2018
WATER SAMPLING RESULTS FOR SELECTED MS4 SITES

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IN-STREAM SAMPLING PROTOCOLS FOR MS4 SITES

Beginning the second week of May and ending the last week of September, the Storm Water Section of the Environmental Health Division conducted surface water testing on a weekly basis throughout the county on ditches, creeks, lakes, and the Elkhart River. The sampling provides data to help prioritize sites with a high illicit discharge potential, characterizes water quality problems, helps determine critical areas for improvement, and documents the long term success of the illicit discharge and elimination program.

The sites are selected by storm water representatives from the MS4 Partnership which includes the cities of Elkhart and Goshen, the town of Bristol, and Elkhart County agencies which meet annually to determine if changes need to be made to the locations. The standard procedure is to obtain a minimum of three years of data per site in order to identify any trends. The following is a list of the sites from the 2018 season:

New Miller Stutsman Ditch; CR 28
Shaffer Ditch; CR 28
Fulmer Ditch; CR 28; site was eliminated due to safety concerns reported by the County Surveyor
Hoke Ditch; CR 9
Yellow Creek; CR 138
Weaver Ditch; CR 44
Pine Creek; CR 23 and Roske Drive at Wyland Drive
Christiana Creek; CR 4
Swoveland Ditch; CR 15 and CR 19
Dausman Ditch; CR 15 and CR 19
Turkey Creek; CR 50
Solomon Creek; CR 33 and CR 52
Elkhart River; CR 43 and Indiana Avenue
Heaton Lake; Ideal Beach and 22892 Lake Shore
Simonton Lake; 51093 Beach Drive and 51330 SR 19

The sampling form includes whether the sample was considered wet or dry and whether it was raining at the time of sample collection. A wet weather event is defined as a rain event with precipitation greater than .1 inches of rain within a twenty-four hour period prior to collection. A dry weather event is defined as a sampling event with no precipitation twenty-four hours prior to collection.

Data gathered for chlorides, dissolved oxygen, pH, temperature, and conductivity are obtained in the field by using a YSI Professional Plus Instrument Probe. Calibration of the instrument probe is done in accordance with the owner's manual. The instrument probe is lowered into the approximate center part of the waterway and placed below the surface of the water to obtain actual real time data. At the sites with piers (Heaton Lake and Simonton Lake) the instrument probe is lowered into the water at the end of the piers. According to the technical experts at YSI, this information is to be used for trending purposes only.

Tests for nitrates, phosphorus, total suspended solids, and E. coli are grab samples in which a single volume of water is obtained at a given point in time, placed in a prepared sample bottle, and then analyzed. Water samples were collected using one of two methods. For low flow sampling and sites with piers, a dipper was used. The dipper is rinsed three times at each site prior to collection to prevent

cross contamination between samples sites. For high flow streams, a Van Dorn sampler is used. The device is lowered into the approximate center of the waterway and placed below the water surface for a minimum of twenty seconds with the ends open to allow rinsing of the unit between sampling sites. A weight is then dropped on a line striking a triggering mechanism which tightly closes each end of the tube at the same time. This captures the free flowing water to be sampled. All samples are placed in pre-labeled and prepared sample bottles.

Nitrates and phosphorus samples are collected for analysis in the Elkhart County Health Department Laboratory using a Hach portable spectrophotometer. Chain of custody procedures are required and implemented. These include labeling the bottles with the sample site number and all other information as recorded on the water sampling form. Items on the water sampling form include the sampling site identification, sampling date and time, sampling number, dry or wet event, raining at the time of collection, and "ECHD" as the agency that collected the sample.

Total suspended solids are collected every Tuesday at selected sampling sites: Swoveland Ditch on CR 15 and CR 19; Dausman Ditch on CR 15 and CR 19; Turkey Creek on CR 50; and Solomon Creek on CR 33 and CR 52 for analysis by the Elkhart Public Works and Utilities Laboratory. Every other Thursday, total suspended solids are collected at New Miller Stutsman Ditch on CR 28; Shaffer Ditch on CR 28; Fulmer Ditch on CR 28; and Hoke Ditch on CR 9 for analysis by the City of Goshen Waste Water Treatment Plant Laboratory. For all E. coli samples and the Tuesday total suspended solids samples, a label is filled out with the site number, location, collection date, who collected the sample, who transported and relinquished the sample. These documents are attached to the sample container. Upon arrival at the Elkhart Public Works and Utilities Laboratory, time is also added to the label. The label includes a space to acknowledge who received the sample. The Elkhart County Health Department's water sampling form is also signed by an Elkhart laboratory representative with the time of sample delivery and a copy is made and kept in their laboratory records. This procedure is implemented to verify chain of custody. For the Thursday total suspended solids, the samples are collected in pre-labeled containers with the site number, location, date, and who collected the sample. The time is added to the sampling form when the samples are delivered to the City of Goshen Waste Water Treatment Plant Laboratory. Upon delivery, an Elkhart County Health Department representative places the total suspended solids samples into a refrigerated unit to ensure proper temperature requirements before analysis.

All samples collected are immediately placed in a cooler with chill packs as soon as they are obtained in order to maintain proper temperature requirements during transportation per standard methods protocol.

PARAMETER DEFINITIONS AND THEIR IMPORTANCE

CHLORIDES are found in groundwater, streams, and lakes and may be of natural mineral origin or from human or animal sewage, industrial process wastewaters, agricultural fields and roadway deicing salts. It is recommended if very high levels (500 mg/l or more) are found, further investigation should take place to locate the source.

CONDUCTIVITY (SpC) is a measure of how easily electricity flows through water. It is strongly correlated with total dissolved solids. It is useful as a general measure of water quality. Each water body has a fairly constant range of conductivity that can be used for baseline readings. Significant changes in conductivity may be an indicator that a discharge or some other source of pollution has entered the water way. If this occurs, it is recommended that further investigation should take place to locate the source.

DISSOLVED OXYGEN (DO) is considered to be one of the most important parameters of water quality in streams, rivers, and lakes. All aquatic organisms need dissolved oxygen in the water to survive. Stream systems produce and consume oxygen. If more oxygen is consumed than produced, dissolved oxygen levels decline and some organisms move away, weaken, or die. Higher concentrations of dissolved oxygen equate to better water quality. Aquatic life is stressed at levels below 5.0 mg/l and levels below 2 mg/l will not support fish. Dissolved oxygen is very sensitive to temperature. The solubility of oxygen in water decreases as temperature increases. A waste discharge can have a dramatic effect on the oxygen balance of a water body by raising water temperature or introducing pollutants which remove the dissolved oxygen. According to 327 IAC 2-1-6 and the US EPA, the recommended target value is > 6 mg/l and not > 9 mg/l.

E. COLI is a species of fecal coliform bacteria that is specific to fecal matter from humans and other warm-blooded animals. E. coli indicates the possible presence of pathogenic bacteria, viruses, and protozoa that also live in the digestive systems of humans and animals. Their presence in a water body indicate pathogens might be present and that swimming/full body contact recreation can be a health risk. As required by the United States Environmental Protection Agency, total maximum daily load (TMDL) calculations have been established by the Indiana Pollution Control Board (327 IAC 2-1-6 Section 6(d)) for E. coli using membrane filter count and are the following numeric standards:

> "Concentrations shall not exceed 125 cfu/100 ml as a geoemetric mean based on not less than five samples equally spaced over a 30-day period nor exceed 235 cfu/100 ml in any one sample in a 30-day period."

NITRATES (N03) are one of the four forms of nitrogen in the nitrogen cycle. They are essential plant nutrients but in excess amounts they can cause significant water quality problems. Together with phosphorus they can cause increase in plant growth and changes in the types of plants and animals that live in surface water. In turn this affects dissolved oxygen and temperature. Excess nutrients can cause hypoxia which is a condition characterized by low levels of dissolved oxygen when the plants decay. The natural level of nitrates in surface water is typically low, less than 1 mg/l. Sources of nitrates include failing onsite septic systems, runoff from animal manure storage areas, fertilizer runoff from lawns and cropland, wastewater treatment plants and industrial discharges that contain corrosion inhibitors. The US EPA reference level is < 1.5 mg/l.

pH The pH scale measures the logarithmic concentration of hydrogen and hydroxide ions which make up water. Pure water, equal ion concentrations, is neutral with a pH of 7.0. Below 7.0 the water is acidic and above 7.0 the water is alkaline. pH affects many chemical and biological processes in water. The majority of the aquatic organisms survive and thrive at a range of 6.5-8.0. pH outside of this range reduces the diversity of the water way because it stresses the physiological systems of most organisms and can reduce reproduction. Low pH also allows toxic elements and compounds to become soluble and available for uptake by aquatic plants and animals. Some industrial discharges contain very high 12-14 pH or very low 1-3 pH. pH is a good monitoring parameter and significant fluctuations need to be investigated. According to 327 IAC 2-1-6, the target value is > 6 or < 9.

PHOSPHORUS Like nitrogen, phosphorus is an essential nutrient for plants and animals that make up the aquatic food chain. Phosphorus in waterways accelerates plant growth and algae blooms and with their decomposition result in low dissolved oxygen and death of some fish, invertebrates and other aquatic species. There are many natural and human sources of phosphorus. These include soil and rocks, wastewater treatment plants, runoff from fertilized lawns and cropland, failing onsite septic systems, runoff from animal manure storage areas, disturbed land areas and commercial cleaning preparations. Phosphorus is the limiting nutrient in many aquatic environments and very small inputs greatly affect photosynthetic productivity and can initiate a massive bloom of plants and algae in slow moving streams and ponds. These blooms are not desired and have a deleterious effect on the aquatic environments where phosphorus has been enriched. The IDEM 303(d) listing criteria is < 0.3 mg/l.

TEMPERATURE is a very important water quality parameter and influences all biological and chemical reactions. Temperature influences the dissolved oxygen content of the water, the metabolism of all aquatic organisms, the rate of photosynthesis, and the sensitivity of organisms to pollutants such as toxic wastes and parasites. All aquatic organisms have optimal temperatures for their survival. Many factors affect temperature including stream flow, sunlight, shade, water depth, turbidity, bottom color and composition, soil erosion, storm water runoff, and seasonal changes. Temperature is measured in degrees Celsius.

TOTAL SUSPENDED SOLIDS (TSS) are particulates in water and can include many organic and inorganic sources such as silt, decaying plant and animal matter, sewage and industrial wastes. They cause the water to be milky or muddy looking due to the light scattering from very small particles in the water. This is called turbidity. Suspended solids can destroy fish habitat because they can settle to the bottom and smother the eggs of fish and aquatic insects and suffocate newly hatched insect larvae. High levels of suspended solids can clog the gills of fish and reduce their growth rates and reduce dissolved oxygen. Also, pollutants and contaminants adhere to the suspended solids. Total suspended solids are measured in mg/l. There are no numeric standards for total suspended solids however they must meet narrative standards which state in part: "all waters at all times and places, including the mixing zone, shall meet the minimum conditions of being free from substances, materials, floating debris, oil, or scum attributable to municipal, industrial, agricultural, and other land use practices, or other discharges which are in amounts sufficient to injure, be acutely toxic to, or otherwise produce serious adverse physiological responses in humans, animals, aquatic life or plants."

NOTE: The above information was obtained from the United States Environmental Protection Agency (US EPA), the Indiana Department of Environmental Management (IDEM), The Center for Watershed Protection, and Purdue University Department of Agricultural and Biological Engineering.

SAMPLING RESULTS AND CHARTS

The sampling results are in Appendix 1.

Appendix 2 contains the charts for E. coli and TSS.

Please note: There is data missing for numerous reasons: not enough water to sample, tall vegetation on the banks of some sites, closed roads and bridges, and limited laboratory staff at Elkhart Public Works and Utilities for analyzing the E. coli and TSS samples.

SUMMARY AND CONCLUSIONS

According to the United States Environmental Protection Agency, "a water body is considered impaired when a water quality standard is violated, whether through exceedance of a numeric or narrative criterion, impairment of a designated use or violation of anti-degradation policy." The results of the 2018 sampling season continue to indicate E. coli levels in excess of the total maximum daily load of 235 cfu/100 ml at many of the sample sites except Christiana Creek which is the control site.

All water bodies are capable of assimilating a certain amount of pollution without adverse effects because of the dilution and self-purification capabilities of natural processes. The ability of a water body to mitigate for an organic pollutant, such as E. coli is dependent on many factors such as stream flow, depth, dissolved oxygen, temperature, available sunlight, and time. However, the high levels of E. coli indicate these pathogens are being infused at a rate greater than can be mitigated through natural processes resulting in these higher than acceptable numbers. Results such as these are indicators of illicit discharges entering the water bodies and will require further investigation to determine the sources.

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Special recognition goes to the laboratory staff at the Elkhart Public Works and Utilities and Goshen Waste Water Treatment Plant. Their cooperation and expertise was instrumental to this effort and is very much appreciated.

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APPENDIX 1:
SURFACE
WATER DATA

YELLOW CREEK CR 138

DATE	TIME	TEMP	DO	SPC	PH	NITRATES	PHOSPHORUS	CHLORIDES	TSS	E. COLI	RAINING	WET
5/8/2018	8:40	12.7	7.77	606	7.75	12.50	0.536	322.47			N	N
5/24/2018	9:00	14.8	6.95	678	7.82	12.00	0.536	526.04		840	N	N
5/29/2018	8:45	18.7	5.39	771	7.81	12.50	0.625	389.80		7800	N	N
6/5/2018				NO SAMPLE - THUNDERSTORMS								
6/12/2018	9:00	17.7	5.42	781	7.99	11.20	0.809	506.58		4250	N	Y
6/19/2018	9:15	21.7	4.57	656	7.97	10.30	5.480	425.09			N	N
6/26/2018	9:30	18.0	5.78	877	7.98	13.70	0.929	497.61		4200	N	N
7/3/2018	8:30	20.8	6.04	1140	7.92	7.32	0.998	510.06			N	N
7/10/2018	8:40	21.3	3.56	1006	7.94	10.30	0.994	533.78		1900	N	N
7/17/2018	8:30	20.4	3.08	700	7.73	13.50	6.170	607.74			N	N
7/24/2018	8:40	20.6	4.93	739	7.76	8.50	1.080	413.93			N	N
7/31/2018	8:40	18.6	5.87	1074	8.17	11.10	1.300	673.74		2825	N	N
8/7/2018	8:30	20.9	5.34	993	7.82	13.50	1.930	505.43		63200	N	Y
8/14/2018	8:45	19.7	5.02	674	7.94	11.60	1.210	687.13		2950	N	N
8/21/2018	8:45	19.9	5.03	820	8.07	3.85	3.210	529.10		63200	N	Y
8/28/2018	8:30	21.8	4.45	1026	8.06	6.77	1.970	749.00			N	N
9/4/2018	9:00	20.8	3.42	917	8.01	3.35	11.000	564.89			N	N
9/13/2018	9:00	16.3	4.47	1021	8.22	5.48	5.760	1110.93		1150	N	N
9/18/2018	9:15	19.4	4.19	1098	8.29	4.96	1.890	1147.11		300	N	N
9/25/2018	9:45	17.8	8.03	1066	8.33	3.18	7.770			480	N	Y

SWOVELAND DITCH CR 15

DATE	TIME	TEMP	DO	SPC	PH	NITRATES	PHOSPHORUS	CHLORIDES	TSS	E. COLI	RAINING	WET
5/8/2018	8:55	11.8	8.12	348.1	7.45	6.74	0.881	141.27			N	N
5/24/2018	9:15	13.8	6.92	421.7	7.51	11.20	0.588	191.89	6	198	N	N
5/29/2018	8:55	16.7	7.44	864.0	8.01	20.10	3.330	279.52	1	7800	N	N
6/5/2018				NO SAMPLE - THUNDERSTORMS								
6/12/2018	9:20	17.4	10.77	505.0	7.48	9.39	0.579	167.66	3	248	N	Y
6/19/2018				NO SAMPLE - TALL VEGETATION								
6/26/2018	9:40	17.6	6.51	1015.0	7.98		3.830	342.12	2	3500	N	N
7/3/2018	8:40	19.2	12.72	2387.0	8.38	6.89	2.140	433.56			N	N
7/10/2018				NO SAMPLE - TALL VEGETATION								
7/17/2018				NO SAMPLE - TALL VEGETATION								
7/24/2018				NO SAMPLE - TALL VEGETATION								
7/31/2018				NO SAMPLE - TALL VEGETATION								
8/7/2018				NO SAMPLE - TALL VEGETATION								
8/14/2018				NO SAMPLE - TALL VEGETATION								
8/21/2018				NO SAMPLE - TALL VEGETATION								
8/28/2018				NO SAMPLE - TALL VEGETATION								
9/4/2018				NO SAMPLE - TALL VEGETATION								
9/13/2018				NO SAMPLE - TALL VEGETATION								
9/18/2018				NO SAMPLE - TALL VEGETATION								
9/25/2018				NO SAMPLE - TALL VEGETATION								

SWOVELAND DITCH CR 19

DATE	TIME	TEMP	DO	SPC	PH	NITRATES	PHOSPHORUS	CHLORIDES	TSS	E. COLI	RAINING	WET
5/8/2018	9:10	11.7	10.45	524	7.89	13.10	0.395	235.88			N	N
5/24/2018	9:25	14.7	8.00	596	7.96	14.10	0.337	354.20	6	710	N	N
5/29/2018	9:05	19.6	5.08	950	7.82	15.20	0.768	287.69	7	980	N	N
6/5/2018				NO SAMPLE - THUNDERSTORMS								
6/12/2018	9:30	17.8	5.84	721	7.89	18.00	0.753	318.00	13	2900	N	Y
6/19/2018	9:30	22.5	5.06	818	7.86	14.30	1.090	315.67			N	N
6/26/2018	9:50	18.0	6.55	766	7.98	19.90	0.438	333.16	4	3300	N	N
7/3/2018	8:50	20.4	3.60	948	7.66	8.74	0.447	190.61			N	N
7/10/2018	9:00	17.5	1.38	856	7.44	9.64	0.347	377.13	6	420	N	N
7/17/2018	8:45	20.7	5.22	552	7.62	8.81	4.230	152.95			N	N
7/24/2018	8:55	19.2	6.05	705	7.75	16.00	1.260	180.23			N	N
7/31/2018	9:00	18.3	2.91	802	7.73	12.60	0.593	381.52	7	1035	N	N
8/7/2018				NO SAMPLE - ROAD CLOSED								
8/14/2018	9:05	19.0	4.57	988	7.84	6.96	0.777	317.02	11	860	N	N
8/21/2018	9:05	19.7	1.20	1240	8.09	7.36	8.420	794.74	169	63200	N	Y
8/28/2018	8:40	21.5	3.92	881	7.95	8.76	1.220	436.97			N	N
9/4/2018	9:20	20.3	5.62	682	7.68	10.10	1.340	237.51			N	N
9/13/2018	9:15	16.5	4.54	727	8.16	7.98	0.893	700.89	5	2333	N	N
9/18/2018	9:35	18.2	1.76	946	7.84	7.99	2.510	782.47	9	1540	N	N
9/25/2018	10:05	15.9	6.30	750	8.01	4.09	1.010	997.44	4	2875	N	Y

WEAVER DITCH CR 44

DATE	TIME	TEMP	DO	SPC	PH	NITRATES	PHOSPHORUS	CHLORIDES	TSS	E. COLI	RAINING	WET
5/8/2018	9:20	10.4	7.40	646	7.49	11.30	1.09	362.78			N	N
5/24/2018	9:40	12.8	6.74	777	7.45	9.21	1.64	740.08		2100	N	N
5/29/2018				NO SAMPLE - ROAD CLOSURE								
6/5/2018				NO SAMPLE - THUNDERSTORMS								
6/12/2018				NO SAMPLE - TALL VEGETATION								
6/19/2018				NO SAMPLE - TALL VEGETATION								
6/26/2018	10:00	17.2	1.74	942	7.34	9.54	1.36	684.02		2100	N	N
7/3/2018				NO SAMPLE - TALL VEGETATION								
7/10/2018				NO SAMPLE - TALL VEGETATION								
7/17/2018				NO SAMPLE - TALL VEGETATION								
7/24/2018				NO SAMPLE - TALL VEGETATION								
7/31/2018				NO SAMPLE - TALL VEGETATION								
8/7/2018				NO SAMPLE - TALL VEGETATION								
8/14/2018				NO SAMPLE - TALL VEGETATION								
8/21/2018				NO SAMPLE -TALL VEGETATION								
8/28/2018				NO SAMPLE - TALL VEGETATION								
9/4/2018				NO SAMPLE -TALL VEGETATION								
9/13/2018				NO SAMPLE - TALL VEGETATION								
9/18/2018				NO SAMPLE - TALL VEGETATION								
9/25/2018				NO SAMPLE - TALL VEGETATION								

DAUSMAN DITCH CR 15

DATE	TIME	TEMP	DO	SPC	PH	NITRATES	PHOSPHORUS	CHLORIDES	TSS	E. COLI	RAINING	WET
5/8/2018	9:30	11.0	3.94	689	7.54	19.20	2.500	508.55			N	N
5/24/2018	9:50	14.3	5.83	686	7.60	17.50	0.686	529.58	2	780	N	N
5/29/2018	9:25	18.8	3.68	772	7.56	18.40	0.969	426.26	9	2100	N	N
6/5/2018				NO SAMPLE - THUNDERSTORMS								
6/12/2018	9:50	17.5	4.71	840	7.56	23.10	0.755	488.73	6	3400	N	Y
6/19/2018	9:40	22.5	1.36	1058	7.65	12.50	1.670	348.01			N	N
6/26/2018	10:15	18.0	3.63	878	7.73	23.10	0.860	427.14	4	1440	N	N
7/3/2018				NO SAMPLE - NOT ENOUGH WATER								
7/10/2018				NO SAMPLE - NOT ENOUGH WATER								
7/17/2018				NO SAMPLE - NOT ENOUGH WATER								
7/24/2018	9:05	19.4	3.59	873	7.66	14.6	1.240	381.47			N	N
7/31/2018				NO SAMPLE - NOT ENOUGH WATER								
8/7/2018				NO SAMPLE - NOT ENOUGH WATER								
8/14/2018				NO SAMPLE - NOT ENOUGH WATER								
8/21/2018				NO SAMPLE - NOT ENOUGH WATER								
8/28/2018				NO SAMPLE - NOT ENOUGH WATER								
9/4/2018				NO SAMPLE - NOT ENOUGH WATER								
9/23/2018				NO SAMPLE - NOT ENOUGH WATER								
9/18/2018				NO SAMPLE - NOT ENOUGH WATER								
9/25/2018				NO SAMPLE - NOT ENOUGH WATER								

DAUSMAN DITCH CR 19

DATE	TIME	TEMP	DO	SPC	PH	NITRATES	PHOSPHORUS	CHLORIDES	TSS	E. COLI	RAINING	WET
5/8/2018	9:45	13.3	9.35	681	7.86	14.60	0.407	309.27			N	N
5/24/2018	10:05	15.7	7.84	619	7.83	11.60	0.370	378.34	3	1540	N	N
5/29/2018	9:35	18.9	5.01	678	7.71	10.10	0.567	308.76	12	2800	N	N
6/5/2018				NO SAMPLE - THUNDERSTORMS								
6/12/2018	9:55	17.1	6.95	613	7.84	20.00	0.538	380.36	15	2800	N	Y
6/19/2018	9:50	20.7	6.02	674	7.86	9.11	0.681	275.88			N	N
6/26/2018	10:25	17.5	7.33	797	7.94	15.40	0.609	318.98	12	2700	N	N
7/3/2018				NO SAMPLE - NOT ENOUGH WATER								
7/10/2018				NO SAMPLE - NOT ENOUGH WATER								
7/17/2018	9:00	19.4	9.49	679	7.58	8.02	5.870	194.75			N	N
7/24/2018	9:15	18.6	6.44	738	7.89	12.30	0.797	274.98			N	N
7/31/2018				NO SAMPLE - NOT ENOUGH WATER								
8/7/2018	9:00	17.3	3.38	803.0	7.85	3.04	0.649	361.91	19	6250	N	Y
8/14/2018				NO SAMPLE - NOT ENOUGH WATER								
8/21/2018	9:35	16.7	5.02	627	7.76	2.49	0.977	487.34	50	6250	N	Y
8/28/2018	9:05	19.4	3.54	751	7.81	3.42	1.250	476.09			N	N
9/4/2018	9:35	20.7	7.06	492	7.74	7.66	3.770	357.49			N	N
9/13/2018				NO SAMPLE - NOT ENOUGH WATER								
9/18/2018	9:45	15.9	3.78	600	7.84	3.42	0.631	485.17	1	1520	N	N
9/25/2018	10:20	16.4	4.39	814	7.87	3.23	0.550	465.72	13	4400	N	Y

TURKEY CREEK CR 50

DATE	TIME	TEMP	DO	SPC	PH	NITRATES	PHOSPHORUS	CHLORIDES	TSS	E. COLI	RAINING	WET
5/8/2018	9:55	15.8	7.42	486.4	7.94	2.21	0.132	140.41			N	N
5/24/2018	10:15	16.8	6.73	537.0	7.99	2.66	0.109	284.75	8	192	N	N
5/29/2018	9:50	20.1	5.71	627.0	8.00	2.54	0.153	306.85	9	250	N	N
6/5/2018				NO SAMPLE - THUNDERSTORMS								
6/12/2018	10:05	18.4	6.15	519.0	7.97	4.11	0.171	186.56	20	5300	N	Y
6/19/2018	10:00	23.6	5.56	542.0	8.04	1.79	0.190	266.67			N	N
6/26/2018	10:35	19.9	6.13	570.0	8.09	2.42	0.261	225.14	13	580	N	N
7/3/2018	9:20	21.0	6.12	655.0	8.09	2.04	0.126	228.72			N	N
7/10/2018	9:35	21.5	6.12	656.0	8.09	2.14	0.136	332.38	4	192	N	N
7/17/2018	9:10	21.3	4.43	615.0	8.00	2.67	2.060	252.53			N	N
7/24/2018	9:25	18.7	6.18	545.0	8.02	2.80	0.232	263.42			N	N
7/31/2018	9:30	18.4	7.09	842.0	8.18	2.28	0.253	297.49	2	233	N	N
8/7/2018	9:15	21.7	5.76	679.0	8.24	2.50	0.265	403.11	5	869	N	Y
8/14/2018	9:30	20.5	5.91	584.0	8.22	2.04	0.289	337.88	6	160	N	N
8/21/2018	9:50	20.0	5.74	581.0	8.20	1.94	0.260	318.97	8	410	N	Y
8/28/2018	9:15	22.4	5.81	558.0	8.12	1.60	0.213	300.03			N	N
9/4/2018	9:40	22.6	5.71	423.1	8.09	1.65	1.160	267.41			N	N
9/13/2018	9:30	17.8	4.95	511.0	8.27	1.66	0.200	435.26	4	168	N	N
9/18/2018	10:00	19.5	5.71	682.0	8.23	2.08	0.409	425.93	3	290	N	N
9/25/2018	10:35	17.1	10.09	538.0	8.22	2.14	0.250	334.14	3	1390	N	Y

SOLOMON CREEK CR 33

DATE	TIME	TEMP	DO	SPC	PH	NITRATES	PHOSPHORUS	CHLORIDES	TSS	E. COLI	RAINING	WET
5/8/2018	10:15	12.8	9.08	587.0	7.98	2.26	0.075	183.97			N	N
5/24/2018	10:40	14.8	7.66	582.0	8.02	2.21	0.048	232.90	8	123	N	N
5/29/2018	10:05	17.9	7.16	645.0	8.00	1.95	0.132	232.10	7	275	N	N
6/5/2018				NO SAMPLE - THUNDERSTORMS								
6/12/2018	10:35	16.2	7.51	584.0	8.05	2.86	0.065	276.57	3	390	N	Y
6/19/2018	10:15	20.6	6.52	633.0	8.11	1.70	0.161	244.09			N	N
6/26/2018	10:55	17.0	7.40	627.0	8.07	2.80	0.098	163.16	10	275	N	N
7/3/2018	9:35	19.2	7.31	705.0	8.10	1.52	0.303	218.37			N	N
7/10/2018	9:55	20.3	7.23	665.0	8.18	1.71	0.353	264.14	5	209	N	N
7/17/2018	9:40	20.2	6.77	700.0	8.02	4.16	1.440	164.23			N	N
7/24/2018	9:40	17.9	7.12	670.0	8.15	2.29	0.054	174.73			N	N
7/31/2018	9:55	17.0	8.36	611.0	8.24	1.58	0.093	256.14	1	148	N	N
8/7/2018	9:35	20.6	6.96	594.0	8.30	1.38	0.133	255.21	3	224	N	Y
8/14/2018	9:50	18.2	7.42	625.0	8.19	1.56	0.124	306.69	5	140	N	N
8/21/2018	10:10	18.1	7.01	681.0	8.19	1.35	0.080	288.31	9	337	N	Y
8/28/2018	9:45	20.1	6.61	656.0	8.18	2.00	0.081	275.95			N	N
9/4/2018	10:10	20.6	5.65	449.7	7.83	3.16	0.333	126.23			N	N
9/13/2018	10:00	15.4	6.91	549.0	8.25	1.57	0.073	291.21	12	235	N	N
9/18/2018	10:25	17.0	6.87	626.0	8.29	1.40	0.313	484.56	7	176	N	N
9/25/2018	11:05	16.7	7.41	593.0	8.25	1.35	0.205	261.14	4	400	N	Y

SOLOMON CREEK CR 52

DATE	TIME	TEMP	DO	SPC	PH	NITRATES	PHOSPHORUS	CHLORIDES	TSS	E. COLI	RAINING	WET
5/8/2018	10:30	13.1	10.42	644.0	7.89	1.94	0.081	202.63			N	N
5/24/2018	10:50	15.4	8.32	653.0	7.93	1.73	0.016	199.95	4	119	N	N
5/29/2018	10:15	18.1	7.17	629.0	7.91	1.61	0.631	233.86	56	211	N	N
6/5/2018				NO SAMPLE - THUNDERSTORMS								
6/12/2018	10:20	16.2	7.25	601.0	7.95	2.36	0.083	344.56	6	228	N	Y
6/19/2018	10:30	20.2	7.38	663.0	7.99	1.41	0.151	237.86			N	N
6/26/2018	11:10	17.2	9.05	758.0	7.88	2.4	0.120	158.97	2	285	N	N
7/3/2018	9:45	18.9	7.46	704.0	7.89	1.25	0.091	169.44			N	N
7/10/2018	10:10	20.3	8.43	692.0	8.15	1.55	0.086	293.31	4	296	N	N
7/17/2018	9:30	19.7	5.83	711.0	7.94	2.54	4.500	196.07			N	N
7/24/2018	9:50	17.6	9.48	1092.0	7.99	1.79	0.074	173.77			N	N
7/31/2018	10:05	16.5	8.30	655.0	8.23	1.53	0.104	275.19	13	455	N	N
8/7/2018	9:45	19.7	6.38	704.0	8.04	1.85	0.200	331.72	7	685	N	Y
8/14/2018	10:00	20.6	8.88	382.0	8.47	1.35	0.128	105.31	8	232	N	N
8/21/2018	10:20	17.6	6.67	694.0	8.06	1.34	0.096	308.90	17	291	N	Y
8/28/2018	9:30	19.2	6.09	706.0	7.96	1.57	0.091	311.42			N	N
9/4/2018	9:55	20.2	4.84	479.2	7.67	2.94	0.118	179.37			N	N
9/13/2018	9:50	15.0	9.39	616.0	8.07	1.41	0.137	349.26	11	380	N	N
9/18/2018	10:40	16.6	7.71	629.0	8.14	1.32	0.144	391.86	6	320	N	N
9/25/2018	10:50	16.7	5.53	600.0	8.16	1.56	0.062	323.85	3	960	N	Y

PINE CREEK CR 23

DATE	TIME	TEMP	DO	SPC	PH	NITRATES	PHOSPHORUS	CHLORIDES	TSS	E.COLI	RAINING	WET
5/10/2018												
5/17/2018												
5/24/2018												
5/31/2018		REPLACEMENT SITE FOR SHAFFER DITCH CR 28 - CR 23 CLOSED										
6/7/2018	9:20	14.6	7.69	528	8.08	4.17	0.168	178.93		920	N	N
6/14/2018	9:15	14.2	8.38	470.3	8.07	4.37	0.187	227.23		8300	N	N
6/21/2018	9:25	15.6	9.4	572.0	8.04	4.23	0.223	313.91		230	N	N
6/28/2018												
7/5/2018	9:10	18.0	7.46	565.0	8.04	4.2	0.29	193.94		1600	N	N
7/12/2018	9:25	16.4	7.74	574.0	8.19	4.65	0.290	301.94		1300	N	N
7/19/2018	9:10	16.2	7.45	541.0	8.04	3.76	0.382	186.79		650	N	N
7/26/2018	9:50	17.1	7.52	640.0	8.13	3.94	0.304	191.64		17000	N	N
8/2/2018	8:50	16.5	7.52	712.0	8.36	4.47	0.346	278.11		710	N	N
8/9/2018	8:55	17.0	7.08	559.0	8.16	3.6	0.327	287.36		2400	N	Y
8/16/2018	8:50	18..3	6.84	553.0	8.13	3.78	0.346	323.76			N	N
8/23/2018	9:10	15.0	8.15	563.0	8.24	4.14	0.252	348.69		640	N	N
8/30/2018	8:50	15.9	7.53	516.0	8.26	3.86	0.354	306.81		1060	N	N
9/6/2018	9:05	20.1	5.80	500.0	8.21	4.29	0.036	361.39		5600	N	Y
9/11/2018	9:50	14.6	5.74	525.0	8.28	4.18	5.64	381.74			N	N
9/20/2018	9:35	17.7	4.71	593.0	8.22	4.21	6.49	351.18		660	N	N
9/27/2018	9:45	12.5	11.44	529.0	8.29	4.19	0.469	321.38		1460	N	N

PINE CREEK WYLAND AND ROSKE

DATE	TIME	TEMP	DO	SPC	PH	NITRATES	PHOSPHORUS	CHLORIDES	TSS	E. COLI	RAINING	WET
5/10/2018												
5/17/2018												
5/24/2018												
5/31/2018	9:30	17.5	7.18	521.0	8.06	3.14	0.244	224.6		2550	N	Y
6/7/2018	9:39	14.6	7.89	554.0	8.17	3.28	0.209	355.2		540	N	N
6/14/2018	9:30	14.4	9.51	558.0	8.16	3.29	0.129	313.2		455	N	N
6/21/2018	9:35	15.4	8.26	601.0	8.15	3.36	0.155	400.27		8100	N	N
6/28/2018												
7/5/2018	9:25	18.0	8.12	477.4	8.2	3.14	0.228	268.83		1380	N	N
7/12/2018	9:45	16.3	8.12	551.0	8.29	3.1	0.104	353.48		1540	N	N
7/19/2018	9:25	15.9	8.28	565.0	8.21	3.5	0.47	289.03		28	N	N
7/26/2018	10:10	16.9	7.95	565.0	8.25	3.19	0.207	303.29		995	N	N
8/2/2018	9:05	16.1	8.53	596.0	8.28	3.55	0.218	422.03		680	N	N
8/9/2018	9:10	17.1	7.99	548.0	8.19	2.8	0.274	340.14		1365	N	Y
8/16/2018	9:05	17.4	8.04	565.0	8.29	3.1	0.202	488.03			N	N
8/23/2018	9:25	15	8.44	570.0	8.37	3.25	0.222	439.36		960	N	N
8/30/2018	9:05	15.7	8.05	547.0	8.37	3.05	0.172	392.08		675	N	N
9/6/2018	9:25	19.7	5.26	519.0	8.19	2.52	0.034	306.49		2100	N	Y
9/11/2018	10:10	14.5	5.65	535.0	8.38	3.31	0.675	526.62			N	N
9/20/2018	9:50	17.3	6.81	594.0	8.36	3.3	0.466	518		3800	N	N
9/27/2018	10:05	12.9	4.96	515.0	8.38	3.17	0.336	452.88		700	N	N

NEW MILLER STUTSMAN CR 28

DATE	TIME	TEMP	DO	SPC	PH	NITRATES	PHOSHORUS	CHLORIDES	TSS	E. COLI	RAINING	WET
5/10/2018	8:25	14.4	5.57	298.3	7.41	5.210	1.480	32.40	107	3000	N	Y
5/17/2018	8:30	15.3	5.92	351.3	7.51	3.240	2.320	90.41		686	N	N
5/22/2018	8:30	13.4	4.77	401.9	7.65	2.010	4.400	105.22	8.5		N	Y
5/31/2018	8:25	18.5	3.09	484.6	7.64	4.300	3.010	78.15		3350	N	Y
6/7/2018	8:25	15.8	2.87	510.0	7.7	1.320	0.267	170.13	15.8	670	N	N
6/14/2018				NO SAMPLE - TALL VEGETATION								
6/21/2018	8:20	18.5	4.11	568.0	7.81	3.440	1.890	212.33	68	1040	N	N
6/28/2018	8:30	17.8	3.07	742.0	7.95	3.110	0.741	290.21		2500	N	N
7/5/2018	8:15	23.1	1.25	732.0	7.29	0.565	0.652	248.73	89.5	323	N	N
7/12/2018	8:25	19.1	3.24	581.0	7.86	741.00	0.634	231.5		2400	N	N
7/19/2018				NO SAMPLE - NO WATER								
7/26/2018	9:00	19.5	0.041	372.6	7.54	0.513	0.877	43.76		4250	N	N
8/2/2018				NO SAMPLE - NO WATER								
8/9/2018				NO SAMPLE - NO WATER								
8/16/2018				NO SAMPLE - NO WATER								
8/23/2018				NO SAMPLE - NO WATER								
8/30/2018				NO SAMPLE - NO WATER								
9/6/2018				NO SAMPLE - NO WATER								
9/11/2018				NO SAMPLE - NO WATER								
9/20/2018				NO SAMPLE - NO WATER								
9/27/2018				NO SAMPLE - NO WATER								

SHAFFER DITCH CR 28

DATE	TIME	TEMP	DO	SPC	PH	NITRATES	PHOSPHORUS	CHLORIDES	TSS	E. COLI	RAINING	WET
5/10/2018	8:40	14.1	5.65	336.6	7.43	4.070	0.461	35.88	48	2400	N	Y
5/17/2018	8:35	14.6	3.83	299.6	7.46	3.220	0.390	102.47		3200	N	N
5/22/2018	8:45	14.4	4.82	513.0	7.14	2.540	0.704	285.59	7.5		N	Y
5/31/2018				NO SAMPLE - TALL VEGETATION								
6/7/2018				NO SAMPLE - TALL VEGETATION								
6/14/2018				NO SAMPLE - TALL VEGETATION								
6/21/2018	8:30	18.3	5.25	5999	7.72	2.410	0.0749	263.95	38.5	296	N	N
6/28/2018	8:40	17.3	5.94	677	7.97	2.490	0.345	209.61		880	N	N
7/5/2018	8:25	21.9	1.65	570	7.82	1.64	0.265	347.72	46	1060	N	N
7/12/2018	8:30	18	2.72	539	7.95	1.910	0.616	108.01		1560	N	N
7/19/2018	8:35	17	0.42	539	7.55	2.100	3.630	204.35	42	43	N	N
7/26/2018	9:15	18.4	4.43	519	7.92	1.670	0.316	176.76		730	N	N
8/2/2018	8:20	17.6	2.31	622.0	8.1	1.870	0.565	232.5	59	6666	N	N
8/9/2018	8:30	18.3	0.47	613	7.54	1.620	0.379	296.19		505	N	Y
8/16/2018				NO SAMPLE - NO WATER								
8/23/2018				NO SAMPLE - NO WATER								
8/30/2018				NO SAMPLE - NO WATER								
9/6/2018				NO SAMPLE - NO WATER								
9/11/2018				NO SAMPLE - NO WATER								
9/20/2018				NO SAMPLE - NO WATER								
9/27/2018				NO SAMPLE -NO WATER								

FULMER DITCH CR 28

DATE	TIME	TEMP	DO	SPC	PH	NITRATES	PHOSPHORUS	CHLORIDES	TSS	E. COLI	RAINING	WET
5/10/2018	8:50	14.2	4.39	367.5	7.18	5.35	0.787	147.25	2536	25000	N	Y
5/17/2018	8:45	16.7	5.51	334.8	7.30	2.33	0.624	52.96		270	N	N
5/22/2018				NO SAMPLE - TALL VEGETATION								
5/31/2018						UNSAFE SITE - AS PER SURVERYORS						
6/7/2018						UNSAFE SITE - AS PER SURVERYORS						
6/14/2018						UNSAFE SITE - AS PER SURVERYORS						
6/21/2018						UNSAFE SITE - AS PER SURVERYORS						
6/28/2018						UNSAFE SITE - AS PER SURVERYORS						
7/5/2018						UNSAFE SITE - AS PER SURVERYORS						
7/12/2018						UNSAFE SITE - AS PER SURVERYORS						
7/19/2018						UNSAFE SITE - AS PER SURVERYORS						
7/26/2018						UNSAFE SITE - AS PER SURVERYORS						
8/2/2018						UNSAFE SITE - AS PER SURVERYORS						
8/9/2018						UNSAFE SITE - AS PER SURVERYORS						
8/16/2018						UNSAFE SITE - AS PER SURVERYORS						
8/23/2018						UNSAFE SITE - AS PER SURVERYORS						
8/30/2018						UNSAFE SITE - AS PER SURVERYORS						
9/6/2018						UNSAFE SITE - AS PER SURVERYORS						
9/11/2018						UNSAFE SITE - AS PER SURVERYORS						
9/20/2018						UNSAFE SITE - AS PER SURVERYORS						
9/27/2018						UNSAFE SITE - AS PER SURVERYORS						

HOKE DITCH CR 9

DATE	TIME	TEMP	DO	SPC	PH	NITRATES	PHOSPHORUS	CHLORIDES	TSS	E. COLI	RAINING	WET
5/10/2018	9:00	13.8	8.12	320.4	7.42	8.85	2.6	49.34	312	20000	N	Y
5/17/2018	8:55	15.1	7.61	363.7	7.56	6.63	1.41	105.23		1000	N	N
5/22/2018	8:55	14.0	7.81	522	7.71	7.81	1.42	289.76	10.5		N	Y
5/31/2018	8:40	18.7	4.64	419.5	7.28	9.27	2.4	63.3		8500	N	Y
6/7/2018	8:40	16.8	7.04	591	7.86	7.14	0.505	319.42	17.5	1260	N	N
6/14/2018	8:40	15.8	7.29	672	7.81	8.12	0.467	345.11		625	N	N
6/21/2018	8:40	18.6	5.52	543	7.87	7.69	2.45	291.03	22	5500	N	N
6/28/2018	8:55	17.9	6.78	603	8.05	8.26	0.434	268.22		1625	N	N
7/5/2018					NO SAMPLE - NOT ENOUGH WATER							
7/12/2018					NO SAMPLE - NOT ENOUGH WATER							
7/19/2018					NO SAMPLE - NOT ENOUGH WATER							
7/26/2018					NO SAMPLE - NOT ENOUGH WATER							
8/2/2018					NO SAMPLE - NOT ENOUGH WATER							
8/9/2018					NO SAMPLE - NOT ENOUGH WATER							
8/16/2018					NO SAMPLE - NOT ENOUGH WATER							
8/23/2018					NO SAMPLE - NOT ENOUGH WATER							
8/30/2018					NO SAMPLE - NOT ENOUGH WATER							
9/6/2018					NO SAMPLE - NOT ENOUGH WATER							
9/11/2018					NO SAMPLE - NOT ENOUGH WATER							
9/20/2018					NO SAMPLE - NOT ENOUGH WATER							
9/27/2018					NO SAMPLE - NOT ENOUGH WATER							

CHRISTIANA CREEK CR 4

DATE	TIME	TEMP	DO	SPC	PH	NITRATES	PHOSPHORUS	CHLORIDES	TSS	E. COLI	RAINING	WET
5/10/2018	11:10	18.8	8.47	378.3	8.37	1.11	0.014	60.58		48	N	Y
5/17/2018	10:25	19.5	7.95	367.6	8.25	0.851	0.036	66.97		120	N	N
5/22/2018	10:50	18.1	8.73	351.3	8.17	1.02	0.313	74.89			N	Y
5/31/2018	11:00	25.7	8.10	312.4	7.04	1.01	0.260	65.31		324	N	Y
6/7/2018	10:40	21.1	7.26	398.2	8.28	0.996	0.060	61.45		94	N	N
6/14/2018	10:40	20.7	7.24	341.6	8.16	0.75	0.091	21.13		164	N	N
6/21/2018	10:35	23.5	7.08	377.4	8.19	0.747	2.010	62.03		200	N	N
6/28/2018	10:35	21.6	7.18	364.1	8.05	0.773	0.069	21.84		126	N	N
7/5/2018	10:20	26.8	6.20	434.3	8.23	0.767	0.087	26.96		216	N	N
7/12/2018	10:35	24.0	6.83	434.9	8.15	0.961	0.047	17.10		160	N	N
7/19/2018	10:20	23.2	6.40	448.9	8.28	1.08	0.179	65.09		184	N	N
7/26/2018	11:25					0.857	0.094			100	N	N
8/2/2018	10:05	22.2	7.09	432.8	8.41	1.07	0.256	75.55		180	N	N
8/9/2018	10:10	23.2	6.72	423.5	8.41	0.838	0.107	54.61		196	N	Y
8/16/2018	10:00	23.5	8.18	430.2	8.33	0.936	0.096	37.75			N	N
8/23/2018	10:35	20.9	7.09	428.9	8.40	0.88	0.054	72.72		151	N	N
8/30/2018	10:15	20.8	5.43	420.2	8.52	0.743	0.050	66.37		146	N	N
9/6/2018	10:30	24.3	5.43	441.0	8.45	0.752	0.129	43.02		216	N	Y
9/11/2018	11:20	19.0	8.19	412.7	8.46	0.843	0.774	100.10			N	N
9/20/2018	10:50	22.6	6.42	452.7	8.40	1.07	0.128	88.33		500	N	N
9/27/2018	11:10	16.9	4.42	411.3	8.40			46.88			N	N

ELKHART RIVER CR 43

DATE	TIME	TEMP	DO	SPC	PH	NITRATES	PHOSPHORUS	CHLORIDES	TSS	E. COLI	RAINING	WET
5/8/2018	10:45	17.7	7.47	495.4	8.10	1.10	0.187	130.01			N	N
5/24/2018	11:05	19.0	6.44	483.3	8.01	1.15	0.209	195.88		92	N	N
5/29/2018	10:30	24.0	5.03	505.0	7.98	1.06	0.306	202.31		172	N	N
6/5/2018					NO SAMPLE - THUNDERSTORMS							
6/12/2018	10:50	19.5	5.82	511.0	7.99	1.94	0.342	189.45		440	N	Y
6/19/2018	11:00	25.6	4.73	528.0	7.99	1.01	0.489	208.67			N	N
6/26/2018	11:35	21.5	5.35	489.1	7.99	1.13	0.471	172.03		104	N	N
7/3/2018	10:00	25.4	4.89	541.0	7.99	0.926	0.298	182.74			N	N
7/10/2018	10:25	23.9	5.68	528.0	8.09	1.03	0.310	253.98		120	N	N
7/17/2018	9:50	23.7	4.90	553.0	7.87	1.40	0.500	138.47			N	N
7/24/2018	10:10	21.1	5.95	547.0	8.16	1.60	0.262	188.60			N	N
7/31/2018	10:20	20.5	6.73	568.0	8.28	1.28	0.302	229.18		115	N	N
8/7/2018	10:00	23.9	5.70	604.0	8.26	1.35	0.336	342.20		184	N	Y
8/14/2018	10:15	22.3	6.13	522.0	8.28	1.29	0.328	305.25		992	N	N
8/21/2018	10:35	22.1	6.01	512.0	8.20	1.23	0.295	293.18		252	N	Y
8/28/2018	10:00	23.6	5.60	533.0	8.18	1.16	0.246	287.76			N	N
9/4/2018	10:25	23.1	5.82	354.1	8.11	1.21	0.0334	345.10			N	N
9/13/2018	10:20	17.9	6.24	491.1	8.34	1.18	0.843	411.93		132	N	N
9/18/2018	11:00	21.3	5.88	513.0	8.31	1.10	0.404	374.75		144	N	N
9/25/2018	11:30	18.4	5.24	499.8	8.31	1.31	0.419	299.78		860	N	Y

ELKHART RIVER INDIANA AVE

DATE	TIME	TEMP	DO	SPC	PH	NITRATES	PHOSPHORUS	CHLORIDES	TSS	E. COLI	RAINING	WET
5/10/2018	9:25	18.1	8.31	492	8.20	1.78	0.165	138.33		250	N	Y
5/17/2018	9:10	18.5	8.01	464.4	7.92	4.04	0.415	175.39		205	N	N
5/22/2018	9:15	16.6	8.48	471.4	8.11	2.18	1.460	197.98			N	Y
5/31/2018	9:00	23.1	6.79	560	8.10	1.60	0.837	195.72		385	N	Y
6/7/2018	9:00	19.1	7.54	507	8.17	1.84	0.258	289.73		172	N	N
6/14/2018	9:00	19.9	7.50	482.8	8.20	2.43	0.303	240.43		196	N	N
6/21/2018	9:00	21.5	7.04	637	8.02	4.44	3.670	229.70		580	N	N
6/28/2018	9:10	20.7	7.51	490.1	8.17	1.86	0.449	241.92		1100	N	N
7/5/2018	8:50	25.7	6.82	564	8.15	1.40	0.556	185.62		124	N	N
7/12/2018	9:00	23.3	7.01	586	8.31	1.32	0.240	289.28		150	N	N
7/19/2018	8:50	22.1	6.98	587	8.24	1.86	6.240	244.35		196	N	N
7/26/2018	9:25	21.8	7.22	610	8.25	2.10	0.306	243.01		124	N	N
8/2/2018				NO SAMPLE - BRIDGE CLOSED								
8/9/2018	8:40	22.3	6.49	616	8.26	1.64	0.307	315.42		88	N	Y
8/16/2018	8:35	22.4	6.25	605	8.19	1.47	0.287	279.72			N	N
8/23/2018	8:35	20.3	6.06	621	8.32	1.73	0.358	317.61		780	N	N
8/30/2018	8:40	21.9	4.81	556	8.38	1.47	0.240	331.44		88	N	N
9/6/2018	8:45	24.1	4.07	581	8.24	1.77	0.281	353.18		172	N	Y
9/11/2018	9:40	17.1	5.24	507	8.43	1.4	0.445	422.03			N	N
9/20/2018	9:20	21.4	3.55	636	8.31	1.6	1.690	316.61		236	N	N
9/27/2018	9:30	17.0	8.90	1331	8.38			359.90			N	N

HEATON LAKE IDEAL BEACH

DATE	TIME	TEMP	DO	SPC	PH	NITRATES	PHOSPHORUS	CHLORIDES	TSS	E. COLI	RAINING	WET
5/10/2018	10:05	20.3	7.82	345.6	8.28	0.258	0.094	74.27		316	N	Y
5/17/2018	9:40	21.5	7.59	336.5	8.31	0.323	0.075	78.69		8000	N	N
5/22/2018	10:00	19.1	7.62	325.7	8.20	0.403	2.420	49.94			N	Y
5/31/2018	9:50	26.7	6.92	369.0	8.46	0.413	0.598	58.87		856	N	Y
6/7/2018				NO SAMPLE - ROAD CLOSURE								
6/14/2018	9:45	22.8	7.29	273.1	8.56	0.385	0.073	24.05		100	N	N
6/21/2018	9:50	24.2	6.98	298.5	8.46	0.330	0.281	36.50		1768	N	N
6/28/2018	9:50	23.2	6.61	311.4	8.57	0.290	0.060	34.36		380	N	N
7/5/2018	9:45	28.6	4.80	295.6	8.10	0.327	0.882	25.84		55	N	N
7/12/2018				NO SAMPLE - ENTRANCE NOT ACCESSIBLE								
7/19/2018				NO SAMPLE - ENTRANCE NOT ACCESSIBLE								
7/26/2018	10:30	25.3	3.05	386.2	8.12	0.393	0.136	453.44		560	N	N
8/2/2018	9:20	25.1	6.36	364.5	8.53	0.268	0.159	97.13		16800	N	N
8/9/2018	9:25	26.0	5.59	328.6	8.53	0.316	0.119	36.11		140	N	Y
8/16/2018				NO SAMPLE -ENTRANCE NOT ACCESSIBLE								
8/23/2018	9:40	23.5	6.74	310.9	8.40	0.298	0.103	47.92		171	N	N
8/30/2018	9:25	23.4	6.15	329.7	8.58	0.293	0.066	52.86		67	N	N
9/6/2018	9:40	26.7	5.36	316.0	9.01	0.304	0.705	68.95		2500	N	Y
9/11/2018	10:35	20.1	5.09	324.0	8.39	0.315	0.124	67.39			N	N
9/20/2018	10:05	24.1	4.90	315.3	8.90	0.276	0.174	37.07		362	N	N
9/27/2018	10:20	18.5	4.05	286.1	8.67	0.355	0.090	39.92		42	N	N

HEATON LAKE 22892 LAKE SHORE

DATE	TIME	TEMP	DO	SPC	PH	NITRATES	PHOSPHORUS	CHLORIDES	TSS	E. COLI	RAINING	WET
5/10/2018	10:20	19.6	6.72	343.6	8.11	0.329	0.045	59.70		86	N	Y
5/17/2018	9:50	21.2	7.55	324.5	8.37	0.318	0.080	86.75		2900	N	N
5/22/2018	10:10	18.9	8.02	243.5	8.25	0.536	1.330	67.73			N	Y
5/31/2018	10:05	25.5	5.01	368.9	8.20	0.455	0.818	32.59		1	N	Y
6/7/2018	10:00	22.7	8.51	290.6	8.47	0.408	0.092	30.07		800	N	N
6/14/2018	10:00	22.5	6.83	345.6	8.51	0.363	0.044	28.99		63	N	N
6/21/2018	10:00	24.3	7.06	313.9	8.57	0.306	0.065	25.60		388	N	N
6/28/2018	10:00	22.5	7.83	303.0	8.61	0.365	0.045	21.43		280	N	N
7/5/2018	9:55	28.8	4.88	314.0	8.40	0.265	0.130	24.98		968	N	N
7/12/2018	10:00	26.5	4.69	326.5	8.40	0.280	0.099	36.31		44	N	N
7/19/2018	9:45	25.2	4.50	197.9	8.11	0.242	4.380	25.83		562	N	N
7/26/2018	10:45	25.2	6.01	357.5	8.36	0.341	0.135	34.44		124	N	N
8/2/2018	9:30	24.0	6.46	295.1	8.57	0.299	0.335	37.79		690	N	N
8/9/2018	9:35	25.4	5.97	321.5	8.61	0.299	0.126	36.24		42	N	Y
8/16/2018	9:25	25.6	8.02	318.6	8.55	0.233	0.080	45.10			N	N
8/23/2018	9:55	23.1	5.27	320.9	8.36	0.312	0.057	78.88		44	N	N
8/30/2018	9:40	21.7	5.73	330.5	8.58	0.035	0.065	73.73		415	N	N
9/6/2018	9:55	26.3	5.35	314.1	8.84	0.289	0.277	39.72		106	N	Y
9/11/2018	10:45	19.9	5.03	322.1	8.41	0.349	0.107	85.87			N	N
9/20/2018	10:15	23.2	6.96	301.7	9.05	0.269	0.077	71.92		82	N	N
9/27/2018	10:30	17.4	4.55	278.0	8.69	0.357	1.140	37.35		58	N	N

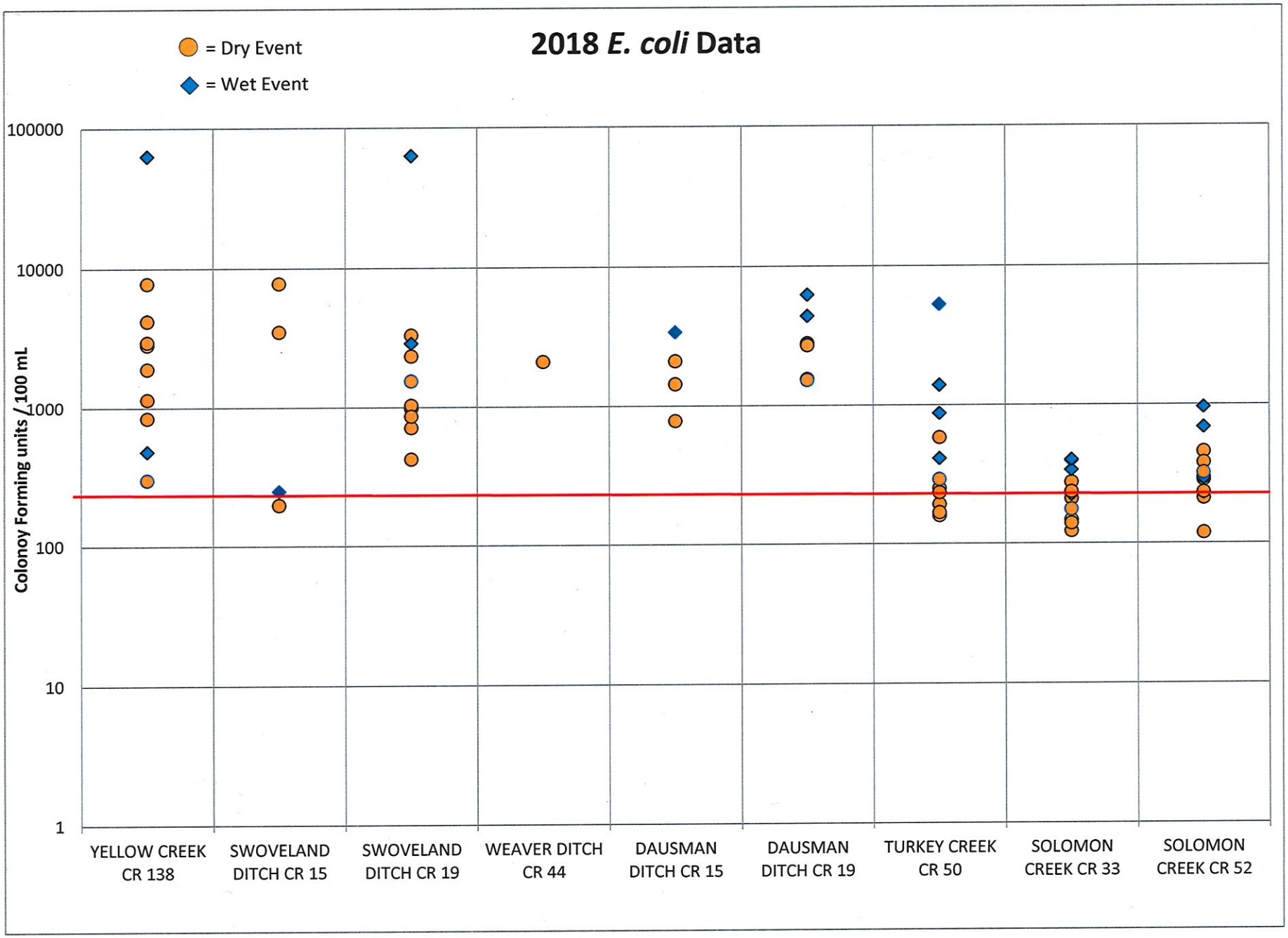
SIMONTON LAKE 51093 BEACH DRIVE

DATE	TIME	TEMP	DO	SPC	PH	NITRATES	PHOSPHORUS	CHLORIDES	TSS	E. COLI	RAINING	WET
5/10/2018	10:40	20.1	7.8	379	8.32	0.741	0.051	98.57		22	N	Y
5/17/2018	10:00	20	8.84	370.2	8.32	0.65	0.047	140.73		800	N	N
5/22/2018	10:25	18.5	8.07	351.8	8.45	0.64	1.48	103.28			N	Y
5/31/2018	10:20	25.7	6.1	415.4	7.74	0.465	0.078	46.31		55	N	Y
6/7/2018	10:15	22.6	8.58	358.4	8.74	0.478	0.041	116.09		152	N	N
6/14/2018	10:10	23	9.98	352.6	8.64	0.355	0.048	43.1		212	N	N
6/21/2018	10:15	24	6.11	400.6	8.36	0.265	3.54	105.08		754	N	N
6/28/2018	10:10	22.6	6.89	434.1	8.36	0.247	0.035	89.11		92	N	N
7/5/2018				NO SAMPLE - ROAD CLOSED								
7/12/2018	10:10	26.6	6.38	382	8.57	0.244	0.017	71.21		116	N	N
7/19/2018	10:00	25.7	5.25	401	8.18	0.128	8.38	59.9		112	N	N
7/26/2018	11:00	ɔT OPERATIONAL				0.193	0.093			194	N	N
8/2/2018	9:45	24.2	5.7	412.8	8.45	0.204	0.123	95.77		646	N	N
8/9/2018	9:50	25.1	6.48	366.7	8.4	0.326	0.125	59.43		770	N	Y
8/16/2018	9:35	25.7	4.52	372.2	8.08	0.286	0.068	82.82			N	N
8/23/2018	10:15	22.5	5.65	389.7	8.6	0.227	0.078	129.04		340	N	N
8/30/2018	9:50	22.8	5.45	357.8	8.48	0.25	0.06	75.1		3900	N	N
9/6/2018	10:10	26.7	4.59	396.2	8.51	0.271	0.281	75.01		3500	N	Y
9/11/2018	11:00	18.9	6.59	367	8.53	0.39	0.063	91.41			N	N
9/20/2018	10:30	24.5	5.63	381.9	8.55	0.344	2.09	61.76		125	N	N
9/27/2018	10:45	18.5	9.52	331.8	8.59	0.205	0.115	52.41		156	N	N

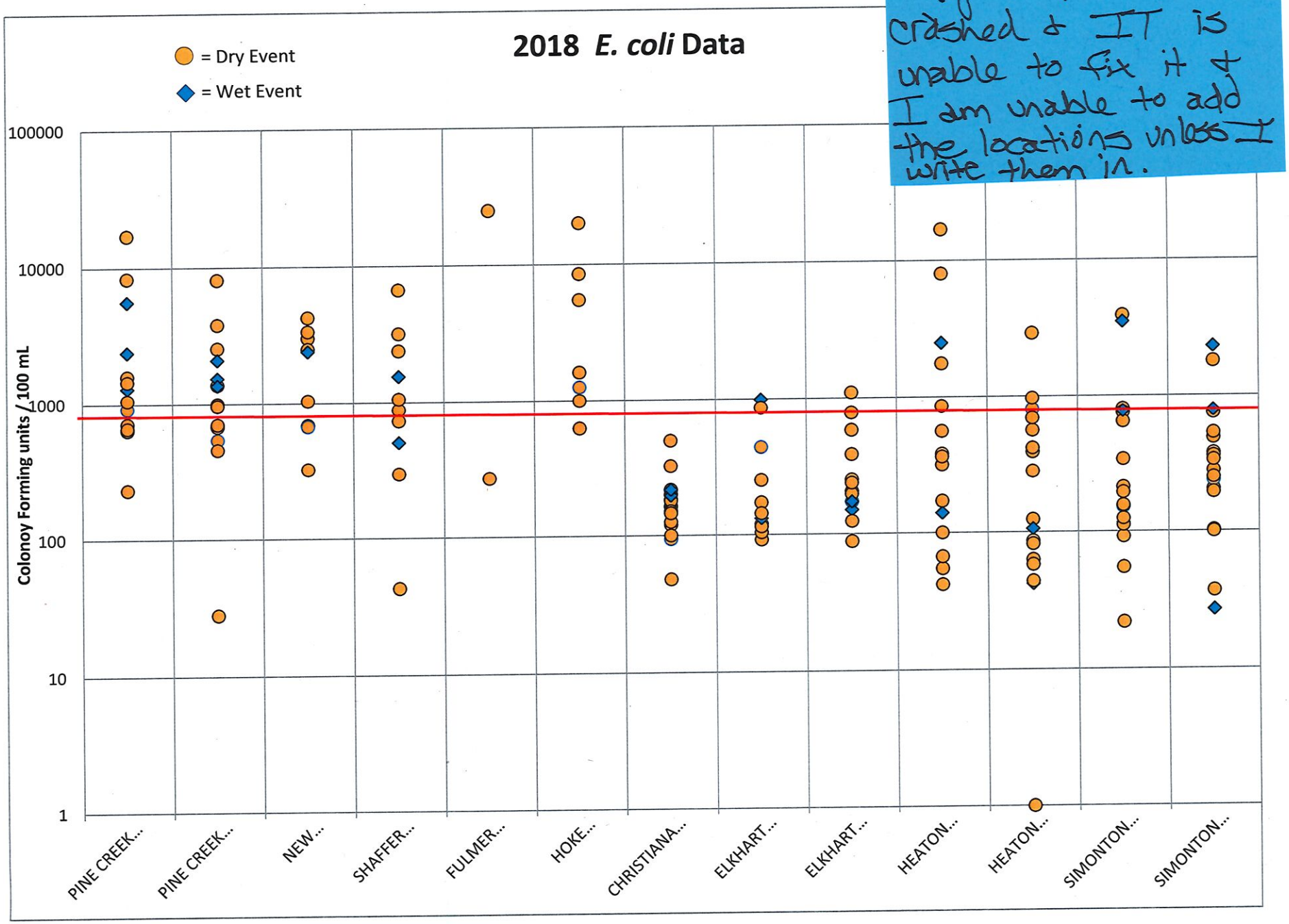
SIMONTON LAKE 51330 SR 19

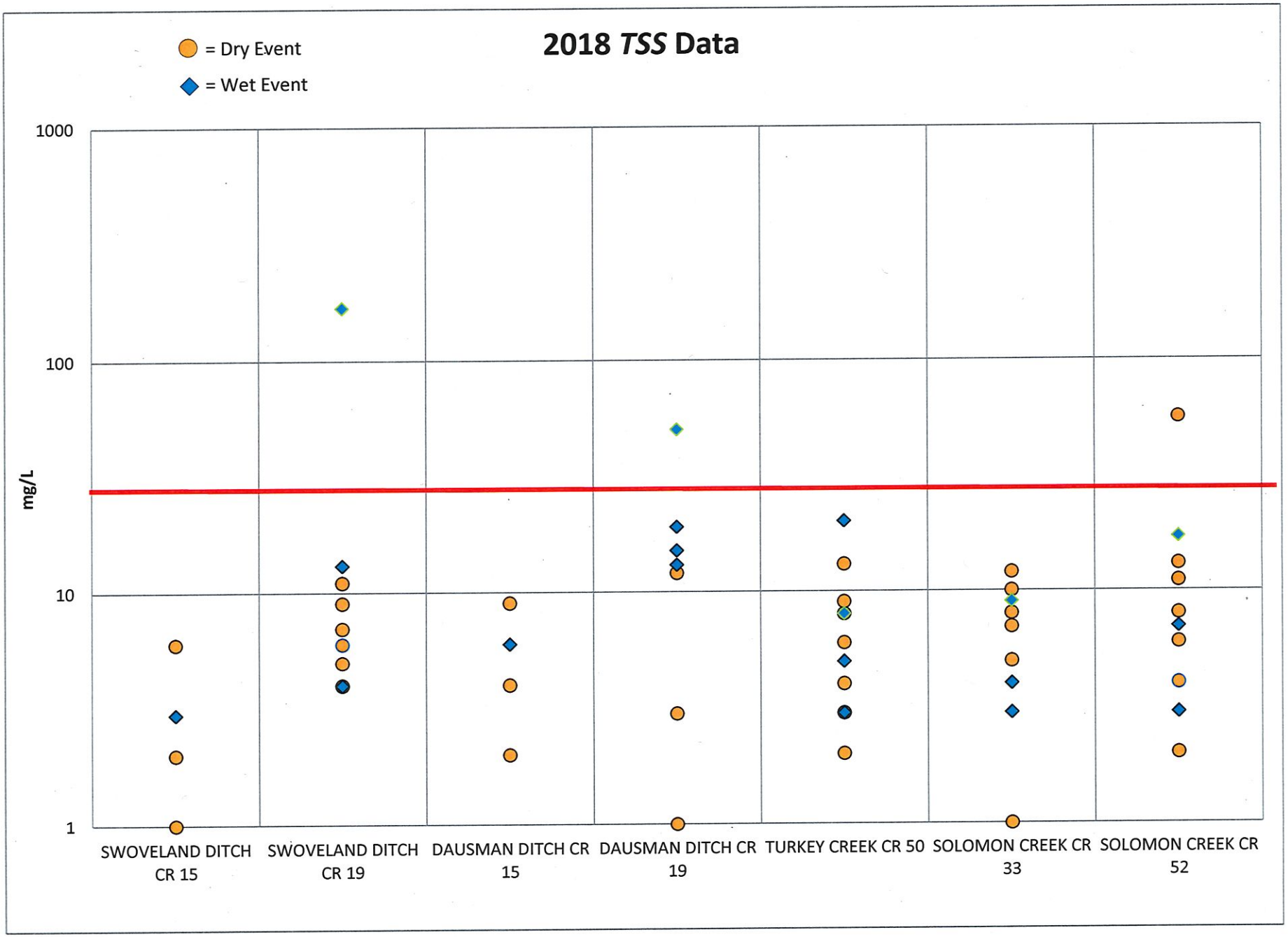
DATE	TIME	TEMP	DO	SPC	PH	NITRATES	PHOSPHORUS	CHLORIDES	TSS	E. COLI	RAINING	WET
5/10/2018	11:00	19.8	7.36	372.1	8.33	0.827	0.001	106.98		204	N	Y
5/17/2018	10:15	20.9	6.69	378.5	8.24	0.795	0.071	123.99		1800	N	N
5/22/2018	10:40	18.8	6.98	361.2	8.32	0.794	0.252	122.11			N	Y
5/31/2018	10:45	26.4	5.67	412.6	8.31	0.664	0.064	106.60		376	N	Y
6/7/2018	10:30	23.0	6.35	384.3	8.46	0.562	0.051	67.15		236	N	N
6/14/2018	10:30	22.8	8.62	379.0	8.72	0.508	0.036	111.62		750	N	N
6/21/2018	10:25	24.4	7.26	404.5	8.65	0.530	0.616	118.64		488	N	N
6/28/2018	10:25	23.3	9.18	372.7	8.70	0.371	0.008	53.63		102	N	N
7/5/2018	10:10	28.5	6.56	399.9	8.19	0.409	0.718	36.39		280	N	N
7/12/2018	10:25	27.1	8.33	355.9	8.36	0.315	0.002	94.41		27	N	N
7/19/2018	10:15	26.2	6.15	377.3	8.41	0.190	7.210	137.95		37	N	N
7/26/2018	11:15		YSI NOT OPERATIONAL			0.245	0.079			194	N	N
8/2/2018	10:00	24.0	5.57	364.6	8.63	0.253	0.147	78.18		360	N	N
8/9/2018	10:00	25.4	5.93	346.5	8.62	0.215	0.094	76.30		780	N	Y
8/16/2018	9:50	26.2	7.07	377.7	8.79	0.303	0.067	133.93			N	N
8/23/2018	10:30	23.4	6.91	258.1	8.32	0.211	0.048	128.9		335	N	N
8/30/2018	10:05	23.8	6.57	208.1	8.85	0.241	0.044	198.22		532	N	N
9/6/2018	10:20	25.6	4.33	374.3	8.63	0.258	0.574	139.52		2300	N	Y
9/11/2018	11:10	19.9	5.85	335.9	8.58	0.264	0.049	89.71			N	N
9/20/2018	10:45	24.4	6.82	377.5	8.62	0.232	0.090	148.07		250	N	N
9/27/2018	11:00	19.0	4.14	319.0	8.22	0.222	0.267	63.46		100	N	N

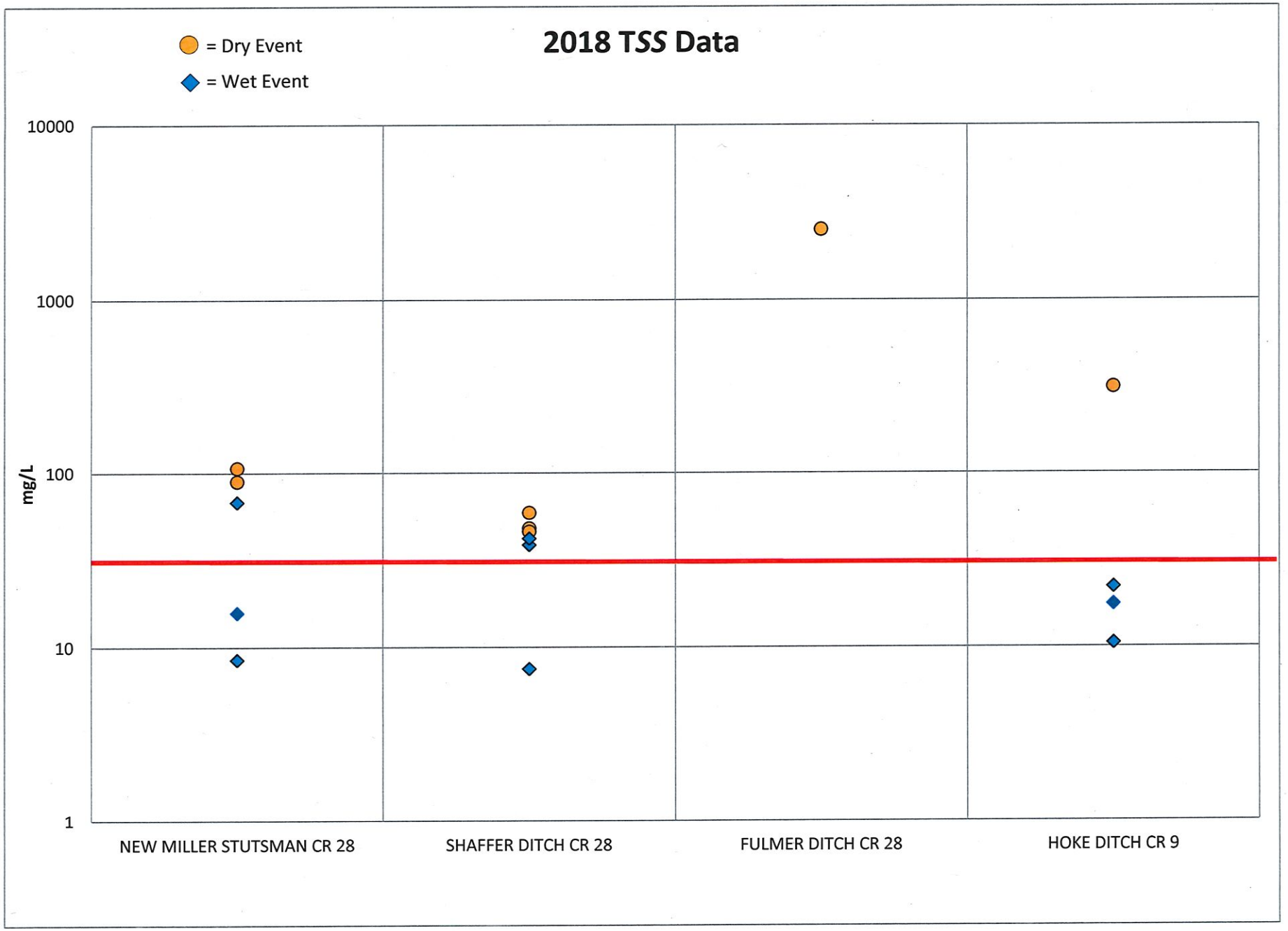
APPENDIX 2:
CHARTS
FOR E. COLI
AND TSS


2018 E. coli Data
= Dry Event
= Wet Event
Colonoy Forming units / 100 mL
100000
10000
1000
100
10
1
YELLOW CREEK CR 138
SWOVELAND DITCH CR 15
SWOVELAND DITCH CR 19
WEAVER DITCH CR 44
DAUSMAN DITCH CR 15
DAUSMAN DITCH CR 19
TURKEY CREEK CR 50
SOLOMON CREEK CR 33
SOLOMON CREEK CR 52

My computer has crashed & IT is unable to fix it & I am unable to add the locations unless I write them in.




2018 TSS Data
= Dry Event
= Wet Event
1000
100
10
1
mg/L
SWOVELAND DITCH CR 15
SWOVELAND DITCH CR 19
DAUSMAN DITCH CR 15
DAUSMAN DITCH CR 19
TURKEY CREEK CR 50
SOLOMON CREEK CR 33
SOLOMON CREEK CR 52


= Dry Event
= Wet Event
2018 TSS Data
10000
1000
100
10
1
mg/L
NEW MILLER STUTSMAN CR 28
SHAFFER DITCH CR 28
FULMER DITCH CR 28
HOKE DITCH CR 9