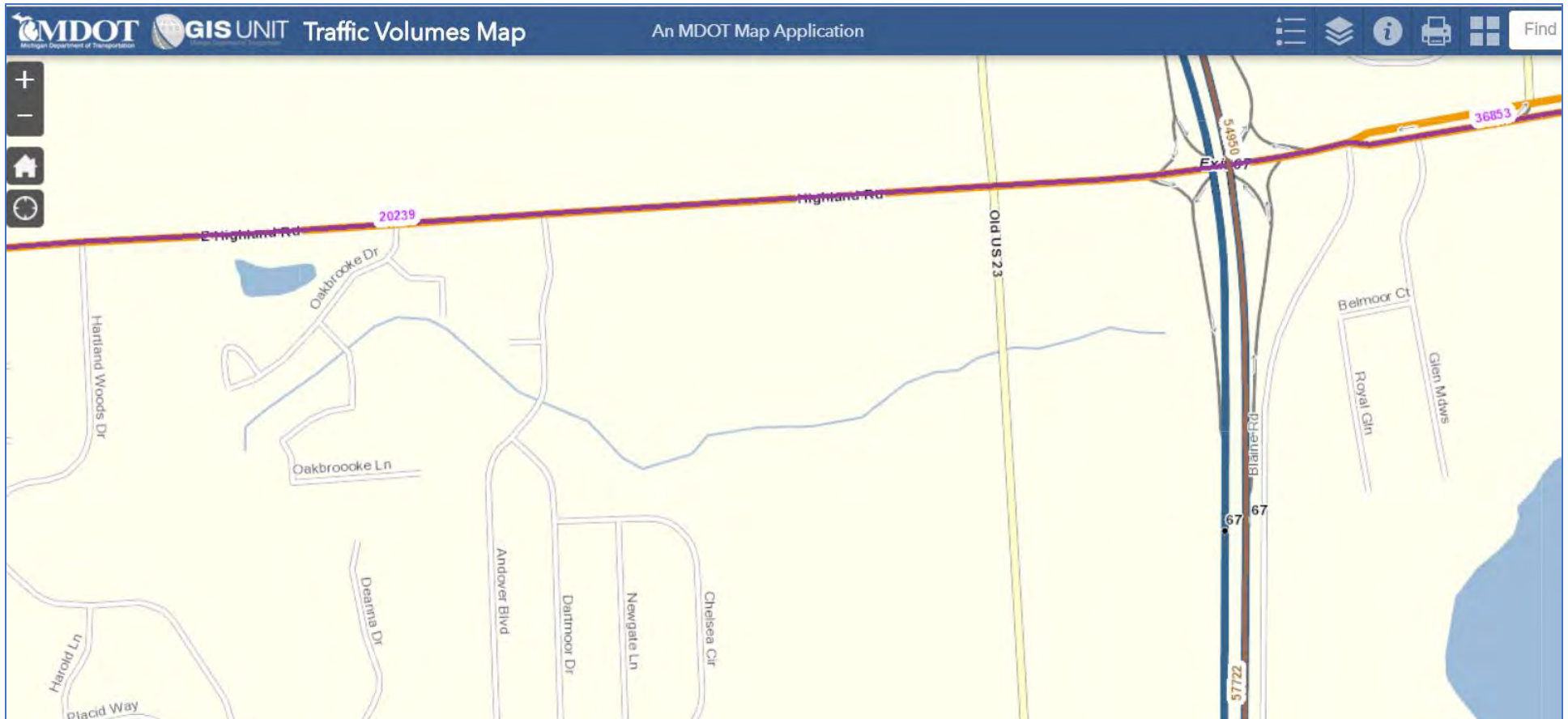


Figure 3 - MDOT Traffic Volume Map, Along M-59 near Old 23 (<https://mdot.maps.arcgis.com/apps/webappviewer/index.html?id=e48aa2a7804845c4aee71fd7344db54a>)

- a. Traffic volume along M-59, east of Hartland Woods Drive and west of Old US 23 is 20,239 vehicles per day.
- b. It is along this stretch of M-59 where citizens have expressed concerns about the number of traffic accidents. Located along this stretch of M-59 is an assisted living facility, a senior center, and a public school.
  - i. Village Manor Retirement Home, the Hartland Senior Center, and Hartland Consolidated Schools are located along the north side of M-59.
  - ii. Charyl Stockwell Academy is located along the south side of M-59





4. Facts with respect to Figure 4



Figure 4 – MDOT Traffic Volume along M-59 between Latson and Eager

- a. Traffic volume along M-59, east of Latson Road and west of Eager Road is 20,744 vehicles per day. This stretch of M-59 had the second highest number of traffic accidents in Livingston County.
- b. Note: This volume is approximately equal to the 20,239 vehicles which travel along M-59 in Hartland.



## **5. Data Exported from TCRS**

Due to TCRS limitations, data was exported one year at a time. A total of ten exports were conducted to download ten years of data from 2009 to 2018. The current year (2019) was excluded from this analysis because it did not include a full year of data.

The TCRS data were copied into an Excel Spreadsheet for analysis. A copy to this spreadsheet file is embedded into this report. Click on the icon below to view the spreadsheet.