

2009

IN-STREAM

WATER QUALITY

SCREENING

FOR SELECTED

MS4 SITES

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IN-STREAM SAMPLING PROTOCOLS FOR MS4 SITES

In-stream sampling continued to provide data to help provide data to help prioritize sites with a high illicit discharge potential and to document the long term success of the illicit discharge detection and elimination program. Prior to the 2009 sampling season, the Elkhart County Surface Water Monitoring Committee convened to discuss whether changes to the program were needed. Christiana Creek was selected, with two sampling sites utilized; one at County Road 4 and the other site at Bristol Street. E-coli and all other parameters were sampled at the County Road 4 site. E-coli was omitted at the Bristol Street site. Christiana Creek's headwaters reside in Michigan with the inland lakes (Eagle, Painter, Juno and Christiana) and have been documented in the past to have low measured levels of E-coli. All other ditch and creek sampling sites remained the same because of their various land uses, their location within the MS4 boundaries, and the committee's recommendation that conclusions should be based on at least three concurrent years of sampling data.

Additionally, as part of an ongoing sampling program, the Elkhart County Health Department conducts water quality testing along the St. Joseph River, the Elkhart River, Heaton Lake, and Simonton Lake. In the past, the St. Joseph River was sampled at the Six Span Bridge and at the Johnson Street Bridge. On June 18th and 25th the Six Span Bridge sampling site was not collected due to bridge construction. Safety and accessibility were the reasons behind this decision. After discussion with members of the committee, the Nibbyville Public Access site was selected as a replacement until further notice. There is a pier at this location and collection began with the July 2nd surface water run. The Johnson Street sampling site was also omitted this season due to bridge construction. A replacement site was not selected. Also, the committee agreed to include a new sampling location on the Elkhart River at County Road 43 in order to obtain baseline data on the river close to where it flows into Elkhart County from Noble County.

Another change was the sampling frequency. Sampling began the first week of April instead of May and was conducted on a weekly basis. In addition to noting whether the sample was considered dry or wet, the water sampling form was modified to include if it was raining at the time of sample collection. These identifiers help to determine how land use impacts water quality and the impact combined sewer overflows may have on the receiving rivers in Elkhart and Goshen.

The samples for the ditches and creeks were collected on Tuesday mornings and the river and lake sites were sampled on Thursday mornings. The parameters and methods of collection are as follows:

Data gathered for dissolved oxygen, pH, temperature, and conductivity are obtained in the field by using an analytical device called a Hydrolab Quanta Water Quality Monitoring System. The Hydrolab 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 (lakes

and Nibbyville), the Hydrolab is lowered into the water at the end of the piers. Pre and post calibrations are conducted in accordance with the equipment manual. In mid-April, the pH readings were very high and ranged from 9 to as high as 13. The pH probe on the Hydrolab would not calibrate and pH was eliminated. The Hydrolab became completely inoperable July 2. An attempt was made to use the old Hydrolab from 1994 however, this piece of equipment only worked for a few short hours. Therefore, the attached charts contain incomplete data for these parameters. The Health Department has purchased a YSI Professional Plus instrument which will be used for the 2010 sampling season for these parameters.

Test samples for nitrates, chlorides, phosphates, 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 sample sites. For high flow sampling, a sampling tube is used. The sampling tube is lowered into the approximate center of the waterway and placed below the water surface for a minimum of 20 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, chlorides, and phosphate samples are collected for analysis in the Elkhart County Health Department Laboratory. This year the Health Department purchased a Hach portable spectrophotometer which provided for more accurate and dependable analysis. 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 time of collection, and the name of the individual(s) who collected the sample.

Total suspended solids and E. coli samples are collected, labeled, and transported to the Elkhart Public Works and Utilities Laboratory for analysis. 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 lab, the time is also added to the label. The label also includes a space to acknowledge who receives the sample. The Elkhart County Health Department's water sampling form is also signed by the 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. Total suspended solids were collected at all sites except the lakes and the St. Joseph River in Elkhart. The exception is once a month, when the Elkhart Public Works and Utilities staff collect their own samples from the St. Joseph River and the Elkhart River in Elkhart and perform their own analysis.

On June 30th, E-coli and the total suspended solids were not analyzed at the creek and ditch sites by the Elkhart Public Works and Utilities Laboratory due to in-house training of their staff members. Private laboratory costs for these parameters were quoted at \$470 and were not possible given the current budget constraints. The City of Goshen did not have the laboratory capacity to analyze this many samples.

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

The following is the list of creek and ditches and their sampling locations:

Horn Ditch – CR 31
Rock Run – CR 21 and CR 34
Pine Creek – CR 17, CR 18, CR 23, and CR 27
Putterbaugh Creek – Reedy Drive
Christiana Creek – CR 4 and Bristol Street

The river sites and locations are as follows:

ELKHART RIVER

CR 40, Goshen
CR 43, Benton Township
Indiana Avenue, Goshen
Old CR 17, Goshen
CR 18, Elkhart
East Jackson Street, Elkhart

ST. JOSEPH RIVER

CR 17, Elkhart and replaced by Nibbyville Public Access site
North Main Street, Elkhart
Ash Road, Elkhart

The lake sites and locations are as follows:

HEATON LAKE

Ideal Beach, 52256 Ideal Beach, Elkhart
22892 Lake Shore Drive, Elkhart

SIMONTON LAKE

51093 Beach Drive, Elkhart
25919 Lake Drive, Elkhart

PARAMETER DEFINITIONS AND THEIR IMPORTANCE

CHLORIDES (Cl_2) 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 stream 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 stream. 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. The higher the concentration of dissolved oxygen, the better the water quality. Aquatic life is stressed at levels below 5.0 mg/l. 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 waterbody by raising water temperature or introducing pollutants which remove the dissolved oxygen.

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 protozoans that also live in the digestive systems of humans and animals. Their presence in streams suggests 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 are the following numeric standards: "Concentrations shall not exceed 125 cfu/100 ml as a geometric 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 (NO_3) 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 increases in plant growth and changes in the types of plants and animals that live in the streams. In turn this affects dissolved oxygen and temperature. Excess nutrients can cause hypoxia which is condition characterized by low levels of dissolved oxygen when the plants decay. The natural level of nitrates in streams 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.

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 aquatic organisms survive and thrive at a range of 6.5-8.0. pH outside of this range reduces the diversity of the stream 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.

PHOSPHATES (PO_4) are the inorganic form of phosphorus and have been used in detergents in the past even with the ban on phosphate based detergents, the amount of phosphorus entering water continues to be a significant problem. Some powdered automatic dishwashing detergents still contain phosphates. Like nitrogen, phosphorus is an essential nutrient for plants and animals that make up the aquatic food web. Phosphorus in streams 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 production and can precipitate 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.

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 pollutions 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, soil erosion, stormwater runoff, and seasonal changes. Temperature is measured in degrees Celsius.

TOTAL SUSPENDED SOLIDS (TSS) are particulates in water and can include many types of material 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. It is not so much the particles themselves that cause the problem, though they can, but more importantly it is what the particles carry on them. Pollutants and contaminants adhere to the suspended solids. High levels of total suspended solids have harmful effects on fish and other aquatic organisms. 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, the Indiana Department of Environmental Management and the Center for Watershed Protection.

SAMPLING RESULTS AND GRAPHS FOR E. COLI LEVELS

The results of the samples are presented in the following surface water tables. As previously stated, data omissions are present due to the Hydrolab becoming completely inoperable for pH, conductivity, temperature and dissolved oxygen. Data for E. coli and total suspended solids are not available for June 30, 2009 for the ditches and creeks.

Graphs for E. coli were prepared due to the public health risk associated with E. coli levels exceeding 235 colonies/100 ml. The vertical axis represents the E. coli concentrations and the horizontal axis is the date of sample collection. In the upper right hand corner of each graph are the outliers. The bold red horizontal line on each chart represents the 235 colonies/100 ml. Dry weather events are identified with green diamonds and wet weather events are identified with blue circles. In general, wet weather events tend to have higher levels of pollution due to the runoff associated with them.

MS4 - Data Report

Date	Time	Temp	SpC	DO	pH	NO3	PO4	Cl2	TSS	E Coli	Raining	Wet Event
Bristol St - Christiana Creek												
4/7/2009	10:50 AM	6.11	416	12.01	9.4	1.7	0.186	5.2	4	0	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4/14/2009	11:50 AM	7.84	429	10.97	10.62	0.7	0.184	10	3	0	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4/21/2009	10:25 AM	9.41	434	11.13	10.84	1.1	0.125	10.8	2	0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
4/28/2009	11:05 AM	13.81	420	9.76	11.24	1.2	0.166	13.6	4	0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5/5/2009	11:40 AM	15.10	435	10.27	10.85	1.2	0.156	5.2	3	0	<input type="checkbox"/>	<input type="checkbox"/>
5/12/2009	11:30 AM	14.35	426	10.74	9.32	1.5	0.116	9.6	4	0	<input type="checkbox"/>	<input type="checkbox"/>
5/19/2009	10:55 AM	15.20	422	9.62	12.02	1.4	0.24	6.8	4	0	<input type="checkbox"/>	<input type="checkbox"/>
5/26/2009	11:05 AM	17.97	464	10.06	0	1.3	0.081	15.2	6	0	<input type="checkbox"/>	<input type="checkbox"/>
6/2/2009	11:15 AM	17.90	463	7.81	0	0.8	0.015	11.6	6	0	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6/9/2009	10:40 AM	18.34	460	7.98	0	1.5	0.031	17.6	6	0	<input type="checkbox"/>	<input type="checkbox"/>
6/16/2009	10:40 AM	19.80	451	5.66	0	1.3	0	10.8	7	0	<input type="checkbox"/>	<input type="checkbox"/>
6/23/2009	10:45 AM	23.92	444	7.66	0	0.7	0.011	7.2	8	0	<input type="checkbox"/>	<input type="checkbox"/>
6/30/2009	10:35 AM	20.78	459	10.36	0	1.6	0.167	13.6	10	0	<input type="checkbox"/>	<input type="checkbox"/>
7/7/2009	11:10 AM	0.00	0	0	0	1.2	0.01	10.4	6	0	<input type="checkbox"/>	<input type="checkbox"/>
7/14/2009	11:05 AM	0.00	0	0	0	0.6	0.045	12.4	7	0	<input type="checkbox"/>	<input type="checkbox"/>
7/21/2009	11:00 AM	0.00	0	0	0	0.5	0.004	16	6	0	<input type="checkbox"/>	<input type="checkbox"/>
7/28/2009	11:30 AM	0.00	0	0	0	1.4	0.021	14	5	0	<input type="checkbox"/>	<input type="checkbox"/>
8/4/2009	11:15 AM	0.00	0	0	0	0.8	0.021	15.6	5	0	<input type="checkbox"/>	<input type="checkbox"/>
8/11/2009	11:15 AM	0.00	0	0	0	1.3	0.011	14.4	5	0	<input type="checkbox"/>	<input type="checkbox"/>
8/18/2009	11:20 AM	0.00	0	0	0	1.2	3.89	12.4	7	0	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8/25/2009	10:40 AM	0.00	0	0	0	0.2	0.034	8.1	6	0	<input type="checkbox"/>	<input type="checkbox"/>
9/1/2009	10:45 AM	0.00	0	0	0	1.5	0.028	14	5	0	<input type="checkbox"/>	<input type="checkbox"/>
9/8/2009	10:30 AM	0.00	0	0	0	0.6	0	15.2	5	0	<input type="checkbox"/>	<input type="checkbox"/>
9/15/2009	10:30 AM	0.00	0	0	0	1.2	0.008	11.6	3	0	<input type="checkbox"/>	<input type="checkbox"/>
9/22/2009	10:50 AM	0.00	0	0	0	2.1	0.014	12.8	3	0	<input type="checkbox"/>	<input type="checkbox"/>
CR 17 - Pine Creek												
4/7/2009	10:00 AM	4.18	381	11.77	8.76	3.2	0.632	7.2	27	418	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4/14/2009	10:50 AM	6.98	631	10.68	9.69	3.1	0.215	22.4	6	312	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
4/21/2009	9:50 AM	8.05	626	10.88	10.95	3.7	0.223	15.2	6	495	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4/28/2009	10:30 AM	13.36	613	9.25	11.15	3.8	0.181	40	14	983	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5/5/2009	11:00 AM	11.83	664	10.81	12.2	4.2	0.219	10	6	88	<input type="checkbox"/>	<input type="checkbox"/>
5/12/2009	10:40 AM	10.46	645	12.75	10.22	4.1	0.034	13.6	7	227	<input type="checkbox"/>	<input type="checkbox"/>
5/19/2009	10:20 AM	12.23	607	9.52	11.68	3.1	0.21	14.8	11	335	<input type="checkbox"/>	<input type="checkbox"/>

Date	Time	Temp	SpC	DO	pH	NO3	PO4	Cl2	TSS	E Coli	Raining	Wet Event
5/26/2009	10:30 AM	13.40	673	9.88	0	2.2	0.164	27.2	9	256	<input type="checkbox"/>	<input type="checkbox"/>
6/2/2009	10:35 AM	14.06	647	8.78	0	3.2	0.072	16.4	8	12700	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6/9/2009	10:00 AM	14.51	657	9.1	0	4	0.079	34	8	510	<input type="checkbox"/>	<input type="checkbox"/>
6/16/2009	10:05 AM	14.67	655	6.62	0	4.2	0.116	23.6	14	920	<input type="checkbox"/>	<input type="checkbox"/>
6/23/2009	10:05 AM	17.12	667	9.05	0	4	0.123	21.2	19	840	<input type="checkbox"/>	<input type="checkbox"/>
6/30/2009	9:55 AM	14.81	692	11.43	0	4.8	0.11	26.8	0	0	<input type="checkbox"/>	<input type="checkbox"/>
7/7/2009	10:35 AM	0.00	0	0	0	3.5	0.078	30.8	6	680	<input type="checkbox"/>	<input type="checkbox"/>
7/14/2009	10:30 AM	0.00	0	0	0	3.4	0.049	35.6	5	695	<input type="checkbox"/>	<input type="checkbox"/>
7/21/2009	10:25 AM	0.00	0	0	0	3.4	0.056	32.4	3	530	<input type="checkbox"/>	<input type="checkbox"/>
7/28/2009	10:45 AM	0.00	0	0	0	4.3	0.056	32	4	537	<input type="checkbox"/>	<input type="checkbox"/>
8/4/2009	10:40 AM	0.00	0	0	0	3.8	0.06	31.6	4	830	<input type="checkbox"/>	<input type="checkbox"/>
8/11/2009	10:30 AM	0.00	0	0	0	4	0.077	14	5	876	<input type="checkbox"/>	<input type="checkbox"/>
8/18/2009	10:50 AM	0.00	0	0	0	2.3	0.755	25.2	54	18900	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8/25/2009	10:00 AM	0.00	0	0	0	4.1	0.173	27.6	10	680	<input type="checkbox"/>	<input type="checkbox"/>
9/1/2009	10:10 AM	0.00	0	0	0	3.8	0.128	30.4	6	580	<input type="checkbox"/>	<input type="checkbox"/>
9/8/2009	10:00 AM	0.00	0	0	0	2.9	0.083	27.6	9	417	<input type="checkbox"/>	<input type="checkbox"/>
9/15/2009	9:55 AM	0.00	0	0	0	3.9	0.062	24.4	10	1320	<input type="checkbox"/>	<input type="checkbox"/>
9/22/2009	10:15 AM	0.00	0	0	0	5.3	0.077	25.2	6	755	<input type="checkbox"/>	<input type="checkbox"/>

CR 18 - Pine Creek

4/7/2009	9:50 AM	4.06	434	11.34	9.01	3.2	0.548	10	28	410	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4/14/2009	10:30 AM	6.80	612	10.31	9.88	3.4	0.261	20.8	6	264	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4/21/2009	9:40 AM	7.88	611	11.3	11.67	4.2	0.176	17.2	5	369	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4/28/2009	10:15 AM	13.48	592	8.67	12.85	4	0.123	18.8	13	1320	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5/5/2009	10:45 AM	11.19	652	10.36	12.36	4.5	0.122	9.2	7	88	<input type="checkbox"/>	<input type="checkbox"/>
5/12/2009	10:20 AM	9.44	637	11.3	9.94	5.1	0.208	15.2	7	282	<input type="checkbox"/>	<input type="checkbox"/>
5/19/2009	10:05 AM	11.84	588	8.96	11.6	2.4	0.035	7.2	12	282	<input type="checkbox"/>	<input type="checkbox"/>
5/26/2009	10:15 AM	13.25	662	9.31	0	6.2	0.201	25.6	10	496	<input type="checkbox"/>	<input type="checkbox"/>
6/2/2009	10:25 AM	14.09	639	8.51	0	3.7	0.105	23.6	10	4200	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6/9/2009	9:55 AM	14.40	648	9.59	0	4.7	0.124	36	9	730	<input type="checkbox"/>	<input type="checkbox"/>
6/16/2009	9:50 AM	14.41	647	6.55	0	4.8	0.096	26.4	20	1385	<input type="checkbox"/>	<input type="checkbox"/>
6/23/2009	9:55 AM	16.92	654	9.28	0	4.6	0.152	15.6	19	1405	<input type="checkbox"/>	<input type="checkbox"/>
6/30/2009	9:45 AM	14.74	682	15.02	0	5.5	0.122	29.2	0	0	<input type="checkbox"/>	<input type="checkbox"/>
7/7/2009	10:25 AM	0.00	0	0	0	5.1	0.079	30.4	8	1075	<input type="checkbox"/>	<input type="checkbox"/>
7/14/2009	10:20 AM	0.00	0	0	0	4.1	0.088	33.6	10	540	<input type="checkbox"/>	<input type="checkbox"/>
7/21/2009	10:15 AM	0.00	0	0	0	3.6	0.073	34.8	7	611	<input type="checkbox"/>	<input type="checkbox"/>
7/28/2009	10:35 AM	0.00	0	0	0	5.3	0.104	29.2	6	605	<input type="checkbox"/>	<input type="checkbox"/>

Date	Time	Temp	SpC	DO	pH	NO3	PO4	Cl2	TSS	E Col	Raining	Wet Event
8/4/2009	10:25 AM	0.00	0	0	0	4.2	0.095	31.6	7	545	<input type="checkbox"/>	<input type="checkbox"/>
8/11/2009	10:20 AM	0.00	0	0	0	4.2	0.125	26	7	601	<input type="checkbox"/>	<input type="checkbox"/>
8/18/2009	10:40 AM	0.00	0	0	0	2.5	0.649	24.8	34	21300	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8/25/2009	9:50 AM	0.00	0	0	0	2.3	0.204	30	22	690	<input type="checkbox"/>	<input type="checkbox"/>
9/1/2009	9:55 AM	0.00	0	0	0	3.3	0.149	30	13	689	<input type="checkbox"/>	<input type="checkbox"/>
9/8/2009	9:50 AM	0.00	0	0	0	3.7	0.116	26	8	765	<input type="checkbox"/>	<input type="checkbox"/>
9/15/2009	9:45 AM	0.00	0	0	0	4.1	0.097	23.2	7	392	<input type="checkbox"/>	<input type="checkbox"/>
9/22/2009	10:05 AM	0.00	0	0	0	4.7	0.1	22.4	5	443	<input type="checkbox"/>	<input type="checkbox"/>

CR 21 - Rock Run

4/7/2009	8:30 AM	4.07	423	12.08	5.22	4	1.35	11.2	34	829	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4/14/2009	8:30 AM	6.85	631	10.57	7.94	4	0.354	22.8	7	300	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4/21/2009	8:25 AM	7.95	611	10.84	8.07	4.7	0.444	22.8	9	630	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4/28/2009	8:55 AM	13.81	591	8.88	11.15	4.2	0.247	19.6	13	1072	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5/5/2009	8:45 AM	11.10	660	10.8	11.3	4	0.335	6.4	4	204	<input type="checkbox"/>	<input type="checkbox"/>
5/12/2009	8:50 AM	9.70	611	10.81	8.25	4.4	0.168	13.6	3	193	<input type="checkbox"/>	<input type="checkbox"/>
5/19/2009	8:45 AM	11.77	592	9.83	8.98	4.9	0.614	7.6	16	620	<input type="checkbox"/>	<input type="checkbox"/>
5/26/2009	8:35 AM	8.94	775	12.26	0	43	0.233	32	10	381	<input type="checkbox"/>	<input type="checkbox"/>
6/2/2009	8:50 AM	15.28	633	8.45	0	3.5	0.13	28.4	13	1080	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
6/9/2009	8:45 AM	15.67	658	9.44	0	4	0.181	32.4	6	760	<input type="checkbox"/>	<input type="checkbox"/>
6/16/2009	8:25 AM	15.61	651	9.59	0	4.4	0.147	26	10	682	<input type="checkbox"/>	<input type="checkbox"/>
6/23/2009	8:45 AM	17.65	667	9.25	0	5.2	0.284	18.8	15	875	<input type="checkbox"/>	<input type="checkbox"/>
6/30/2009	8:35 AM	14.89	707	12.86	0	4.2	0.084	28.8	0	0	<input type="checkbox"/>	<input type="checkbox"/>
7/7/2009	9:00 AM	0.00	0	0	0	3.9	0.089	34	3	573	<input type="checkbox"/>	<input type="checkbox"/>
7/14/2009	8:45 AM	14.97	536	9.07	7.81	2	0.066	32	3	458	<input type="checkbox"/>	<input type="checkbox"/>
7/21/2009	6:45 PM	0.00	0	0	0	3.5	0.064	48.4	3	6700	<input type="checkbox"/>	<input type="checkbox"/>
7/28/2009	8:50 AM	0.00	0	0	0	3.7	0.115	38	5	630	<input type="checkbox"/>	<input type="checkbox"/>
8/4/2009	9:20 AM	0.00	0	0	0	2.7	0.092	36.4	5	650	<input type="checkbox"/>	<input type="checkbox"/>
8/11/2009	9:10 AM	0.00	0	0	0	3.1	0.177	28.4	5	770	<input type="checkbox"/>	<input type="checkbox"/>
8/18/2009	9:15 AM	0.00	0	0	0	3.7	0.072	17.2	50	33200	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8/25/2009	8:50 AM	0.00	0	0	0	3.3	0.245	25.4	13	1230	<input type="checkbox"/>	<input type="checkbox"/>
9/1/2009	8:55 AM	0.00	0	0	0	3.8	0.3	32.8	14	569	<input type="checkbox"/>	<input type="checkbox"/>
9/8/2009	8:55 AM	0.00	0	0	0	3.2	0.134	32	7	527	<input type="checkbox"/>	<input type="checkbox"/>
9/15/2009	8:50 AM	0.00	0	0	0	3.7	0.062	34	3	466	<input type="checkbox"/>	<input type="checkbox"/>
9/22/2009	9:05 AM	0.00	0	0	0	4	0.069	31.2	3	463	<input type="checkbox"/>	<input type="checkbox"/>

CR 23 - Pine Creek

4/7/2009	9:40 AM	4.63	534	10.25	8.16	4.6	1.38	10.8	31	441	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4/14/2009	10:15 AM	7.07	625	10.03	9.92	3.9	0.218	14.8	6	205	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Date	Time	Temp	SpC	DO	pH	NO3	PO4	Cl2	TSS	E Coli	Raining	Wet Event
4/21/2009	9:25 AM	7.63	612	10.43	10.39	4.6	0.26	0	9	1005	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4/28/2009	10:00 AM	12.86	586	8.7	10.42	3.9	0.231	14.4	11	5625	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5/5/2009	10:30 AM	11.17	664	10.14	10.6	3	0.251	12.4	5	120	<input type="checkbox"/>	<input type="checkbox"/>
5/12/2009	10:00 AM	9.61	643	14.49	9.28	5.8	0.242	11.2	5	141	<input type="checkbox"/>	<input type="checkbox"/>
5/19/2009	9:50 AM	7.73	674	11.52	10.85	5.1	0.151	6	10	370	<input type="checkbox"/>	<input type="checkbox"/>
5/26/2009	10:05 AM	13.22	665	8.56	0	5.2	0.201	20.8	10	546	<input type="checkbox"/>	<input type="checkbox"/>
6/2/2009	10:15 AM	13.59	648	8.3	0	4	0.133	18	10	2600	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6/9/2009	9:45 AM	14.06	655	8.15	0	5	0.178	15.6	11	515	<input type="checkbox"/>	<input type="checkbox"/>
6/16/2009	9:40 AM	14.09	651	6.4	0	5.5	0.121	20.4	10	700	<input type="checkbox"/>	<input type="checkbox"/>
6/23/2009	9:45 AM	16.38	664	8.78	0	4.2	0.157	16.4	13	860	<input type="checkbox"/>	<input type="checkbox"/>
6/30/2009	9:35 AM	14.53	693	11.49	0	5.4	0.195	27.2	0	0	<input type="checkbox"/>	<input type="checkbox"/>
7/7/2009	10:15 AM	0.00	0	0	0	5.4	0.087	22	8	1100	<input type="checkbox"/>	<input type="checkbox"/>
7/14/2009	10:05 AM	13.32	533	8.64	7.98	4	0.129	25.6	12	910	<input type="checkbox"/>	<input type="checkbox"/>
7/21/2009	10:05 AM	0.00	0	0	0	4.2	0.134	24	6	705	<input type="checkbox"/>	<input type="checkbox"/>
7/28/2009	10:25 AM	0.00	0	0	0	5.5	0.134	21.6	7	675	<input type="checkbox"/>	<input type="checkbox"/>
8/4/2009	10:15 AM	0.00	0	0	0	6.1	0.144	25.6	7	645	<input type="checkbox"/>	<input type="checkbox"/>
8/11/2009	10:10 AM	0.00	0	0	0	3.9	0.205	20	8	965	<input type="checkbox"/>	<input type="checkbox"/>
8/18/2009	10:35 AM	0.00	0	0	0	3.2	0.676	23.6	22	39000	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8/25/2009	9:40 AM	0.00	0	0	0	4.8	0.019	22.5	5	455	<input type="checkbox"/>	<input type="checkbox"/>
9/1/2009	9:50 AM	0.00	0	0	0	3.8	0.154	25.6	7	745	<input type="checkbox"/>	<input type="checkbox"/>
9/8/2009	9:45 AM	0.00	0	0	0	4.2	0.123	21.2	8	1035	<input checked="" type="checkbox"/>	<input type="checkbox"/>
9/15/2009	9:40 AM	0.00	0	0	0	3.8	0.128	20.4	38	585	<input type="checkbox"/>	<input type="checkbox"/>
9/22/2009	9:55 AM	0.00	0	0	0	5.7	0.14	20.8	7	619	<input type="checkbox"/>	<input type="checkbox"/>

CR 27 - Pine Creek

4/7/2009	9:25 AM	4.59	548	10.49	8.1	7.6	0.506	11.6	29	365	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4/14/2009	10:00 AM	6.91	629	10.85	10.05	5.8	0.272	15.2	7	2140	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4/21/2009	9:10 AM	7.37	606	10.88	10.53	5.9	0.423	12.4	7	1642	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4/28/2009	9:45 AM	12.70	597	9.71	10.41	5	0.236	15.2	12	6775	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5/5/2009	10:10 AM	10.80	670	10.76	13.6	7	0.162	6	5	120	<input type="checkbox"/>	<input type="checkbox"/>
5/12/2009	9:45 AM	9.06	644	13.21	9.4	7.6	0.164	12.4	4	158	<input type="checkbox"/>	<input type="checkbox"/>
5/19/2009	9:30 AM	10.88	630	9.54	10.11	6.9	0.214	8.4	12	302	<input type="checkbox"/>	<input type="checkbox"/>
5/26/2009	9:25 AM	12.54	689	8.77	0	6.8	0.112	21.6	11	498	<input type="checkbox"/>	<input type="checkbox"/>
6/2/2009	10:05 AM	11.78	680	9.61	0	6.3	0.122	17.2	11	4300	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6/9/2009	9:35 AM	13.72	674	8.88	0	7	0.065	19.6	11	560	<input type="checkbox"/>	<input type="checkbox"/>
6/16/2009	9:20 AM	13.54	610	6.69	0	7.5	0.104	18.4	13	1015	<input type="checkbox"/>	<input type="checkbox"/>
6/23/2009	9:35 AM	15.31	692	10.11	0	6.8	0.068	16.8	16	970	<input type="checkbox"/>	<input type="checkbox"/>
6/30/2009	9:25 AM	14.09	598	15.07	0	7.6	0.066	22.4	0	0	<input type="checkbox"/>	<input type="checkbox"/>

Date	Time	Temp	SpC	DO	pH	NO3	PO4	Cl2	TSS	E Coli	Raining	Wet Event
7/7/2009	9:55 AM	0.00	0	0	0	7.5	0.107	22.8	7	1360	<input type="checkbox"/>	<input type="checkbox"/>
7/14/2009	10:00 AM	12.95	526	9.7	7.96	6.9	0.047	28.4	10	1222	<input type="checkbox"/>	<input type="checkbox"/>
7/21/2009	9:55 AM	0.00	0	0	0	6.6	0.041	26	15	1270	<input type="checkbox"/>	<input type="checkbox"/>
7/28/2009	10:15 AM	0.00	0	0	0	6.4	0.077	22.8	5	970	<input type="checkbox"/>	<input type="checkbox"/>
8/4/2009	10:10 AM	0.00	0	0	0	5.9	0.043	28	6	885	<input type="checkbox"/>	<input type="checkbox"/>
8/11/2009	9:55 AM	0.00	0	0	0	6.5	0.046	19.2	7	1000	<input type="checkbox"/>	<input type="checkbox"/>
8/18/2009	10:20 AM	0.00	0	0	0	3.7	0.837	26.8	15	30000	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8/25/2009	9:35 AM	0.00	0	0	0	5.2	0.051	21.8	8	713	<input type="checkbox"/>	<input type="checkbox"/>
9/1/2009	9:40 AM	0.00	0	0	0	6.5	0.126	25.2	8	615	<input type="checkbox"/>	<input type="checkbox"/>
9/8/2009	9:35 AM	0.00	0	0	0	6.6	0.051	21.2	6	494	<input checked="" type="checkbox"/>	<input type="checkbox"/>
9/15/2009	9:35 AM	0.00	0	0	0	7.2	0.042	17.2	7	560	<input type="checkbox"/>	<input type="checkbox"/>
9/22/2009	9:45 AM	0.00	0	0	0	7	0.038	20.8	4	540	<input type="checkbox"/>	<input type="checkbox"/>

CR 31 - Horn Ditch

4/7/2009	8:55 AM	4.06	376	10.67	6.81	5.5	1.25	10.4	29	664	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4/14/2009	9:15 AM	6.14	589	10.52	10.18	7.6	615	17.6	9	280	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4/21/2009	8:45 AM	6.93	475	10.46	9.95	7.1	1.5	18.4	28	13100	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4/28/2009	9:20 AM	11.66	523	9.06	9.68	6.8	1.37	22	25	80800	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5/5/2009	9:45 AM	10.34	636	11.31	11.07	8	0.342	7.6	5	140	<input type="checkbox"/>	<input type="checkbox"/>
5/12/2009	9:20 AM	9.17	652	13.3	10.11	8.3	0.227	19.6	3	206	<input type="checkbox"/>	<input type="checkbox"/>
5/19/2009	9:10 AM	11.14	526	9.38	9.15	10.3	0.895	1.2	7	480	<input type="checkbox"/>	<input type="checkbox"/>
5/29/2009	9:05 AM	12.70	665	9	0	8.6	0.295	21.5	8	552	<input type="checkbox"/>	<input type="checkbox"/>
6/2/2009	9:40 AM	13.80	670	8.24	0	7.7	0.297	23.6	8	3900	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
6/9/2009	9:15 AM	14.75	654	9.11	0	7.5	0.162	19.6	7	1520	<input type="checkbox"/>	<input type="checkbox"/>
6/16/2009	9:00 AM	14.53	652	7.84	0	8.2	0.163	19.6	12	645	<input type="checkbox"/>	<input type="checkbox"/>
6/23/2009	9:15 AM	17.15	677	10.78	0	8.8	0.196	14.8	9	1320	<input type="checkbox"/>	<input type="checkbox"/>
6/30/2009	9:05 AM	13.08	739	13.24	0	7.5	0.148	25.6	0	0	<input type="checkbox"/>	<input type="checkbox"/>
7/7/2009	9:35 AM	0.00	0	0	0	6.1	0.129	20.8	13	1865	<input type="checkbox"/>	<input type="checkbox"/>
7/14/2009	9:40 AM	15.26	560	10.75	8.11	6.3	0.043	20	3	625	<input type="checkbox"/>	<input type="checkbox"/>
7/21/2009	9:35 AM	0.00	0	0	0	5.3	0.053	26.8	3	477	<input type="checkbox"/>	<input type="checkbox"/>
7/28/2009	9:50 AM	0.00	0	0	0	5.7	0.104	24	4	360	<input type="checkbox"/>	<input type="checkbox"/>
8/4/2009	9:50 AM	0.00	0	0	0	4.6	0.074	27.2	6	855	<input type="checkbox"/>	<input type="checkbox"/>
8/11/2009	9:35 AM	0.00	0	0	0	3.9	0.126	16.8	5	1375	<input type="checkbox"/>	<input type="checkbox"/>
8/18/2009	10:00 AM	0.00	0	0	0	5.6	0.049	16.8	20	51600	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8/25/2009	9:15 AM	0.00	0	0	0	5	0.287	19.2	11	2110	<input type="checkbox"/>	<input type="checkbox"/>
9/1/2009	9:20 AM	0.00	0	0	0	5.5	0.4	24.4	13	2740	<input type="checkbox"/>	<input type="checkbox"/>
9/8/2009	9:20 AM	0.00	0	0	0	5.2	0.145	22.4	12	624	<input type="checkbox"/>	<input type="checkbox"/>

Date	Time	Temp	SpC	DO	pH	NO3	PO4	Cl2	TSS	E.Coli	Raining	Wet Event
9/15/2009	9:15 AM	0.00	0	0	0	5.6	0.093	17.6	8	1075	<input type="checkbox"/>	<input type="checkbox"/>
9/22/2009	9:30 AM	0.00	0	0	0	5.6	0.081	16.8	3	705	<input type="checkbox"/>	<input type="checkbox"/>
CR 34 - Rock Run												
4/7/2009	9:10 AM	4.09	480	11.07	6.84	4.7	0.441	12.4	25	570	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4/14/2009	9:35 AM	6.57	662	9.89	10.89	6.1	0.326	18.8	5	470	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4/21/2009	9:00 AM	7.28	646	10.77	11.92	6.5	0	22	5	4580	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4/28/2009	9:35 AM	13.11	622	8.29	11.65	5.3	0.829	19.6	18	59200	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5/5/2009	9:15 AM	10.17	698	11.02	11.87	6.8	0.368	7.6	2	240	<input type="checkbox"/>	<input type="checkbox"/>
5/12/2009	9:10 AM	8.52	675	13.43	9.37	7.4	0.151	14.4	3	487	<input type="checkbox"/>	<input type="checkbox"/>
5/19/2009	9:20 AM	10.99	618	9.09	11.16	6.6	0.572	7.6	24	820	<input type="checkbox"/>	<input type="checkbox"/>
5/26/2009	8:55 AM	12.73	713	8.22	0	7.1	0.269	31.2	6	2560	<input type="checkbox"/>	<input type="checkbox"/>
6/2/2009	9:25 AM	14.20	703	7.75	0	6.6	0.157	21.6	4	920	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6/9/2009	9:05 AM	15.13	699	8	0	7.4	0.149	26.8	4	1265	<input type="checkbox"/>	<input type="checkbox"/>
6/16/2009	8:45 AM	14.68	696	0		7.9	0.178	23.6	6	985	<input type="checkbox"/>	<input type="checkbox"/>
6/23/2009	9:05 AM	16.47	700	9.33	0	7.3	0.324	17.6	9	885	<input type="checkbox"/>	<input type="checkbox"/>
6/30/2009	8:50 AM	11.70	800	11.28	0	7.6	0.17	29.2	0	0	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7/7/2009	9:20 AM	0.00	0	0	0	8.1	0.099	28	2	1125	<input type="checkbox"/>	<input type="checkbox"/>
7/14/2009	9:25 AM	13.79	579	8.75	7.91	6.2	0.053	31.2	3	725	<input type="checkbox"/>	<input type="checkbox"/>
7/21/2009	9:25 AM	0.00	0	0	0	7.7	0.076	36.8	3	820	<input type="checkbox"/>	<input type="checkbox"/>
7/28/2009	9:35 AM	0.00	0	0	0	8	0.142	30.8	4	865	<input type="checkbox"/>	<input type="checkbox"/>
8/4/2009	9:40 AM	0.00	0	0	0	9.3	0.145	33.2	6	790	<input type="checkbox"/>	<input type="checkbox"/>
8/11/2009	9:25 AM	0.00	0	0	0	8.7	0.14	38.8	8	955	<input type="checkbox"/>	<input type="checkbox"/>
8/18/2009	9:45 AM	0.00	0	0	0	3.3	0.041	25.2	32	20800	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8/25/2009	9:10 AM	0.00	0	0	0	6.3	0.276	28.4	9	1217	<input type="checkbox"/>	<input type="checkbox"/>
9/1/2009	9:10 AM	0.00	0	0	0	5.3	0.325	29.2	8	489	<input type="checkbox"/>	<input type="checkbox"/>
9/8/2009	9:10 AM	0.00	0	0	0	6.6	0.135	30.8	9	425	<input type="checkbox"/>	<input type="checkbox"/>
9/15/2009	9:05 AM	0.00	0	0	0	7.7	0.059	27.2	5	450	<input type="checkbox"/>	<input type="checkbox"/>
9/22/2009	9:20 AM	0.00	0	0	0	7.6	0.084	29.2	3	502	<input type="checkbox"/>	<input type="checkbox"/>

CR 4 - Christiana Creek

4/7/2009	10:35 AM	6.37	397	11.28	8.97	1.2	0.158	4.8	4	28	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4/14/2009	11:30 AM	7.82	405	11	9.94	1	0.182	8	3	70	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
4/21/2009	10:20 AM	9.49	409	12.14	10.84	0.4	0.137	6	1	36	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4/28/2009	10:55 AM	13.86	404	10.02	11.69	1.4	0.171	10.8	2	175	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5/5/2009	11:25 AM	15.59	416	10.24	11.37	1.4	0.166	4	3	36	<input type="checkbox"/>	<input type="checkbox"/>
5/12/2009	11:15 AM	14.80	505	11.53	9.49	1.8	0.117	7.6	3	38	<input type="checkbox"/>	<input type="checkbox"/>
5/19/2009	10:45 AM	15.63	402	9.58	11.5	1.4	0.118	6.8	4	44	<input type="checkbox"/>	<input type="checkbox"/>
5/26/2009	11:00 AM	18.69	433	8.92	0	1.3	0.1	9.2	7	92	<input type="checkbox"/>	<input type="checkbox"/>

Date	Time	Temp	SpC	DO	pH	NO3	PO4	Cl2	TSS	E Coli	Raining	Wet Event
6/2/2009	11:00 AM	16.82	452	9.09	0	0.9	0	6.4	6	144	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6/9/2009	10:30 AM	18.96	434	8.34	0	1.4	0.018	10	7	150	<input type="checkbox"/>	<input type="checkbox"/>
6/16/2009	10:30 AM	20.48	426	5.74	0	1.2	0.025	7.2	6	126	<input type="checkbox"/>	<input type="checkbox"/>
6/23/2009	10:35 AM	24.55	426	14.13	0	1.2	0.01	4	7	150	<input type="checkbox"/>	<input type="checkbox"/>
6/30/2009	10:25 AM	21.48	462	9.14	0	0	0.172	8.8	0	0	<input type="checkbox"/>	<input type="checkbox"/>
7/7/2009	11:05 AM	0.00	0	0	0	1.3	0.033	4.8	5	129	<input type="checkbox"/>	<input type="checkbox"/>
7/14/2009	10:55 AM	0.00	0	0	0	0.3	0.002	7.6	5	193	<input type="checkbox"/>	<input type="checkbox"/>
7/21/2009	10:50 AM	0.00	0	0	0	1	0.001	8.8	4	132	<input type="checkbox"/>	<input type="checkbox"/>
7/28/2009	11:20 AM	0.00	0	0	0	1.6	0.014	7.6	3	197	<input type="checkbox"/>	<input type="checkbox"/>
8/4/2009	11:10 AM	0.00	0	0	0	0.7	0.015	10	5	122	<input type="checkbox"/>	<input type="checkbox"/>
8/11/2009	11:05 AM	0.00	0	0	0	1.4	0.047	7.2	5	188	<input type="checkbox"/>	<input type="checkbox"/>
8/18/2009	11:15 AM	0.00	0	0	0	0.9	2.01	10.8	8	430	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8/25/2009	10:30 AM	0.00	0	0	0	1.2	0.033	5.6	6	657	<input type="checkbox"/>	<input type="checkbox"/>
9/1/2009	10:35 AM	0.00	0	0	0	1.1	0.12	9.2	4	60	<input type="checkbox"/>	<input type="checkbox"/>
9/8/2009	10:20 AM	0.00	0	0	0	0	0.002	7.6	3	116	<input type="checkbox"/>	<input type="checkbox"/>
9/15/2009	10:20 AM	0.00	0	0	0	0.9	0.002	8.4	2	134	<input type="checkbox"/>	<input type="checkbox"/>
9/22/2009	10:40 AM	0.00	0	0	0	1.7	0.007	3.6	2	124	<input type="checkbox"/>	<input type="checkbox"/>

Reedy Dr - Putterbaugh Creek

4/7/2009	10:20 AM	5.77	366	11.2	9.11	0.9	0.243	6.8	2	28	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4/14/2009	11:10 AM	7.41	403	9.79	10.24	0	0.168	8.8	2	14	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
4/21/2009	10:00 AM	9.70	400	10.32	10.08	0.3	0.148	7.2	2	125	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4/28/2009	10:45 AM	16.22	404	7.89	10.41	0.2	0.056	13.6	2	287	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5/5/2009	11:15 AM	15.45	418	9.63	10.48	0	0.041	4.4	3	107	<input type="checkbox"/>	<input type="checkbox"/>
5/12/2009	11:00 AM	13.71	411	9.34	9.05	2.3	0	8	2	86	<input type="checkbox"/>	<input type="checkbox"/>
5/19/2009	10:30 AM	15.68	368	7.56	11.61	0.6	0.082	5.2	3	94	<input type="checkbox"/>	<input type="checkbox"/>
5/26/2009	10:45 AM	17.86	425	7.09	0	0.3	0.161	9.2	4	106	<input type="checkbox"/>	<input type="checkbox"/>
6/2/2009	10:50 AM	18.35	414	7.19	0	0	0.021	7.6	3	91	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6/9/2009	10:15 AM	19.06	418	7.28	0	0.5	0.028	10.4	3	130	<input type="checkbox"/>	<input type="checkbox"/>
6/16/2009	10:20 AM	19.63	404	5.36	0	0.7	0.03	7.6	2	185	<input type="checkbox"/>	<input type="checkbox"/>
6/23/2009	10:20 AM	24.04	388	7	0	0.6	0.029	5.2	3	277	<input type="checkbox"/>	<input type="checkbox"/>
6/30/2009	10:15 AM	14.68	424	11.01	0	0.3	0.036	9.6	0	0	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7/7/2009	10:50 AM	0.00	0	0	0	0.7	0.032	6.8	5	350	<input type="checkbox"/>	<input type="checkbox"/>
7/14/2009	10:45 AM	0.00	0	0	0	0	0.03	11.6	3	403	<input type="checkbox"/>	<input type="checkbox"/>
7/21/2009	10:35 AM	0.00	0	0	0	0.1	0.025	11.2	1	548	<input type="checkbox"/>	<input type="checkbox"/>
7/28/2009	11:00 AM	0.00	0	0	0	0.3	0	11.6	2	880	<input type="checkbox"/>	<input type="checkbox"/>
8/4/2009	10:55 AM	0.00	0	0	0	0	0.017	13.6	3	288	<input type="checkbox"/>	<input type="checkbox"/>

Date	Time	Temp	SpC	DO	pH	NO3	P04	Cl2	TSS	E Col	Raining	Wet Event
8/11/2009	10:50 AM	0.00	0	0	0	0.6	0.053	32	5	446	<input type="checkbox"/>	<input type="checkbox"/>
8/18/2009	11:00 AM	0.00	0	0	0	0.6	1.8	11.2	7	940	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8/25/2009	10:15 AM	0.00	0	0	0	0.3	0.04	8.7	2	244	<input type="checkbox"/>	<input type="checkbox"/>
9/1/2009	10:20 AM	0.00	0	0	0	0.6	0	11.2	1	96	<input type="checkbox"/>	<input type="checkbox"/>
9/8/2009	10:10 AM	0.00	0	0	0	0.1	0	10.4	2	297	<input type="checkbox"/>	<input type="checkbox"/>
9/15/2009	10:05 AM	0.00	0	0	0	0.6	0.012	10.4	4	735	<input type="checkbox"/>	<input type="checkbox"/>
9/22/2009	10:25 AM	0.00	0	0	0	0.8	0.022	9.6	2	279	<input type="checkbox"/>	<input type="checkbox"/>

Lakes and Rivers - Data Report

Date	Time	Temp	SpC	DO	pH	NO3	PO4	Cl2	TSS	Fish	Raining
22892 Lake Shore Dr Heaton Lake											
4/9/2009	11:00 AM	8.40	356	10.91	9.17	1.3		8.4		2	<input type="checkbox"/>
4/16/2009	10:55 AM	9.65	360	10.33	11.14	0.0	0.073	4.0		0	<input type="checkbox"/>
4/23/2009	10:50 AM	10.96	364	11.19	11.67	0.1	0.089	8.0		5	<input type="checkbox"/>
4/30/2009	10:55 AM	15.25	374	9.23	10.89	0.7	0.047	5.6		18	<input checked="" type="checkbox"/>
5/7/2009	11:20 AM	19.67	357	9.74	9.64	0.2	0.119	3.6		3	<input type="checkbox"/>
5/14/2009	10:55 AM	16.33	367	8.44	10.01	0.9	0.029	5.2		1000	<input type="checkbox"/>
5/21/2009	11:45 AM	20.84	373	8.94		0.5		13.2		83	<input type="checkbox"/>
5/28/2009	10:50 AM	21.19	379	8.09		0.9	0	8.8		150	<input type="checkbox"/>
6/4/2009	11:00 AM	20.96	375	9.70		0.1	0.008	5.6		2	<input type="checkbox"/>
6/11/2009	11:05 AM	21.85	355	6.95		1.8	0.024	10.0		42	<input checked="" type="checkbox"/>
6/18/2009	10:35 AM	20.55	374	5.55		0.0	0.017	6.8		45	<input type="checkbox"/>
6/25/2009	10:15 AM	20.40	495	2.69		0.2	0	8.8		17	<input type="checkbox"/>
7/2/2009	10:45 AM					2.1	0.047	9.6		2	<input type="checkbox"/>
7/9/2009	10:20 AM	23.31	367	9.10	8.38	0.1	0.04	10.1		47	<input type="checkbox"/>
7/16/2009	10:25 AM	23.39	371	7.65	8.24	0.0	0.001	9.0		25	<input type="checkbox"/>
7/23/2009	10:55 AM					0.2	0.007	7.6		112	<input type="checkbox"/>
7/30/2009	10:45 AM					0.1	0	8.8		74	<input type="checkbox"/>
8/6/2009	10:40 AM					1.2	0	9.2		17	<input type="checkbox"/>
8/13/2009	10:45 AM					0.1	0.008	10.0		11	<input type="checkbox"/>
8/20/2009	11:05 AM					0.4	0	10.6		36	<input type="checkbox"/>
8/27/2009	10:45 AM					0.6		9.4		7	<input type="checkbox"/>
9/3/2009	10:30 AM					0.8	0.012	7.6		6	<input type="checkbox"/>
9/10/2009	10:35 AM					0.8	0.007	8.0		6	<input type="checkbox"/>
9/17/2009	10:55 AM						0.004	7.8		2	<input type="checkbox"/>
9/24/2009	10:45 AM					1.1	0.021	5.3		50	<input type="checkbox"/>
25919 Lake Dr Simonton Lake											
4/9/2009	11:30 AM	8.32	398	11.54	9.25	0.9		19.2		0	<input type="checkbox"/>
4/16/2009	11:15 AM	8.74	402	11.84	10.27	0.8	0.248	8.0		4	<input type="checkbox"/>
4/23/2009	11:15 AM	11.09	401	12.66	11.51	1.0	0.079	10.0		7	<input type="checkbox"/>
4/30/2009	11:20 AM	14.96	402	9.99	11.69	1.2	0.014	5.6		18	<input checked="" type="checkbox"/>
5/7/2009	11:45 AM	16.60	384	9.60	9.97	1.5	0.103	12.0		4	<input type="checkbox"/>
5/14/2009	11:15 AM	16.90	386	9.45	9.47	1.9	0.159	6.0		5	<input type="checkbox"/>
5/21/2009	12:10 PM	19.99	397	9.99		1.0	0	16.0		3	<input type="checkbox"/>
5/28/2009	11:10 AM	20.87	400	8.29		1.9	0	18.8		11	<input type="checkbox"/>
6/4/2009	11:25 AM	20.98	400	8.41		1.2	0.006	13.2		2	<input type="checkbox"/>

Date	Time	Temp	Sal	pH	DO	NO3	PO4	Chl	SS	E.coli	Sampling
6/11/2009	11:35 AM	21.65	384	7.01		0.8	0.001	20.0		6	<input checked="" type="checkbox"/>
6/18/2009	11:00 AM	21.47	389	6.34		0.8	0	14.8		4	<input type="checkbox"/>
6/25/2009	10:35 AM	24.76	429	2.50		0.4	0	20.4		13	<input type="checkbox"/>
7/2/2009	11:00 AM					1.2	0.001	19.6		8	<input type="checkbox"/>
7/9/2009	10:35 AM	23.48	397	8.87	8.43	0.7	0.001	16.6		14	<input type="checkbox"/>
7/16/2009	10:45 AM					1.5	0	19.2		2	<input type="checkbox"/>
7/23/2009	11:10 AM					0.8	0	20.0		14	<input type="checkbox"/>
7/30/2009	11:05 AM					0.4	0	20.0		14	<input type="checkbox"/>
8/6/2009	11:00 AM					1.3	0	20.4		3	<input type="checkbox"/>
8/13/2009	11:05 AM					0.8	0	2.0		32	<input type="checkbox"/>
8/20/2009	11:25 AM					0.4	0	3.6		25	<input type="checkbox"/>
8/27/2009	11:05 AM					1.0		24.4		736	<input checked="" type="checkbox"/>
9/3/2009	10:50 AM					1.4	0	19.2		3	<input type="checkbox"/>
9/10/2009	10:55 AM					0.8	0	14.8		27	<input type="checkbox"/>
9/17/2009	11:15 AM						0	17.1		21	<input type="checkbox"/>
9/24/2009	11:05 AM					0.8	0.002	12.5		44	<input type="checkbox"/>

51093 Beach De Simonon Lake

4/9/2009	11:10 AM	8.64	425	11.70	9.19	1.2		12.8		0	<input type="checkbox"/>
4/16/2009	11:05 AM	8.63	414	11.53	11.54	0.8	0.126	9.6		0	<input type="checkbox"/>
4/23/2009	11:05 AM	11.30	413	14.26	11.44	0.9	0.108	12.8		0	<input type="checkbox"/>
4/30/2009	11:10 AM	14.86	412	9.60	12.15	1.3	0.026	6.0		17	<input checked="" type="checkbox"/>
5/7/2009	11:35 AM	17.21	395	0.94	10.61	1.6	0.148	8.4		3	<input type="checkbox"/>
5/14/2009	11:05 AM	16.55	393	9.90	10	1.7	0.018	6.4		90	<input type="checkbox"/>
5/21/2009	11:55 AM	20.89	404	9.30		1.0		17.2		5	<input type="checkbox"/>
5/28/2009	10:55 AM	21.50	401	8.13			0			36	<input type="checkbox"/>
6/4/2009	11:10 AM	20.50	400	8.18		0.4	0.007	18.0		23	<input type="checkbox"/>
6/11/2009	11:15 AM	21.51	389	6.32		0.6	0.001	17.2		102	<input checked="" type="checkbox"/>
6/18/2009	10:45 AM	19.94	392	5.81		0.0	0	13.6		16	<input type="checkbox"/>
6/25/2009	10:25 AM	29.48	391	9.87		0.5	0	16.4		5	<input type="checkbox"/>
7/9/2009	10:20 AM	23.26	389	9.04	8.37	0.4	0.008	20.2		9	<input type="checkbox"/>
7/16/2009	10:35 AM					1.2	0	16.0		22	<input type="checkbox"/>
7/23/2009	11:05 AM					0.5	0	10.4		35	<input type="checkbox"/>
7/30/2009	10:55 AM					0.2	0	16.8		35	<input type="checkbox"/>
8/6/2009	10:50 AM					0.7	0.002	19.6		18	<input type="checkbox"/>
8/13/2009	10:55 AM					0.6	0.009	2.0		29	<input type="checkbox"/>
8/27/2009	10:55 AM							16.2		57	<input checked="" type="checkbox"/>
9/3/2009	10:40 AM					0.9	0	14.8		5	<input type="checkbox"/>
9/10/2009	10:45 AM					0.6	0	15.2		26	<input type="checkbox"/>
9/17/2009	11:05 AM						0	14.3		2	<input type="checkbox"/>
9/24/2009	10:55 AM					0.9	0.014	12.1		228	<input type="checkbox"/>

Date	Time	Temp	SpC	DO	pH	NO3	PO4	CL2	TSS	E.coli	Rainfall
Ash Rd St Joe River											
4/9/2009	12:25 PM	7.62	471	13.01	9.31	1.2		16.0		41	<input type="checkbox"/>
4/16/2009	12:10 PM	8.90	494	12.19	9.98	1.3	0.358	8.4		12	<input type="checkbox"/>
4/23/2009	12:10 PM	10.78	492	13.43	10.71	1.5	0.267	19.2		40	<input type="checkbox"/>
4/30/2009	12:05 PM	14.65	507	9.99	11.13	1.6	0.234	2.8		94	<input checked="" type="checkbox"/>
5/7/2009	1:25 PM	16.05	501	9.79	9.33	1.8	0.046	8.0		35	<input type="checkbox"/>
5/14/2009	11:55 AM	15.69	495	9.41	9.78	2.1	0.166	4.4		3600	<input type="checkbox"/>
5/21/2009	10:29 AM	19.30				2.1		13.6		78	<input type="checkbox"/>
5/28/2009	11:50 AM	20.34	520	8.24		3.6	0.029	13.2		352	<input type="checkbox"/>
6/4/2009	12:10 PM	18.35	528	8.65		2.2	0.193	9.6		90	<input type="checkbox"/>
6/11/2009	10:59 AM	19.40		8.00		1.7	0.037	32.8		168	<input checked="" type="checkbox"/>
6/18/2009	11:40 AM	19.57	517	5.09		1.5	0.046	12.0		99	<input type="checkbox"/>
6/25/2009	11:15 AM	25.96	503	1.40		0.5	0.056	20.8		92	<input type="checkbox"/>
7/9/2009	11:15 AM	21.25	516	9.22	8.17	1.3	0.077	24.1		34	<input type="checkbox"/>
7/16/2009	10:56 AM	25.50		7.20		2.8	0.03	22.0		66	<input type="checkbox"/>
7/23/2009	12:00 PM					1.9	0.044	22.4		46	<input type="checkbox"/>
7/30/2009	11:45 AM					1.5	0.077	20.0		1040	<input type="checkbox"/>
8/6/2009	11:45 AM					2.9	0.027	25.6		34	<input type="checkbox"/>
8/13/2009	11:45 AM					2.0	0.069	28.8		24	<input type="checkbox"/>
8/20/2009	12:00 PM					2.3	0.215	30.4		335	<input type="checkbox"/>
8/27/2009	10:07 AM	19.80		7.80		1.8		24.2		178	<input checked="" type="checkbox"/>
9/3/2009	11:30 AM	0.00				2.5	0.09	20.8		76	<input type="checkbox"/>
9/10/2009	11:30 AM					2.5	0.06	19.6		75	<input type="checkbox"/>
9/17/2009	10:50 AM	20.40		9.00			0.047	22.4	3	35	<input type="checkbox"/>
9/24/2009	11:45 AM					1.2	0.062	18.0		89	<input type="checkbox"/>

CR-17 St Joe River											
4/9/2009	10:35 AM	6.87	460	12.28	8.85	0.8		13.6		36	<input type="checkbox"/>
4/16/2009	10:25 AM	8.50	482	12.24	10.27	1.0	0.165	8.8		16	<input type="checkbox"/>
4/23/2009	10:30 AM	10.23	483	11.55	11.17	1.4	0.141	12.4		43	<input type="checkbox"/>
4/30/2009	10:35 AM	13.60	508	9.99	13.28	1.5	0.182	9.2		58	<input checked="" type="checkbox"/>
5/7/2009	10:55 AM	15.98	489	9.02	11.06	1.8	0.091	15.2		39	<input type="checkbox"/>
5/14/2009	10:35 AM	15.52	492	9.00	11.18	2.3	0.083	10.8		502	<input type="checkbox"/>
5/21/2009	9:44 AM	19.40				1.2		15.2		104	<input type="checkbox"/>
5/28/2009	10:30 AM	20.48	503	7.68		2.0	0.024	16.8		119	<input type="checkbox"/>
6/4/2009	10:30 AM	17.80	520	8.35		1.2	0.038	12.4		42	<input type="checkbox"/>
6/11/2009	10:05 AM	18.90		7.40		1.9	0.116	18.0		101	<input checked="" type="checkbox"/>

CR-18 Elkhart River											
4/9/2009	8:35 AM	7.43	484	11.84	6.45	2.4		15.2		50	<input type="checkbox"/>

Date	Time	Temp	Spd	DO	pH	NO ₂	NO ₃	Cl ₂	F ₂	F ₃₀	Salinity
4/16/2009	8:30 AM	8.47	497	12.28	8.28	1.5	0.244	12.0		32	<input type="checkbox"/>
4/23/2009	8:35 AM	10.54	510	12.50	10.93	2.3	0.202	20.8		129	<input type="checkbox"/>
4/30/2009	8:30 AM	13.38	537	9.99	10.62	2.0	0.379	14.0		154	<input type="checkbox"/>
5/7/2009	9:00 AM	12.29	577	9.99	9.65	2.1	0.182	8.8		73	<input type="checkbox"/>
5/14/2009	8:55 AM	14.85	517	8.98	9.36	2.7	0.371	15.6		6400	<input type="checkbox"/>
5/21/2009	9:23 AM	19.10				2.6		22.4		98	<input type="checkbox"/>
5/28/2009	8:45 AM	19.32	532	7.99		4.2	0.254	20.4		2400	<input type="checkbox"/>
6/4/2009	8:40 AM	16.23	561	8.85		1.9	0.139	20.0		204	<input type="checkbox"/>
6/11/2009	9:38 AM	19.60		7.60		1.8	0.131	23.6		435	<input checked="" type="checkbox"/>
6/18/2009	8:45 AM	18.27	549	6.50		1.4	0.169	22.8		220	<input type="checkbox"/>
6/25/2009	8:30 AM	23.91	579	0.58		1.8	0.175	23.8		160	<input type="checkbox"/>
7/2/2009	8:50 AM					2.5	0.177	34.4		168	<input type="checkbox"/>
7/9/2009	8:30 AM	19.52	579	7.97	8.11	1.8	0.115	37.2		114	<input type="checkbox"/>
7/16/2009	9:48 AM	21.20		7.80		2.2	0.085	22.0		168	<input type="checkbox"/>
7/23/2009	8:40 AM					2.2	0.121	28.4		713	<input type="checkbox"/>
7/30/2009	8:50 AM					0.6	0.113	31.2		417	<input type="checkbox"/>
8/6/2009	8:45 AM					2.5	0.098	49.2		199	<input type="checkbox"/>
8/13/2009	8:55 AM					2.1	0.109	46.8		214	<input type="checkbox"/>
8/20/2009	8:50 AM					2.4	0.35	34.4		1350	<input type="checkbox"/>
8/27/2009	8:53 AM	1.97		8.20		1.2		28.2		455	<input checked="" type="checkbox"/>
9/3/2009	8:45 AM					2.4	0.139	28.4		168	<input type="checkbox"/>
9/10/2009	8:45 AM					2.1	0.125	26.4		228	<input type="checkbox"/>
9/17/2009	9:25 AM	17.60					0.103	32.0	3	140	<input type="checkbox"/>
9/24/2009	8:50 AM					2.3	0.118	28.4		590	<input type="checkbox"/>

CR 40 Elkhart River

4/9/2009	9:20 AM	6.63	474	10.35	8.84	1.8		15.6	4	80	<input type="checkbox"/>
4/16/2009	9:10 AM	7.50	489	10.75	11.78	1.0	0.19	10.4	3	54	<input type="checkbox"/>
4/23/2009	9:10 AM					1.6	0.188	18.8	6	117	<input type="checkbox"/>
4/30/2009	9:10 AM	13.09	534	8.81	10.1	1.7	0.287	5.6	6	181	<input type="checkbox"/>
5/7/2009	9:45 AM	14.45	530	8.56	9.38	1.8	0.174	8.4	9	101	<input type="checkbox"/>
5/14/2009	9:30 AM	14.99	532	7.97	9.48	2.3	0.403	10.8	20	1090	<input type="checkbox"/>
5/21/2009	10:25 AM	16.78	534	7.86		1.7		19.2	12	195	<input type="checkbox"/>
5/28/2009	9:25 AM	19.04	530	6.90		4.0	0.218	17.2	10	601	<input type="checkbox"/>
6/4/2009	9:20 AM	16.70	549	7.88		1.9	0.145	10.4	12	276	<input type="checkbox"/>
6/11/2009	9:45 AM	18.24	552	7.04		1.5	0.189	20.8	16	795	<input checked="" type="checkbox"/>
6/18/2009	9:20 AM	18.04	538	5.83		1.1	0.145	12.4	15	204	<input type="checkbox"/>
6/25/2009	9:00 AM	23.56	557	9.16		1.3	0.166	21.2	15	216	<input type="checkbox"/>
7/2/2009	9:25 AM					2.4	0.2	19.2	9	288	<input type="checkbox"/>
7/9/2009	9:00 AM	18.48	542	7.23	8.13	1.4	0.14	27.1	8	247	<input type="checkbox"/>
7/16/2009	9:10 AM	18.95	558	7.37	8.14	2.2	0.063	30.0	7	351	<input type="checkbox"/>

Date	Time	Temp	SpC	DO	pH	NO3	PCN	CL2	TSS	E.coli	Rainmg
7/23/2009	9:25 AM					1.8	0.103	20.4	6	326	<input type="checkbox"/>
7/30/2009	9:20 AM					1.1	0.106	26.4	7	324	<input type="checkbox"/>
8/6/2009	9:10 AM					2.2	0.03	29.6	5	266	<input type="checkbox"/>
8/13/2009	9:25 AM					1.6	0.163	28.4	8	381	<input type="checkbox"/>
8/20/2009	9:45 AM					2.4	0.297	28.6	17	1200	<input type="checkbox"/>
8/27/2009	9:35 AM					0.2		27.0	15	640	<input checked="" type="checkbox"/>
9/3/2009	9:10 AM					2.2	0.142	26.0	11	224	<input type="checkbox"/>
9/10/2009	9:15 AM					1.8	0.124	23.2	8	213	<input type="checkbox"/>
9/17/2009	9:45 AM						0.096	19.9	6	200	<input type="checkbox"/>
9/24/2009	9:15 AM					1.9	0.097	17.2	6	627	<input type="checkbox"/>

CR 43 Elkhardt River											
4/9/2009	9:45 AM	7.17	427	10.71	9.04	0.7		15.2	5	42	<input type="checkbox"/>
4/16/2009	9:35 AM	7.81	449	10.86	11.18	0.7	0.221	9.2	4	52	<input type="checkbox"/>
4/23/2009	9:40 AM	9.90	463	10.44	12.58	1.1	0.196	16.4	5	60	<input type="checkbox"/>
4/30/2009	9:30 AM	13.68	487	9.18	12.11	1.0	0.256	9.6	7	115	<input checked="" type="checkbox"/>
5/7/2009	10:05 AM	15.29	485	8.36	10.99	1.1	0.317	7.2		21	<input checked="" type="checkbox"/>
5/14/2009	9:50 AM	15.39	472	7.92	10.88	2.1	0.488	6.0	18	4250	<input type="checkbox"/>
5/21/2009	10:50 AM	17.98	481	8.16		1.1	0	15.6	9	185	<input type="checkbox"/>
5/28/2009	9:45 AM	20.13	484	6.06		2.5	0.186	14.8	12	409	<input type="checkbox"/>
6/4/2009	9:45 AM	16.57	507	7.42		0.7	0.146	9.6	9	234	<input type="checkbox"/>
6/11/2009	10:10 AM	18.91	501	6.10		1.0	0.155	22.0	12	700	<input checked="" type="checkbox"/>
6/18/2009	9:40 AM	18.83	502	5.60		0.8	0.153	12.8	12	90	<input type="checkbox"/>
6/25/2009	9:20 AM	24.30	530	8.18		0.5	0.227	22.8	11	208	<input type="checkbox"/>
7/2/2009	9:45 AM					1.4	0.275	16.0	11	224	<input type="checkbox"/>
7/9/2009	9:20 AM	19.40	503	7.55	7.98	0.9	0.185	22.2	7	328	<input type="checkbox"/>
7/16/2009	9:35 AM	20.01	514	7.01	8.01	1.4	0.124	28.0	6	292	<input type="checkbox"/>
7/23/2009	9:45 AM					1.2	0.134	18.4	7	404	<input type="checkbox"/>
7/30/2009	9:40 AM					0.9	0.165	20.8	4	386	<input type="checkbox"/>
8/6/2009	9:30 AM					1.3	0.63	24.4	4	173	<input type="checkbox"/>
8/13/2009	9:45 AM					1.9	0.153	22.4	4	630	<input type="checkbox"/>
8/20/2009	10:05 AM					2.1	0.24	23.0	25	1730	<input type="checkbox"/>
8/27/2009	9:55 AM					0.1		26.7	22	560	<input checked="" type="checkbox"/>
9/3/2009	9:30 AM					1.6	0.147	21.2	16	278	<input type="checkbox"/>
9/10/2009	9:35 AM					1.3	0.153	20.8	11	387	<input type="checkbox"/>
9/17/2009	10:05 AM						0.114	18.5	6	340	<input type="checkbox"/>
9/24/2009	9:35 AM					1.7	0.136	17.2	4	425	<input type="checkbox"/>

E. Jackson St Elkhardt River											
4/9/2009	11:50 AM	7.73	488	11.88	9.11	2.2		16.0		84	<input type="checkbox"/>
4/16/2009	11:40 AM	8.83	513	12.27	10.01	1.6	0.155	9.6		16	<input type="checkbox"/>

Date	Time	Temp	SpC	DO	pH	NO3	NO2	ORP	Chl	TSS	EC	Algae
4/23/2009	11:30 AM	10.82	520	14.42	11.09	2.1	0.265	15.6		84		<input type="checkbox"/>
4/30/2009	11:40 AM	13.27	557	9.99	10.99	2.2	0.247	5.2		247		<input checked="" type="checkbox"/>
5/7/2009	12:05 PM	15.15	553	9.97	9.45	2.1	0.256	12.4		102		<input type="checkbox"/>
5/14/2009	11:30 AM	14.78	531	9.66	10.12	2.6	0.397	6.0		1427		<input type="checkbox"/>
5/21/2009	10:03 AM	19.30				2.7		22.0		126		<input type="checkbox"/>
5/28/2009	11:25 AM	19.25	541	8.13		4.2	0.192	17.6		1893		<input type="checkbox"/>
6/4/2009	11:40 AM	16.66	568	9.22		2.2	0.158	12.8		207		<input type="checkbox"/>
6/11/2009	10:26 AM	18.60		8.00		1.7	0.141	18.4		5400		<input checked="" type="checkbox"/>
6/18/2009	11:15 AM	18.24	557	6.53		1.9	0.162	18.0		212		<input type="checkbox"/>
6/25/2009	10:50 AM	23.96	589	0.12		0.6	0.175	26.0		206		<input type="checkbox"/>
7/2/2009	11:15 AM					2.5	0.161	28.4		350		<input type="checkbox"/>
7/9/2009	10:50 AM	19.82	588	9.08	8.19	1.8	0.086	36.3		195		<input type="checkbox"/>
7/16/2009	10:33 AM	21.80		7.40		2.8	0.093	0.0		24		<input type="checkbox"/>
7/23/2009	11:25 AM					2.2	0.101	31.2		309		<input type="checkbox"/>
7/30/2009	11:20 AM					1.7	0.159	33.6		865		<input type="checkbox"/>
8/6/2009	11:15 AM					2.4	0.112	35.6		234		<input type="checkbox"/>
8/13/2009	11:20 AM					2.4	0.133	20.8		363		<input type="checkbox"/>
8/20/2009	11:40 AM					1.5	0.351	21.0		940		<input type="checkbox"/>
8/27/2009	9:36 AM	19.10		8.40		1.3		28.7		850		<input checked="" type="checkbox"/>
9/3/2009	11:05 AM					2.2	0.174	25.6		188		<input type="checkbox"/>
9/10/2009	11:10 AM					1.9	0.135	23.6		274		<input type="checkbox"/>
9/17/2009	10:20 AM	18.40		8.00			0.117	27.9	3	128		<input type="checkbox"/>
9/24/2009	11:20 AM					1.5	0.107	23.4		665		<input type="checkbox"/>

Ideal Beach												
4/9/2009	10:50 AM	8.42	355	11.16	9.35	0.8		9.6		2		<input type="checkbox"/>
4/16/2009	10:45 AM	9.00	358	11.47	11.15	0.0	0.056	3.6		0		<input type="checkbox"/>
4/23/2009	10:40 AM	10.70	361	11.70	11.7	0.0	0.106	10.8		7		<input type="checkbox"/>
4/30/2009	10:45 AM	14.90	369	9.17	11.38	0.4	0.076	1.6		7		<input checked="" type="checkbox"/>
5/7/2009	11:10 AM	16.97	357	9.99	9.80	0.1	0.152	7.2		21		<input type="checkbox"/>
5/14/2009	10:45 AM	16.57	355	8.50	10.46	0.7	0.06	4.8		612		<input type="checkbox"/>
5/21/2009	11:40 AM	20.28	366	9.23		0.3		10.8		19		<input type="checkbox"/>
5/28/2009	10:40 AM	21.32	372	7.98		0.3	0.024	6.4		16		<input type="checkbox"/>
6/4/2009	10:50 AM	21.02	372	9.33		0.1	0.008	6.4		8		<input type="checkbox"/>
6/11/2009	10:55 AM	20.99	351	7.65		0.2	0.091	7.6		97		<input checked="" type="checkbox"/>
6/18/2009	10:25 AM	20.01	358	6.96		0.1	0	7.2		47		<input type="checkbox"/>
6/25/2009	10:05 AM	29.11	344	1.30		0.0	0	8.8		122		<input type="checkbox"/>
7/2/2009	10:35 AM					0.5	0.024	10.0		22		<input type="checkbox"/>
7/9/2009	10:10 AM	23.68	369	8.25	8.27	0.1	0.03	9.6		19		<input type="checkbox"/>
7/16/2009	10:15 AM	23.70	353	8.25	8.48	1.1	0.029	10.0		12		<input type="checkbox"/>
7/23/2009	10:45 AM					0.5	0.003	6.4		1530		<input type="checkbox"/>

Date	Time	Temp	SpC	DO	pH	NO3	NO4	CL2	TSS	E.coli	Rating
7/30/2009	10:35 AM					0.0	0.023	9.2		30	<input type="checkbox"/>
8/6/2009	10:30 AM					0.8	0.014	10.4		904	<input type="checkbox"/>
8/13/2009	10:35 AM					0.8	0.033	9.2		144	<input type="checkbox"/>
8/20/2009	10:55 AM					0.3	0	10.0		5300	<input type="checkbox"/>
8/27/2009	10:35 AM					0.0		8.6		10	<input checked="" type="checkbox"/>
9/3/2009	10:20 AM					0.9	0.011	8.0		5	<input type="checkbox"/>
9/10/2009	10:30 AM					0.0	0.005	7.2		3	<input type="checkbox"/>
9/17/2009	10:45 AM						0	6.8		3	<input type="checkbox"/>
9/24/2009	10:35 AM					0.5	0.019	5.6		62	<input type="checkbox"/>

Indiana Ave Elkhart River

4/9/2009	9:05 AM	7.26	478	9.65	8.79	1.7		15.2	6	54	<input type="checkbox"/>
4/16/2009	8:55 AM	8.14	495	10.69	11.15	1.4	0.169	10.4	3	54	<input type="checkbox"/>
4/23/2009	8:55 AM	10.08	503	11.12	12.29	1.5	0.225	17.2	7	64	<input type="checkbox"/>
4/30/2009	8:55 AM	13.28	538	9.41	10.34	1.7	0.312	7.6	6	145	<input type="checkbox"/>
5/7/2009	9:25 AM	14.96	533	8.41	10.69	1.4	0.262	6.8	5	69	<input type="checkbox"/>
5/14/2009	9:15 AM	14.76	528	9.12	10.81	1.4	0.26	5.2	9	263	<input type="checkbox"/>
5/21/2009	10:10 AM	17.11	539	8.49		2.1		17.2	9	76	<input type="checkbox"/>
5/28/2009	9:05 AM	19.27	537	7.45		4.3	0.329	17.2	13	1165	<input type="checkbox"/>
6/4/2009	9:00 AM	16.06	548	8.40		2.1	0.133	17.2	11	164	<input type="checkbox"/>
6/11/2009	9:30 AM	18.45	558	7.80		1.5	0.126	19.6	12	160	<input checked="" type="checkbox"/>
6/18/2009	9:05 AM	18.27	537	6.45		1.2	0.176	10.4	10	112	<input type="checkbox"/>
6/25/2009	8:50 AM	24.02	562	9.39		1.5	0.165	26.0	10	146	<input type="checkbox"/>
7/2/2009	9:15 AM					2.0	0.176	24.8	8	232	<input type="checkbox"/>
7/9/2009	8:45 AM	19.49	555	8.40	8.04	1.3	0.127	25.6	5	74	<input type="checkbox"/>
7/16/2009	8:50 AM	19.75	567	7.87	8.05	1.2	0.082	27.0	3	135	<input type="checkbox"/>
7/23/2009	9:00 AM					1.5	0.084	27.6	3	141	<input type="checkbox"/>
7/30/2009	9:05 AM					1.2	0.117	25.2	3	100	<input type="checkbox"/>
8/6/2009	9:00 AM					1.8	0.094	38.8	2	52	<input type="checkbox"/>
8/13/2009	9:10 AM					1.5	0.108	29.2	1	116	<input type="checkbox"/>
8/20/2009	9:10 AM					2.1	0.37	28.4	17	29600	<input type="checkbox"/>
8/27/2009	9:20 AM					1.2		23.1	11	420	<input checked="" type="checkbox"/>
9/3/2009	8:55 AM					2.0	0.147	22.4	8	139	<input type="checkbox"/>
9/10/2009	9:00 AM					1.4	0.138	22.0	7	84	<input type="checkbox"/>
9/17/2009	9:25 AM	0.00					0.088	23.1	4	92	<input type="checkbox"/>
9/24/2009	9:00 AM					1.4	0.1	20.2	4	129	<input type="checkbox"/>

N. Main St. Joe River

4/9/2009	12:05 PM	7.25	465	12.38	9.37	1.2		17.6		49	<input type="checkbox"/>
4/16/2009	11:55 AM	8.78	488	12.13	9.73	1.3	0.413	6.0		13	<input type="checkbox"/>
4/23/2009	11:40 AM	10.54	484	15.15	11.32	1.4	0.189	15.2		41	<input type="checkbox"/>

Date	Time	Temp	SpC	DO	pH	NO3	NO2	Cl2	TSS	Dissol	Sampling
4/30/2009	11:50 AM	14.63	501	9.99	11.08	1.7	0.225	7.6		199	<input checked="" type="checkbox"/>
5/7/2009	12:20 PM	15.94	498	9.57	9.72	1.7	0.091	5.2		173	<input type="checkbox"/>
5/14/2009	11:40 AM	15.57	504	9.99	10.6	2.4	0.17	9.2		481	<input type="checkbox"/>
5/21/2009	10:11 AM	19.40				1.0		6.4		98	<input type="checkbox"/>
5/28/2009	11:35 AM	19.85	521	9.03		2.6	0.043	15.2		502	<input type="checkbox"/>
6/4/2009	11:50 AM	18.05	525	1.25		3.4	0.153	8.8		60	<input type="checkbox"/>
6/11/2009	10:39 AM	18.50		8.00		1.6	0.067	24.8		1253	<input checked="" type="checkbox"/>
6/18/2009	11:25 AM	19.41	521	6.21		1.6	0.052	14.0		88	<input type="checkbox"/>
6/25/2009	11:05 AM	25.67	520	2.01		0.2	0.068	19.6		114	<input type="checkbox"/>
7/2/2009	11:20 AM					1.7	0.061	16.8		80	<input type="checkbox"/>
7/9/2009	11:00 AM	21.82	512	9.41	8.20	1.1	0.046	21.6		51	<input type="checkbox"/>
7/16/2009	10:41 AM	23.20		7.60		2.6	0.007	14.8		70	<input type="checkbox"/>
7/23/2009	11:40 AM					1.8	0.016	15.6		78	<input type="checkbox"/>
7/30/2009	11:30 AM					1.6	0.067	20.4		249	<input type="checkbox"/>
8/6/2009	11:25 AM					2.3	0.068	24.0		134	<input type="checkbox"/>
8/13/2009	11:30 AM					1.3	0.021	24.4		52	<input type="checkbox"/>
8/20/2009	11:50 AM	0.00				2.1	0.238	23.3		670	<input type="checkbox"/>
8/27/2009	9:47 AM	19.20		8.00		1.8		24.3		2460	<input checked="" type="checkbox"/>
9/3/2009	11:15 AM					2.5	0.131	24.0		154	<input type="checkbox"/>
9/10/2009	11:15 AM					2.4	0.07	17.6		146	<input type="checkbox"/>
9/17/2009	10:30 AM	20.40		9.00			0.028	16.4	4	52	<input type="checkbox"/>
9/24/2009	11:30 AM					2.2	0.001	14.3		259	<input type="checkbox"/>

Nibbyville Public Access Site St. Jo

7/2/2009	10:25 AM					2.1	0.029	14.0		91	<input type="checkbox"/>
7/9/2009	10:00 AM	21.22	499	7.39	8.18	1.7	0.009	19.6		70	<input type="checkbox"/>
7/16/2009	10:06 AM	22.30		7.20		2.8	0.006	20.0		86	<input type="checkbox"/>
7/23/2009	10:30 AM					1.9	0.003	17.6		139	<input type="checkbox"/>
7/30/2009	10:25 AM					1.0	0.017	20.8		60	<input type="checkbox"/>
8/6/2009	10:15 AM					2.1	0.021	21.6		57	<input type="checkbox"/>
8/13/2009	10:25 AM					2.0	0.038	22.8		102	<input type="checkbox"/>
8/20/2009	10:45 AM					1.3	0.068	20.4		380	<input type="checkbox"/>
8/27/2009	9:12 AM	0.00	0					0.0			<input type="checkbox"/>
8/27/2009	9:12 AM	19.70		8.00		1.6		20.1		224	<input checked="" type="checkbox"/>
9/3/2009	10:10 AM					2.2	0.037	20.4		98	<input type="checkbox"/>
9/10/2009	10:15 AM					1.8	0.028	20.0		92	<input type="checkbox"/>
9/17/2009	9:50 AM	18.00		8.00			0.009	15.6	3	74	<input type="checkbox"/>
9/24/2009	10:25 AM					1.5	0.037	15.0		114	<input type="checkbox"/>

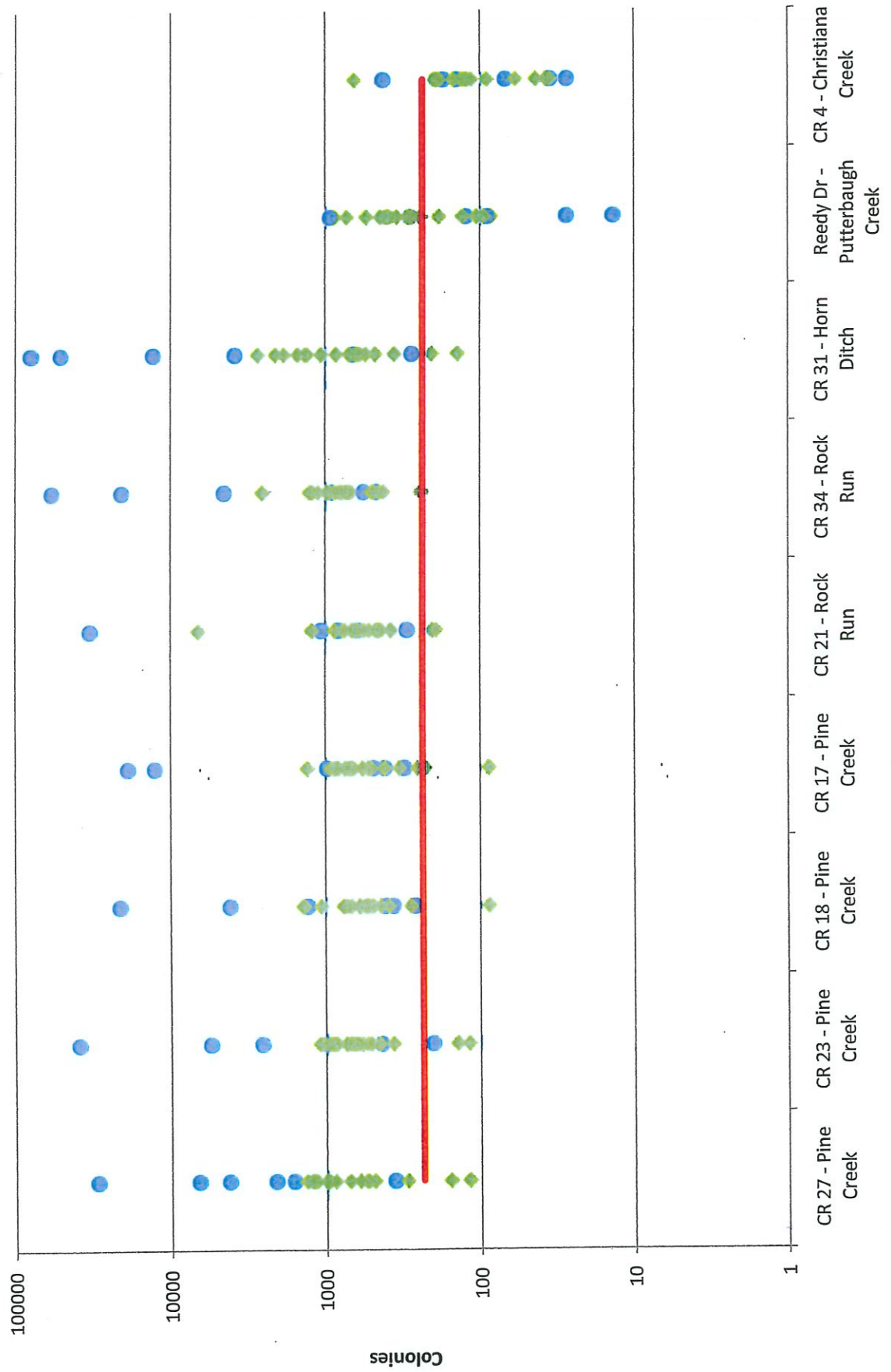
Old CR 17 Elkhart River

4/9/2009	8:50 AM	7.36	476	11.62	8.86	2.3		15.6	7	76	<input type="checkbox"/>
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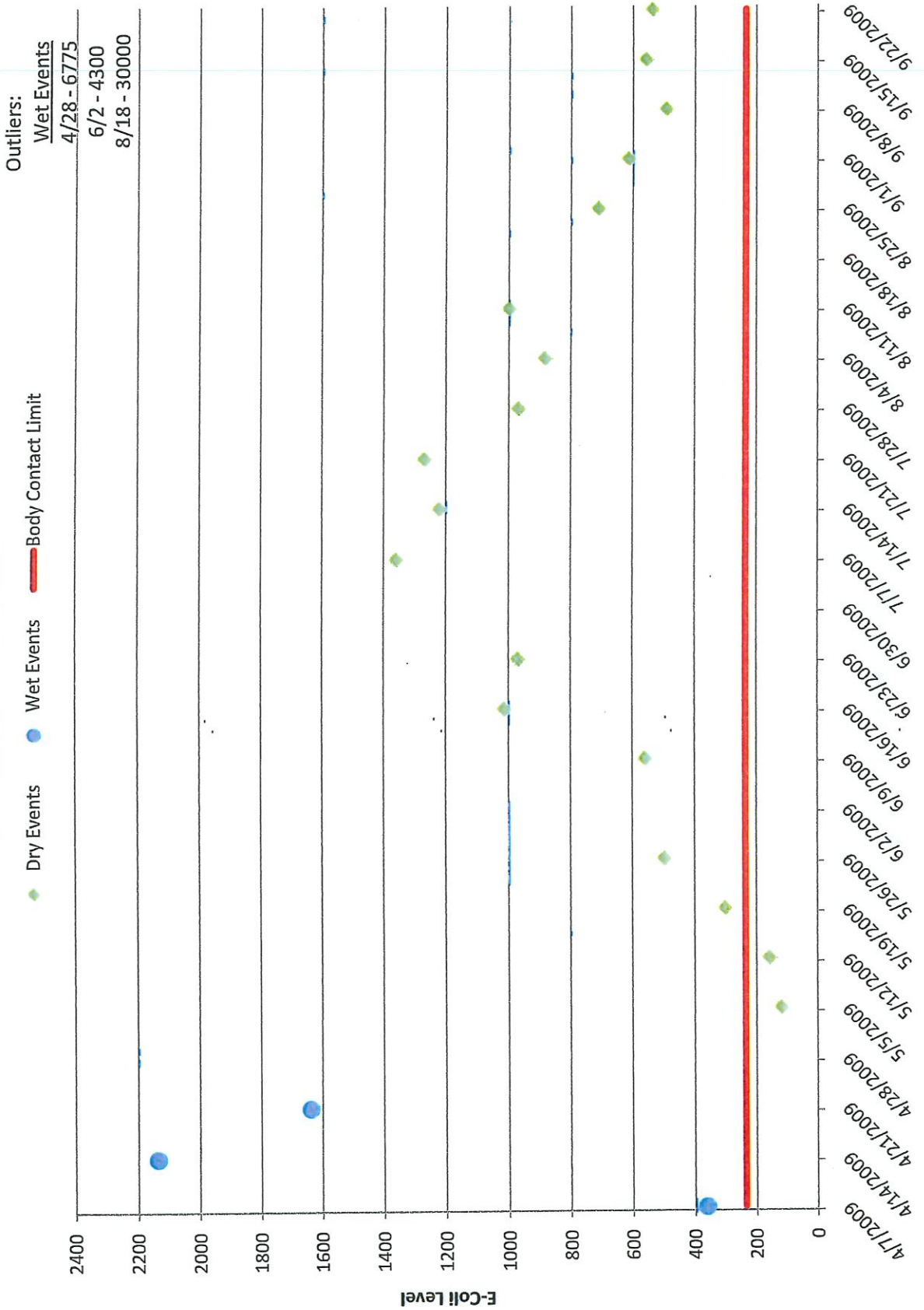
Date	Time	Temp	SpC	DO	pH	NO3	PO4	CL2	TSS	Turb	Rainfall
4/16/2009	8:40 AM	8.35	503	11.73	10.45	1.4	0.421	10.8	5	47	<input type="checkbox"/>
4/23/2009	8:25 AM	10.34	511	12.18	8.20	2.6	0.237	12.8	8	74	<input type="checkbox"/>
4/30/2009	8:25 AM	13.29	545	9.99	10.99	3.5	0.292	4.8	7	158	<input type="checkbox"/>
5/7/2009	8:50 AM	12.05	586	9.99	10.08	2.2	0.301	12.0	6	91	<input type="checkbox"/>
5/14/2009	8:35 AM	14.78	525	9.52	9.05	2.7	0.33	10.4	46	3580	<input type="checkbox"/>
5/21/2009	9:55 AM	17.00	540	9.72		2.3		22.0	10	149	<input type="checkbox"/>
5/28/2009	8:30 AM	17.28	561	8.65		4.5	0.245	16.0	14	1675	<input type="checkbox"/>
6/4/2009	8:25 AM	16.07	557	8.93		2.1	0.155	18.0	8	124	<input type="checkbox"/>
6/11/2009	9:15 AM	18.58	563	8.73		1.3	0.217	24.4	11	427	<input checked="" type="checkbox"/>
6/18/2009	8:35 AM	18.20	540	7.83		0.9	0.208	18.0	10	192	<input type="checkbox"/>
6/25/2009	8:20 AM	23.89	562	9.34		1.6	0.58	21.6	10	182	<input type="checkbox"/>
7/2/2009	8:40 AM					0.7	0.223	26.0	5	112	<input type="checkbox"/>
7/9/2009	8:15 AM	19.16	570	7.62	7.81	1.4	0.219	30.0	4	128	<input type="checkbox"/>
7/16/2009	8:30 AM	19.64	580	7.70	7.99	2.4	0.105	29.0	3	176	<input type="checkbox"/>
7/23/2009	8:20 AM					2.1	0.14	27.2	3	1770	<input type="checkbox"/>
7/30/2009	8:40 AM					1.7	0.125	32.4	4	372	<input type="checkbox"/>
8/6/2009	8:30 AM					2.2	0.56	33.6	2	173	<input type="checkbox"/>
8/13/2009	8:45 AM					2.7	0.146	44.4	2	197	<input type="checkbox"/>
8/20/2009	8:40 AM					2.3	0.36	36.2	12	790	<input checked="" type="checkbox"/>
8/27/2009	9:05 AM					1.1		23.5	12	610	<input checked="" type="checkbox"/>
9/3/2009	8:35 AM					2.7	0.153	29.2	8	128	<input type="checkbox"/>
9/10/2009	8:35 AM					1.9	0.149	26.8	7	207	<input type="checkbox"/>
9/17/2009	9:00 AM						0.116	25.8	4	76	<input type="checkbox"/>
9/24/2009	8:40 AM					1.6	0.154	25.3	4	297	<input type="checkbox"/>

2009 Creek and Ditch E-Coli Data

Wet Event Dry Event Body Contact Limit



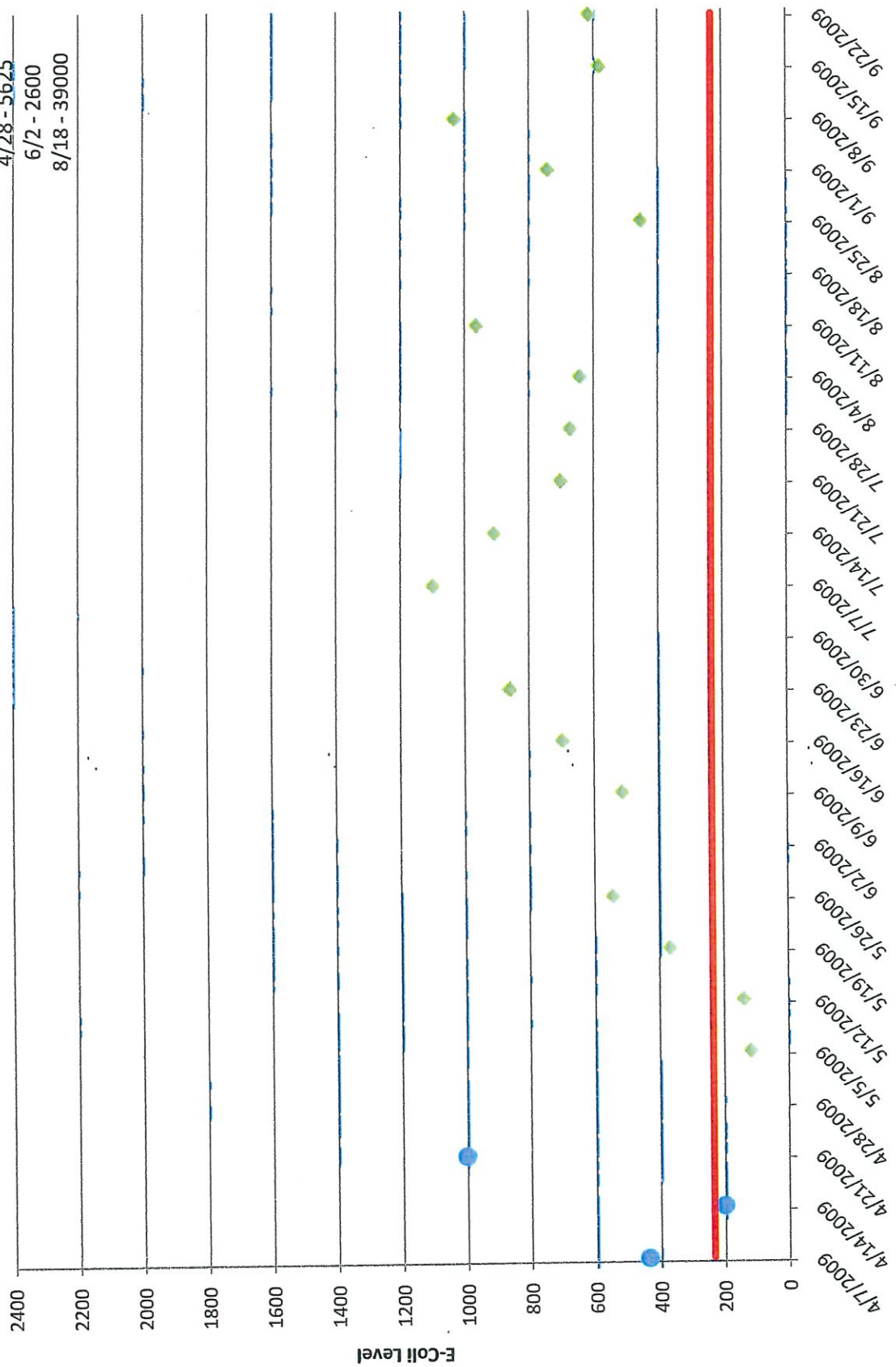
Pine Creek - County Road 27



Pine Creek - County Road 23

Outliers:
Wet Events
4/28 - 5625
6/2 - 2600
8/18 - 39000

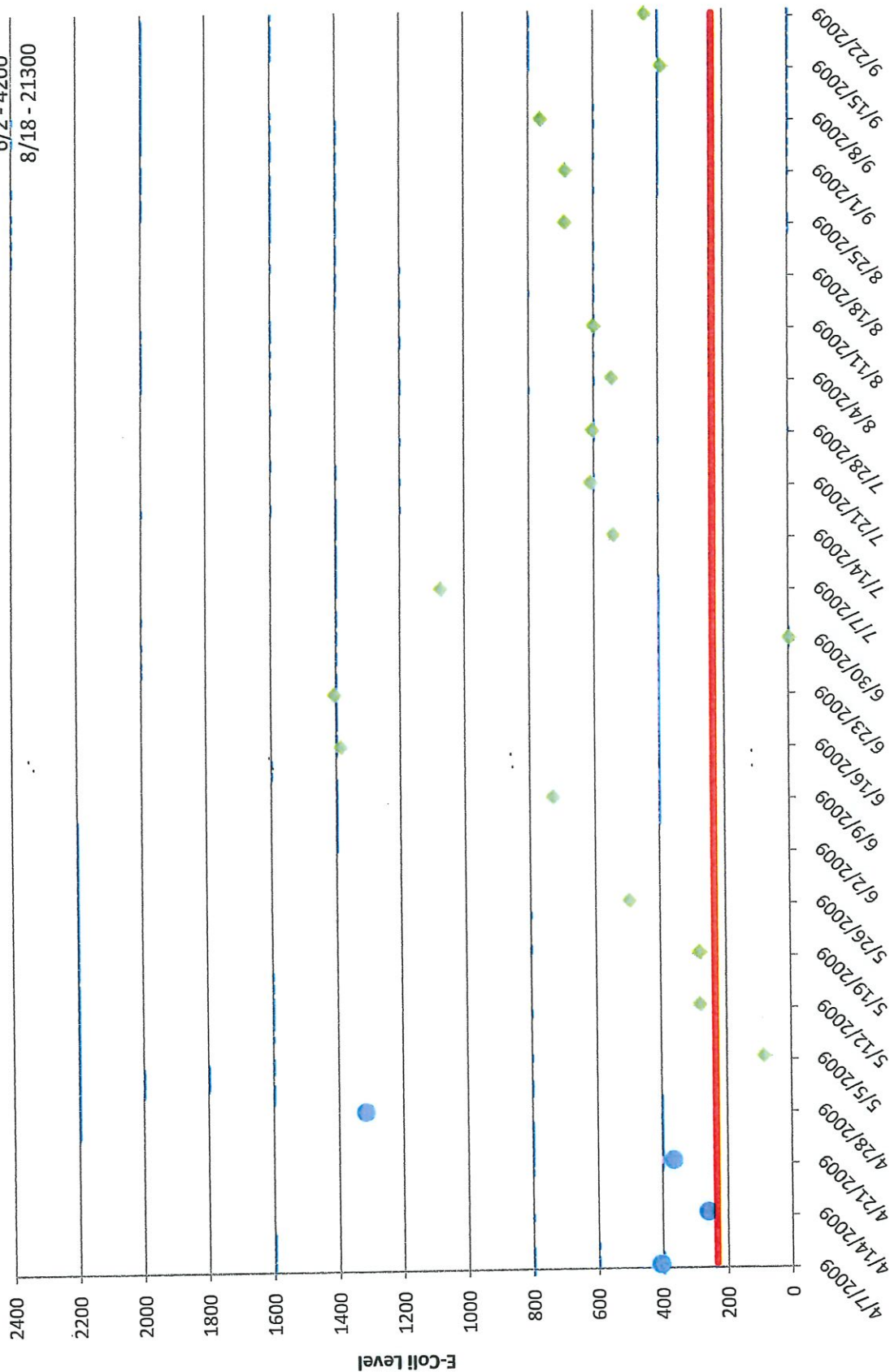
◆ Dry Events ● Wet Events — Body Contact Limit



Pine Creek - County Road 18

Outliers:
Wet Events
6/2 - 4200
8/18 - 21300

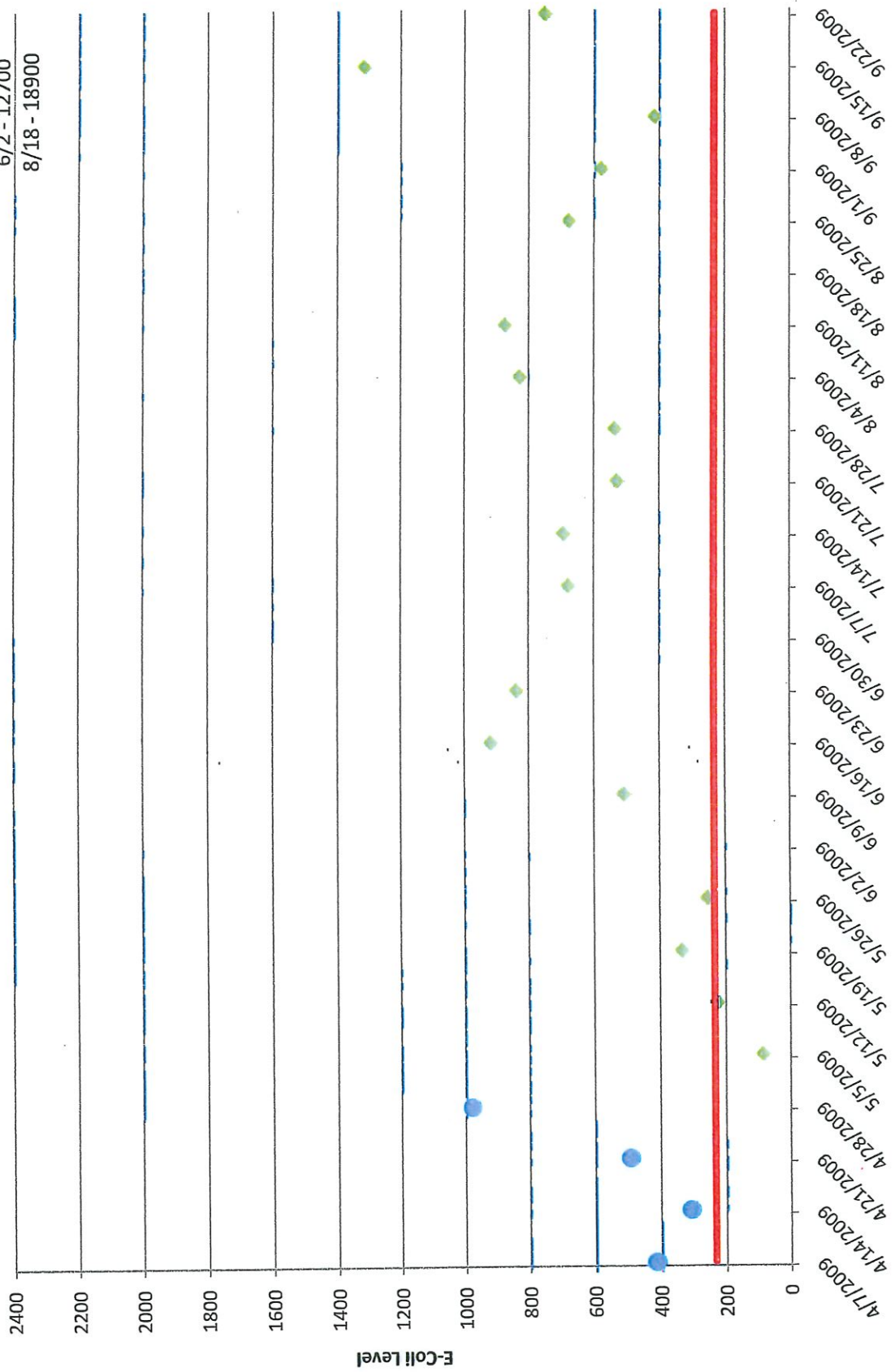
● Dry Events ● Wet Events — Body Contact Limit



Pine Creek - County Road 17

Outliers:
Wet Events
6/2 - 12700
8/18 - 18900

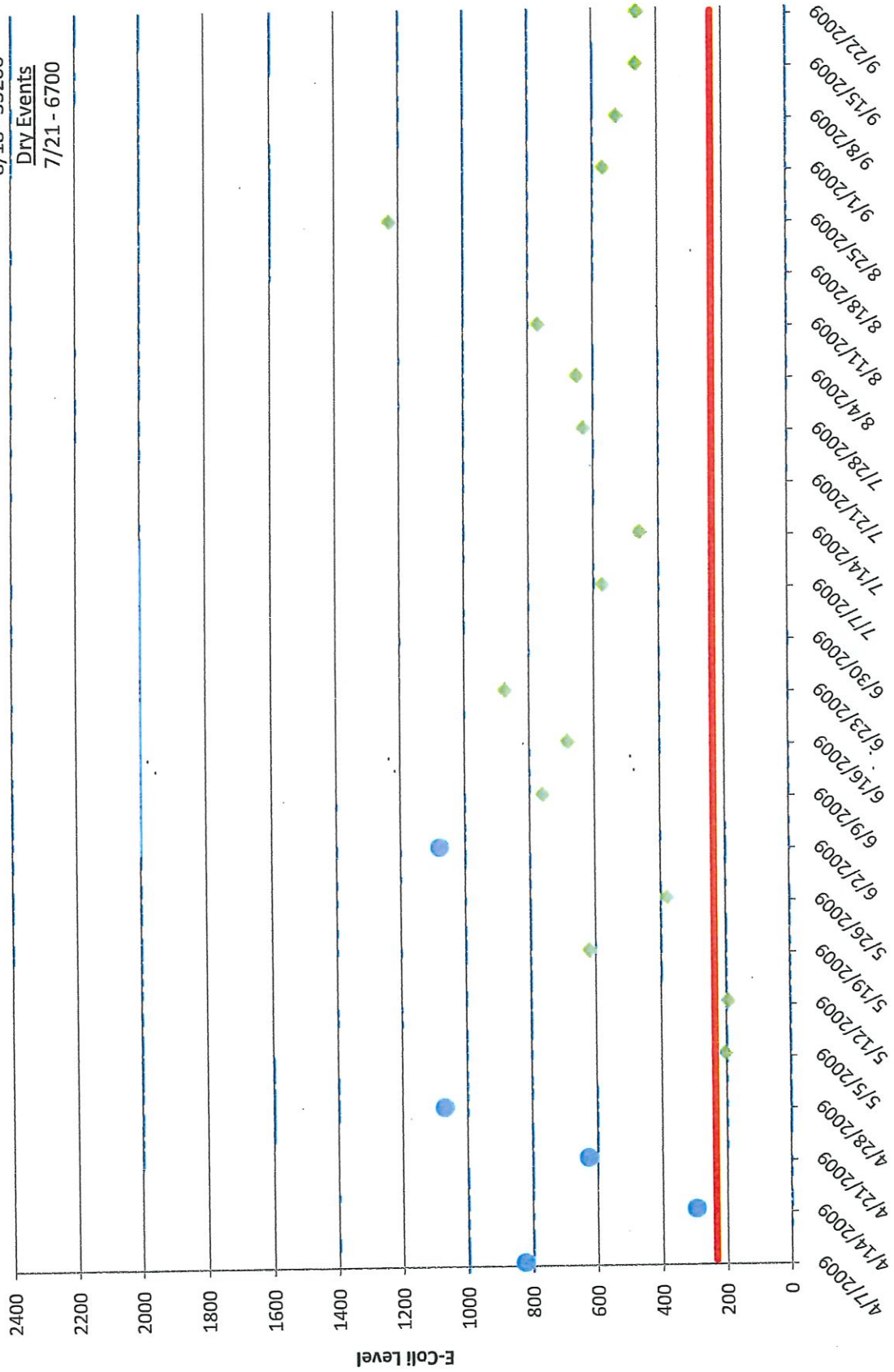
Dry Events Wet Events Body Contact Limit



Rock Run Creek - County Road 21

Outliers:
Wet Events
8/18 - 33200
Dry Events
7/21 - 6700

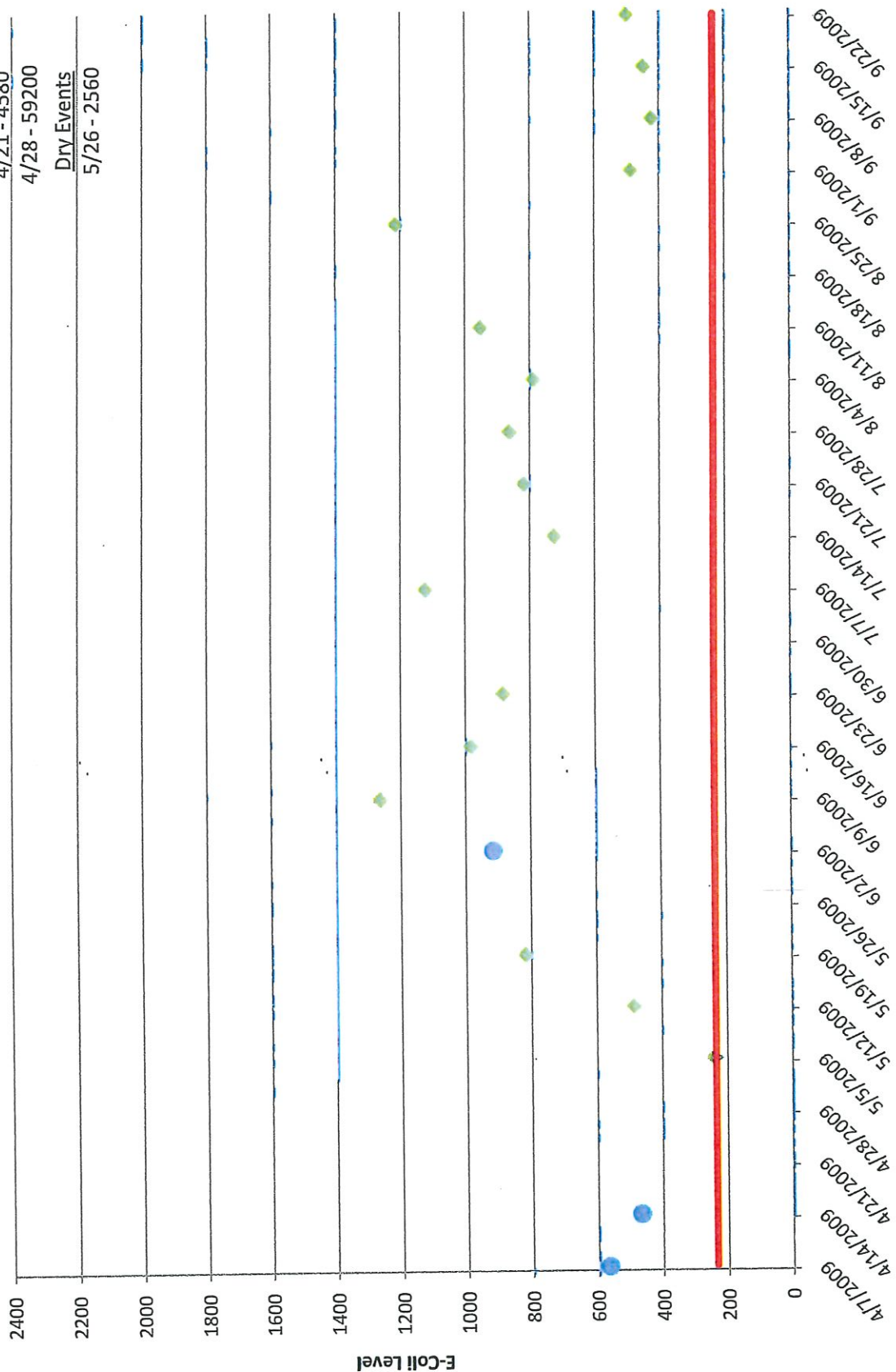
◆ Dry Events ● Wet Events — Body Contact Limit



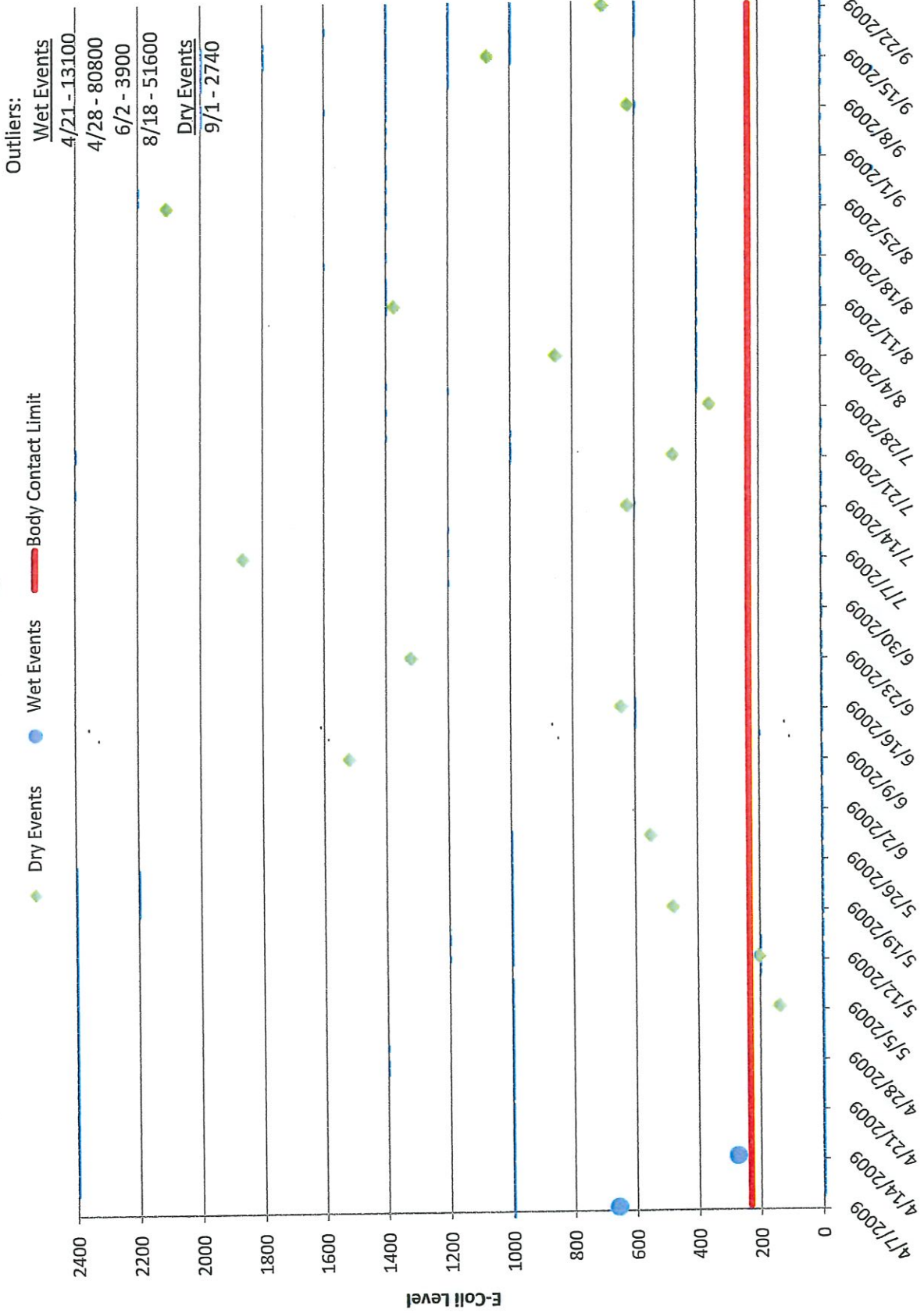
Rock Run Creek - County Road 34

Outliers:
Wet Events
 4/21 - 4580
 4/28 - 59200
Dry Events
 5/26 - 2560

● Dry Events ● Wet Events — Body Contact Limit

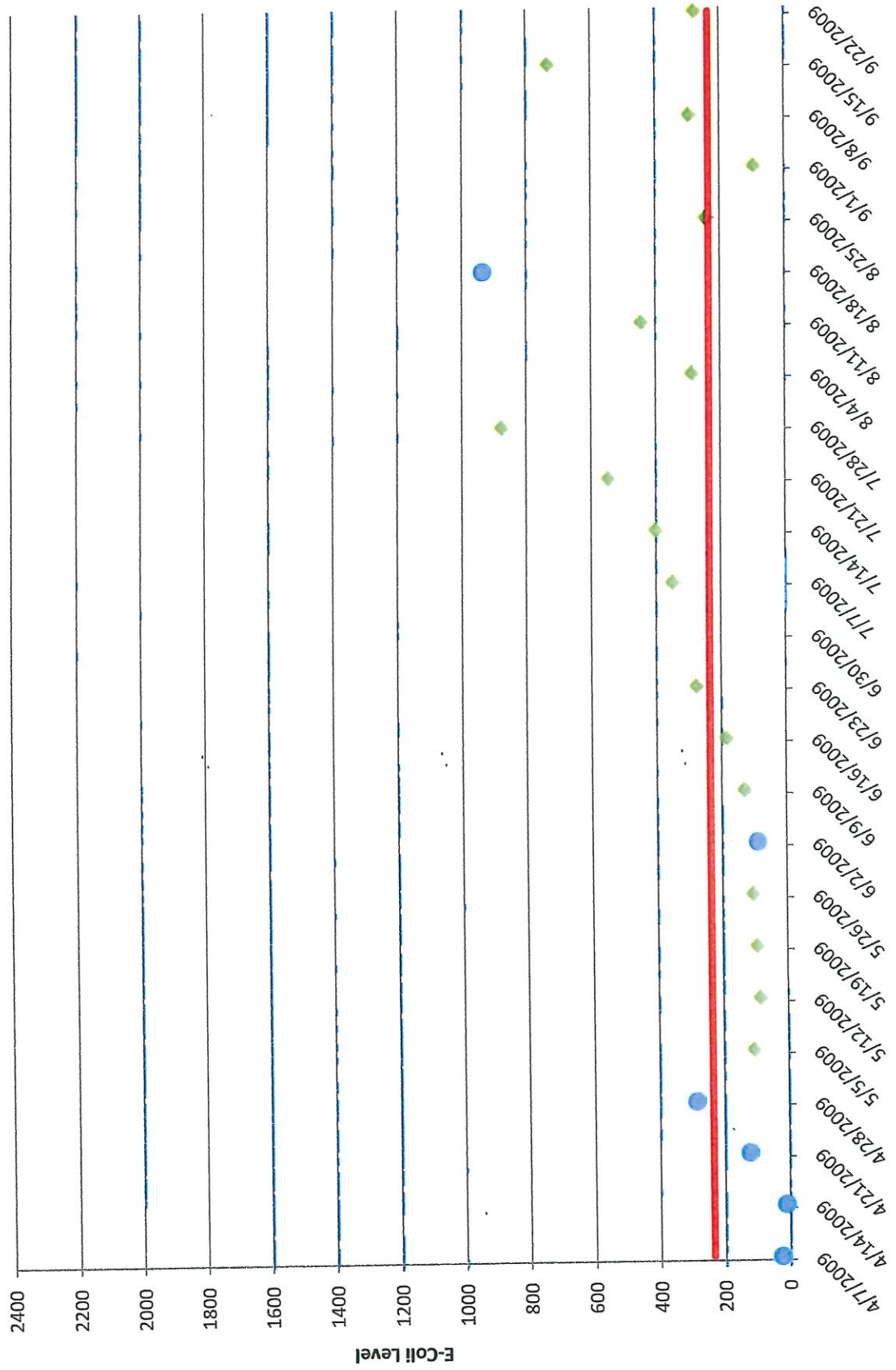


Horn Ditch - County Road 31



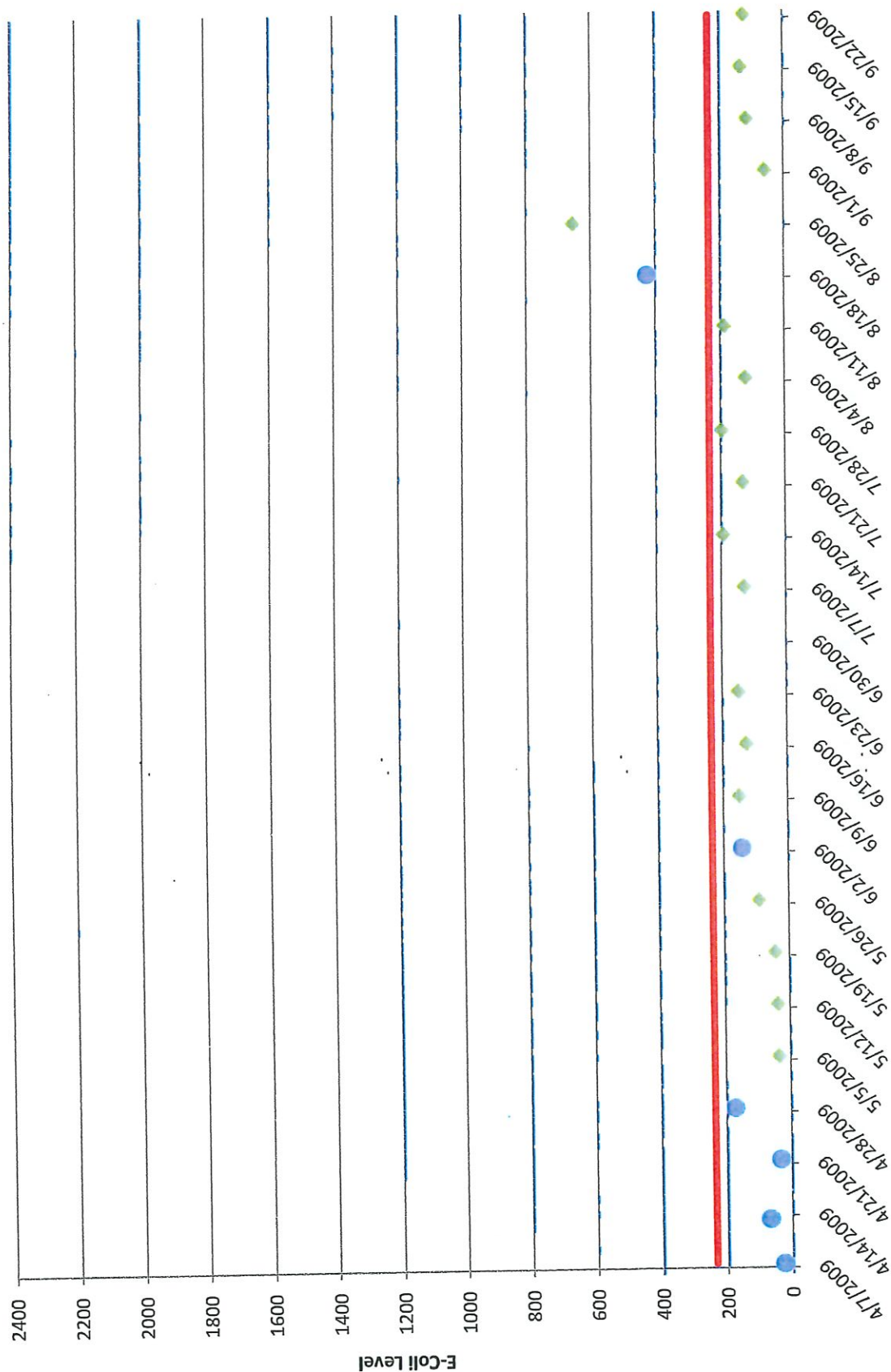
Putterbaugh Creek - Reedy Dr

◆ Dry Events ● Wet Events — Body Contact Limit



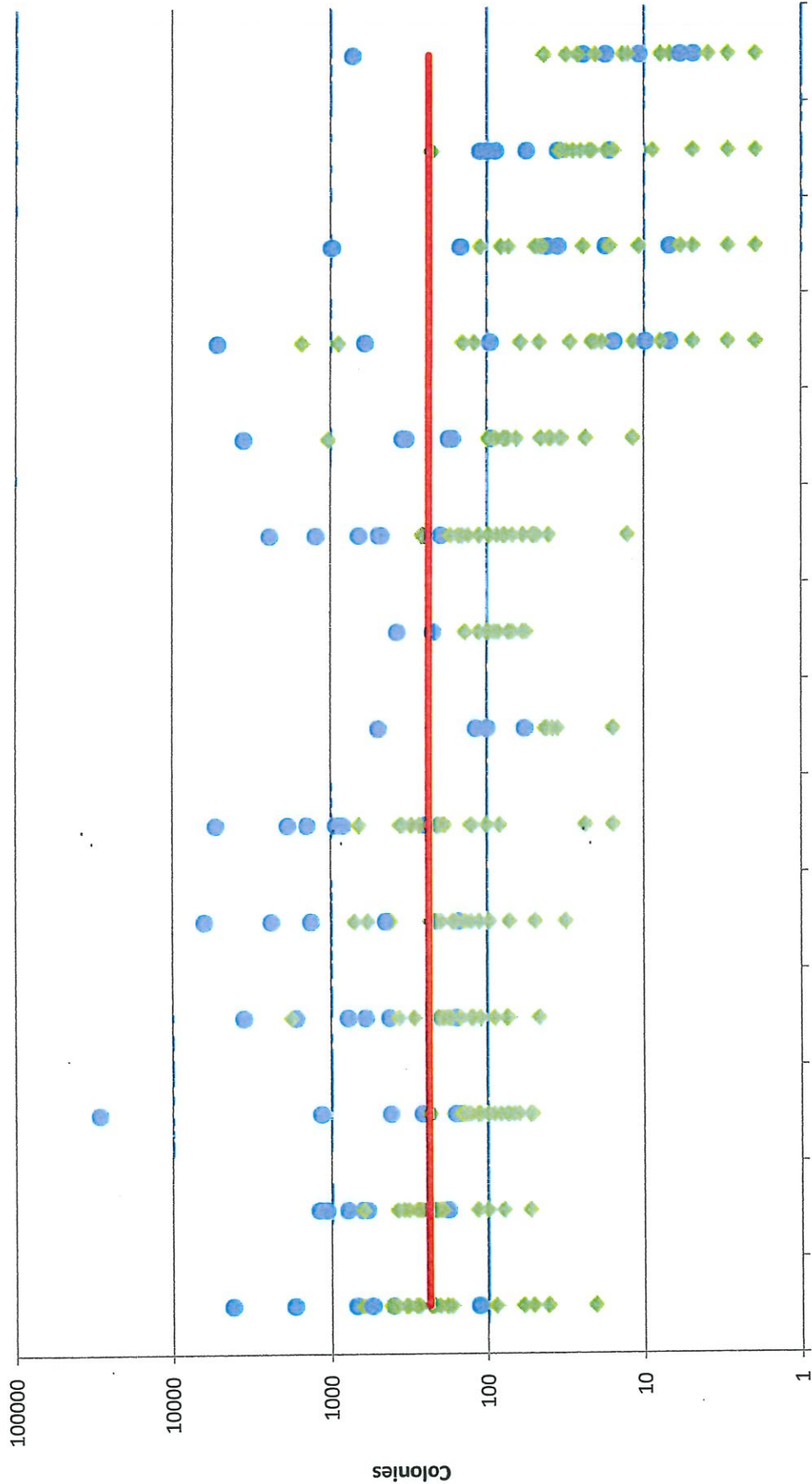
Christiana Creek - County Road 4

◆ Dry Events ● Wet Events — Body Contact Limit



2009 River and Lake E-Coli Data

Wet Event Dry Event Body Contact Limit

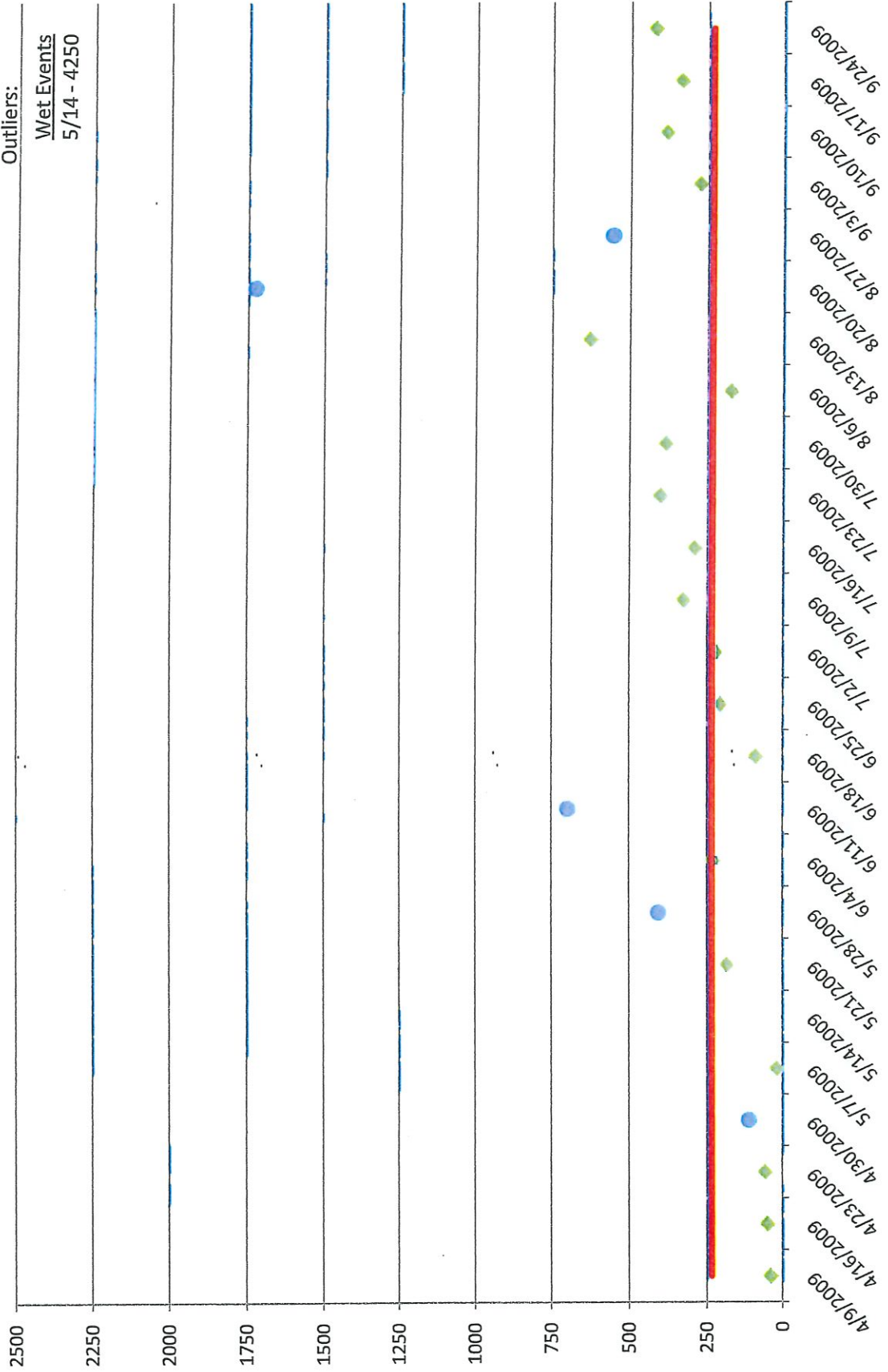


County Road 43 - Elkhart River

◆ Dry Event
 ● Wet Event
 — Body Contact Limit

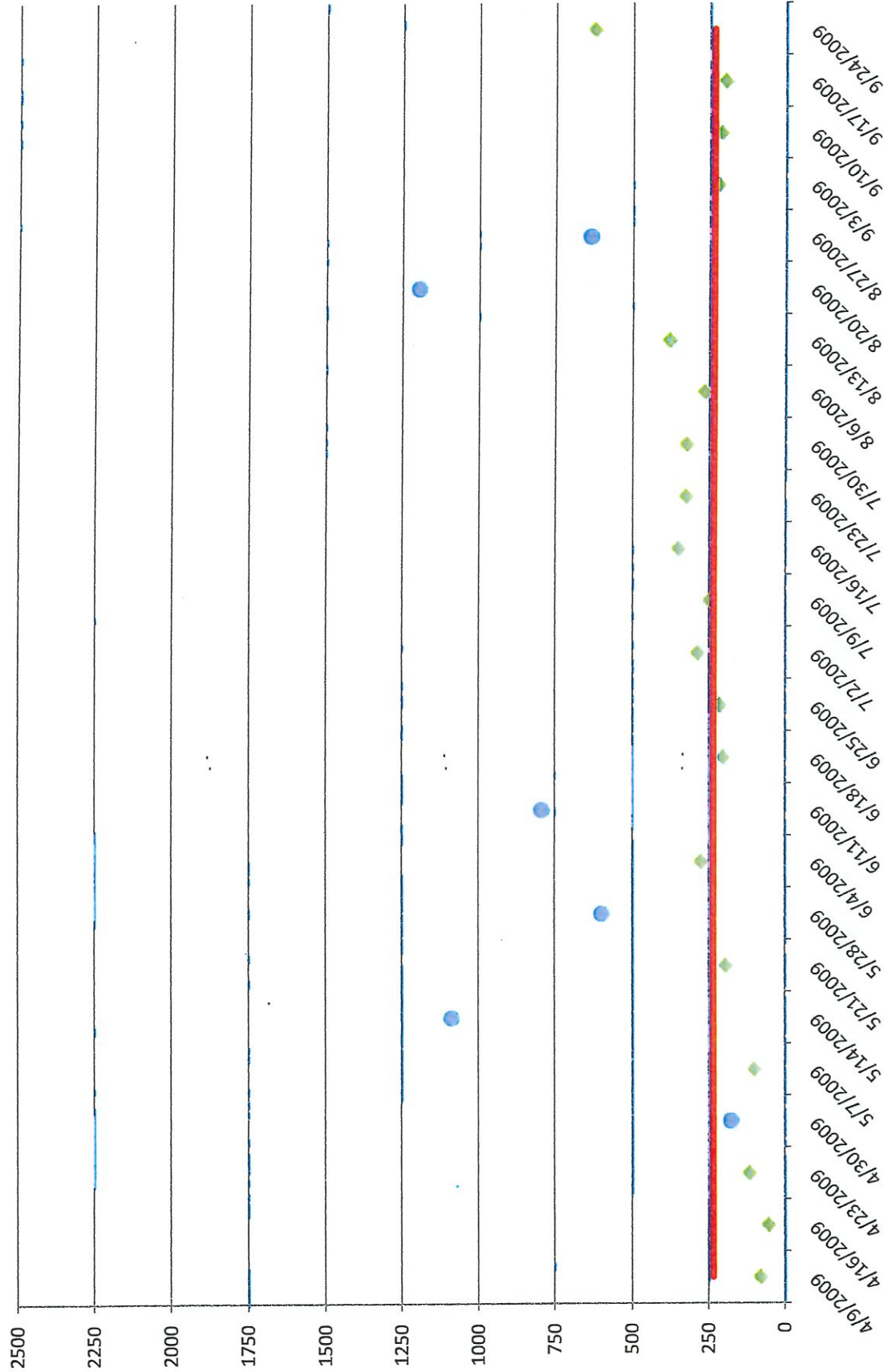
Outliers:

Wet Events
 5/14 - 4250



County Road 40 - Elkhart River

◆ Dry Event ● Wet Event — Body Contact Limit

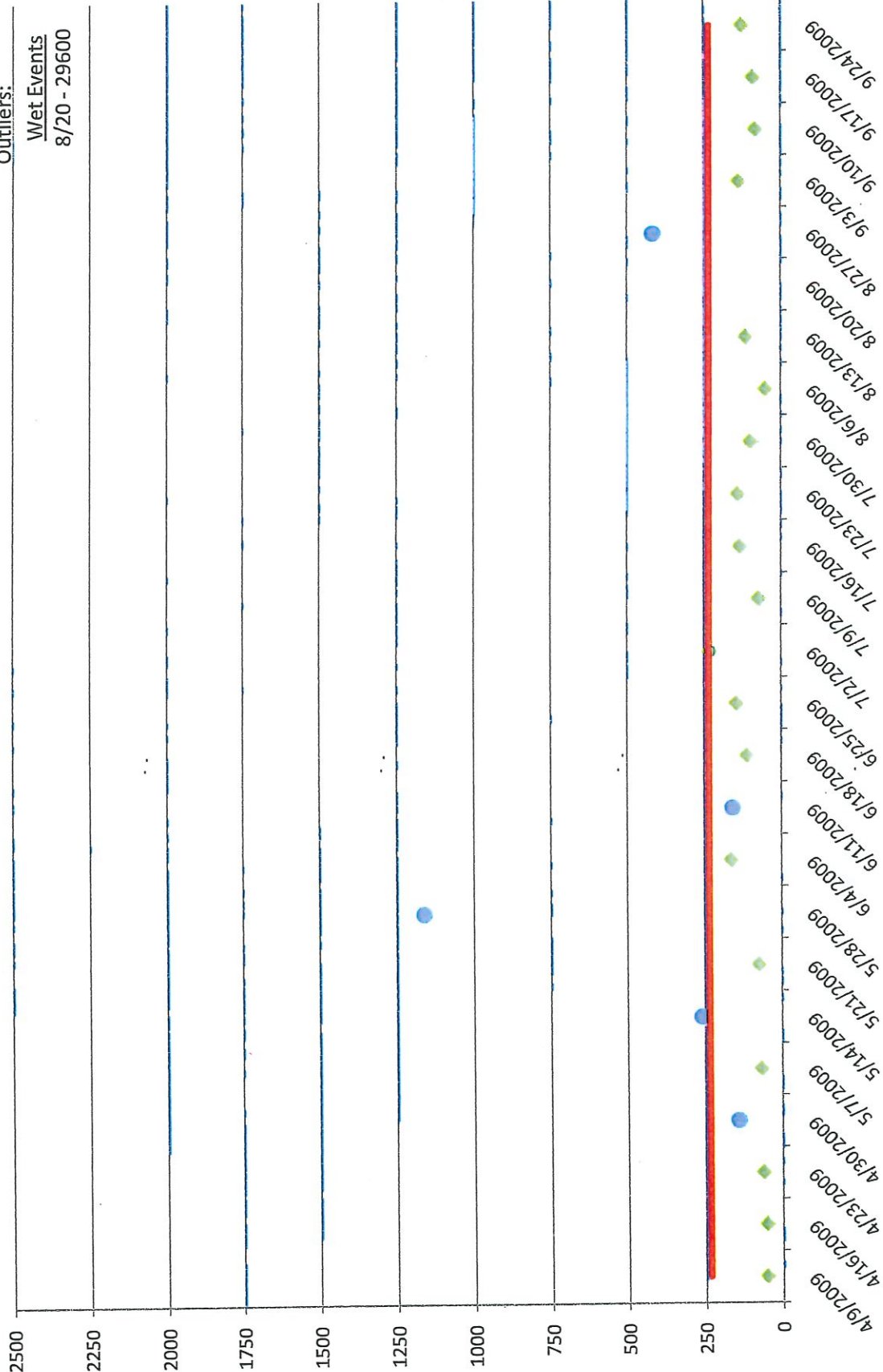


Indiana Ave. - Elkhart River

◆ Dry Event
 ● Wet Event
 — Body Contact Limit

Outliers:

Wet Events
 8/20 - 29600

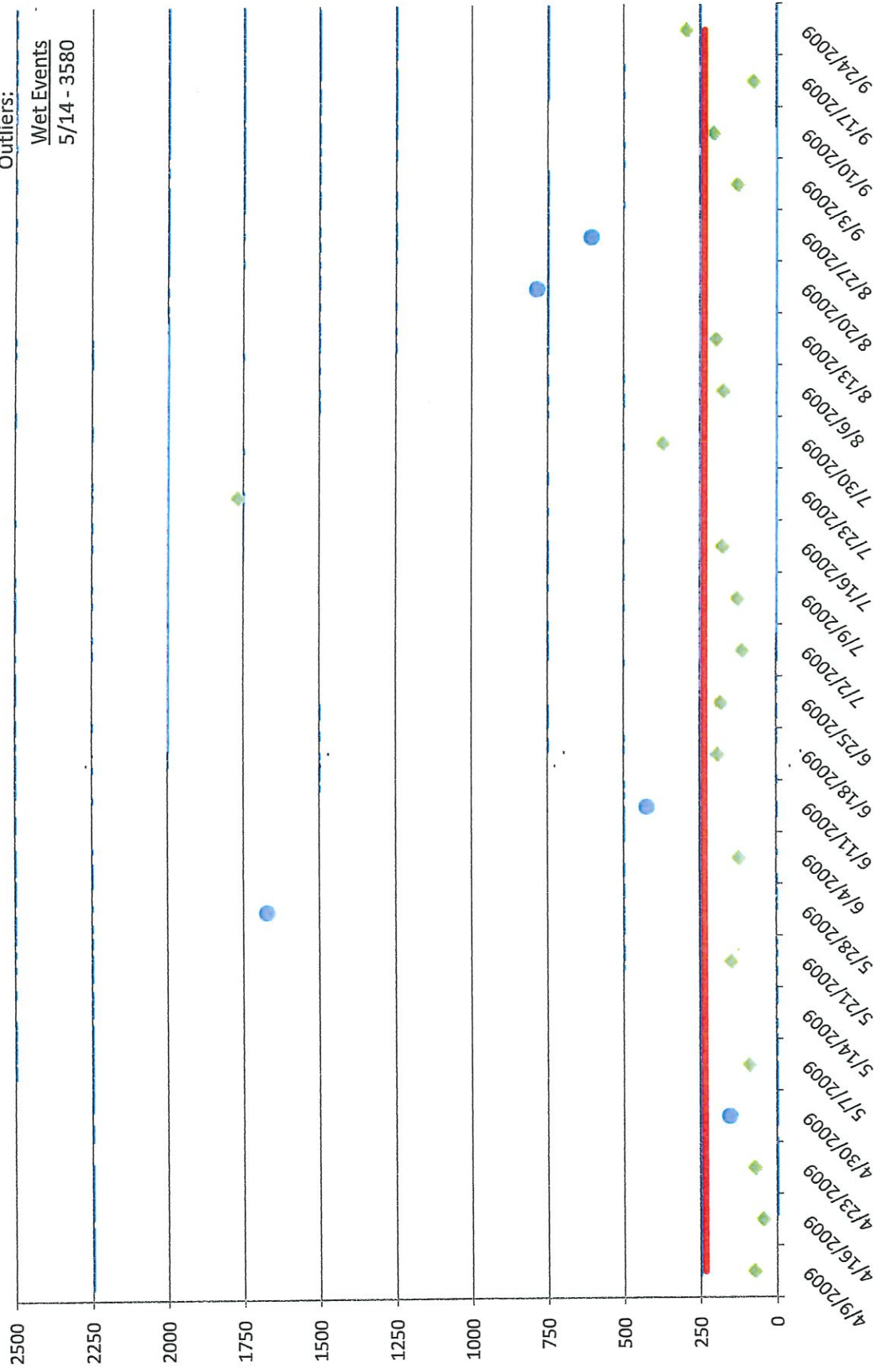


Old County Road 17 - Elkhart River

◆ Dry Event
 ● Wet Event
 — Body Contact Limit

Outliers:

Wet Events
 5/14 - 3580

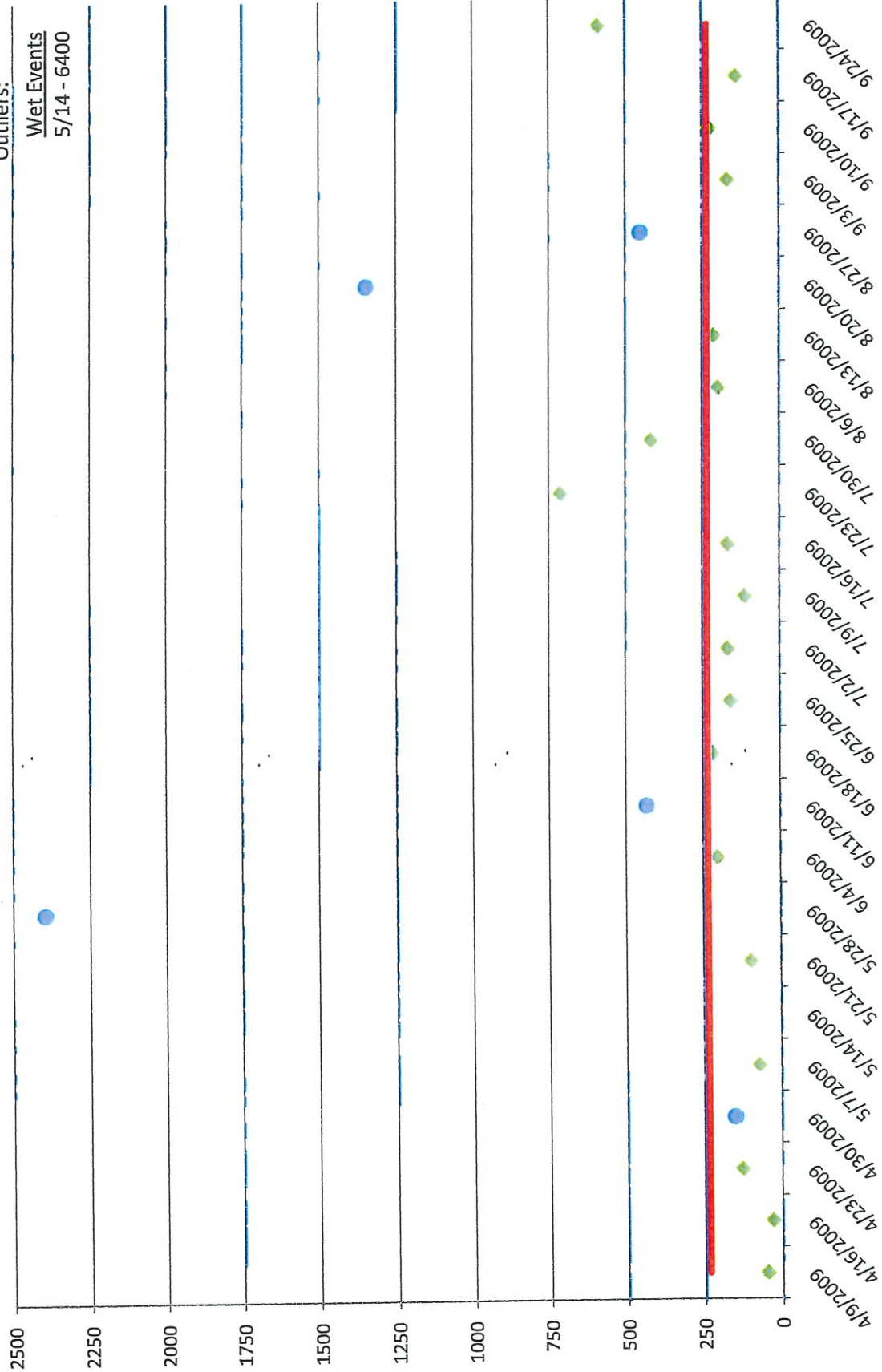


County Road 18 - Elkhart River

◆ Dry Event
 ● Wet Event
 — Body Contact Limit

Outliers:

Wet Events
 5/14 - 6400



E. Jackson St - Elkhart River

♦ Dry Event
 ● Wet Event
 — Body Contact Limit

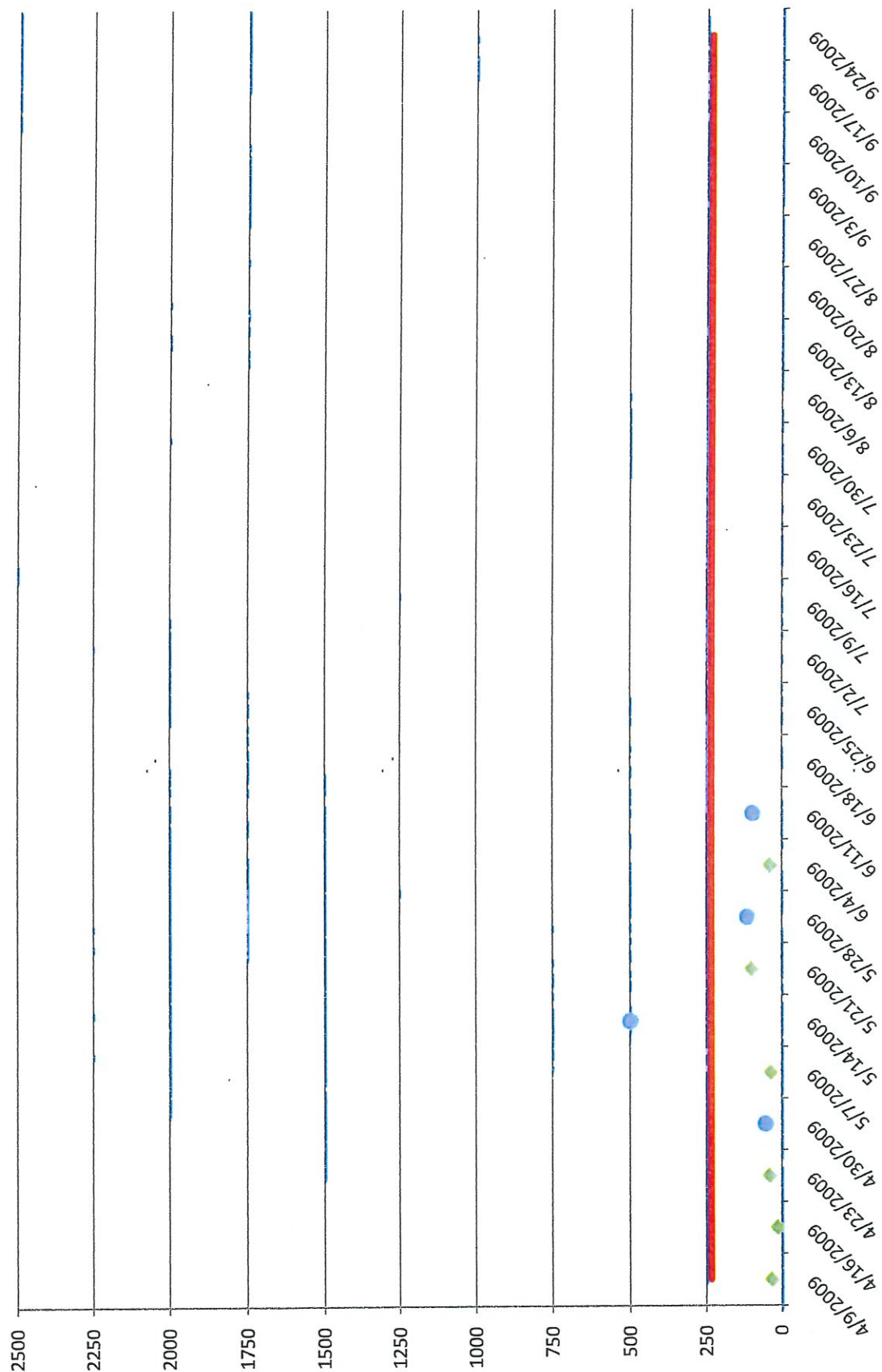
Outliers:

Wet Events
 6/11 - 5400



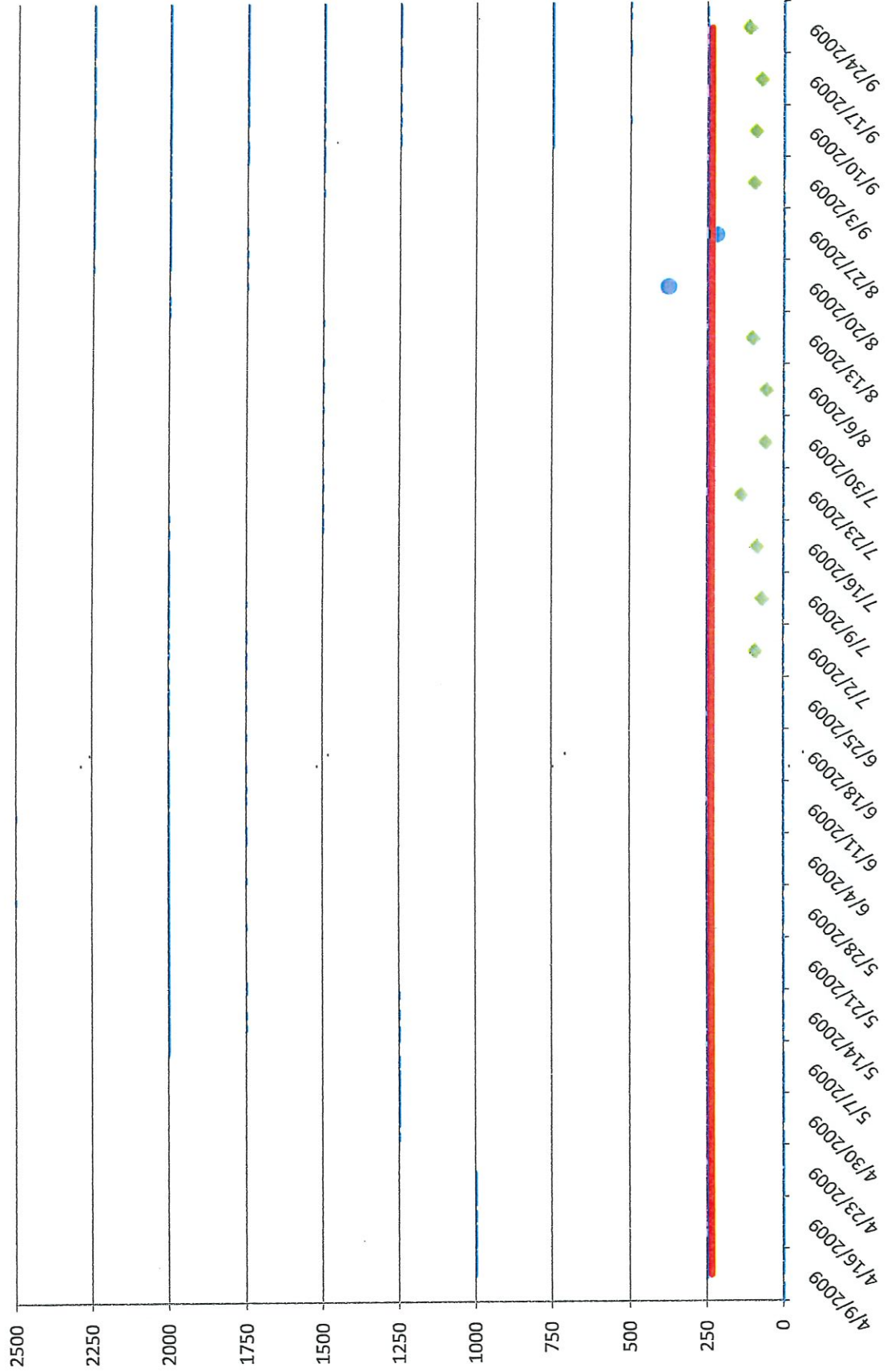
County Road 17 - St. Joe River

◆ Dry Event ● Wet Event — Body Contact Limit



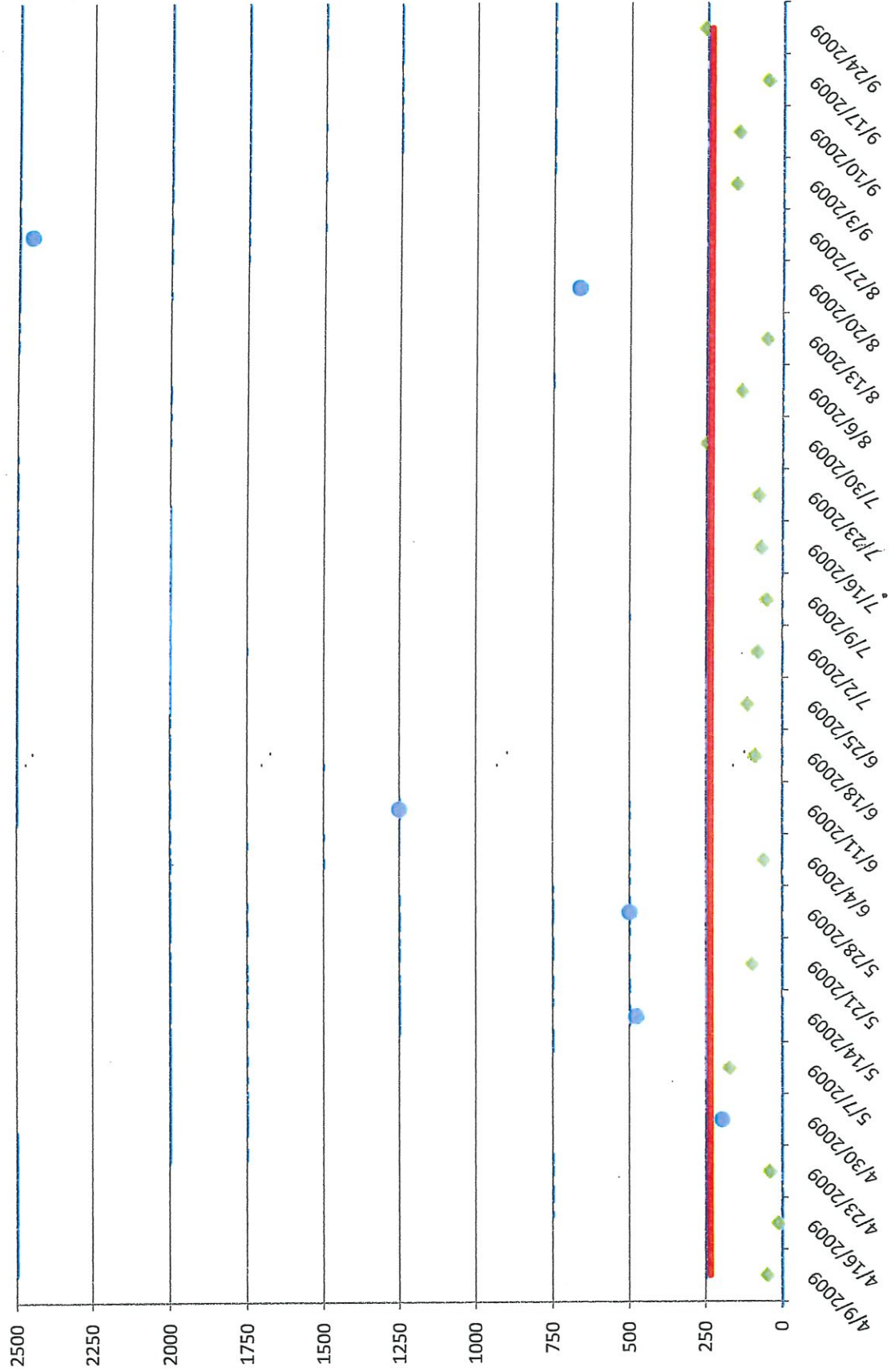
Nibbyville Public Access Site - St. Joe River

◆ Dry Event ● Wet Event — Body Contact Limit



N. Main St - St. Joe River

● Dry Event ● Wet Event — Body Contact Limit

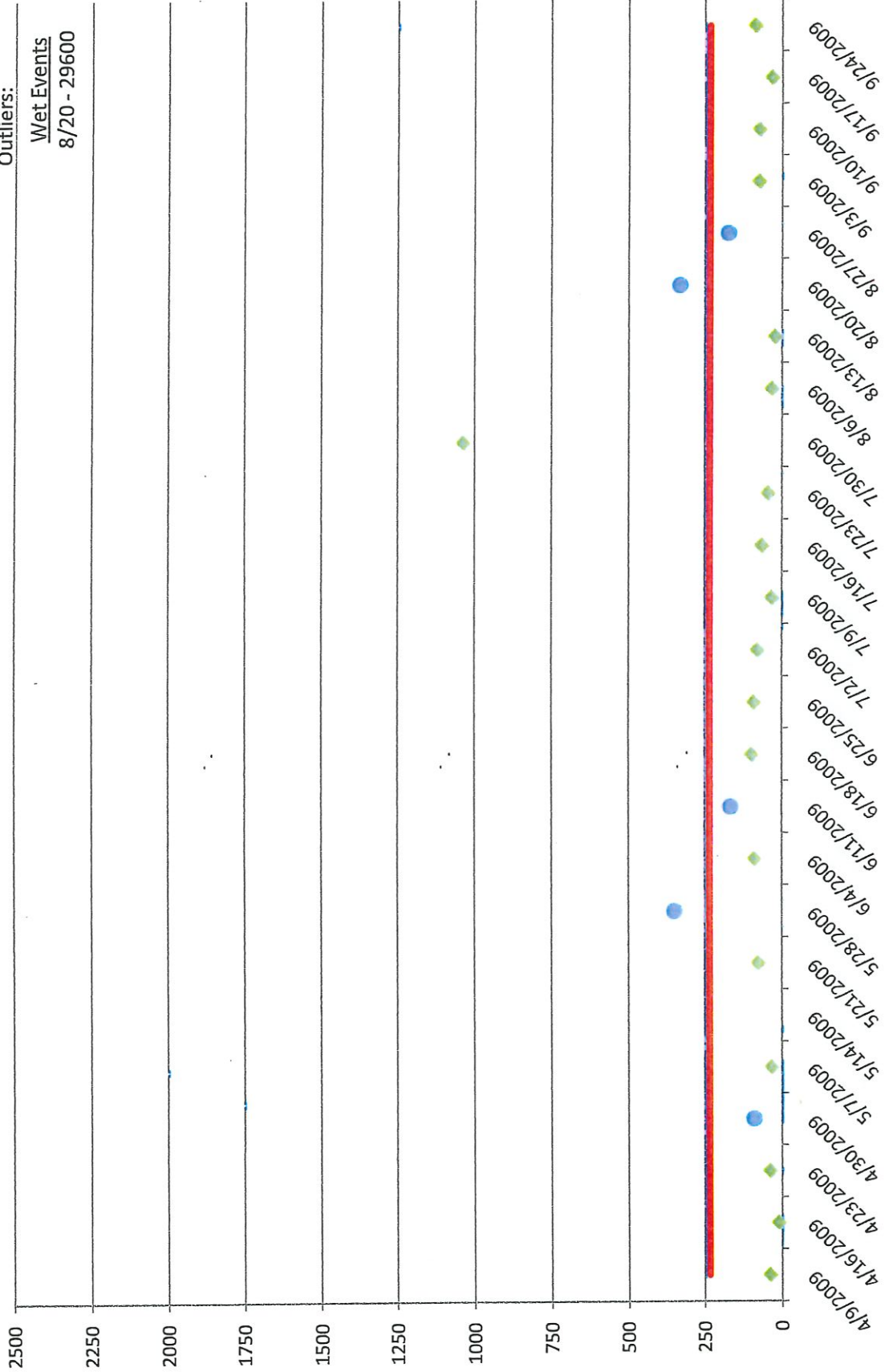


Ash Rd - St. Joe River

◆ Dry Event ● Wet Event — Body Contact Limit

Outliers:

Wet Events
8/20 - 29600

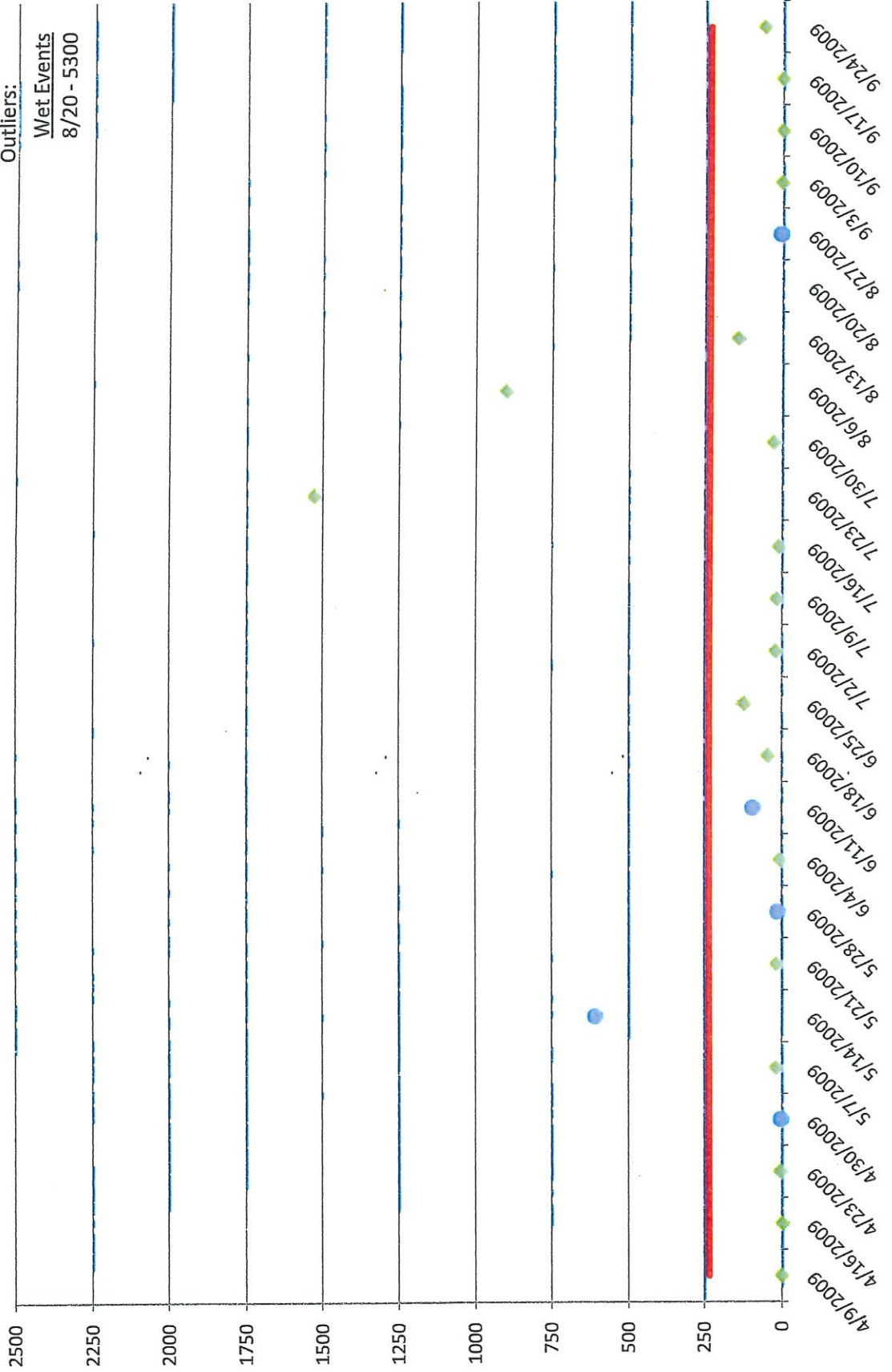


Ideal Beach - Heaton Lake

◆ Dry Event ● Wet Event — Body Contact Limit

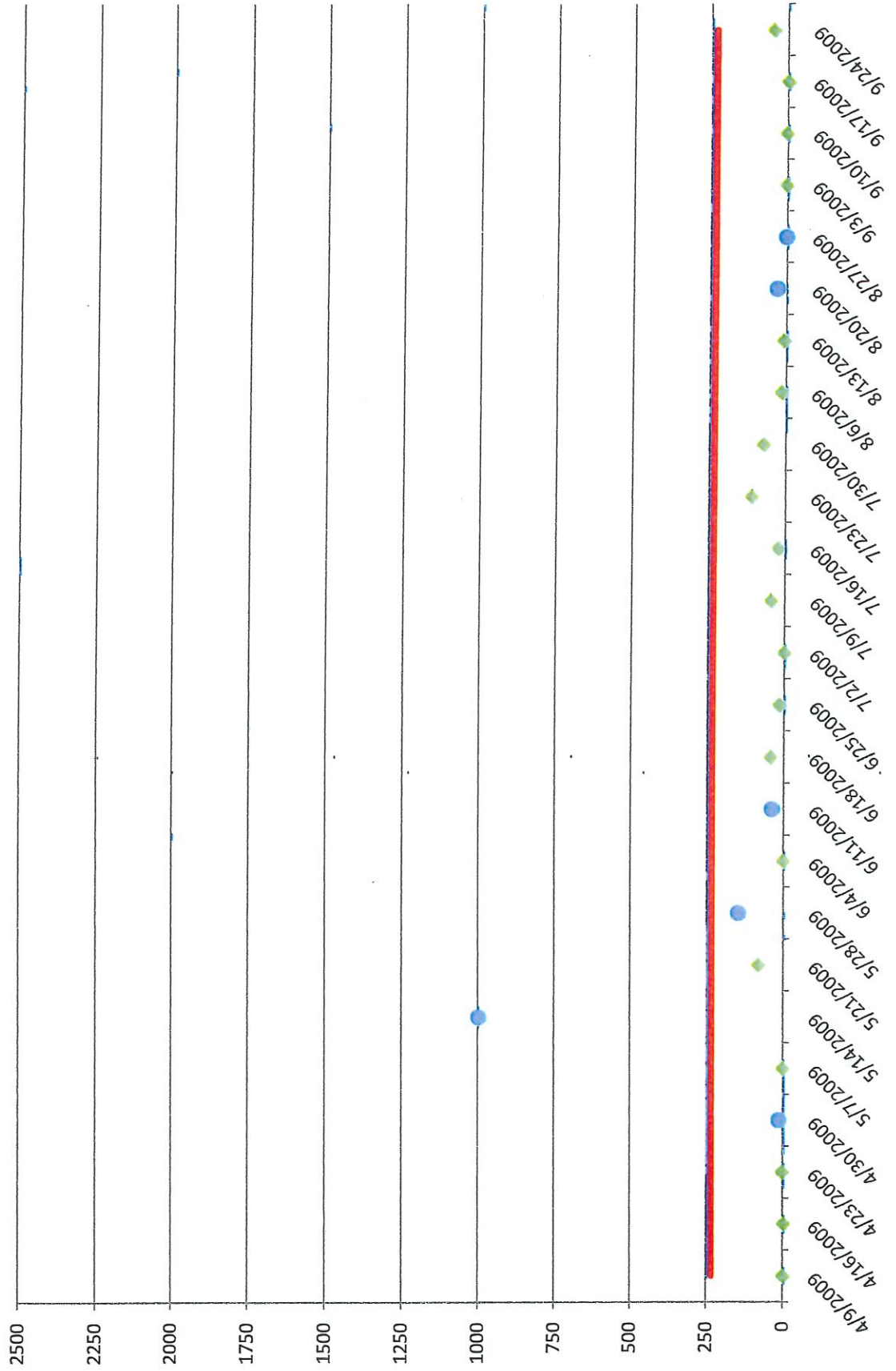
Outliers:

Wet Events
8/20 - 5300



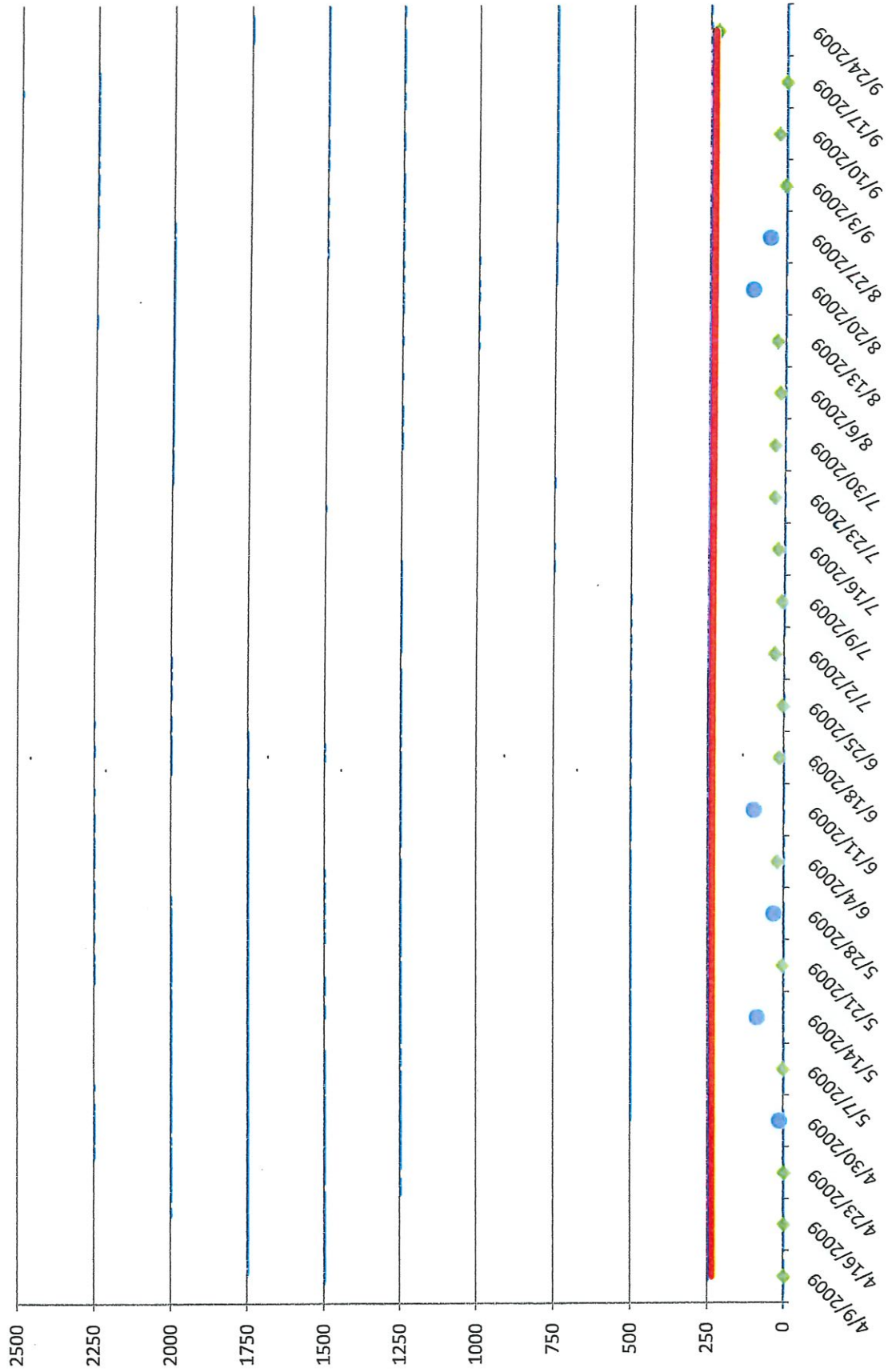
22892 Lake Shore Dr - Heaton Lake

◆ Dry Event ● Wet Event — Body Contact Limit



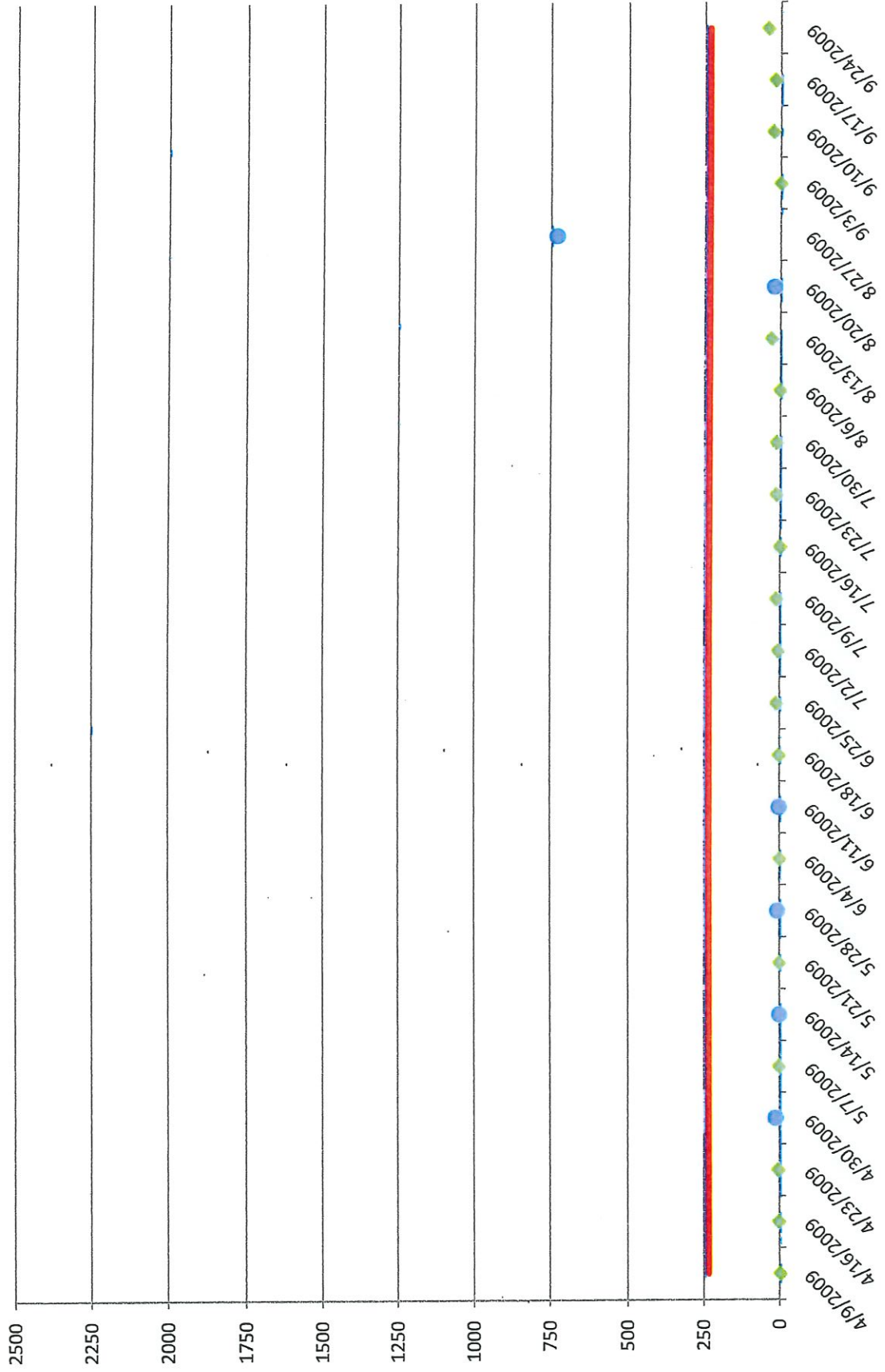
51093 Beach Dr - Simonton Lake

● Dry Event ● Wet Event ■ Body Contact Limit



25919 Lake Dr - Simonton Lake

◆ Dry Event ● Wet Event — Body Contact Limit



SUMMARY AND CONCLUSION

According to the United States Environmental Protection Agency "a waterbody is considered impaired when a water quality standard is violated, whether through exceedance of a numeric or narrative criterion, impairment of designated use or violation of an antidegradation policy." The results from the 2009 sampling effort indicated levels of *E. coli* in excess of the total maximum daily load of 235 cfu/100 ml, known as the full body contact standard at all of the waterways sampled except at one of the sampling sites on Simonton Lake where none of the samples exceeded the 235 cfu/100 ml. The frequency of the exceedances varied, with the ditches and creeks and the Elkhart River having the highest occurrence of sampling events exceeding the 235 numeric standard. For the ditches and creeks, not including the control stream, a total of 192 samples were collected with 169 of these samples exceeding the 235 numeric standard which equates to 88.02%. For the river sites, 223 samples were collected with 74 samples exceeding the 235 numeric standard which equates to 31.49%.

The sources of *E. coli* are separated into rural and urban components. In rural areas sources include animal wastes, runoff from livestock operations, wildlife and failing septic systems. In urban areas sources include leakage of sanitary sewers, combined sewer overflows, wildlife and domestic animals. Due to the high numbers of *E. coli* and the frequency of exceedance, the Health Department issued a press release mid-summer to all local media outlets including newspapers, radio and television warning the public to avoid full body contact in specified waterways. A copy of the press release is included with this report.

All waterbodies 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 stream 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 likely indicators of illicit discharges and will require further investigation to identify the specific sources and eliminate each one.



Environmental Health Services

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Aixsa Pérez, MD
Health Officer



Public Health
Prevent. Promote. Protect.

PRESS RELEASE

FOR IMMEDIATE RELEASE

For further information contact John Hulewicz at the Elkhart County Health Department (574) 875-3391

The Environmental Health Services Division of the Elkhart County Health Department continues to monitor various rivers, creeks and lakes for their suitability for human body contact. The bacteria tested for are E. coli, which are present in the intestines of warm-blooded animals. Presence of these bacteria in surface water indicates contamination with organisms, which may cause illness.

Indiana Administrative Code 327, Article 2 establishes minimum bacteriological water quality for recreational uses. The E. coli count shall not exceed one hundred twenty-five (125) per one hundred milliliters (ml) as a geometric mean based on five samples equally spaced over a 30 day period nor exceed two hundred thirty-five (235) per one hundred milliliters (ml) in any one sample.

The most recent samplings indicate that Simonton and Heaton Lakes and the upper St. Joseph River exhibit good bacteriological water quality. The water in these areas meets bathing beach quality standards.

Tests performed on the lower St. Joseph River show variable results for bacteriological quality. This portion of the river is readily influenced by rainfall events. Residents using the lower St. Joseph River should use caution especially during periods of significant rainfall.

Tests on the Elkhart River indicate that it should not be considered for full body contact. Testing on numerous creeks and ditches entering the Elkhart River indicate that they should also be avoided for full body contact. Based on this year's data and past history, the Environmental Health Service Division is issuing a health advisory on the Elkhart River and other small creeks and ditches entering the Elkhart River for the remainder of the summer and advises the public to avoid these waters for swimming.

Ep9713-09PRESSRELEASEswimmingwaters

ACKNOWLEDGEMENTS

I would like to thank Nathan Hughes for his assistance with this project. Nathan assisted with collecting the samples. In addition, he also assisted with the laboratory analysis for nitrates, chlorides and phosphates at the Elkhart County Health Department and provided outstanding computer and technical skills for the data analysis. Nathan attends college at Indiana University, South Bend and his assistance was invaluable.

I would also like to thank fellow staff members Bill Hartsuff and John Hulewicz, Supervisors, who provided oversight of the program. Special recognition goes to the Laboratory Staff at the Elkhart City Public Works and Utilities who conducted the E. coli and total suspended solids analysis. Their cooperation and expertise was very instrumental to the success of this effort and was very much appreciated.

Elise Pfaff