Appendix 6

IDEM Fixed Station Data

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Inspiration to reality.

At the beginning of the Little Calumet River Watershed Management Plan study information was requested from various governmental agencies, including the Indiana Department of Environmental Management (IDEM). The requested information included water quality data that was available for the three 14-digit HUC watersheds involved in this study.

The information received from IDEM included fish community assessments and fixed station data that was recorded at the Portage Boat Yard (Lat. 41° 36' 9" Long. -87° 11' 35"). The fixed station data from the Portage Boat Yard is not sampled within the study area being looked at for this report but all of the water that goes through this study drains directly to this point. The information was used to help find overall water quality for the Little Calumet River and its tributaries and not for any BMP assessments.

The following information contains the request letter response from IDEM and the fish community assessment results received. Tables 1-6 show the fixed station data results for *E.coli*, Ammonia, Nitrogen (Nitrates + Nitrites), Total Phosphorus, TKN, and Total Suspended Solids. The figures displayed in the report are shown in Figures 1-6.

There were an additional three sample locations added along the Little Calumet River and Portage-Burns Waterway in the summer of 2000. These locations had *E.coli* samples ran and the results are shown in Figure 7 and the data in Table 7. These additional sample locations were located at approximately the Cline Ave., Broadway Street, and Ripley Street Bridges along the Little Calumet River and Burns Ditch. The conferred with the sampling data compiled for this study and observed from previous studies that the Cline Avenue location was the greatest concern. This information was not included in the report however because the three locations were all sampled only five times in the months of July and August 2000 and they presented no new information to the study.

Request for Information

Indiana Department of Environmental Management
Office of Water Quality-Assessment Branch-Biological Studies Section

REQUESTOR INFORMATION

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REQUEST

Area(s) of Interest	Little Calumet River, 07120003030050, 04040001040020, 04040001040030

Information Requested (circle):

Fish Community **Fish Tissue** **Macroinvertebrate** **Lake**

Format Requested (there is a charge for all photocopied and electronic materials):
Electronic if possible
Paper **Report** **Disk/CD** **Fax** **Office Visit** **Other**

OFFICE USE ONLY

Request Taken By (inc. phone): Stacey Sobat, 317-308-3191 Date:10/30/06

Request Filled By (inc. phone): Stacey Sobat, 317-308-3191 Date:11/1/06

How was request filled (including where info retrieved from and time spent)?
AIMS queried by HUCs listed above from 1996-2006. Two samples found 00054, 05014. Sent files in Word. Also referenced the Central Corn Belt Plain document which he may check for additional information. Time spent = 30 minutes

Total Cost __NA____ Receipt No._____

Indiana Department of Environmental Management
Office of Water Quality/ Assessment Branch/ Biological Studies Section
Fish Community Assessments

Site Information

SubBasin: Little Calumet-Galien **14 digit HUC:** 04040001040030 **LSite:** LMG040-0001
Site: Little Calumet River **Location:** SR 51 **County:** Lake
Latitude: 41 35 16.339 **Longitude:** -87 14 14.755 **IASNatRegion:** 2B **Topo:** A-32 **Segment:** 2
Ecoregion: Central Corn Belt Plains **DrainageArea (sq.miles):** 167 **Gradient (ft/mile):** 1.33

Sample

SampleNumber: AA01804 **EventID:** 00054 **SampleMediumCollected:** Water + FishComm + FishTiss
SampleDate: 8/29/2000 **SurveyCrewChief:** JWB **SampleTime:** 8:40:00 AM **HydroLabNumber:** 8
WaterFlowType: Pool **WaterAppearance:** Murky **SkyConditions:** Partly **AirTemperature:** 76-85
WindDirection: West (270 degrees) **WindStrength:** Light
DissolvedO2 (mg/l): 2.69 **pH:** 7.59 **WaterTemp (°C):** 24.2 **SpecificConductivity (µS/cm):** 868 **Turbidity (NTU):** 40
SpecialNotes:

ElectrofishingEquipment: Scanoe **Voltage:** 300 **Avg.StreamWidth (m):** 13.4 **DistanceFished (m):** 270
SecondsFished: 2231 **WaterDepthAvg (m):** 0.8 **WaterDepthMax (m):** 1.2 **TimeAtSite:** 4:15
BridgeInReach: **ReachRepresentative:** **WhyReachNotRepresentative:**
SpecialComments: AA01804

Habitat

TotalScore (max100): 45 **SubstrateScore (max20):** 12 **InstreamCoverScore (max20):** 12
ChannelMorphologyScore (max20): 4
RiparianZone&BankErosionScore (max10): 5 **Pool/GlideQualityScore (max12):** 8
Riffle/RunScoreQuality (max8): 0
GradientScore(max10): 4 **%Pool** 0 **%Riffle:** 0 **%Run:** 0 **%Glide:** 100
CanopyCoverPctOpen: 87
SubjectiveRating: 4 **AestheticRating:** 2 **NOTES:**

Fish Community Index of Biotic Integrity (IBI) Information

	Actual Observation	Metric Score		Actual Observation	Metric Score
SpeciesCount:	14	3	**SensitiveSpeciesCount:**		1
Darter/Madtom/SculpinSpeciesCount:	0	0	**%TolerantIndividuals:**	40.4	3
DarterSpeciesCount:		1	**%OmnivoreIndividuals:**	19.9	3
%LargeRiverIndividuals:		0	**%InsectivoreIndividuals:**	63.0	5
%HeadwaterIndividuals:		0	**%PioneerIndividuals:**	27.4	0
SunfishSpeciesCount:	6	5	**%CarnivoreIndividuals:**	15.1	3
CentrarchidaeSpeciesCount:	7	0	**Total #of Individuals(CPUE):**	146	1
MinnowSpeciesCount:	3	0	**CPUElessGizzardShads:**	0	0
SuckerSpeciesCount:		0	**%SimpleLithophilicInd.:**		1
RoundBodySuckerSpeciesCount:		0	**%Ind.withDeformities, ErodedFins,Lesions,&Tumors:**	0.0	5
SalmonidaeSpeciesCount:		1			

TotalIBIScore (min 6=nofish): 32 max=60

Metrics are dependent on Ecoregion and Drainage Area.
Metrics can score a 1, 3, or 5 depending on calibration.

Indiana Department of Environmental Management
Office of Water Quality/ Assessment Branch/ Biological Studies Section
Fish Community Assessments

SampleNumber: AA0180 **EventID:** 00054 **LSite:** LMG040-0001 **County:** Lake
StreamName: Little Calumet River **LocationDescription:** SR 51

Common Name	Individual Fish Count	Deformities	Eroded Fins	Lesions	Tumors	Multiple Anomalies
black crappie	3	0	0	0	0	0
bluegill	13	0	0	0	0	0
bluntnose minnow	10	0	0	0	0	0
brown bullhead	4	0	0	0	0	0
carp	9	0	0	0	0	0
central mudminnow	2	0	0	0	0	0
gizzard shad	5	0	0	0	0	0
goldfish	3	0	0	0	0	0
green sunfish	30	0	0	0	0	0
hybrid sunfish	4	0	0	0	0	0
largemouth bass	18	0	0	0	0	0
orangespotted sunfish	7	0	0	0	0	0
pumpkinseed	27	0	0	0	0	0
round goby	7	0	0	0	0	0
warmouth	4	0	0	0	0	0

Indiana Department of Environmental Management
Office of Water Quality/ Assessment Branch/ Biological Studies Section
Fish Community Assessments

Site Information

SubBasin: Little Calumet-Galien **14 digit HUC:** 04040001040030 **LSite:** LMG040-0008
Site: Willow Cr **Location:** Sunset St **County:** Porter
Latitude: 41 34 4.1627 **Longitude:** -87 11 26.408 **IASNatRegion:** 2B **Topo:** A-32 **Segment:** 3
Ecoregion: Central Corn Belt Plains **DrainageArea (sq.miles):** 8.82 **Gradient (ft/mile):** 3.98

Sample

SampleNumber: AA27029 **EventID:** 05014 **SampleMediumCollected:** FishComm
SampleDate: 6/14/2005 **SurveyCrewChief:** CCM **SampleTime:** 12:22:00 PM **HydroLabNumber:** bss 1
WaterFlowType: Pool **WaterAppearance:** Brown **SkyConditions:** Partly **AirTemperature:** > 86
WindDirection: West (270 degrees) **WindStrength:** Light
DissolvedO2 (mg/l): 4.86 **pH:** 7.58 **WaterTemp (°C):** 21.2 **SpecificConductivity (µS/cm):** 674 **Turbidity (NTU):** 101
SpecialNotes:

ElectrofishingEquipment: Backpack **Voltage:** 300 **Avg.StreamWidth (m):** 5 **DistanceFished (m):** 75
SecondsFished: 664 **WaterDepthAvg (m):** 0.3 **WaterDepthMax (m):** 0.5 **TimeAtSite:**
BridgeInReach: **ReachRepresentative:** **WhyReachNotRepresentative:**
SpecialComments:

Habitat

TotalScore (max100): 37 **SubstrateScore (max20):** 9 **InstreamCoverScore (max20):** 6
ChannelMorphologyScore (max20): 6
RiparianZone&BankErosionScore (max10): 5 **Pool/GlideQualityScore (max12):** 5
Riffle/RunScoreQuality (max8): 0
GradientScore(max10): 6 **%Pool** 10 **%Riffle:** 10 **%Run:** 80 **%Glide:** 0
CanopyCoverPctOpen: 5
SubjectiveRating: 4 **AestheticRating:** 4 **NOTES:**

Fish Community Index of Biotic Integrity (IBI) Information

	Actual Observation	Metric Score		Actual Observation	Metric Score
SpeciesCount:	6	3	**SensitiveSpeciesCount:**	0	1
Darter/Madtom/SculpinSpeciesCount:	0	1	**%TolerantIndividuals:**	85.2	1
DarterSpeciesCount:	0	0	**%OmnivoreIndividuals:**	29.6	3
%LargeRiverIndividuals:	0.0	0	**%InsectivoreIndividuals:**	18.5	1
%HeadwaterIndividuals:	0.0	0	**%PioneerIndividuals:**	74.1	1
SunfishSpeciesCount:	2	3	**%CarnivoreIndividuals:**	0.0	0
CentrarchidaeSpeciesCount:	2	0	**Total #of Individuals(CPUE):**	27	1
MinnowSpeciesCount:	3	5	**CPUElessGizzardShads:**	27	0
SuckerSpeciesCount:	1	0	**%SimpleLithophilicInd.:**	14.8	1
RoundBodySuckerSpeciesCount:	0	0	**%Ind.withDeformities, ErodedFins,Lesions,&Tumors:**	0.0	5
SalmonidaeSpeciesCount:	0	0			

TotalIBIScore (min 6=nofish): **26** max=60

Metrics are dependent on Ecoregion and Drainage Area.
Metrics can score a 1, 3, or 5 depending on calibration.

Indiana Department of Environmental Management
Office of Water Quality/ Assessment Branch/ Biological Studies Section
Fish Community Assessments

SampleNumber: AA2702 **EventID:** 05014 **LSite:** LMG040-0008 **County:** Porter
StreamName: Willow Cr **LocationDescription:** Sunset St

Common Name	Individual Fish Count	Deformities	Eroded Fins	Lesions	Tumors	Multiple Anomalies
bluegill	3	0	0	0	0	0
bluntnose minnow	4	0	0	0	0	0
central stoneroller	1	0	0	0	0	0
creek chub	13	0	0	0	0	0
green sunfish	2	0	0	0	0	0
white sucker	4	0	0	0	0	0

Sample Date	E.coli (CFU/100mL)	Sample Date	E.coli (CFU/100mL)	Sample Date	E.coli (CFU/100mL)
1/24/1990	230	9/8/1993	530	5/28/1997	250
2/28/1990	3,700	9/29/1993	760	6/18/1997	550
3/28/1990	2,100	10/27/1993	270	7/23/1997	750
5/16/1990	350	11/16/1993	320	8/20/1997	340
6/5/1990	1,600	3/2/1994	570	9/24/1997	4,000
7/17/1990	670	3/15/1994	110	10/21/1997	60
8/8/1990	4,700	4/26/1994	50	11/18/1997	1,900
9/19/1990	90	6/1/1994	60	12/9/1997	40
10/2/1990	40	8/31/1994	10	2/4/1998	110
11/28/1990	3,700	10/4/1994	30	4/1/1998	4,000
12/19/1990	430	11/14/1994	240	4/28/1998	40
1/16/1991	11,000	1/18/1995	960	6/3/1998	4,000
2/12/1991	80	3/7/1995	970	6/30/1998	1,100
3/5/1991	1,000	4/25/1995	60	9/1/1998	4,000
4/17/1991	400	5/24/1995	490	9/29/1998	240
5/21/1991	800	6/26/1995	180	10/27/1998	20
6/25/1991	6,500	7/26/1995	340	11/17/1998	130
7/24/1991	610	9/7/1995	100	12/15/1998	210
8/15/1991	2,500	9/26/1995	20	1/26/1999	2,800
9/24/1991	180	10/25/1995	160	2/23/1999	230
10/22/1991	250	11/15/1995	2,200	3/24/1999	120
11/20/1991	4,300	12/21/1995	530	5/26/1999	200
12/18/1991	2,000	1/24/1996	380	8/18/1999	120
2/25/1992	2,200	2/28/1996	1,500	9/29/1999	5
3/26/1992	590	3/26/1996	10	10/19/1999	1,200
4/22/1992	360	4/24/1996	200	7/31/2000	480
6/24/1992	440	5/22/1996	750	8/8/2000	5,200
7/27/1992	140	6/19/1996	1,900	8/15/2000	240
8/24/1992	10	8/21/1996	100	8/22/2000	210
9/22/1992	90	9/18/1996	210	8/29/2000	50
10/20/1992	120	10/23/1996	440	9/20/2000	440
11/16/1992	340	11/13/1996	2,800	11/21/2000	250
12/15/1992	40	12/11/1996	140	2/13/2001	1,100
1/13/1993	390	2/5/1997	590	4/10/2001	38
3/16/1993	560	2/26/1997	3	8/14/2001	96
5/10/1993	30	4/2/1997	1	10/11/2001	610
8/2/1993	70	4/30/1997	10	7/7/2004	340

* Green cells denote data used in figure for report purposes.

Table 1: IDEM *E.coli* fixed station data collected at the Portage Boat Yard

Sample Date	Ammonia (mg/L)	Sample Date	Ammonia (mg/L)	Sample Date	Ammonia (mg/L)	Sample Date	Ammonia (mg/L)
1/24/1990	0.3	8/31/1994	0.1	11/17/1998	0.2	10/9/2002	0.1
2/28/1990	0.3	10/4/1994	0.1	12/15/1998	0.2	11/13/2002	0.1
3/28/1990	0.3	11/14/1994	0.3	1/26/1999	0.2	12/12/2002	0.2
4/25/1990	0.2	1/18/1995	0.1	2/23/1999	0.1	1/8/2003	0.1
5/16/1990	0.3	3/7/1995	0.2	3/24/1999	0.1	2/6/2003	0.6
6/5/1990	0.1	4/25/1995	0.2	4/28/1999	0.2	3/11/2003	0.4
7/17/1990	0.2	5/24/1995	0.2	5/26/1999	0.36	4/9/2003	0.2
8/8/1990	0.2	6/26/1995	0.2	6/29/1999	0.6	5/8/2003	0.2
9/19/1990	0.4	7/26/1995	0.2	7/28/1999	0.2	6/5/2003	0.1
10/2/1990	0.1	9/7/1995	0.2	8/18/1999	0.2	7/1/2003	0.2
11/28/1990	0.1	9/26/1995	0.1	9/29/1999	0.3	8/4/2003	0.1
12/19/1990	0.1	10/25/1995	0.1	10/19/1999	0.3	9/4/2003	0.2
1/16/1991	0.4	11/15/1995	0.1	11/30/1999	0.1	10/7/2003	0.1
2/12/1991	0.1	12/21/1995	0.2	12/28/1999	0.3	11/17/2003	0.1
3/5/1991	0.2	1/24/1996	0.4	8/15/2000	0.1	12/3/2003	0.2
4/17/1991	0.1	2/28/1996	0.3	1/25/2000	0.1	1/5/2004	0.2
5/21/1991	0.3	3/26/1996	0.1	2/14/2000	0.2	2/23/2004	0.8
6/25/1991	0.1	4/24/1996	0.1	3/20/2000	0.3	3/15/2004	0.2
7/24/1991	0.2	5/22/1996	0.3	4/24/2000	0.2	4/12/2004	0.1
8/15/1991	0.3	6/19/1996	0.2	5/24/2000	0.3	5/17/2004	0.3
9/24/1991	0.1	7/17/1996	0.2	6/21/2000	0.2	6/2/2004	0.1
10/22/1991	0.1	8/21/1996	0.2	7/17/2000	0.2	7/7/2004	0.1
11/20/1991	0.2	9/18/1996	0.1	8/22/2000	0.1	8/10/2004	0.1
12/18/1991	0.1	10/23/1996	0.1	9/20/2000	0.1	9/1/2004	0.1
2/25/1992	0.1	11/13/1996	0.4	10/23/2000	0.1	10/5/2004	0.1
3/26/1992	0.1	12/11/1996	0.3	11/21/2000	0.1	11/3/2004	0.1
4/22/1992	0.2	2/5/1997	0.3	12/13/2000	0.1	12/15/2004	0.1
5/19/1992	0.1	2/26/1997	0.1	1/9/2001	0.3	1/3/2005	0.2
6/24/1992	0.2	4/2/1997	0.1	2/13/2001	0.2	2/2/2005	0.2
7/27/1992	0.3	4/30/1997	0.2	3/12/2001	0.1	3/28/2005	0.1
8/24/1992	0.4	5/28/1997	0.3	4/10/2001	0.1	4/11/2005	0.1
9/22/1992	0.1	6/18/1997	0.1	5/9/2001	0.1	5/9/2005	0.1
10/20/1992	0.1	7/23/1997	0.3	6/6/2001	0.2	6/13/2005	0.2
11/16/1992	0.1	8/20/1997	0.1	7/9/2001	0.1	7/12/2005	0.1
12/15/1992	0.2	9/24/1997	0.2	8/14/2001	0.1	8/3/2005	0.1
1/13/1993	0.1	10/21/1997	0.1	9/19/2001	0.1	9/12/2005	0.1
3/16/1993	0.2	11/18/1997	0.1	10/11/2001	0.1	10/11/2005	0.1
4/26/1993	0.2	12/9/1997	0.2	11/7/2001	0.1	11/15/2005	0.1
5/10/1993	0.2	2/4/1998	0.3	12/4/2001	0.1	12/19/2005	0.3
8/2/1993	0.3	3/4/1998	0.2	1/28/2002	0.1	1/30/2006	0.1
9/8/1993	0.2	4/1/1998	0.3	2/19/2002	0.1	2/22/2006	0.1
9/29/1993	0.2	4/28/1998	0.1	3/13/2002	0.1002	3/13/2006	0.1
10/27/1993	0.1	6/3/1998	0.3	4/16/2002	0.1	4/5/2006	0.1
11/16/1993	0.4	6/30/1998	0.3	5/15/2002	0.1	5/15/2006	0.2
3/2/1994	0.6	7/28/1998	0.2	6/10/2002	0.1	6/26/2006	0.1
3/15/1994	0.2	9/1/1998	0.4	7/17/2002	0.1	7/25/2006	0.1
4/26/1994	0.3	9/29/1998	0.1	8/8/2002	0.1	8/28/2006	0.1
6/1/1994	0.4	10/27/1998	0.2	9/12/2002	0.1	9/13/2006	0.1
8/2/1994	0.1						

* Green cells denote data used in figure for report purposes.

Table 2: IDEM Ammonia fixed station data from the Portage Boat Yard.

Sample Date	Nitrogen (mg/L)	Sample Date	Nitrogen (mg/L)	Sample Date	Nitrogen (mg/L)	Sample Date	Nitrogen (mg/L)
1/24/1990	3.7	8/31/1994	5.1	12/15/1998	2.3	12/12/2002	2.8
2/28/1990	4.7	10/4/1994	3.1	1/26/1999	2.7	1/8/2003	4
3/28/1990	2.3	11/14/1994	2.1	2/23/1999	2.5	2/6/2003	2.9
4/25/1990	2.2	1/18/1995	3.6	3/24/1999	2.6	3/11/2003	2.8
5/16/1990	3.1	3/7/1995	2.1	4/28/1999	2	4/9/2003	4.5
6/5/1990	2.1	4/25/1995	1.2	5/26/1999	1.6	5/8/2003	3
7/17/1990	1.4	5/24/1995	1.5	6/29/1999	0.81	6/5/2003	2.1
8/8/1990	0.8	6/26/1995	1.3	7/28/1999	1.9	7/1/2003	2.5
9/19/1990	1.1	7/26/1995	1.2	8/18/1999	3.9	8/4/2003	1.3
10/2/1990	2	9/7/1995	2.7	9/29/1999	1.9	9/4/2003	1.4
11/28/1990	1	9/26/1995	2.9	10/19/1999	1.4	10/7/2003	1.1
12/19/1990	1.6	10/25/1995	1.3	11/30/1999	1.6	11/17/2003	2.2
1/16/1991	2.1	11/15/1995	3.4	12/28/1999	5	12/3/2003	2.7
2/12/1991	2	12/21/1995	2.7	8/15/2000	1.2	1/5/2004	3.5
3/5/1991	2.1	1/24/1996	3.6	1/25/2000	4.3	2/23/2004	3
4/17/1991	1.6	2/28/1996	2.5	2/14/2000	3.9	3/15/2004	3.1
5/21/1991	1.9	3/26/1996	2.8	3/20/2000	2.1	4/12/2004	2
6/25/1991	0.3	4/24/1996	4.2	4/24/2000	3.7	5/17/2004	2.2
7/24/1991	0.7	5/22/1996	2.9	5/24/2000	1.6	6/2/2004	2.4
8/15/1991	1.9	6/19/1996	1.6	6/21/2000	4.2	7/7/2004	1.2
9/24/1991	2.8	7/17/1996	2.6	7/17/2000	1.4	8/10/2004	1.2
10/22/1991	3	8/21/1996	1.6	8/22/2000	1.7	9/1/2004	1.2
11/20/1991	3	9/18/1996	2.2	9/20/2000	3.3	10/5/2004	1.5
12/18/1991	3.6	10/23/1996	1.2	10/23/2000	2.3	11/3/2004	1.4
2/25/1992	3	11/13/1996	2.5	11/21/2000	2.2	12/15/2004	2.2
3/26/1992	2.8	12/11/1996	2.6	12/13/2000	2.8	1/3/2005	2.8
4/22/1992	2.3	2/5/1997	2.1	1/9/2001	3.7	2/2/2005	3
5/19/1992	0.5	2/26/1997	2.2	2/13/2001	3.9	3/28/2005	1.8
6/24/1992	2.2	4/2/1997	1.7	3/12/2001	4.2	4/11/2005	1.4
7/27/1992	1.4	4/30/1997	1.2	4/10/2001	1.4	5/9/2005	2.6
8/24/1992	1.3	5/28/1997	2.9	5/9/2001	2.5	6/13/2005	2.4
9/22/1992	1.4	6/18/1997	2.1	6/6/2001	3.3	7/12/2005	4.6
10/20/1992	1	7/23/1997	1.1	7/9/2001	1	8/3/2005	1.4
11/16/1992	3.2	8/20/1997	1.2	8/14/2001	2.2	9/12/2005	2.8
12/15/1992	2.7	9/24/1997	1.8	9/19/2001	2	10/11/2005	2.1
1/13/1993	2.2	10/21/1997	1.7	10/11/2001	1.5	11/15/2005	2.3
3/16/1993	2.9	11/18/1997	1.4	11/7/2001	2.8	12/19/2005	4.3
4/26/1993	1.7	12/9/1997	2.1	12/4/2001	2.3	1/30/2006	3.3
5/10/1993	1.5	2/4/1998	2.5	1/28/2002	2.5005	2/22/2006	3.4
8/2/1993	1.3	3/4/1998	2.1	2/19/2002	3.5938	3/13/2006	2.7
9/8/1993	1.3	4/1/1998	1.3	3/13/2002	2.9709	4/5/2006	2.7
9/29/1993	1.4	4/28/1998	1.6	4/16/2002	2.2104	5/15/2006	3
10/27/1993	1.1	6/3/1998	2	5/15/2002	1.6	6/26/2006	1.6
11/16/1993	2.1	6/30/1998	0.6	6/10/2002	1.9	7/25/2006	1.5
3/2/1994	1.5	7/28/1998	2.8	7/17/2002	1.7	8/28/2006	1.4
3/15/1994	2.2	9/1/1998	1.8	8/8/2002	3.8	9/13/2006	1.5
4/26/1994	0.8	9/29/1998	3	9/12/2002	3.2		
6/1/1994	0.8	10/27/1998	2.2	10/9/2002	2		
8/2/1994	1.6	11/17/1998	2	11/13/2002	1.5		

*Green cells denote data used in figure for report purposes.

Table 3: IDEM Nitrogen (nitrates + nitrites) fixed station data.

Sample Date	Total Phosphorus (mg/L)	Sample Date	Total Phosphorus (mg/L)	Sample Date	Total Phosphorus (mg/L)	Sample Date	Total Phosphorus (mg/L)
1/24/1990	0.1	8/2/1994	0.13	10/27/1998	0.23	10/9/2002	0.14
2/28/1990	0.12	8/31/1994	0.27	11/17/1998	0.14	11/13/2002	0.11
3/28/1990	0.12	10/4/1994	0.27	12/15/1998	0.15	12/12/2002	0.19
4/25/1990	0.15	11/14/1994	0.15	1/26/1999	0.22	1/8/2003	0.08
5/16/1990	0.17	1/18/1995	0.18	2/23/1999	0.09	2/6/2003	0.1
6/5/1990	0.21	3/7/1995	0.15	3/24/1999	0.09	3/11/2003	0.06
7/17/1990	0.16	4/25/1995	0.05	4/28/1999	0.18	4/9/2003	0.13
8/8/1990	0.18	5/24/1995	0.16	5/26/1999	0.23	5/8/2003	0.23
9/19/1990	0.18	6/26/1995	0.17	6/29/1999	0.23	6/5/2003	0.13
10/2/1990	0.2	7/26/1995	0.18	7/28/1999	0.38	7/1/2003	0.19
11/28/1990	0.45	9/7/1995	0.19	8/18/1999	0.23	8/4/2003	0.25
12/19/1990	0.1	9/26/1995	0.21	9/29/1999	0.26	9/4/2003	0.17
1/16/1991	0.18	10/25/1995	0.2	10/19/1999	0.22	10/7/2003	0.11
2/12/1991	0.05	11/15/1995	0.23	11/30/1999	0.17	11/17/2003	0.12
3/5/1991	0.2	12/21/1995	0.13	8/15/2000	0.24	12/3/2003	0.12
4/17/1991	0.28	1/24/1996	0.15	1/25/2000	0.13	1/5/2004	0.1
5/21/1991	0.14	2/28/1996	0.16	2/14/2000	0.14	2/23/2004	0.16
6/25/1991	0.14	3/26/1996	0.12	3/20/2000	0.18	3/15/2004	0.11
7/24/1991	0.22	4/24/1996	0.21	4/24/2000	0.23	4/12/2004	0.12
8/15/1991	0.32	5/22/1996	0.14	5/24/2000	0.24	5/17/2004	0.16
9/24/1991	0.2	6/19/1996	0.34	6/21/2000	0.19	6/2/2004	0.18
10/22/1991	0.24	7/17/1996	0.21	7/17/2000	0.19	7/7/2004	0.16
11/20/1991	0.26	8/21/1996	0.18	8/22/2000	0.24	8/10/2004	0.17
12/18/1991	0.11	9/18/1996	0.17	9/20/2000	0.17	9/1/2004	0.2
2/25/1992	0.09	10/23/1996	0.14	10/23/2000	0.21	10/5/2004	0.15
3/26/1992	0.08	11/13/1996	0.16	11/21/2000	0.1	11/3/2004	0.19
4/22/1992	0.1	12/11/1996	0.09	12/13/2000	0.1	12/15/2004	0.12
5/19/1992	0.17	2/5/1997	0.15	1/9/2001	0.11	1/3/2005	0.16
6/24/1992	0.21	2/26/1997	0.16	2/13/2001	0.22	2/2/2005	0.12
7/27/1992	0.25	4/2/1997	0.11	3/12/2001	0.13	3/28/2005	0.05
8/24/1992	0.3	4/30/1997	0.13	4/10/2001	0.08	4/11/2005	0.08
9/22/1992	0.15	5/28/1997	0.19	5/9/2001	0.16	5/9/2005	0.18
10/20/1992	0.11	6/18/1997	0.35	6/6/2001	0.14	6/13/2005	0.21
11/16/1992	0.18	7/23/1997	0.21	7/9/2001	0.19	7/12/2005	0.38
12/15/1992	0.09	8/20/1997	0.22	8/14/2001	0.22	8/3/2005	0.31
1/13/1993	0.08	9/24/1997	0.18	9/19/2001	0.2	9/12/2005	0.24
3/16/1993	0.11	10/21/1997	0.21	10/11/2001	0.17	10/11/2005	0.23
4/26/1993	0.16	11/18/1997	0.1	11/7/2001	0.12	11/15/2005	0.15
5/10/1993	0.16	12/9/1997	0.11	12/4/2001	0.13	12/19/2005	0.19
8/2/1993	0.21	2/4/1998	0.11	1/28/2002	0.0981	1/30/2006	0.14
9/8/1993	0.2	3/4/1998	0.09	2/19/2002	0.1212	2/22/2006	0.15
9/29/1993	0.23	4/1/1998	0.19	3/13/2002	0.161	3/13/2006	0.35
10/27/1993	0.18	4/28/1998	0.12	4/16/2002	0.1259	4/5/2006	0.13
11/16/1993	0.15	6/3/1998	0.19	5/15/2002	0.18	5/15/2006	0.17
3/2/1994	0.07	6/30/1998	0.24	6/10/2002	0.14	6/26/2006	0.22
3/15/1994	0.12	7/28/1998	0.24	7/17/2002	0.17	7/25/2006	0.2
4/26/1994	0.06	9/1/1998	0.3	8/8/2002	0.24	8/28/2006	0.2
6/1/1994	0.06	9/29/1998	0.28	9/12/2002	0.23	9/13/2006	0.31

* Green cells denote data used in figure for report purposes.

Table 4: IDEM Total Phosphorus fixed station data for the Portage Boat Yard.

Sample Date	TKN (mg/L)	Sample Date	TKN (mg/L)	Sample Date	TKN (mg/L)	Sample Date	TKN (mg/L)
1/24/1990	1.2	8/31/1994	0.9	11/17/1998	1	10/9/2002	0.9
2/28/1990	1.1	10/4/1994	1.3	12/15/1998	1	11/13/2002	0.8
3/28/1990	1.3	11/14/1994	1.3	1/26/1999	1.5	12/12/2002	1.3
4/25/1990	1.1	1/18/1995	1.3	2/23/1999	1	1/8/2003	0.8
6/5/1990	1.4	3/7/1995	1.2	3/24/1999	1	2/6/2003	1.3
7/17/1990	1.3	4/25/1995	0.9	4/28/1999	1	3/11/2003	1.3
8/8/1990	1.4	5/24/1995	1.2	5/26/1999	1.6	4/9/2003	1.3
9/19/1990	1.4	6/26/1995	1.4	6/29/1999	1	5/8/2003	1.5
10/2/1990	0.9	7/26/1995	1.3	7/28/1999	1	6/5/2003	1.3
11/28/1990	2.2	9/7/1995	1.2	8/18/1999	1.7	7/1/2003	1.6
12/19/1990	0.9	9/26/1995	1.4	9/29/1999	1.4	8/4/2003	1.3
1/16/1991	1.2	10/25/1995	1.3	10/19/1999	1.6	9/4/2003	1.4
2/12/1991	1	11/15/1995	1.5	11/30/1999	1.2	10/7/2003	0.9
3/5/1991	1.5	12/21/1995	0.8	12/28/1999	1.2	11/17/2003	1
4/17/1991	1.7	1/24/1996	1.2	8/15/2000	1.5	12/3/2003	1.3
5/21/1991	1.5	2/28/1996	1.3	1/25/2000	1.1	1/5/2004	1.2
6/25/1991	2.1	3/26/1996	1.1	2/14/2000	1.1	2/23/2004	2
7/24/1991	1.8	4/24/1996	1.8	3/20/2000	1.6	3/15/2004	1.3
8/15/1991	1.8	5/22/1996	1.3	4/24/2000	2.2	4/12/2004	1.6
9/24/1991	1.3	6/19/1996	1.9	5/24/2000	1.7	5/17/2004	1.6
10/22/1991	1.6	7/17/1996	1.4	6/21/2000	1.6	6/2/2004	1.8
11/20/1991	1.6	8/21/1996	1.4	7/17/2000	1.5	7/7/2004	1.8
12/18/1991	1	9/18/1996	1.3	8/22/2000	1.3	8/10/2004	1.2
2/25/1992	0.91	10/23/1996	1	9/20/2000	1.3	9/1/2004	1.2
3/26/1992	0.9	11/13/1996	1.4	10/23/2000	1	10/5/2004	1.3
4/22/1992	1.1	12/11/1996	1.1	11/21/2000	0.7	11/3/2004	1.5
5/19/1992	1.5	2/5/1997	1.1	12/13/2000	0.9	12/15/2004	1.3
6/24/1992	1.7	2/26/1997	1.4	1/9/2001	1.1	1/3/2005	1.3
7/27/1992	1.6	4/2/1997	0.9	2/13/2001	1.6	2/2/2005	1.2
8/24/1992	2.2	4/30/1997	1.4	3/12/2001	0.4	3/28/2005	1.1
9/22/1992	1.4	5/28/1997	1.6	4/10/2001	1.2	4/11/2005	1.9
10/20/1992	1	6/18/1997	1.6	5/9/2001	1.6	5/9/2005	1.6
11/16/1992	1.2	7/23/1997	1.3	6/6/2001	1	6/13/2005	1.9
12/15/1992	1	8/20/1997	1.2	7/9/2001	1.9	7/12/2005	2.2
1/13/1993	0.9	9/24/1997	1.1	8/14/2001	1.5	8/3/2005	1.5
3/16/1993	0.9	10/21/1997	1.1	9/19/2001	1.1	9/12/2005	1.4
4/26/1993	1.4	11/18/1997	0.8	10/11/2001	1.1	10/11/2005	1.6
5/10/1993	1.6	12/9/1997	0.7	11/7/2001	1	11/15/2005	1.1
8/2/1993	1.6	2/4/1998	1	12/4/2001	1.2	12/19/2005	1.2
9/8/1993	1.4	3/4/1998	1	1/28/2002	0.626	1/30/2006	1.1
9/29/1993	2	4/1/1998	1.5	2/19/2002	0.8058	2/22/2006	1.2
10/27/1993	1.1	4/28/1998	1.2	3/13/2002	1.017	3/13/2006	2.3
11/16/1993	1.2	6/3/1998	1.5	4/16/2002	1.4865	4/5/2006	1.2
3/2/1994	1.3	6/30/1998	1.4	5/15/2002	1.3	5/15/2006	1.5
3/15/1994	1	7/28/1998	1.4	6/10/2002	1.2	6/26/2006	1.2
4/26/1994	0.9	9/1/1998	1.7	7/17/2002	1.4	7/25/2006	1.3
6/1/1994	0.8	9/29/1998	1.4	8/8/2002	1.2	8/28/2006	1.3
8/2/1994	0.9	10/27/1998	1.7	9/12/2002	1	9/13/2006	2

* Green cells denote data used in figure for report purposes.

Table 5: IDEM TKN fixed station data from the Portage Boat Yard.

Sample Date	TSS (mg/L)	Sample Date	TSS (mg/L)	Sample Date	TSS (mg/L)	Sample Date	TSS (mg/L)
1/24/1990	11	8/31/1994	30	11/17/1998	18	10/9/2002	9
2/28/1990	24	10/4/1994	32	12/15/1998	16	11/13/2002	11
3/28/1990	32	11/14/1994	32	1/26/1999	44	12/12/2002	15
4/25/1990	31	1/18/1995	30	2/23/1999	10	1/8/2003	6
5/16/1990	69	3/7/1995	47	3/24/1999	29	3/11/2003	6
6/5/1990	28	4/25/1995	24	4/28/1999	58	4/9/2003	37
7/17/1990	24	5/24/1995	33	5/26/1999	21	5/8/2003	80
8/8/1990	36	6/26/1995	22	6/29/1999	15	6/5/2003	34
9/19/1990	23	7/26/1995	18	7/28/1999	19	7/1/2003	21
10/2/1990	31	9/7/1995	12	8/18/1999	18	8/4/2003	24
11/28/1990	240	9/26/1995	20	9/29/1999	16	9/4/2003	20
12/19/1990	30	10/25/1995	24	10/19/1999	21	10/7/2003	15
1/16/1991	14	11/15/1995	34	11/30/1999	7	11/17/2003	9
2/12/1991	21	12/21/1995	6	12/28/1999	5	12/3/2003	10
3/5/1991	92	1/24/1996	13	8/15/2000	23	1/5/2004	8
4/17/1991	184	2/28/1996	18	1/25/2000	4	2/23/2004	18
5/21/1991	44	3/26/1996	20	2/14/2000	4	3/15/2004	17
6/25/1991	28	4/24/1996	64	3/20/2000	36	4/12/2004	25
7/24/1991	25	5/22/1996	27	4/24/2000	62	5/17/2004	34
8/15/1991	19	6/19/1996	158	5/24/2000	28	6/2/2004	49
9/24/1991	38	7/17/1996	18	6/21/2000	76	7/7/2004	16
10/22/1991	15	8/21/1996	22	7/17/2000	25	8/10/2004	12
11/20/1991	86	9/18/1996	21	8/22/2000	23	9/1/2004	29
12/18/1991	8	10/23/1996	19	9/20/2000	20	10/5/2004	10
2/25/1992	26	11/13/1996	9	10/23/2000	22	11/3/2004	41
3/26/1992	19	12/11/1996	8	11/21/2000	8	12/15/2004	15
4/22/1992	34	2/5/1997	22	12/13/2000	7	1/3/2005	20
5/19/1992	31	2/26/1997	44	1/9/2001	4	2/2/2005	8
6/24/1992	32	4/2/1997	28	2/13/2001	38	3/28/2005	15
7/27/1992	40	4/30/1997	30	3/12/2001	15	4/11/2005	27
8/24/1992	41	5/28/1997	58	4/10/2001	20	5/9/2005	28
9/22/1992	33	6/18/1997	198	5/9/2001	19	6/13/2005	28
10/20/1992	20	7/23/1997	49	6/6/2001	25	7/12/2005	21
11/16/1992	15	8/20/1997	67	7/9/2001	36	8/3/2005	16
12/15/1992	10	9/24/1997	34	8/14/2001	17	9/12/2005	13
1/13/1993	9	10/21/1997	47	9/19/2001	17	10/11/2005	15
3/16/1993	24	11/18/1997	5	10/11/2001	29	11/15/2005	14
5/10/1993	21	12/9/1997	4	11/7/2001	20	12/19/2005	6
8/2/1993	20	2/4/1998	14	12/4/2001	16	1/30/2006	28
9/8/1993	48	3/4/1998	18	1/28/2002	4	2/22/2006	20
9/29/1993	70	4/1/1998	72	2/19/2002	12	3/13/2006	186
10/27/1993	41	4/28/1998	31	3/13/2002	46	4/5/2006	29
11/16/1993	47	6/3/1998	34	4/16/2002	25	5/15/2006	28
3/2/1994	10	6/30/1998	47	5/15/2002	56	6/26/2006	11
3/15/1994	28	7/28/1998	30	6/10/2002	16	7/25/2006	17
4/26/1994	11	9/1/1998	23	7/17/2002	15	8/28/2006	14
6/1/1994	20	9/29/1998	24	8/8/2002	14	9/13/2006	119
8/2/1994	20	10/27/1998	17	9/12/2002	12		

* Green cells denote data used in figure for report purposes.

Table 6: IDEM Total Suspended Solids fixed station data from the Portage Boat Yard.

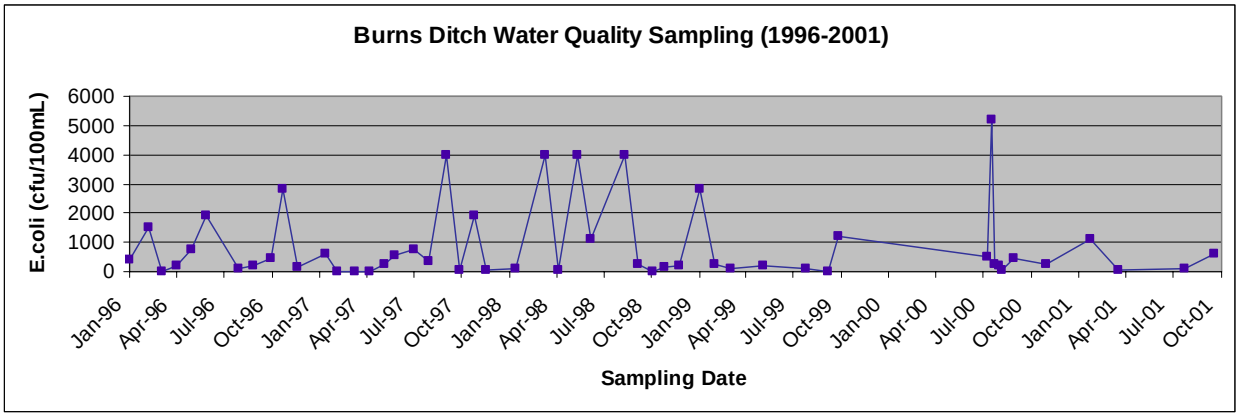

Figure 1: *E.coli* sampling results as recorded by IDEM at the Portage Boat Yard.

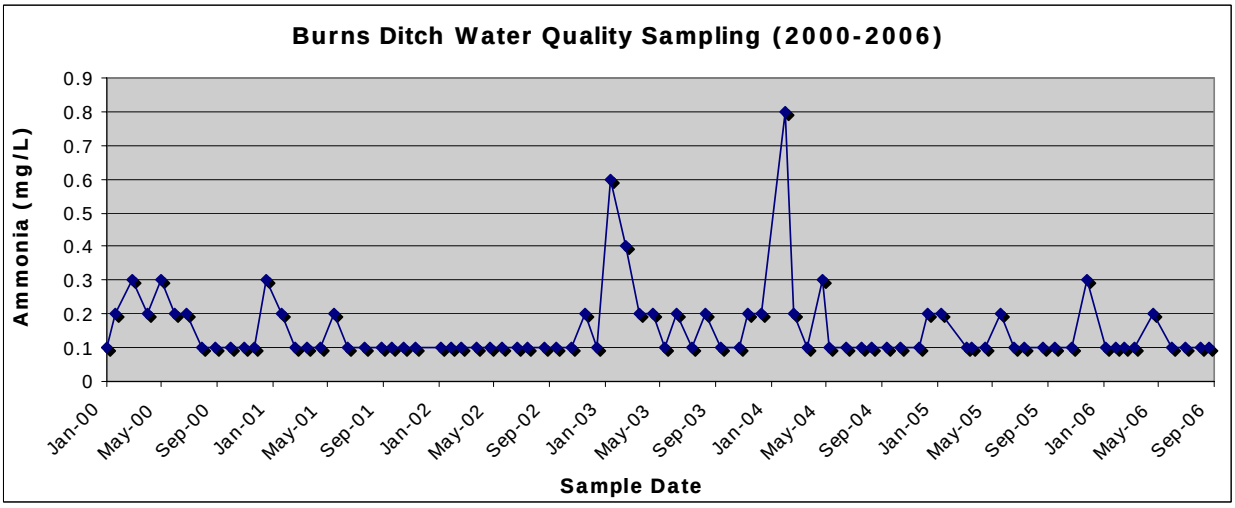

Figure 2: Ammonia sampling results as recorded by IDEM at the Portage Boat Yard.

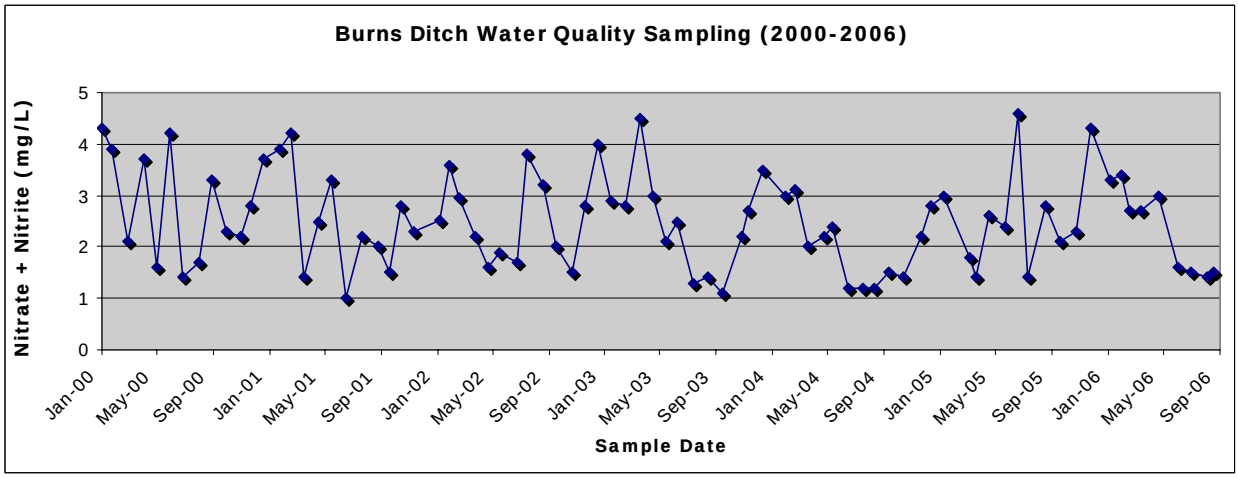

Figure 3: Nitrogen sampling results as recorded by IDEM at the Portage Boat Yard.

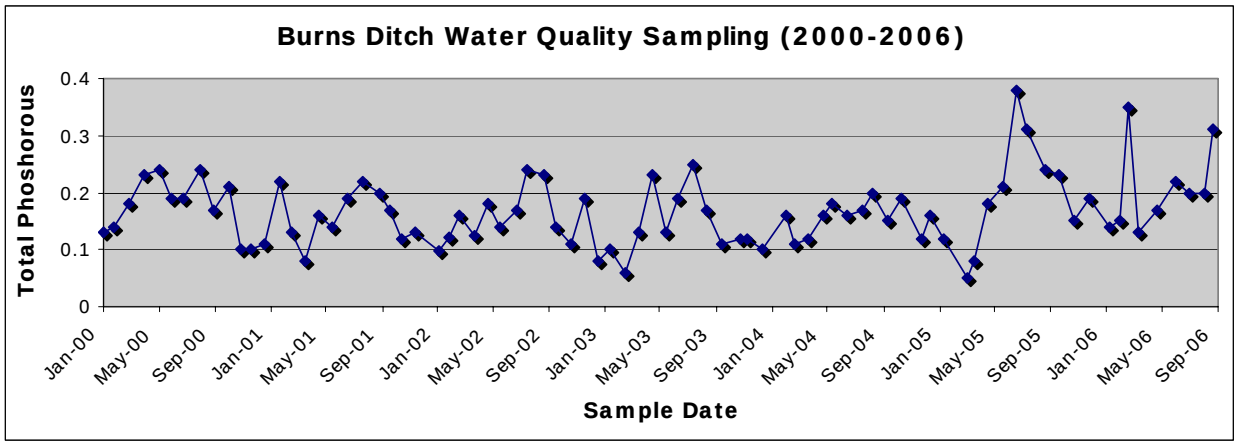

Figure 4: Total Phosphorus sample results as recorded by IDEM at the Portage Boat Yard.

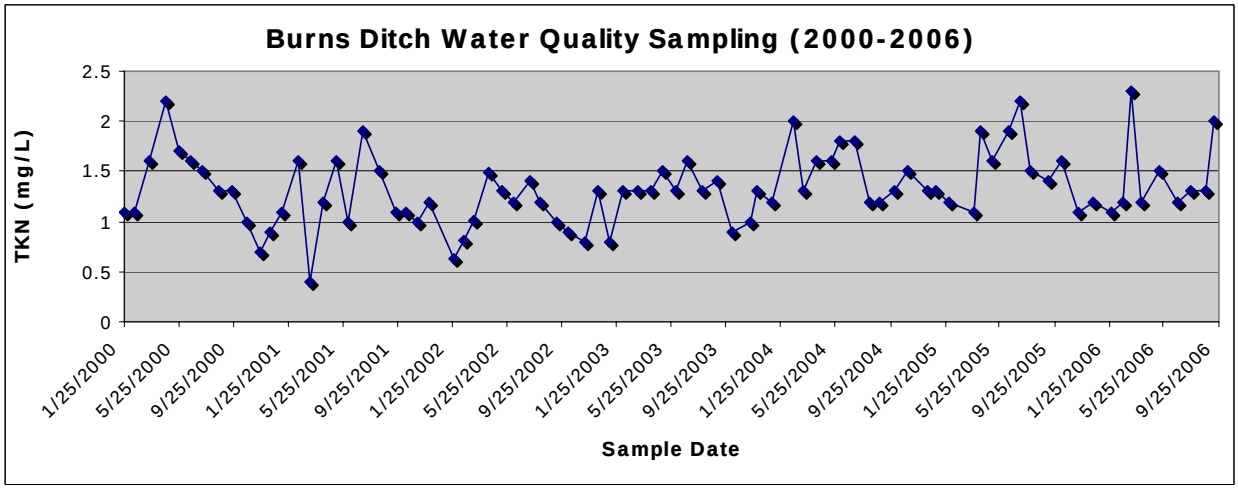

Figure 5: Total Kjeldahl Nitrogen sample results as recorded by IDEM at the Portage Boat Yard.

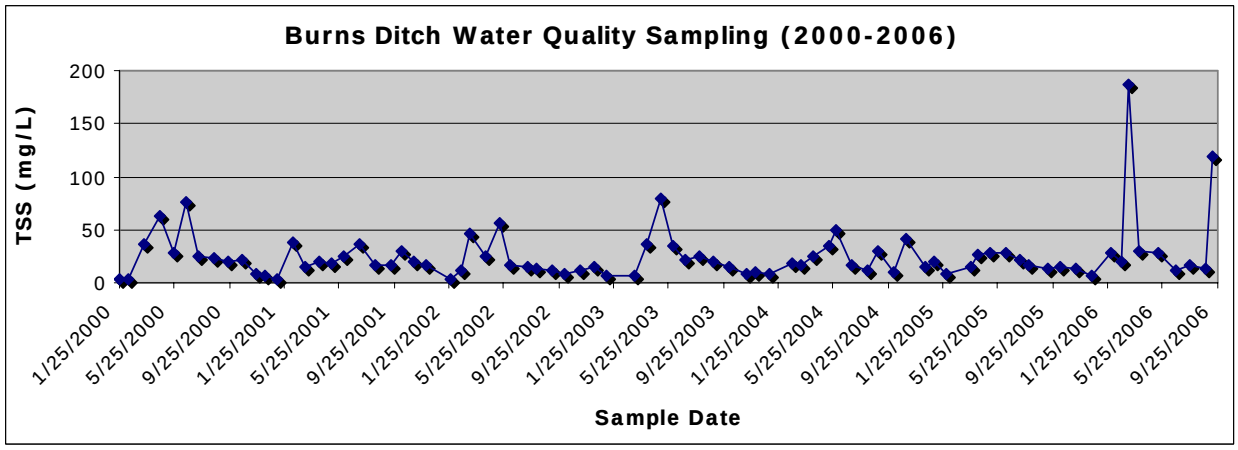

Figure 6: Total Suspended Solids sample results as recorded by IDEM at the Portage Boat Yard.

Project Name	Stream Name	Description	HUC to 14	E.coli (cfu/100mL)
2000 E Coli	Burns Ditch	SR 51 bridge, north of I-94, Exit 15, Lake Station	4040001040030	270
2000 E Coli	Burns Ditch	SR 51 bridge, north of I-94, Exit 15, Lake Station	4040001040030	980.4
2000 E Coli	Burns Ditch	SR 51 bridge, north of I-94, Exit 15, Lake Station	4040001040030	2420
2000 E Coli	Burns Ditch	SR 51 bridge, north of I-94, Exit 15, Lake Station	4040001040030	201.4
2000 E Coli	Burns Ditch	SR 51 bridge, north of I-94, Exit 15, Lake Station	4040001040030	387.3
2000 E Coli	Little Calumet River	SR 53 bridge, S of Exit 10 I-80	4040001040020	9.7
2000 E Coli	Little Calumet River	SR 53 bridge, S of Exit 10 I-80	4040001040020	1203.3
2000 E Coli	Little Calumet River	SR 53 bridge, S of Exit 10 I-80	4040001040020	1413.6
2000 E Coli	Little Calumet River	SR 53 bridge, S of Exit 10 I-80	4040001040020	101.7
2000 E Coli	Little Calumet River	SR 53 bridge, S of Exit 10 I-80	4040001040020	107.6
2000 E Coli	Little Calumet River	SR 912 S Bound, S of I-80-95 Exit 5, Highland	7120003030050	3654
2000 E Coli	Little Calumet River	SR 912 S Bound, S of I-80-95 Exit 5, Highland	7120003030050	770.1
2000 E Coli	Little Calumet River	SR 912 S Bound, S of I-80-95 Exit 5, Highland	7120003030050	1986.28
2000 E Coli	Little Calumet River	SR 912 S Bound, S of I-80-95 Exit 5, Highland	7120003030050	2420
2000 E Coli	Little Calumet River	SR 912 S Bound, S of I-80-95 Exit 5, Highland	7120003030050	5475

Table 7: IDEM sample results for locations along the Little Calumet river in the Summer of 2000.

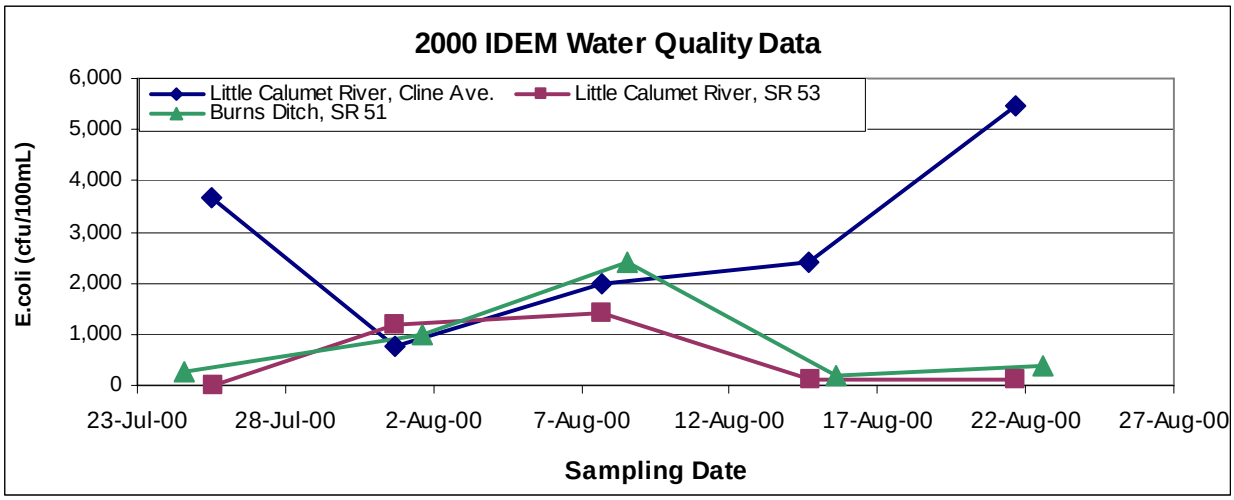

Figure 7: IDEM sample results for *E.coli* found at three additional sampling locations.