

US EPA Environmental Technology Initiative

Onsite Wastewater Technology Testing Report



Massachusetts
Alternative
Septic
System
Test
Center

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-- August, 2004 --

MicroFAST®

Technology Vendor

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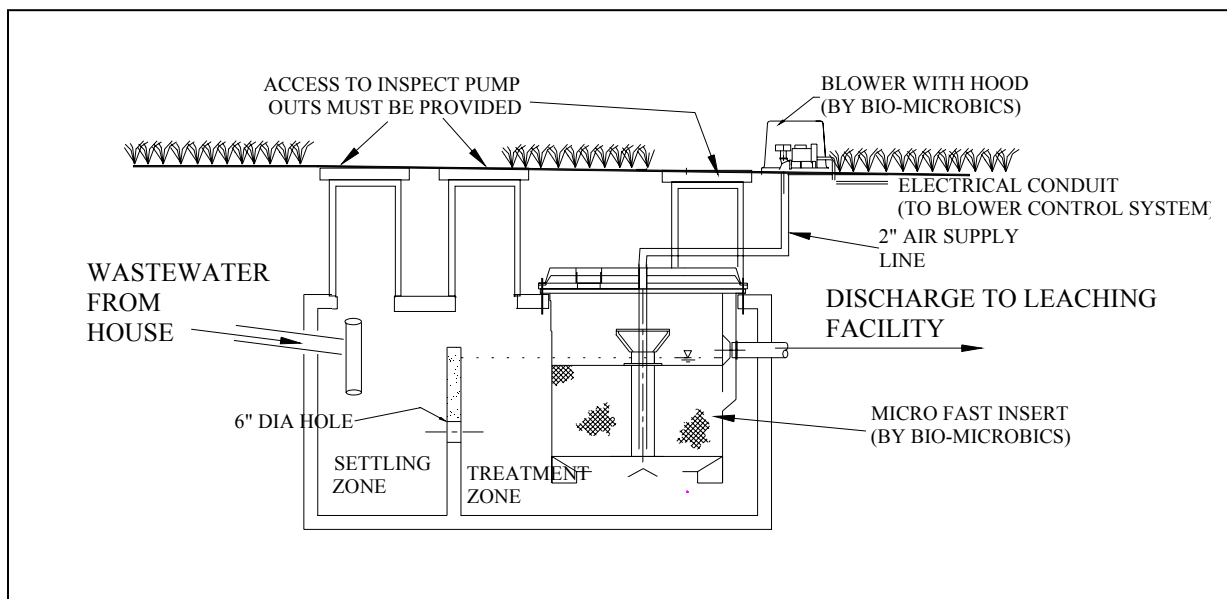
1. Technology description

Components

The MicroFAST® system consists of a 1,500 gallon septic tank, a blower and a control box. The 1,500- gallon septic tank is partitioned into a 500 gallon settling tank and 1,000 gallon treatment chamber. The 500 gallon chamber acts to retain solids. The 1,000 gallon chamber contains a plastic treatment unit which consists of plastic sheet media submerged in the chamber liquid. A 1/3 hp blower mounted in a housing on the ground adjacent to the treatment unit blows air through a patented airlift technology into the unit's submerged media for aerobic treatment. A control panel with audio and visual alarms is usually mounted nearby.

Siting Considerations and installation notes

MicroFAST® system component installation is similar to a standard septic tank system. Installers should receive training and oversight from the manufacturer. Designers should consider locating the blower unit to minimize intrusion of sound from the blower. The control panel should be accessible for inspection and maintenance.



Hydraulic Flow description

Flow through the technology is by gravity. Wastewater flows from the house sewer into the 500 gallon settling chamber. Solids settle and collect in this chamber. Water then flows through an opening at mid-depth in the chamber separation baffle into the second chamber which contains the FAST module. Air is blown continuously into the treatment module through the airlift mechanism that pulls wastewater from the bottom and creates circulation of the liquid within the module. A portion of the air-lifted liquid flows by a small trough back toward the 500 gallon settling chamber for anoxic treatment (denitrification). As excess biosolids are created they settle to the bottom of the treatment chamber. Treated effluent flows from the FAST module by gravity to the soil absorption system or alternatively to a pump chamber if pressure dosing is required.

Theory of operation

FAST is an acronym for Fixed Activated Sludge Treatment, an aerobic method that injects air into the wastewater to sustain both suspended and attached microbial populations. Biological organisms remove organic contaminants and also nitrify ammonium (NH_4) to nitrate (NO_3) in the wastewater. A portion of the liquid in the FAST module is lifted to a collection trough that leads back toward the initial chamber to an area that is designed to remain anoxic. The nitrate is reduced to nitrogen gas (denitrification) that is released harmlessly to the atmosphere.

2. Costs

Installation

The manufacturer's suggested retail costs for the components of MicroFAST 0.5 total \$2995. The manufacturer estimates that the components plus installation are \$3,500 more than a conventional system. Readers should use the above estimates as approximations of average costs, because the cost of installation for any treatment technology are very dependent upon the particular site conditions.

Design and permitting costs vary with the site conditions and local permitting requirements.

Electric usage

Average electric usage by the three units for the period 5/10/99 to 9/20/00, (9/20/00 was when Unit 2 was changed to a blower with a timed on-off cycle) was 8.58 kW per day per unit or about \$.85 per day at \$.10 per kW; monthly this comes to \$25.62 per month, and \$307.44 per year.

Maintenance

Massachusetts requires that all alternative technologies have a service contract in force for the life of the installation. Costs for this service vary but are approximately \$400 per year. The service includes inspection of blower, alarms and septic tank residuals depth. Septic tanks are pumped to remove accumulated residuals at a frequency based on usage, but an approximate cost for this unit is \$60 - \$90 per annum assuming a 2-3 year pump out cycle. This technology required pumping after 12 months due to sludge accumulation (refer to Section 6, below).

Replacement parts

Blowers carry a two-year warranty and replacement cost is (\$450). An extended ten-year warranty is available at additional cost. FAST systems are UL-CE-CSA certified for electrical safety.

Other costs

Quarterly effluent quality monitoring is required for some permits at a cost of \$300 or more annually. Following an initial period specified in the approval letter, monitoring may be reduced by requesting a reduction from MA DEP and/or the local approving authority.

3. ETI Testing Protocol Synopsis

Technology operation

The testing duration was for two years. The technology was installed in triplicate, with identical components. The MicroFAST® received wastewater at the rate of 330 gallons per day, throughout the two-year testing period. The 330 gallon per day volume is the Massachusetts Department of Environmental Protection (MA DEP) minimum design flow for a new residential house of three bedrooms or less.

Delivery of the wastewater was apportioned into fifteen equal doses of 22 gallons each, on a schedule which was designed to mimic the pattern of wastewater use in a typical residence (35% of flow in the morning; 25% flow during midday; 40% in the evening; see ETI QAPP and NSF/ANSI Standard 40). Periodic calibration of dose volumes delivered to each technology ensured equal dosing to each replicate and to different technologies.

Effluent from the technology flowed to a distribution box with four outlets. Three of the four outlets directed effluent to a facility sewer, and the fourth conveyed treated effluent to a one-quarter sized soil absorption system (SAS), designed to loading limits of MA DEP Title 5 rules. Lysimeters were installed at depths of one, two and five feet beneath the SAS to collect leachate for analysis. A polyethylene liner with sump collected all leachate from the three technology replicates.

Technology Monitoring

The technologies were sampled of at two-week intervals. During each sampling event, technology influent wastewater was sampled at the common source. Technology effluent was sampled at the distribution box. Influent wastewater and technology effluent were sampled using automated samplers, programmed to obtain fifteen flow-weighted samples composited over a twenty-four hour period. Initiation of the individual samples was timed to coincide with the discharge for each technology.

Composite samples were kept refrigerated at 4 degrees centigrade either by ice packed in the sampler or by use of a refrigerated sampler. Analysis for pH and specific conductance were conducted at MAASTC during sample processing. Subsamples for BOD₅ and fecal coliform were sent to the Barnstable County Department of Health and the Environment laboratory. Subsamples for nitrogen and phosphorus analysis: ammonium (NH₄), nitrate plus nitrite (NO_x), dissolved organic nitrogen, (DON), particulate organic nitrogen (PON), alkalinity, orthophosphate (PO₄) and total phosphorus (TP); were sent to the Coastal Systems Laboratory at the School for Marine Science University of Massachusetts, Dartmouth (SMAST).

Electrical usage was measured by a single electric meter for all three units and recorded monthly. Kilowatt usage was then divided by three to calculate individual unit use.

Mechanical and other non-quantitative performance monitoring

Alarms, mechanical failures, unusual sounds, and smells were recorded in a logbook as they occurred. Restorative measures taken by the technology vendor to address non-normal conditions were also recorded and appear in Section 6 “Operation and Maintenance” section of this report.

4. Testing Objectives

The MicroFAST® was tested to demonstrate nitrogen removal for use in Massachusetts watersheds which are nitrogen sensitive. Technologies must be able to demonstrate reduction of average total nitrogen levels to below 19 mg/l.

5. Contaminant Removal Performance Summary for the MicroFAST®

Note: Technologies were allowed a start-up period, when measures of removal performance would be excluded from the test period. We define the start-up period as ending when the technology attains effluent levels below 30 mg/l BOD₅; 30 mg/l TSS; and 19 mg/l TN. These levels are performance thresholds for alternative systems set by MA DEP.

The data from all three MicroFAST® units from start-up at 5/10/99 until the 6/09/99 sample event was excluded under the start-up period rules. Data from the final sample event from Unit 3 was also excluded due to the blower shutting down because of a loose wire shortly before the last sampling event.

Technology operating history

The three MicroFAST® units were started up on 5/10/99. Units 1 and 3 were operated continuously for the two-year test period with a last sampling date of 5/08/01. Unit 2 ran as a replicate until 9/21/00, when the blower was put on a timer control to reduce the air supply on time from continuous operation to a cycle of 30 minutes on, 30 minutes off schedule. Unit 2 was also monitored until 5/08/01.

Biochemical Oxygen Demand (BOD₅) removal

BOD₅ measured in the technology effluent averaged 22.6 mg/l (median, 21.0 mg/l) over the monitoring period, versus 168 mg/l for influent wastewater, representing a removal rate of 86.7 per cent (Table 1). For comparison the regulatory threshold for BOD₅ is 30 mg/l. Unit 3 had the highest number of excursions above 30 mg/l: 12 while Units 1 & 2 had 9 and 7 instances, respectively.

Standard deviation, a reflection of the variability of the performance was moderate but similar for all three replicates. The similarity between replicate units suggests that the range of the majority of the performance data, between 10 mg/l and about 32 mg/l, was descriptive of this design’s performance.

Discounting the one measurement (250 mg/l, 5/08/01) on Unit 3 that occurred after the blower for that unit had shut down; maximum values were similar in the three replicates, 75 mg/l, 63 mg/l and 80 mg/l (Table 1).

Table 1. Biochemical Oxygen Demand (5-day) removal performance of the MicroFAST® system during testing at the Massachusetts Alternative Septic System Test Center – May, 1999-May 2001.

BOD (mg/l)	Replicate 1	Replicate 2	Replicate 3	Influent	Mean	%Removal
Average	21.9	22.2	25.0	171.5	23.2	86.5%
Median	21.0	19.0	22.0	165.0		
Standard Deviation	12.7	13.6	13.1	55.4		
Maximum	75.0	63.0	80.0	326.0		
Minimum	4.0	4.0	4.0	96.0		
Count	44	28	43	44		
Count > 30 mg/l	8	6	13			
Avg. to 6/14/00	14.6	18.0	18.5	173.6	17.0	90.2%
Avg after 6/14/00	28.6	34.9	31.3	169.7	30.6	82.0%

BOD removal performance over the two-year test period was better in the first 12 months than the second (Table 1, bottom), the aggregate removal performance dropped from 90.2% to 82.0% even though the strength of the influent BOD was somewhat lower in the second year (174 mg/l versus 170 mg/l). The second year average for Units 2 & 3 exceeded the 30 mg/l limit. This deterioration of removal performance is likely due to sludge buildup within the septic tank, which began to affect performance about 6/00. Sludge was removed from all three systems on 9/21/00 (see note below on sludge accretion and removal) by pumping 1,000 gallons from each unit. Sludge build up appeared to affect the TSS more sharply than BOD.

Total Suspended Solids (TSS) removal

TSS measured in the technology effluent averaged 18.2 mg/l over the monitoring period, versus 161 mg/l for influent wastewater, representing a removal rate of 88.7 per cent (Table 2). The regulatory threshold is 30 mg/l. Performance for the first 12 months was more than twice as good during the first year when compared with the second year, 10.4 mg/l versus 27.7 mg/l (Table 2, bottom). This decline may be due to the residuals build up mentioned above but also may reflect the 44 percent increase in influent wastewater TSS levels for year two (132 mg/l, year one 190 mg/l, year two). Considering all three units, the number of times TSS measurements exceeded the threshold 30 mg/l level was 15 or 13 percent (15/115).

The maximum values for Units 2 & 3 occurred during the period when residuals levels in the septic tank had built up to the point where solids were entering the second chamber and exiting in the technology effluent. Our data indicate that as the unit reaches its maximum design load, annual pumping may be necessary to maintain an acceptable level of performance.

Table 2. Total Suspended Solids (TSS) removal performance of the MicroFAST® system during testing at the Massachusetts Alternative Septic System Test Center – May, 1999- May 2001.

TSS (mg/l)	Replicate 1	Replicate 2	Replicate 3	Influent	Mean	%Removal
Average	16.5	21.9	17.7	161	18.2	88.7%
Median	16.3	11.0	12.0	160		
Standard Deviation	9.2	25.0	17.7	60.6		
Maximum	42.0	122.0	98.0	330		
Minimum	4.0	4.0	3.3	49		
Count	44	28	43	43		
Count > 30 mg/l	3	7	5			
Avg. to 6/14/00	10.6	11.9	8.8	132	10.4	92.1%
Avg after 6/14/00	21.8	52.0	26.1	190	27.7	85.4%

Nitrogen removal

Total nitrogen (TN) measured in the technology effluent averaged 17.4 mg/l over the monitoring period (median, 17.2 mg/l) versus 35.5 mg/l for influent wastewater, representing a removal rate of 51.5 percent (Table 3). For reference, the regulatory benchmark in Massachusetts is 19 mg/l. Average removal was very similar for all three units, however Unit 1 exceeded 19 mg/l more frequently than Units 2&3: 21, 7, 15 times, respectively.

A reduction in the treatment of this unit for nitrogen appeared to coincide with reductions in performance for BOD and TSS. Again, these reductions in performance appear related to the buildup of residuals in the tanks. Separately analyzing data collected before June 14, 2000 and after show nearly a 10% higher performance prior to the buildup of residuals.

Table 3. Total Nitrogen removal performance of the MicroFAST® system during testing at the Massachusetts Alternative Septic System Test Center – May, 1999- May 2001.

Total Nitrogen(mg/l)	Replicate 1	Replicate 2	Replicate 3	Influent	Mean	%Removal
Average	17.6	16.3	17.8	35.5	17.4	51.0%
Median	18.7	16.4	17.0	34.5		
Standard Deviation	4.3	4.6	5.0	3.6		
Maximum	28.5	25.6	36.5	43.8		
Minimum	10.4	9.0	9.2	28.6		
Count	45	29	45	45		
Count > 19 mg/l	20	7	15			
Avg. to 6/14/00	16.1	15.0	15.7	34.5	15.6	54.8%
Avg after 6/14/00	19.0	20.5	19.8	36.4	19.9	45.2%

Pathogen removal

Reduction of fecal coliform organisms by the treatment technology is used as an indicator of pathogen removal performance. Fecal coliform in the influent averaged (geometric mean) 2.7×10^6 colonies per 100 ml (Table 5). Effluent from the FAST® units averaged 6.6×10^4 colonies per 100 ml, amounting to a reduction of 98 per cent.

Additional reductions in pathogens can be obtained by vendors of alternative onsite technologies by post treatment with ultraviolet light, ozonation or chlorination.

Table 4. Fecal Coliform removal performance of the MicroFAST® system during testing at the Massachusetts Alternative Septic System Test Center – May, 1999- May 2001.

Fecal Coliform CFU/100 ml	Replicate 1	Replicate 2	Replicate 3	Influent	Mean	%Removal
Log Mean	6.9E+04	4.9E+04	8.7E+04	2.7E+06	6.6E+04	98
Maximum	1.3E+06	3.3E+05	1.4E+06	2.2E+07		
Minimum	1.0E+04	9.0E+03	5.0E+03	1.0E+05		

6. Operation and Maintenance Monitoring – MicroFAST®

MicroFAST®

Mechanical Components

The blower on Unit 3 failed in the last week of testing due to a loose wire. The control/alarm panel on Unit 2 did not function properly in the first week of operation and was replaced. The timer unit for the blower installed on Unit 2 failed in the first week of operation.

Noise

The primary source of noise from the system is the blower. Noise levels were measured on 2/27/00 using a Quest Model 2700 Sound Level Meter calibrated by factor on 2/23/00 (NIST Traceable) using slow response and A weighting. Levels were recorded 20 feet from the unit 4 feet above grade. Recorded levels averaged 46 db. These levels compare to background levels at the site on that date of about 39 db.

Ease of maintenance

The blower unit is above ground and easy to access by removing the housing cover.

Solids removal

Frequency of pumping septic tank solids is dependent upon the rate of wastewater use in the residence. At MASSTC the wastewater flow to the MicroFAST units was 330 gallons

per day. At that loading rate, solids accumulation in both the initial and secondary chambers of the septic tank began to interfere with treatment performance after 13 months of operation. We would suggest a one-year solids pumping interval for these units at that loading rate. Households with lower loading rates would have longer intervals between pumping events. The frequency for residuals removal in any situation should be determined by regular measurement of the residuals buildup in the tank.

8. Vendor's Comments

The vendor wished to distinguish between a failure of equipment and the occurrence of a loose wire which was the reason for the blower ceasing on Unit 3 near the end of the test. Additionally, the vendor comments that the failure of the control/alarm panel noted for unit 2 would have been covered under the warranty.

APPENDIX 1

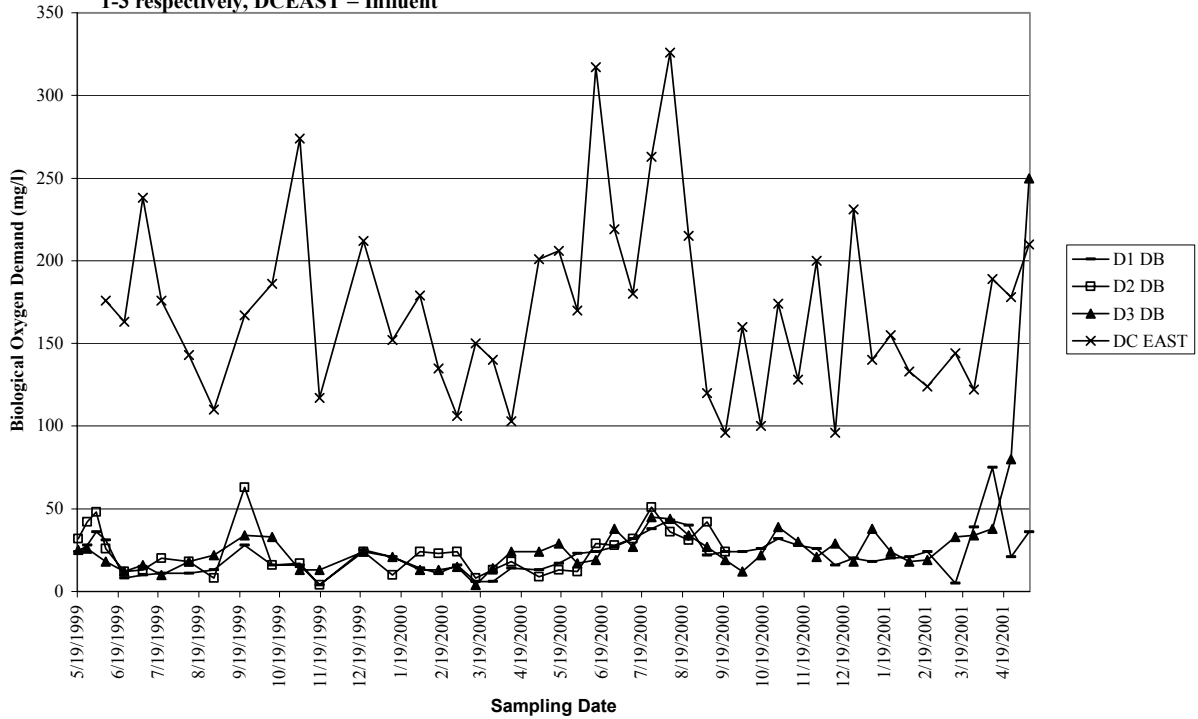
Graphs of Major Wastewater Constituents At Discharge

MicroFAST®

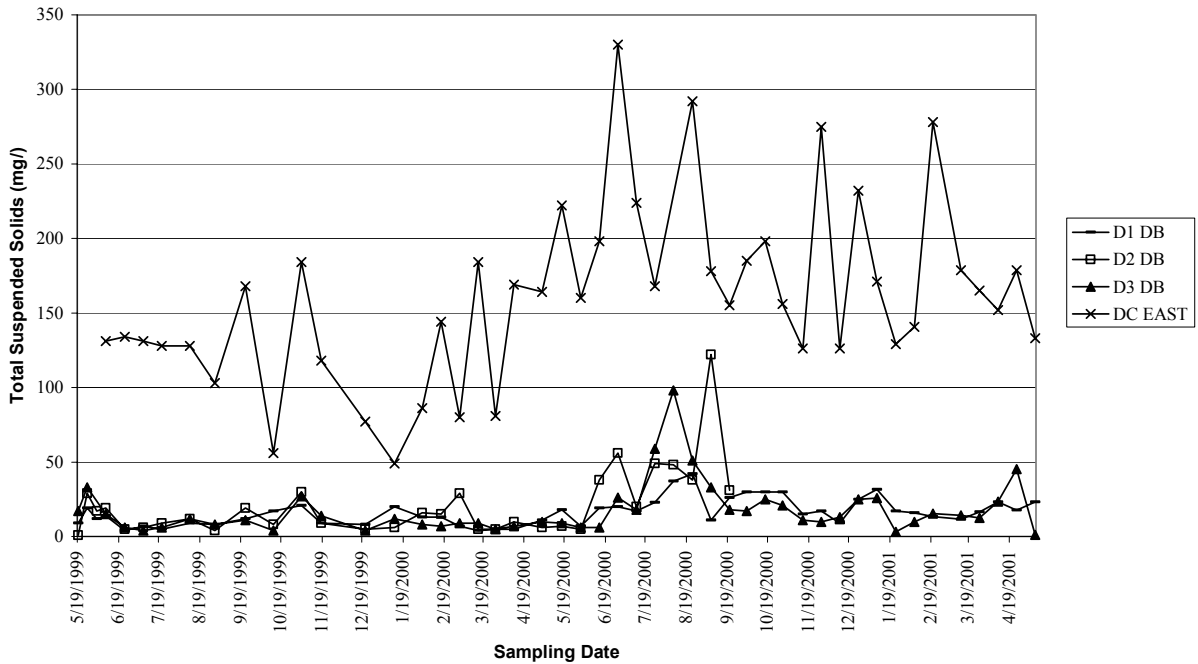
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Shawnee, KS 66227

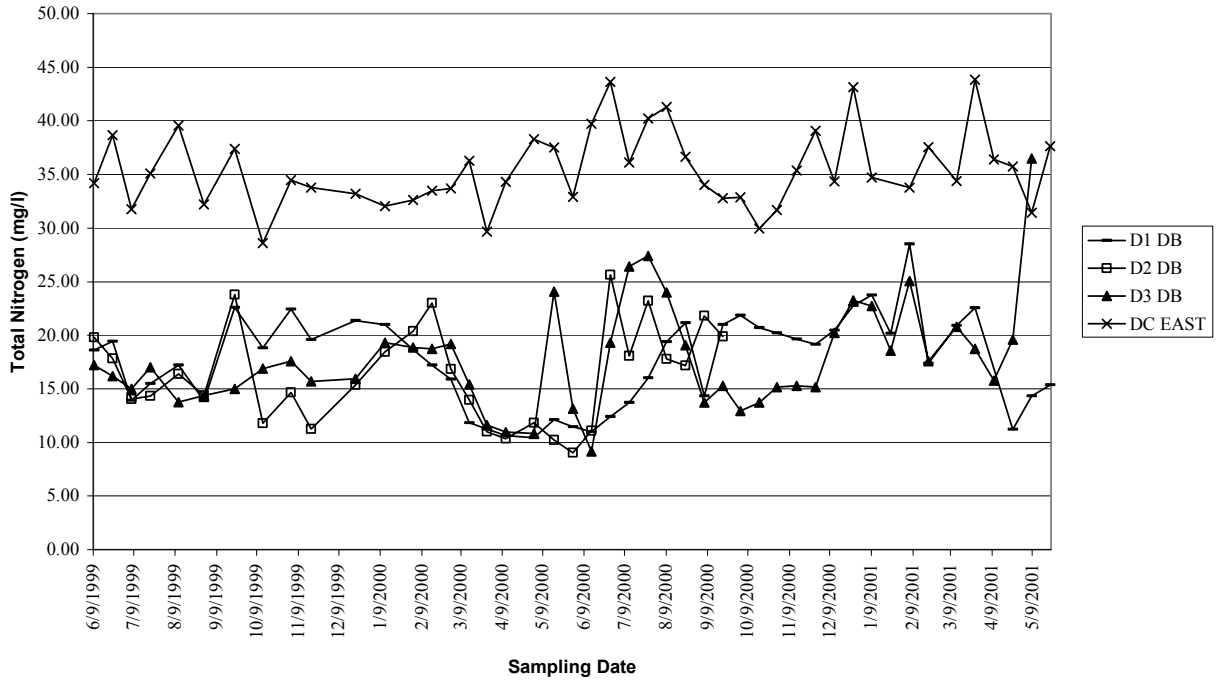
BOD(5day) Concentrations of MicroFAST Discharge vs. Influent During Testing at the Massachusetts Alternative Septic System Test Center May 10, 1999 - May 8, 2001. D1 DB, D2 DB, D3 DB = Replicates 1-3 respectively, DCEAST = Influent



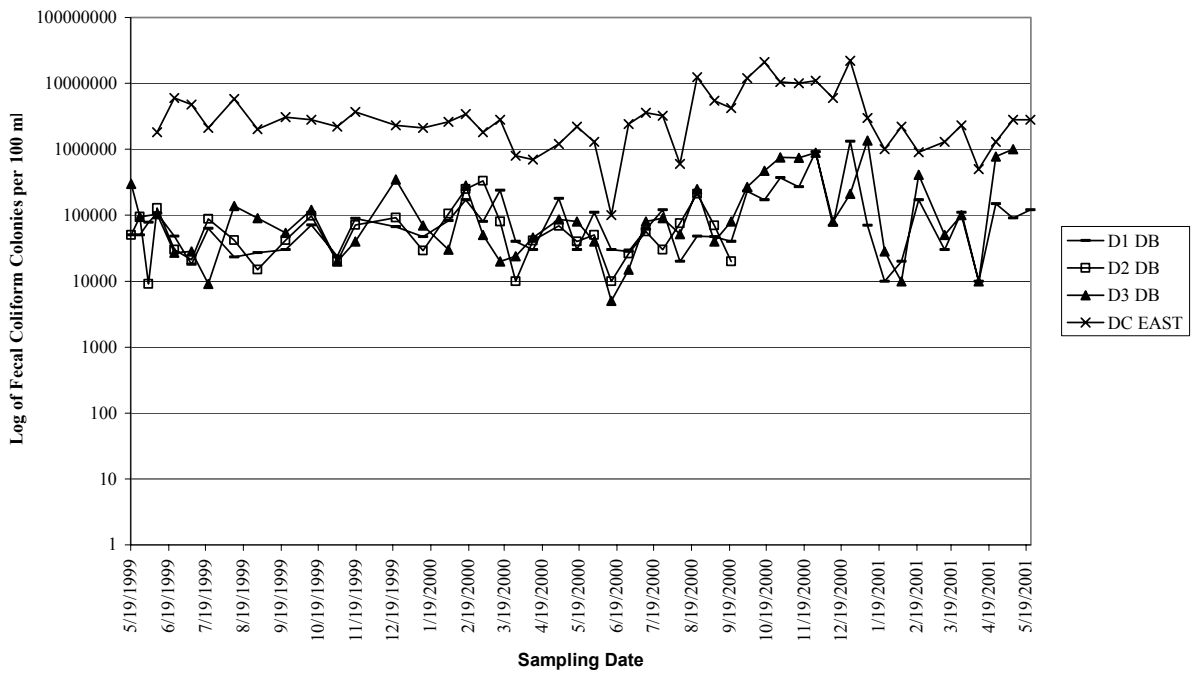
Total Suspended Solids(TSS) Concentrations of MicroFAST Discharge vs. Influent During Testing at the Massachusetts Alternative Septic System Test Center May 10, 1999 - May 8, 2001. D1 DB, D2 DB, D3 DB = Replicates 1-3 respectively, DCEAST = Influent



Total Nitrogen Concentrations of MicroFAST Discharge vs. Influent During Testing at the Massachusetts Alternative Septic System Test Center May 10, 1999 - May 8, 2001. D1 DB, D2 DB, D3 DB = Replicates 1-3 respectively, DCEAST = Influent



Fecal Coliform Densities in MicroFAST Discharge vs. Influent During Testing at the Massachusetts Alternative Septic System Test Center May 10, 1999 - May 8, 2001. D1 DB, D2 DB, D3 DB = Replicates 1-3 respectively, DCEAST = Influent



APPENDIX 2

Tables of All Wastewater Constituents Monitored in Conjunction with Testing

MicroFAST®

Technology Vendor

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8450 Cole Parkway
Shawnee, KS 66227

Key:

D1DB, D2DB, and D3DB represent the discharges of units #1-3 accordingly
DSU = Sump data – a composite collection in a sump situated beneath all three soil
absorption systems.

D1 1 FT, D1 2 FT, D1 5 FT – Pan lysimeters collections beneath the D1 soil
absorption system at 1 ft, 2 ft, and 5 ft respectively. Similar for system D2 and D3.

DCEAST – samples at the relevant influent location.

Location	Date	pH	Alkalinity (mg/l)	BOD5 (mg/l)	FC #/100 ml	DON (mg/l)	NH ₄ (mg/l)	NO _x (mg/l)	PON (mg/l)	Total Nitrogen (mg/l)	POC (mg/l)	PO ₄ (mg/l)	TP (mg/l)	Sp Cond (uS)	TSS (mg/l)
DC EAST	6/9/99	7.40	185.0	176.0	1.80E+06	0.3	27.5	0.00	6.4	34.2	62.2	3.5	5.4	509	131.0
DC EAST	6/23/99	7.32	187.0	163.0	6.00E+06	2.4	29.0	0.02	7.3	38.7	59.3	3.6	5.1	492	134.0
DC EAST	7/7/99	7.18	169.0	238.0	4.80E+06	0.5	23.5	0.05	7.7	31.8	75.4	3.8	4.9	431	131.0
DC EAST	7/21/99	7.47	193.0	176.0	2.10E+06	0.7	28.5	0.08	5.9	35.1	57.7	3.9	5.5	602	128.0
DC EAST	8/11/99	7.33	201.0	143.0	5.80E+06	1.5	31.5	0.08	6.5	39.6	57.8	4.5	5.7	570	128.0
DC EAST	8/30/99	7.36	172.0	110.0	2.00E+06	1.6	25.0	0.18	5.5	32.2	47.7	3.6	6.0	537	103.0
DC EAST	9/22/99	7.42	158.0	167.0	3.10E+06	1.2	27.4	0.00	8.8	37.4	74.8	3.2	5.1	534	168.0
DC EAST	10/13/99	7.25	184.0	186.0	2.80E+06	0.5	25.0	0.00	3.1	28.6	28.1	3.2	4.9	460	56.0
DC EAST	11/3/99	7.30	179.0	274.0	2.20E+06	2.5	23.8	0.06	8.1	34.5	83.1	3.1	4.2	550	184.0
DC EAST	11/18/99	7.36	185.0	117.0	3.70E+06	1.5	26.2	0.05	6.0	33.8	57.3	3.2	5.1	579	118.0
DC EAST	12/14/99	7.33	168.0	192.0	2.50E+06	0.2	27.1	0.04	7.8	35.2	71.2	3.5	4.9	531	175.0
DC EAST	12/21/99	7.39	242.0	212.0	2.30E+06	2.2	27.2	0.10	3.8	33.2	34.6	3.7	5.7	556	77.0
DC EAST	1/12/00	7.42	183.0	152.0	2.10E+06	0.6	28.0	0.04	3.5	32.1	27.4	3.8	5.3	588	49.0
DC EAST	2/2/00	7.30	152.0	179.0	2.60E+06	5.3	23.4	0.03	3.9	32.6	40.4	3.5		514	86.0
DC EAST	2/16/00	7.52	162.0	135.0	3.40E+06	2.7	23.1	0.05	7.6	33.5	75.8	2.9		532	144.0
DC EAST	2/23/00		165.0	129.0	5.00E+05	3.5	21.7	0.03	5.4	30.6	50.3	2.8			107.0
DC EAST	3/1/00	7.45	147.0	106.0	1.80E+06	3.7	22.9	0.04	7.0	33.7	69.5	3.0	5.3	572	80.0
DC EAST	3/8/00	7.17	168.0	187.0	3.50E+06	2.7	24.9	0.02	8.4	36.1	88.1	3.9	5.6	563	182.0
DC EAST	3/15/00	7.27	209.0	150.0	2.80E+06	2.5	23.8	0.04	9.9	36.3	92.6	3.4		570	184.0
DC EAST QA	3/15/00	7.32	176.0	145.0	1.46E+06	3.6	23.2	0.06	7.2	34.0	59.3	3.5	6.0	600	130.0
DC EAST	3/28/00	7.55	159.0	140.0	8.00E+05	2.3	22.4	0.08	5.0	29.7	36.0	3.1	5.3	531	81.0
DC EAST	4/11/00	7.49	168.0	103.0	7.00E+05	3.5	22.9	0.01	7.9	34.3	70.8	3.1	5.2	584	169.0
DC EAST	4/19/00	7.78	162.0	297.0	6.00E+05	4.4	23.5	0.04	7.4	35.3	76.2	3.6		556	189.0
DC EAST	5/2/00	7.38	162.0	201.0	1.20E+06	4.4	26.5	0.04	7.4	38.3	76.2	3.6	7.4	552	164.0
DC EAST	5/11/00	7.33	150.0	205.0	3.50E+06	2.7	21.4	0.01				2.6	4.0	531	216.0
DC EAST	5/17/00	7.42	161.0	206.0	2.20E+06	3.7	21.6	0.09	12.1	37.5	102.3	2.8	5.2	570	222.0
DC EAST	5/31/00	7.37	170.0	170.0	1.30E+06	4.8	20.7	0.17	7.3	32.9	70.6	2.7	5.0	564	160.0
DC EAST	6/14/00	7.09	130.0	317.0	1.00E+05	0.9	30.1	0.12	8.7	39.7	93.1	3.9	5.7	600	198.0
DC EAST QA	6/14/00	7.09	51.2	365.0	2.00E+05	1.3	28.6	0.19	8.3	38.3	79.2	3.7	5.7	600	169.0
DC EAST	6/28/00	7.28	158.0	219.0	2.40E+06	5.9	25.0	0.13	12.6	43.6	164.4	3.3	4.3	657	330.0
DC EAST	7/12/00	7.02	58.8	180.0	3.60E+06	1.7	23.8	0.09	10.5	36.1	105.1	2.8	3.9	532	224.0
DC EAST	7/26/00	7.39	192.0	263.0	3.20E+06	5.0	28.6	0.03	6.6	40.2	54.9	4.2	5.9	675	168.0
DC EAST	8/9/00	7.25	168.0	326.0	6.00E+05	4.4	21.1	0.08	15.8	41.3	366.0	3.2		608	
DC EAST	8/23/00	7.25	150.0	215.0	1.24E+07	1.6	23.3	0.03	11.7	36.7	143.2	3.2	4.9	638	292.0
DC EAST	9/6/00	7.45	140.0	120.0	5.50E+06	1.4	21.8	0.03	10.8	34.0	81.0	3.0	3.8	599	178.0
DC EAST	9/20/00	7.41	138.0	96.0	4.20E+06	1.8	22.0	0.02	8.9	32.8	72.9	3.2	5.3	547	155.0
DC EAST QA	9/20/00	7.38	136.0	97.0	2.13E+06	1.2	22.4	0.03	11.3	35.0	99.9	3.4	5.1	545	209.0
DC EAST	10/3/00	7.28	141.0	160.0	1.21E+07	1.1	24.0	0.03	7.8	32.9	89.0	3.6	4.9	607	185.0
DC EAST	10/17/00	7.28	178.0	100.0	2.09E+07	1.4	19.3	0.16	9.2	30.0	89.8	2.6	4.7	525	198.0

Location	Date	pH	Alkalinity (mg/l)	BOD5 (mg/l)	FC #/100 ml	DON (mg/l)	NH ₄ (mg/l)	NO _x (mg/l)	PON (mg/l)	Total Nitrogen (mg/l)	POC (mg/l)	PO ₄ (mg/l)	TP (mg/l)	Sp Cond (uS)	TSS (mg/l)
DC EAST	10/30/00	7.35	155.5	174.0	1.05E+07	3.8	20.6	0.04	7.3	31.7	69.7	2.8	3.4	461	156.0
DC EAST	11/14/00	7.66	163.0	128.0	1.00E+07	1.9	25.9	0.03	7.5	35.4	59.8	3.1	5.2	482	126.0
DC EAST	11/28/00	7.49	183.5	200.0	1.10E+07	4.2	25.2	0.01	9.7	39.1	145.8	3.2	5.2	550	275.0
DC EAST	12/12/00	7.51	182.0	96.0	6.00E+06	1.3	26.6	0.05	6.4	34.4	62.3	3.0	4.3	569	126.0
DC EAST	12/26/00	7.42	183.0	231.0	2.20E+07	0.6	30.5	0.01	12.0	43.1	104.7	3.6	6.1	547	232.0
DC EAST	1/9/01	7.63	181.0	140.0	3.00E+06	5.5	21.5	0.07	7.6	34.7	73.8	3.8	5.6	561	171.0
DC EAST	1/23/01	7.47	185.0	120.0	1.00E+06		28.4	0.04	6.5	35.0	61.9	3.7	4.8	523	87.5
DC EAST	2/6/01	7.49	181.5	133.0	2.20E+06	3.4	23.5	0.07	6.8	33.8	73.4	3.4	5.0	785	140.5
DC EAST	2/20/01	7.42	185.5	124.0	9.00E+05	3.6	24.3	0.07	9.5	37.5	140.6	3.4	4.9	517	278.2
DC EAST QA	2/20/01	7.43	186.0	151.0	1.00E+06	5.2	23.7	0.05	7.9	36.9	85.9	3.6	5.2	519	197.2
DC EAST	3/13/01	7.39	168.0	93.0	1.30E+06	2.7	23.1	0.14	8.4	34.4	82.4	3.6	5.6	972	178.5
DC EAST	3/27/01	7.50	177.0	122.0	2.30E+06	5.5	29.3	0.01	9.0	43.8	82.0	3.6	5.5	821	165.0
DC EAST QA	3/27/01	7.51	177.0	122.0	9.00E+05	4.2	29.2	0.06	8.9	42.3	82.8	3.5	5.6	830	118.5
DC EAST	4/10/01	7.58	182.5	189.0	5.00E+05	4.1	25.2	0.06	7.1	36.4	74.5	3.9	5.0	499	152.0
DC EAST	4/24/01	7.48	192.0	178.0	1.30E+06	1.9	26.3	0.05	7.5	35.7	73.9	3.3	4.2	546	178.5
DC EAST	5/8/01	7.44	173.5	210.0	2.80E+06	1.5	24.6	0.06	5.2	31.4	52.3	3.3	4.8	516	110.3
DC EAST	5/22/01	7.41	173.0	140.0	2.80E+06	2.9	26.7	0.05	8.0	37.6	73.8	3.9	4.1	499	170.3
DC EAST	6/5/01	7.44	183.5	270.0	1.20E+06	1.2	26.5	0.01	5.5	33.2	41.1	3.3	4.8	536	91.3
DC EAST	6/19/01	7.43	185.0	185.0	9.20E+06	1.5	29.4	0.05	6.7	37.7	60.2	3.3	3.5	525	126.7
DC EAST	7/2/01	7.39	180.5	256.0	1.27E+07	2.5	22.4	0.07	10.2	35.1	117.3	3.2	4.7	550	258.4
DC EAST	7/17/01	7.31	188.0	302.0	4.00E+06	2.2	24.6	0.03	12.8	39.5	152.7	3.5	4.2	536	328.7
DC EAST	7/31/01	7.39	166.5	122.0	4.30E+06	1.1	22.6	0.08	5.8	29.6	44.4	2.8	3.7	474	98.7
DC EAST	8/14/01	7.25	178.5	260.0	5.60E+06	0.7	24.8	0.13				3.4	3.8	540	132.0
DC EAST QA	8/14/01	7.28	180.0	238.0	1.00E+07	0.0	24.8	0.06	9.2	34.1	89.3	3.2	3.4	534	199.8
DC EAST	8/28/01	7.57	180.0	278.0	1.27E+07	3.0	18.1	0.23	7.4	28.7	63.2	2.8	3.3	500	109.4
DC EAST QA	8/28/01		179.5	260.0	5.00E+06	2.0	18.9	0.28	9.2	30.4	112.9	3.0	3.2		227.7
DC EAST	9/11/01	7.35	191.5	251.0	2.90E+06	4.8	21.9	0.13	6.6	33.4	59.9	3.3	4.3	521	134.0
DC EAST	9/25/01	7.10	183.0	255.0	5.10E+06	2.1	20.8	0.09	5.3	28.2	66.0	3.4	4.7	505	150.5
DC EAST	10/9/01	7.25	184.0	243.0	5.80E+06	7.1	16.0	0.10	4.2	27.3	55.0	3.8	4.8	540	178.5

Location	Date	pH	Alkalinity (mg/l)	BOD5 (mg/l)	FC #/100 ml	DON (mg/l)	NH ₄ (mg/l)	NO _x (mg/l)	PON (mg/l)	Total Nitrogen (mg/l)	POC (mg/l)	PO ₄ (mg/l)	TP (mg/l)	Sp Cond (uS)	TSS (mg/l)
D1 DB	5/19/99	7.90	213.0	24.0	5.00E+04	0.2	24.3	0.2	0.9	25.6	4.4	1.2	1.4	539	9.0
D1 DB	5/26/99	8.10	213.0	28.0	5.00E+04	0.0	27.2	0.6	1.3	29.1	7.7	1.5	1.8	879	19.0
D1 DB	6/2/99	7.54		36.0	7.80E+04	2.1	13.3	10.2	0.9	26.5	4.5	3.2	3.7	458	12.0
D1 DB	6/9/99	7.60	50.0	31.0	1.07E+05	1.6	0.6	15.1	1.3	18.6	7.5	3.7	3.9	416	14.0
D1 DB	6/23/99	7.45	46.0	8.0	4.80E+04	0.0	0.4	18.7	0.3	19.4	1.6	3.6	3.7	410	4.0
D1 DB	7/7/99	7.48	72.0	10.0	1.80E+04	0.6	0.4	12.4	0.6	13.9	3.1	4.1	4.2	375	7.0
D1 DB	7/21/99	7.24	53.0	11.0	6.30E+04	0.0	0.5	14.5	0.5	15.5	2.7	3.9		385	5.0
D1 DB QA	7/21/99	7.44	60.0	6.0	3.20E+04	0.5	0.5	14.4	0.5	15.8	2.7	3.9	4.0	375	6.0
D1 DB	8/11/99	7.58	58.4	11.0	2.30E+04	0.8	0.8	14.7	0.9	17.2	4.2	3.9	4.1	455	9.0
D1 DB	8/30/99	7.61	65.9	13.0	2.70E+04	1.6	0.6	11.0	0.6	13.9	3.5	4.2	5.4	405	8.0
D1 DB	9/22/99	7.55	54.0	28.0	3.00E+04	1.1	3.0	17.6	0.9	22.6	4.7	3.6	4.1	467	12.0
D1 DB	10/13/99	7.44	52.0	16.0	7.10E+04	0.7	0.5	16.0	1.6	18.8	7.6	3.6	4.1	404	17.0
D1 DB	11/3/99	7.41	50.0	16.0	2.40E+04	2.2	0.7	17.8	1.8	22.4	9.1	3.6	3.7	482	21.0
D1 DB	11/18/99	7.56	48.0	4.0	8.90E+04	0.9	0.7	17.2	0.8	19.6	4.2	3.6	3.7	482	9.0
D1 DB	12/21/99	7.35	49.0	25.0	6.70E+04	1.2	1.0	18.4	0.8	21.4	4.6	3.8	4.3	475	8.0
D1 DB	1/12/00	7.42	46.0	21.0	4.70E+04	1.2	0.1	17.7	2.0	21.0	9.5	4.2	4.2	436	20.0
D1 DB	2/2/00	7.58	56.0	14.0	8.20E+04	2.2	4.3	10.6	1.7	18.7	12.5	3.5		479	13.0
D1 DB	2/16/00	7.84	105.6	11.0	1.70E+05	1.1	9.8	5.7	0.5	17.2	3.5	4.3		517	13.0
D1 DB	3/1/00	7.70	91.2	16.0	8.00E+04	0.6	7.3	7.5	0.4	15.9	3.2	3.7	4.4	507	7.0
D1 DB	3/15/00	7.46	72.0	6.0	2.40E+05	0.4	1.0	10.1	0.3	11.8	1.9	4.0	4.4	435	4.0
D1 DB	3/28/00	7.77	68.8	6.0	4.00E+04	0.8	0.8	9.4	0.2	11.3	1.5	3.7	4.4	473	5.0
D1 DB	4/11/00	7.65	74.8	14.0	3.00E+04	1.3	1.1	7.9	0.3	10.6	2.1	3.7	4.5	459	5.0
D1 DB QA	4/11/00		73.2		6.00E+04	0.1	2.3	7.9	0.4	10.7	2.5	3.3	3.8		6.0
D1 DB	5/2/00	7.68	78.0	13.0	1.80E+05	1.6	1.4	6.6	0.9	10.4	5.4	4.3	4.8	447	11.0
D1 DB	5/17/00	7.75	104.0	17.0	3.00E+04	0.8	6.8	3.1	1.4	12.1	7.3	3.8	4.7	474	18.0
D1 DB	5/31/00	7.78	133.2	23.0	1.10E+05	2.6	6.2	2.0	0.6	11.5	3.4	4.7	5.2	501	7.0
D1 DB	6/14/00	7.48	81.2	24.0	3.00E+04	0.9	1.4	7.1	1.6	11.0	8.3	4.7	5.1	448	19.0
D1 DB	6/28/00	7.58	94.8	27.0	2.80E+04	2.3	4.2	4.4	1.5	12.4	8.7	5.1	5.9	510	20.0
D1 DB	7/12/00	7.24	77.6	32.0	6.10E+04	4.4	3.4	4.5	1.4	13.7	8.3	4.4	5.0	448	17.0
D1 DB	7/26/00	7.63	116.4	38.0	1.20E+05	1.5	7.3	5.8	1.5	16.0	9.6	4.6	4.6	511	23.0
D1 DB	8/9/00	7.92	107.2	43.0	2.00E+04	6.4	0.1	10.0	2.8	19.4	16.5	3.9		538	37.0
D1 DB	8/23/00	7.49	65.0	40.0	4.80E+04	4.6	1.6	11.5	3.4	21.1	18.5	3.4	4.2	516	42.0
D1 DB	9/6/00	8.00	94.8	22.0	4.70E+04	0.3	0.4	12.4	1.2	14.3	5.3	4.4	4.5	525	11.0
D1 DB	9/20/00	7.45	69.2	24.0	4.00E+04	1.0	1.0	16.3	2.7	21.0	12.0	3.4	3.8	474	26.0
D1 DB	10/3/00	7.32	65.6	24.0	2.30E+05	9.6	1.1	8.3	2.8	21.9	14.4	3.4	3.9	495	30.0
D1 DB	10/17/00	7.72	70.8	26.0	1.70E+05	0.6	1.0	16.4	2.7	20.7	12.6	3.1	3.5	473	30.0
D1 DB	10/30/00	7.51	70.5	32.0	3.70E+05	2.4	3.6	11.9	2.3	20.2	12.5	2.9	3.1	405	30.0
D1 DB	11/14/00	7.26	43.5	28.0	2.70E+05	1.5	1.3	15.6	1.4	19.7	6.8	2.7	3.3	383	15.0
D1 DB	11/28/00	7.41	51.0	26.0	9.20E+05	1.7	0.9	14.8	1.7	19.1	7.9	3.1	3.7	407	17.0

Location	Date	pH	Alkalinity (mg/l)	BOD5 (mg/l)	FC #/100 ml	DON (mg/l)	NH ₄ (mg/l)	NO _x (mg/l)	PON (mg/l)	Total Nitrogen (mg/l)	POC (mg/l)	PO ₄ (mg/l)	TP (mg/l)	Sp Cond (uS)	TSS (mg/l)
D1 DB QA	11/28/00	7.46	46.5	20.0	2.30E+05	1.4	0.9	14.8	1.7	18.8	8.5	3.2	3.7	405	18.0
D1 DB	12/12/00	7.54	51.0	16.0	7.00E+04	2.4	0.4	17.0	0.6	20.5	3.9	3.8	3.9	465	9.0
D1 DB	12/26/00	7.46	62.0	20.0	1.32E+06	3.5	1.4	14.9	3.0	22.8	12.8	3.4	4.0	435	25.0
D1 DB	1/9/01	7.28	37.5	18.0	7.00E+04	1.6	1.8	16.4	4.0	23.7	18.0	3.6	4.6	438	31.5
D1 DB	1/23/01	7.31	180.5	20.0	1.00E+04	0.7	3.2	14.0	2.2	20.2	12.1	3.7	4.1	437	17.0
D1 DB	2/6/01	7.29	52.5	21.0	2.00E+04	4.0	1.8	20.9	1.8	28.5	10.4	3.5	3.7	454	16.0
D1 DB	2/20/01	7.67	83.5	24.0	1.70E+05	2.5	4.0	10.0	0.8	17.4	6.0	3.6	3.7	433	13.3
D1 DB	3/13/01	7.71	100.5	5.0	3.00E+04	0.8	11.9	7.2	1.0	20.9	6.0	3.9	4.0	616	11.6
D1 DB	3/27/01	7.78	112.5	39.0	1.10E+05	4.1	11.1	6.0	1.3	22.6	8.2	3.5	4.0	434	16.6
D1 DB	4/10/01	7.76	87.0	75.0	1.00E+04				2.1	2.1	11.8	4.0	4.0	418	23.2
D1 DB	4/24/01	7.68	77.0	21.0	1.50E+05	0.1	0.7	9.5	0.9	11.2	5.2	3.7	4.3	414	17.7
D1 DB	5/8/01	7.48	83.0	36.0	9.00E+04	1.3	3.9	7.2	1.9	14.4	10.2	4.1	4.2	400	23.1
D1 DB	5/22/01	7.53	69.5	38.0	1.20E+05	0.4	0.6	9.0	5.4	15.4	31.5	4.5	5.6	378	78.7

D2 Dbox

D2 DB	5/19/99	7.83	212.0	32.0	5.00E+04	0.0	23.4	0.2	0.3	23.9	1.7	1.2	1.5	540	1.0
D2 DB	5/26/99	8.02	204.0	42.0	9.40E+04	0.9	26.2	1.0	2.9	31.0	13.6	1.6	1.9	480	29.0
D2 DB	6/2/99	7.59		48.0	9.00E+03	1.1	15.9	9.1	1.4	27.5	7.3	3.4	4.5	460	17.0
D2 DB	6/9/99	7.50	61.0	26.0	1.29E+05	1.9	1.1	15.1	1.7	19.8	9.3	3.7	4.3	403	19.0
D2 DB	6/23/99	7.54	41.0	12.0	3.00E+04	1.3	0.5	15.7	0.3	17.9	1.6	4.0	4.1	392	5.0
D2 DB	7/7/99	7.09	74.0	13.0	2.10E+04	1.1	0.4	12.1	0.5	14.1	2.8	4.0	4.1	373	6.0
D2 DB QA	7/7/99	7.51	75.0	12.0	8.00E+04	0.5	0.4	12.0	0.7	13.6	3.5	4.1	4.2	364	8.0
D2 DB	7/21/99	7.58	67.0	20.0	8.80E+04	0.1	0.7	12.7	0.8	14.3	4.2	3.7	3.9	373	9.0
D2 DB	8/11/99	7.44	54.5	18.0	4.20E+04	0.8	0.9	13.6	1.0	16.4	5.1	3.9	4.1	432	12.0
D2 DB	8/30/99	7.48	62.5	8.0	1.50E+04	1.1	1.3	11.7	0.3	14.4	1.9	4.3	4.4	413	4.0
D2 DB	9/22/99	7.64	78.0	63.0	4.20E+04	1.1	9.9	11.3	1.5	23.8	8.6	3.8	5.0	495	19.0
D2 DB	10/13/99	7.65	68.0	16.0	9.80E+04	1.2	0.6	9.3	0.7	11.8	3.7	3.6	4.0	381	8.0
D2 DB	11/3/99	7.55	67.0	17.0	2.00E+04	2.0	0.4	9.9	2.4	14.7	12.4	3.7	4.0	456	30.0
D2 DB	11/18/99	7.74	69.2	4.0	7.10E+04	1.2	0.7	8.3	1.1	11.3	6.1	3.7	3.7	442	9.0
D2 DB	12/21/99	7.64	79.0	24.0	9.20E+04	0.7	4.2	10.0	0.5	15.4	3.0	4.0	4.5	470	5.0
D2 DB	1/12/00	7.69	88.4	10.0	2.90E+04	1.5	7.8	9.1		18.4		4.5	4.7	456	6.0
D2 DB QA	1/12/00	7.71	96.0	100.0	2.00E+04	0.4	7.6	9.4	0.4	17.7	2.2	4.4	4.8	438	5.0
D2 DB	2/2/00	7.65	82.8	24.0	1.05E+05	1.4	11.9	5.5	1.7	20.4	14.3	3.4	3.5	482	16.0
D2 DB	2/16/00	7.94	152.0	23.0	2.50E+05	0.4	20.9	0.7	1.1	23.0	7.7	3.9		534	15.0
D2 DB	3/1/00	7.65	87.2	24.0	3.30E+05	1.2	7.0	8.0	0.7	16.8	4.4	4.0	4.5	511	29.0
D2 DB	3/15/00	7.48	64.0	8.0	8.00E+04	1.0	1.0	11.0	1.0	14.0	2.5	3.9	4.1	432	5.0
D2 DB	3/28/00	7.91	67.6	13.0	1.00E+04	1.5	0.1	9.0	0.5	11.0	3.3	4.2	4.3	515	5.0
D2 DB	4/11/00	7.73	76.0	18.0	4.10E+04	0.8	1.4	7.5	0.6	10.4	4.3	3.5	3.8	416	10.0
D2 DB	5/2/00	7.66	74.8	9.0	6.90E+04	1.2	0.8	9.4	0.5	11.9	2.9	4.2	4.7	447	6.0

Location	Date	pH	Alkalinity (mg/l)	BOD5 (mg/l)	FC #/100 ml	DON (mg/l)	NH ₄ (mg/l)	NO _x (mg/l)	PON (mg/l)	Total Nitrogen (mg/l)	POC (mg/l)	PO ₄ (mg/l)	TP (mg/l)	Sp Cond (uS)	TSS (mg/l)
D2 DB	5/17/00	7.85	69.6	13.0	4.00E+04	2.2	6.4	1.1	0.5	10.2	2.8	4.1	5.1	477	7.0
D2 DB	5/31/00	7.61	80.0	12.0	5.00E+04	1.8	1.0	6.0	0.3	9.0	1.8	4.7	5.6	429	5.0
D2 DB	6/14/00	7.60	92.4	29.0	1.00E+04	1.8	2.2	4.8	2.3	11.1	15.3	5.2	5.3	455	38.0
D2 DB	6/28/00	7.78	130.8	28.0	2.60E+04	4.0	13.3	4.6	3.8	25.6	23.6	5.1	5.6	602	56.0
D2 DB	7/12/00	7.46	101.6	32.0	5.70E+04	1.9	10.2	4.5	1.5	18.1	8.5	4.4	5.2	503	20.0
D2 DB	7/26/00	7.78	126.0	51.0	3.00E+04	1.1	10.5	7.9	3.7	23.2	20.7	4.1	4.8	543	49.0
D2 DB QA	7/26/00		132.0	47.0	4.20E+04		11.1	7.8	2.9	21.8	16.1	4.3	4.9		38.0
D2 DB	8/9/00	7.72	95.6	36.0	7.50E+04	3.7	0.2	10.9	3.0	17.8	19.5	3.3		527	48.0
D2 DB	8/23/00	7.58	71.0	31.0	2.10E+05	1.2	1.5	11.5	3.0	17.2	15.6	3.3	4.1	520	38.0
D2 DB	9/6/00	7.75	80.4	42.0	7.00E+04	0.2	1.0	13.4	7.3	21.8	26.6	3.3	4.4	500	122.0
D2 DB	9/20/00	7.68	78.0	24.0	2.00E+04	1.2	0.9	14.3	3.5	19.9	16.5	3.4	4.1	469	31.0
D2 DB	10/3/00	7.65	94.4	46.0	3.20E+05	4.2	6.0	3.6	3.5	17.3	17.4	3.4	4.1	508	36.0
D2 DB	10/17/00	7.62	88.8	18.0	3.60E+05	0.7	1.4	9.6	2.3	14.0	10.8	3.1	3.3	463	32.0
D2 DB QA	10/17/00	7.61	90.8	21.0	2.00E+04	0.7	1.3	9.4	2.2	13.6	11.0	2.8	3.8	465	25.0
D2 DB	10/30/00	7.59	76.5	18.0	2.00E+05	1.3	0.8	8.0	1.2	11.3	6.9	3.4	3.5	398	14.0
D2 DB	11/14/00	7.54	65.0	17.0	1.90E+05	1.0	1.0	9.1	1.9	13.1	10.6	2.5	3.3	337	23.0
D2 DB QA	11/14/00	7.41	65.5	15.0	8.90E+04	1.3	1.0	9.2	1.3	12.8	7.1	2.7	3.6	372	15.0
D2 DB	11/28/00	7.55	79.5	22.0	5.20E+05	0.9	2.3	8.8	1.7	13.7	8.6	2.8	3.4	401	18.0
D2 DB	12/12/00	7.83	121.5	10.0	5.00E+04			4.6	1.5	6.1	9.0	3.3	3.5	509	15.0
D2 DB	12/26/00	7.75	175.0	21.0	1.60E+05	0.8	22.1	1.0	2.8	26.7	14.1	3.6	4.5	530	30.0
D2 DB	1/9/01	7.84	185.5	23.0	1.13E+06	5.7	21.1	0.3	4.2	31.4	19.4	3.4	4.7	571	45.8
D2 DB	1/23/01	7.89	177.5	17.0	1.10E+05		25.8	0.2	2.3	28.3	13.0	3.9	4.3	547	19.8
D2 DB	2/6/01	7.87	173.0	24.0	2.00E+04	4.4	21.0	0.8	2.3	28.5	12.9	3.6	3.8	541	20.7
D2 DB	2/20/01	7.92	162.0	14.0	1.40E+04	3.4	17.8	3.4	0.3	24.9	1.6	3.8	4.1	588	2.5
D2 DB	3/13/01	7.88	160.5	1.0	2.10E+05	1.5	19.0	0.8	3.0	24.2	15.8	3.5	4.0	672	35.7
D2 DB	3/27/01	7.90	170.0	16.0	4.00E+04	3.0	22.6	0.8	2.6	29.0	13.9	3.7	4.2	505	28.0
D2 DB	4/10/01	8.05	180.0	18.0	2.00E+04	2.7	22.5	0.1	0.3	25.6	2.4	4.1	4.2	509	3.8
D2 DB	4/24/01	7.86	123.0	8.0	3.00E+04	1.1	7.0	2.6	0.2	10.8	1.2	3.9	4.2	444	2.0
D2 DB	5/8/01	7.89	152.0	19.0	7.00E+04	4.0	13.3	0.7	0.4	18.4	2.1	4.9	4.9	481	4.0
D2 DB	5/22/01	7.88	198.5	60.0	8.00E+04	7.8	29.4	0.3	1.6	39.1	8.8	4.3	4.7	517	20.9
D2 DB QA	5/22/01	7.89	198.5	51.0	4.60E+04	1.5	28.4	0.1	0.8	30.7	4.0	4.3	4.8	526	8.6
D2 DB	6/5/01	8.13	210.5	35.0	1.40E+05	1.0	30.0	1.4	1.4	33.9	7.1	4.8	5.3	583	17.1
D2 DB	6/19/01	7.93	209.5	58.0	1.18E+06	0.0	33.2	0.1	3.1	36.4	15.6	3.8	3.9	537	34.3
D2 DB	7/2/01	7.68	218.0	89.0	1.76E+06	19.1	10.9	0.2	6.2	36.5	28.4	3.7	5.3	590	74.4
D2 DB	7/17/01	7.77	223.0	49.8	5.60E+05	0.6	31.1	0.5	6.3	38.5	28.7	3.9	5.3	599	67.5
D2 DB	7/31/01	8.02	191.5	34.0	2.40E+05	0.8	27.4	0.8	1.8	30.8	9.0	3.7	4.1	526	19.2
D2 DB QA	7/31/01	8.04	193.5	51.0	1.22E+05	0.4	28.6	0.7	2.0	31.6	10.4	3.8	4.4	527	23.5

Location	Date	pH	Alkalinity (mg/l)	BOD5 (mg/l)	FC #/100 ml	DON (mg/l)	NH ₄ (mg/l)	NO _x (mg/l)	PON (mg/l)	Total Nitrogen (mg/l)	POC (mg/l)	PO ₄ (mg/l)	TP (mg/l)	Sp Cond (uS)	TSS (mg/l)
D2 DB	8/14/01	7.79	218.0	86.0	4.00E+05	1.9	26.9	0.3	3.8	33.0	22.1	3.5	3.6	584	49.0
D2 DB	8/28/01	7.93	210.5	52.1	5.00E+03	2.5	14.4	6.8	3.8	27.5	17.9	3.1	3.2	558	31.7
D2 DB	9/11/01	7.82	209.5	48.0	6.20E+04	3.0	22.8	0.3	0.8	26.9	4.0	3.8	4.0	532	6.6
D2 DB	9/25/01	7.84	201.0	41.0	1.62E+05	0.7	17.6	0.8	2.5	21.5	15.2	4.1	4.2	498	7.2
D2 DB	10/9/01	7.93	182.5	44.0	6.30E+04	4.8	14.4	1.8	2.1	23.0	12.1	4.0	4.0	510	23.1
D2 DB QA	10/9/01	7.93	181.0	97.0	5.70E+04	0.9	16.5	1.5	1.9	20.9	12.0	3.7	4.5	556	25.3

D3 Dbox

D3 DB	5/19/99	8.08	216.0	25.0	3.00E+05	1.8	25.5	0.2	1.6	29.1	7.8	1.3	1.6	539	17.0
D3 DB	5/26/99	8.00	195.0	26.0	9.50E+04		25.2	1.7	3.2	30.1	14.8	1.6	2.0	470	33.0
D3 DB	6/2/99									0.0					
D3 DB	6/9/99	7.60	64.0	18.0	1.04E+05	1.6	0.5	13.8	1.3	17.2	7.1	3.8	4.0	369	15.0
D3 DB	6/23/99	7.75	51.0	12.0	2.70E+04	0.3	0.5	14.9	0.5	16.2	2.5	3.7	3.8	398	6.0
D3 DB	7/7/99	7.63	80.0	16.0	2.80E+04	0.9	0.4	13.2	0.6	15.0	2.9	4.2	4.9	370	4.0
D3 DB	7/21/99	7.78	60.0	10.0	9.00E+03	0.1	0.0	16.3	0.5	17.0	2.7	4.4	4.5	395	6.0
D3 DB	8/11/99	7.97	90.6	18.0	1.38E+05	0.1	1.9	10.9	0.9	13.8	4.8	4.5	5.6	497	12.0
D3 DB	8/30/99	6.84	47.4	22.0	9.00E+04	1.9	1.0	10.8	0.7	14.4	3.6	4.0	4.1	389	8.0
D3 DB	9/22/99	7.46	57.0	34.0	5.40E+04	0.7	1.0	12.2	1.1	15.0	5.3	3.5	4.1	426	11.0
D3 DB	10/13/99	7.62	59.0	33.0	1.20E+05	1.6	1.3	13.4	0.6	16.9	3.0	3.6	4.1	398	4.0
D3 DB	11/3/99	7.55	61.0	13.0	2.00E+04	1.6	0.7	13.1	2.2	17.6	11.4	3.7	3.8	470	27.0
D3 DB QA	11/3/99	7.55	56.0			2.0	0.7	12.9	2.2	17.8	11.4	3.4	4.0		26.0
D3 DB	11/18/99	7.66	70.0	13.0	4.00E+04	1.4	1.1	11.9	1.3	15.7	6.9	3.6	4.0	457	14.0
D3 DB	12/21/99	7.52	64.0	24.0	3.50E+05	0.5	1.7	12.3	1.5	16.0	8.4	3.7	4.0	461	4.0
D3 DB	1/12/00	7.49	54.0	21.0	7.00E+04	1.5	1.1	15.7	1.1	19.3	6.0	4.1	4.1	428	12.0
D3 DB	2/2/00	7.36	33.2	13.0	3.00E+04	0.9	1.4	16.2	0.5	18.9	4.2	3.5		532	8.0
D3 DB	2/16/00	7.76	80.8	13.0	2.80E+05	2.0	5.5	10.6	0.6	18.7	4.4	4.1		491	7.0
D3 DB QA	2/16/00		80.8	18.0	9.00E+04	2.3	5.4	10.3	0.6	18.7	4.2	4.1			8.0
D3 DB	3/1/00	7.78	102.0	15.0	5.00E+04	0.6	10.6	7.6	0.4	19.2	3.0	4.0	4.3	539	9.0
D3 DB	3/15/00	7.48	60.4	4.0	2.00E+04	4.9	1.2	9.0	0.3	15.4	2.2	3.9	4.0	480	9.0
D3 DB	3/28/00	7.69	69.6	14.0	2.40E+04	0.8	0.9	9.6	0.3	11.6	2.3	3.5	4.2	458	5.0
D3 DB	4/11/00	7.88	102.4	24.0	4.60E+04	1.6	5.6	3.2	0.5	11.0	3.0	3.9	4.2	462	7.0
D3 DB QA	4/11/00		107.0	16.0	1.10E+05	0.0	7.0	3.3	0.5	10.7	3.1	3.4	4.8		7.0
D3 DB	5/2/00	7.88	119.6	24.0	8.70E+04	1.7	6.4	2.0	0.7	10.8	4.6	4.3	4.8	494	10.0
D3 DB	5/17/00	7.99	151.0	29.0	8.00E+04	0.0	22.9	0.5	0.7	24.1	4.0	4.5	5.5	560	9.0
D3 DB QA	5/17/00	7.99	182.0	12.0	8.00E+04	2.7	19.8	0.5	0.7	23.6	3.9	4.7	5.1	560	10.0
D3 DB	5/31/00	7.83	112.0	17.0	4.00E+04	9.2	0.5	3.4	0.1	13.2	0.9	4.8	5.5	476	6.0
D3 DB	6/14/00	7.74	111.2	19.0	5.00E+03	0.6	5.7	2.5	0.4	9.2	2.9	4.8	5.0	424	6.0

Location	Date	pH	Alkalinity (mg/l)	BOD5 (mg/l)	FC #/100 ml	DON (mg/l)	NH ₄ (mg/l)	NO _x (mg/l)	PON (mg/l)	Total Nitrogen (mg/l)	POC (mg/l)	PO ₄ (mg/l)	TP (mg/l)	Sp Cond (uS)	TSS (mg/l)
D3 DB	6/28/00	7.84	142.8	38.0	1.50E+04	1.5	14.9	1.0	2.0	19.3	10.7	5.0	5.2	588	26.0
D3 DB	7/12/00	7.53	141.0	27.0	8.00E+04	0.9	21.8	2.1	1.6	26.4	8.5	5.5	6.3	541	18.0
D3 DB	7/26/00	7.73	133.0	45.0	9.00E+04	1.4	15.6	6.3	4.2	27.4	24.8	4.2	5.8	567	59.0
D3 DB	8/9/00	7.81	113.0	44.0	5.20E+04	7.5	0.1	9.6	6.7	24.0	40.5	3.1		543	98.0
D3 DB	8/23/00	7.58	73.0	34.0	2.48E+05	1.5	1.2	12.2	4.2	19.1	22.7	3.0	4.1	513	51.0
D3 DB	9/6/00	7.84	75.0	27.0	4.00E+04	0.7	0.7	9.9	2.4	13.7	14.2	3.2	3.4	501	33.0
D3 DB	9/20/00	7.67	69.0	19.0	8.00E+04	0.9	0.9	12.2	1.3	15.3	8.1	3.2	3.5	474	18.0
D3 DB	10/3/00	7.69	66.0	12.0	2.70E+05	0.7	0.5	10.2	1.5	12.9	9.1	3.7	3.7	471	17.0
D3 DB	10/17/00	7.64	84.0	22.0	4.70E+05	0.4	0.7	10.7	1.9	13.7	9.8	3.1	3.7	451	25.0
D3 DB	10/30/00	7.65	76.5	39.0	7.50E+05	1.3	2.8	9.4	1.6	15.2	9.4	3.3	3.4	398	21.0
D3 DB	11/14/00	7.51	61.5	30.0	7.40E+05	1.4	2.2	10.8	0.9	15.3	5.2	2.6	3.3	384	11.0
D3 DB	11/28/00	7.75	66.5	21.0	8.90E+05	1.2	0.7	12.3	0.9	15.2	4.8	3.4	3.7	412	10.0
D3 DB	12/12/00	7.60	69.0	29.0	8.00E+04	2.1	3.6	13.0	1.6	20.2	5.9	3.3	3.7	490	13.0
D3 DB	12/26/00	7.54	73.0	18.0	2.10E+05	2.7	3.9	14.2	2.5	23.2	11.9	3.6	4.1	450	25.0
D3 DB	1/9/01	7.77	99.0	38.0	1.36E+06	1.3	10.9	7.8	2.7	22.7	12.1	3.5	4.5	496	25.8
D3 DB	1/23/01	7.50	63.0	24.0	2.80E+04	0.8	4.1	13.6	0.1	18.6	0.5	3.9	3.9	451	3.3
D3 DB	2/6/01	7.54	63.0	18.0	1.00E+04	3.5	2.5	17.8	1.2	25.0	7.1	3.6	3.8	445	10.0
D3 DB	2/20/01	7.58	71.5	19.0	4.10E+05	2.7	2.2	11.2	1.4	17.6	8.4	3.5	4.1	439	15.3
D3 DB	3/13/01	7.78	111.0	33.0	5.00E+04	0.5	13.0	6.0	1.2	20.8	7.2	3.8	4.2	639	14.2
D3 DB	3/27/01	7.71	86.0	34.0	1.00E+05	2.0	6.1	9.6	1.1	18.7	6.6	4.0	4.4	417	12.5
D3 DB	4/10/01	7.70	82.5	38.0	1.00E+04	1.8	3.3	8.8	1.8	15.8	12.1	4.0	4.3	416	23.6
D3 DB	4/24/01	7.38	168.5	80.0	7.80E+05	0.1	15.2	0.0	4.3	19.6	25.6	4.6	5.3	470	45.3
D3 DB	5/8/01	7.17	209.5	250.0	1.00E+06	4.1	31.9	0.1	0.4	36.5	2.8	5.1	5.3	591	1.3

Location	Date	pH	FC #/100 ml	DON (mg/l)	NH ₄ (mg/l)	NO _x (mg/l)	Total Nitrogen (mg/l)	PO ₄ (mg/l)	TDP (mg/l)	Sp Cond (uS)
D1 1FT	2/2/00		5.00E+00	0.3	0.1	0.6	1.0	0.2		
D1 1FT	2/16/00	7.75	5.00E+00	0.5	0.0	0.7	1.1	0.2		116
D1 1FT	3/15/00	6.97	1.00E+02	0.3	0.1	1.0	1.3	0.0		120
D1 1FT	11/28/00	6.77	1.00E+02							55
D1 1FT	12/12/00	7.21	2.00E+01	0.8	0.0	16.8	17.6	3.5		407
D1 1FT	12/26/00	7.46	5.00E+00				0.0			414
D1 1FT	1/9/01	6.81	5.00E+00	0.4	0.0	0.2	0.7	0.6		64
D1 1FT	1/23/01	6.92	5.00E+00	0.6	0.1	0.3	1.0	0.2		72
D1 1FT	4/10/01	6.63	5.00E+00	0.3	0.0	0.4	0.6	0.0		41
D1 1FT	4/24/01	6.78	5.00E+00							84
D1 1FT	5/22/01	6.88	3.90E+02	0.7	0.5	10.7	12.0	3.4		375

D1 2FT

Location	Date	pH	FC #/100 ml	DON (mg/l)	NH ₄ (mg/l)	NO _x (mg/l)	Total Nitrogen (mg/l)	PO ₄ (mg/l)	TDP (mg/l)	Sp Cond (uS)
D1 2FT	6/14/00	7.96	5.00E+00	2.1	0.0	0.1	2.2	0.0		767
D1 2FT	2/6/01	7.29	5.00E+00	3.0	0.0	15.0	17.9	3.3	3.4	441
D1 2FT	2/20/01	7.27	5.00E+00	1.9	0.0	14.9	16.8	3.2		409
D1 2FT	4/10/01	6.89	1.10E+02		0.3		0.3	3.4	3.6	421
D1 2FT	4/24/01	6.98	2.00E+01							480
D1 2FT	5/8/01	6.77	2.80E+02							419
D1 2FT	5/22/01	7.27	3.00E+01	0.1	0.0	11.4	11.5	4.2	4.3	404

D1 5FT

Location	Date	pH	FC #/100 ml	DON (mg/l)	NH ₄ (mg/l)	NO _x (mg/l)	Total Nitrogen (mg/l)	PO ₄ (mg/l)	TDP (mg/l)	Sp Cond (uS)
D1 5FT	2/2/00		5.00E+00		0.0	0.8	0.8	0.1		
D1 5FT	2/16/00		5.00E+00	3.4	0.1	2.2	5.7	0.2		
D1 5FT	1/23/01	7.01	5.00E+00		0.2	20.0	20.2	3.2		432
D1 5FT	2/20/01		5.00E+00							
D1 5FT	4/10/01	6.71	5.00E+00	1.2	0.5	10.1	11.8	3.6	3.8	360
D1 5FT	4/24/01	6.98	5.00E+00							397
D1 5FT	5/8/01	7.01	5.00E+00							422
D1 5FT	5/22/01	7.20	1.00E+01	0.0	0.0	12.4	12.5	4.1	4.2	395

D2 1FT

Location	Date	pH	FC #/100 ml	DON (mg/l)	NH ₄ (mg/l)	NO _x (mg/l)	Total Nitrogen (mg/l)	PO ₄ (mg/l)	TDP (mg/l)	Sp Cond (uS)
D2 1FT	10/13/99	6.91		0.4	0.0	16.6	17.0	4.0		
D2 1FT	2/2/00		5.00E+00		0.0	3.0	3.0	0.1		
D2 1FT	6/14/00	7.66	3.70E+02	0.0	1.1	6.5	7.6	4.4	4.5	394
D2 1FT	6/28/00	6.77	2.90E+02	0.3	0.1	19.0	19.4	5.3	5.3	469
D2 1FT	7/12/00	6.58	1.00E+01	0.6	0.6	17.9	19.2	5.5	5.6	476
D2 1FT	8/9/00	7.21	2.00E+03	7.5	0.0	7.5	15.0	3.7	3.8	537
D2 1FT	8/23/00	7.08	2.00E+03	0.3	0.0	14.4	14.7	3.9	4.1	506
D2 1FT	9/6/00	7.27	4.00E+02	0.1	0.0	14.4	14.5	3.7	3.8	492
D2 1FT	10/3/00	7.37	1.50E+03	0.0	0.0	13.2	13.3	3.4	3.6	465
D2 1FT	1/23/01	7.33	1.00E+03	0.2	0.0	7.9	8.1	1.8		369
D2 1FT	2/20/01		5.00E+02							
D2 1FT	3/13/01		5.00E+01							

D2 1FT

Location	Date	pH	FC #/100 ml	DON (mg/l)	NH ₄ (mg/l)	NO _x (mg/l)	Total Nitrogen (mg/l)	PO ₄ (mg/l)	TDP (mg/l)	Sp Cond (uS)
D2 1FT	3/27/01	6.81	1.30E+02	16.5	0.2	5.4	22.2	3.2		335
D2 1FT	4/10/01	6.33	5.00E+00	3.8	0.1	15.1	18.9	3.6		360
D2 1FT	4/24/01	7.06	3.10E+02	0.8	0.0	9.7	10.6	3.8		416
D2 1FT	5/8/01	7.05	8.00E+01	0.8	0.0	7.0	7.8	4.7		412
D2 1FT	5/22/01	6.28	3.30E+02	0.4	0.8	23.9	25.1	4.7		453
D2 1FT	6/5/01	5.35	6.65E+03	0.7	1.7	30.9	33.2	3.7		523
D2 1FT	6/19/01	4.76	4.00E+02	1.2	0.9	19.4	21.6	3.9		448
D2 1FT	7/2/01	5.30	5.00E+01	2.0	1.8	33.2	37.0	3.9		464
D2 1FT	7/31/01	4.97	9.00E+02	7.6	1.2	17.0	25.8	4.6		410
D2 1FT	9/11/01		5.00E+01							

D2 2FT

Location	Date	pH	FC #/100 ml	DON (mg/l)	NH ₄ (mg/l)	NO _x (mg/l)	Total Nitrogen (mg/l)	PO ₄ (mg/l)	TDP (mg/l)	Sp Cond (uS)
D2 2FT	1/9/01	6.96	3.21E+04		0.7	9.7	10.4	3.9	4.0	580
D2 2FT	1/23/01	6.57	5.00E+02	20.0	0.7	16.3	37.0	3.9	4.2	548
D2 2FT	2/6/01	6.67	1.30E+03	4.7	10.9	18.0	33.6	4.2	4.2	519
D2 2FT	2/20/01	6.41	6.00E+02	4.1	7.9	23.7	35.8	5.7	6.0	539
D2 2FT	3/13/01	6.54	1.20E+03	1.3	5.0	14.1	20.4	3.5	3.7	493
D2 2FT	3/27/01	5.86	2.00E+02	23.0	1.1	7.7	31.8	4.2	4.4	369
D2 2FT	4/10/01	5.82	2.00E+02	2.9	0.0	26.5	29.4	3.8	4.0	458
D2 2FT	4/24/01	5.72	3.00E+01	0.1	0.1	33.5	33.7	4.2	5.0	499
D2 2FT	5/8/01	6.76	5.00E+01	1.7	0.0	11.8	13.5	5.2	5.2	428
D2 2FT	5/22/01	5.96	1.40E+03	2.3	8.7	35.6	46.5	5.2	5.2	559
D2 2FT	6/5/01	6.17	2.81E+04	1.8	12.9	23.2	37.9	4.4	5.0	554
D2 2FT	6/19/01	5.60	2.60E+03	4.7	7.8	33.9	46.4	4.2		547
D2 2FT	7/2/01	5.24	3.02E+04	0.4	4.3	43.3	48.0	4.5	5.0	544
D2 2FT	7/17/01	5.73	8.70E+03	0.2	4.8	53.5	58.5	4.8	5.2	618
D2 2FT	7/31/01	5.50	1.10E+03	0.9	0.6	36.1	37.6	4.5	4.8	469
D2 2FT	8/14/01	6.04	1.54E+04	0.2	3.8	30.6	34.6	4.1	4.2	564
D2 2FT	8/28/01	6.01	7.90E+03	9.1	3.1	23.2	35.3	3.7	4.0	487
D2 2FT	9/11/01	5.99	9.00E+02	0.9	1.4	26.7	29.0	3.9	3.9	480
D2 2FT	9/25/01	5.57	6.00E+02	0.9	0.1	31.2	32.1	4.2	4.2	474
D2 2FT	10/9/01	6.05	2.00E+02	2.2	0.0	30.8	33.0	4.2	4.2	435

D2 5FT

Location	Date	pH	FC #/100 ml	DON (mg/l)	NH ₄ (mg/l)	NO _x (mg/l)	Total Nitrogen (mg/l)	PO ₄ (mg/l)	TDP (mg/l)	Sp Cond (uS)
D2 5FT	6/14/00	7.37	1.00E+01	0.8	0.0	5.3	6.2	2.4	2.6	401
D2 5FT	7/12/00	6.83		2.2	0.0	14.2	16.4	5.1	5.2	427
D2 5FT	7/26/00		5.00E+00				0.0			493
D2 5FT	8/9/00	7.18	2.10E+02	0.5	0.0	14.3	14.8	3.4	3.6	498
D2 5FT	1/9/01	7.07	3.13E+03	1.2	6.9	10.8	19.0	3.6	3.6	508
D2 5FT	1/23/01	7.12	3.00E+02		9.0	9.1	18.1	3.1		393
D2 5FT	2/6/01	7.07	5.00E+01							440

D2 5FT

Location	Date	pH	FC #/100 ml	DON (mg/l)	NH ₄ (mg/l)	NO _x (mg/l)	Total Nitrogen (mg/l)	PO ₄ (mg/l)	TDP (mg/l)	Sp Cond (uS)
D2 5FT	2/20/01	6.80	5.00E+01	1.9	3.9	19.0	24.7	3.6	3.8	476
D2 5FT	3/13/01	6.41	4.70E+02	1.9	0.0	18.4	20.4	3.4	3.5	462
D2 5FT	3/27/01	6.07	2.10E+02	22.1	0.0	6.6	28.8	3.5	3.7	367
D2 5FT	4/10/01	5.99	1.00E+01	5.0	0.2	20.1	25.3	3.4	3.5	426
D2 5FT	4/24/01	6.29	5.00E+00	0.0	0.0	23.5	23.5	3.4		413
D2 5FT	5/8/01	6.29	1.00E+01	1.4	0.0	13.6	14.9	4.9	5.0	399
D2 5FT	5/22/01	6.05	1.60E+03	0.4	0.5	30.5	31.4	4.5	4.5	509
D2 5FT	6/5/01	5.56	7.10E+03	7.8	1.0	37.3	46.1	3.3		486
D2 5FT	6/19/01	4.73	3.00E+03	2.7	1.5	13.1	17.4	3.2		470
D2 5FT	7/2/01	4.93	2.00E+02	1.7	0.1	46.1	48.0	2.1	2.4	533
D2 5FT	7/17/01	4.81	5.00E+01	0.3	0.2	37.1	37.6	3.6	3.9	497
D2 5FT	7/31/01	4.75	5.00E+01	1.5	0.2	32.4	34.1	3.9	4.3	432
D2 5FT	8/14/01	5.48	1.00E+03	0.5	0.1	30.9	31.5	3.7	3.8	506
D2 5FT	8/28/01	5.62	6.00E+02	2.0	0.0	29.4	31.4	3.9	4.0	432
D2 5FT	9/11/01	5.90	6.00E+02	0.5	0.0	26.5	27.0	3.8	4.0	421
D2 5FT	9/25/01	5.77	5.00E+01	0.8	0.0	26.0	26.8	4.1	4.2	437
D2 5FT	10/9/01	6.29	3.30E+02	1.5	0.0	20.6	22.2	4.1	4.1	393

D3 1FT

Location	Date	pH	FC #/100 ml	DON (mg/l)	NH ₄ (mg/l)	NO _x (mg/l)	Total Nitrogen (mg/l)	PO ₄ (mg/l)	TDP (mg/l)	Sp Cond (uS)
D3 1FT	8/30/99	7.13	2.00E+02	0.1	0.0	14.1	14.3	4.2		429
D3 1FT	9/22/99	7.08		0.1	0.4	13.7	14.2	3.8		
D3 1FT	10/13/99		5.00E+02							
D3 1FT	11/3/99		5.00E+02							
D3 1FT	11/18/99	6.93	6.00E+02	0.8	0.0	14.8	15.6	3.9		462
D3 1FT	12/21/99	6.89	4.10E+03	0.4	0.0	14.9	15.2	3.8		393
D3 1FT	1/12/00	6.76	2.30E+03	0.0	0.0	17.5	17.5	4.3		464
D3 1FT	2/2/00	6.74	4.30E+02	1.4	0.0	18.6	20.0	3.4		458
D3 1FT	2/16/00	7.01	4.60E+02	1.2	0.7	18.4	20.4	4.1		521
D3 1FT	3/1/00	6.55	2.10E+02	1.2	1.3	16.3	18.8	4.0		572
D3 1FT	3/15/00	6.47	5.00E+01	0.0	0.2	15.7	15.9	3.9		435
D3 1FT	3/28/00	6.84	1.00E+01	0.1	0.0	15.3	15.4	3.4		497
D3 1FT	4/11/00	6.99	5.00E+00	0.1	0.0	10.5	10.6	3.7		452
D3 1FT	5/2/00		4.40E+02	1.2	0.0	4.4	5.6	4.8		
D3 1FT	5/31/00	6.75	3.00E+01	2.0	1.3	21.6	24.9	5.4	5.7	480
D3 1FT	6/14/00	7.18	5.00E+01	0.2	0.0	7.1	7.3	4.5	4.6	444
D3 1FT	6/28/00		3.00E+01							
D3 1FT	11/14/00	7.12	3.80E+03	0.9	0.0	11.0	11.9	3.1		338
D3 1FT	11/28/00	7.27	5.00E+01	0.2	0.0	13.4	13.5	3.2		362
D3 1FT	12/12/00		5.00E+00							

D3 2FT

Location	Date	pH	FC #/100 ml	DON (mg/l)	NH ₄ (mg/l)	NO _x (mg/l)	Total Nitrogen (mg/l)	PO ₄ (mg/l)	TDP (mg/l)	Sp Cond (uS)
D3 2FT	1/23/01	6.71	1.00E+02		1.3	20.1	21.4	3.7	4.1	456
D3 2FT	2/6/01	6.79	7.00E+02	3.3	0.0	14.7	18.0	3.6	3.7	423
D3 2FT	2/20/01	6.96	3.60E+03	0.0	0.0	16.8	16.9	3.7	3.8	445
D3 2FT	3/13/01	6.84	1.30E+03	1.4	7.8	12.6	21.7	3.9	3.9	511
D3 2FT	3/27/01	6.59	1.00E+02	14.9	2.8	4.7	22.4	4.1	4.2	360
D3 2FT	4/10/01	6.79	8.00E+01	4.6	0.0	9.5	14.1	3.9	4.0	383
D3 2FT	4/24/01	7.14	4.50E+02	0.2	0.0	9.6	9.8	3.6	4.1	422
D3 2FT	5/8/01	6.27	3.60E+03	0.1	0.0	11.0	11.1	4.5	4.5	507
D3 2FT	5/22/01	5.93	1.80E+04	2.0	0.7	22.3	25.0	4.5	4.7	477

D3 5FT

Location	Date	pH	FC #/100 ml	DON (mg/l)	NH ₄ (mg/l)	NO _x (mg/l)	Total Nitrogen (mg/l)	PO ₄ (mg/l)	TDP (mg/l)	Sp Cond (uS)
D3 5FT	1/12/00	7.00	4.00E+01	0.4	0.0	17.1	17.5	4.2		460
D3 5FT	2/2/00	7.03	5.00E+00	0.0	0.0	18.0	18.1	3.6		476
D3 5FT	2/16/00	7.16	5.00E+00	0.7	0.5	16.4	17.6	3.9		511
D3 5FT	3/1/00	6.82	5.00E+00	0.4	1.1	15.7	17.2	3.8		572
D3 5FT	3/28/00	6.95	5.00E+00	0.1	0.0	14.4	14.5	3.4		488
D3 5FT	4/11/00	7.21	5.00E+00	0.7	0.0	8.8	9.5	3.9		435
D3 5FT	5/17/00	6.68	1.00E+01	0.8	0.1	21.7	22.6	4.3	4.5	508
D3 5FT	5/31/00	6.66	5.00E+00	0.0	0.0	21.3	21.3	5.0	5.7	458
D3 5FT	6/14/00	7.31	2.00E+01	0.5	0.0	8.0	8.5	4.7		430
D3 5FT	6/28/00	6.98	2.20E+02	0.2	0.0	14.6	14.8	4.8	4.8	463
D3 5FT	7/12/00	6.59	6.00E+01	1.7	0.0	23.8	25.6	6.0	6.2	486
D3 5FT	7/26/00	6.46	1.00E+01	1.6	0.0	21.8	23.3	5.9	6.0	492
D3 5FT	4/10/01		5.00E+00							
D3 5FT	4/24/01	7.03	5.00E+00							503

D SUMP

Location	Date	pH	FC #/100 ml	DON (mg/l)	NH ₄ (mg/l)	NO _x (mg/l)	Total Nitrogen (mg/l)	PO ₄ (mg/l)	TDP (mg/l)	Sp Cond (uS)
D SU	9/22/99	6.86	5.00E+00	0.7	0.0	14.2	14.9	1.9		391
D SU	10/13/99	6.79		0.1	0.0	13.9	14.0	2.6		
D SU	11/3/99	6.98	5.00E+00	0.6	0.0	12.4	13.0	2.0		
D SU	11/18/99	6.96	5.00E+00		0.0	12.2	12.2	2.4		
D SU	12/21/99	6.94	5.00E+00	0.3	0.0	10.2	10.6	2.0		298
D SU	1/12/00	6.79	5.00E+00	1.5	0.0	10.3	11.8	2.3		326
D SU	2/2/00	7.02	4.10E+02	0.7	0.1	13.1	13.9	2.8		465
D SU	2/16/00	7.28	5.10E+02	0.1	9.0	9.2	18.3	3.2		483
D SU	3/1/00	6.37	1.00E+01	0.1	0.4	13.3	13.7	2.4		438
D SU	3/15/00	6.31	5.10E+02	0.5	0.0	13.6	14.1	2.8		395
D SU	3/28/00	6.61	5.00E+00	0.2	0.0	7.4	7.7	1.6		281
D SU	4/11/00	6.98	5.00E+00	0.8	0.0	9.1	9.9	2.6		406
D SU	5/2/00	7.02	5.00E+00	0.5	0.0	6.6	7.1	2.3		329
D SU	5/17/00	6.97	5.00E+00	0.0	0.0	10.1	10.1	2.6	2.7	380
D SU	5/31/00	6.91	5.00E+00	0.2	0.0	13.3	13.5	3.4	3.5	401

D SUMP

Location	Date	pH	FC #/100 ml	DON (mg/l)	NH ₄ (mg/l)	NO _x (mg/l)	Total Nitrogen (mg/l)	PO ₄ (mg/l)	TDP (mg/l)	Sp Cond (uS)
D SU	6/14/00	6.99	9.00E+01	0.0	0.0			3.1		397
D SU	6/28/00	6.64	0.00E+00	0.4	0.0	10.7	11.1	2.6	2.6	440
D SU	7/12/00	6.80	4.70E+02	2.2	0.0	14.4	16.6	3.4	3.6	426
D SU	7/26/00	6.67	3.00E+01	2.3	0.0	17.4	19.7	3.0	3.0	482
D SU	8/9/00	6.79	1.00E+01	0.2	0.0	16.2	16.4	2.4	3.0	468
D SU	8/23/00	6.83	5.00E+00	2.6	0.0	13.7	16.2	2.5	2.8	431
D SU	9/6/00	7.09	5.00E+00	0.9	0.0	13.4	14.3	2.9	3.0	442
D SU	9/20/00	7.01	1.00E+01	0.6	0.0	14.6	15.2	2.9		436
D SU	10/3/00	7.08	1.00E+01	0.5	0.0	13.7	14.1	2.9	3.0	438
D SU	10/17/00	7.07	2.10E+01	0.4	0.0	13.1	13.5	2.7		415
D SU	10/30/00	7.07	4.00E+01	0.3	0.0	14.2	14.5	2.9	3.0	400
D SU	11/14/00	7.02	1.00E+01	0.4	0.0	11.6	12.1	2.3	3.0	336
D SU	11/28/00	7.05	5.00E+00	0.0	0.0	11.1	11.1	2.2	2.8	334
D SU	12/12/00	6.96	5.00E+00	0.6	0.0	15.4	16.0	2.9	3.0	405
D SU	12/26/00	6.95	5.00E+00	1.6	0.0	14.6	16.2	2.8	2.9	378
D SU	1/9/01	6.56	7.10E+02	0.2	0.0	17.9	18.1	2.7	2.7	434
D SU	1/23/01	6.14	2.00E+01	11.1	0.9	11.1	23.1	2.9	3.1	414
D SU	2/6/01	6.33	1.00E+01	0.2	0.2	22.1	22.4	2.5	2.5	360
D SU	2/20/01	6.51	7.00E+01	1.2	0.0	17.1	18.3	3.0	3.0	422
D SU	3/13/01	6.55	5.00E+00	4.5	0.0	9.2	13.7	2.6	2.7	380
D SU	3/27/01	6.43	5.00E+00	0.7	0.0	16.2	17.0	2.3	2.4	258
D SU	4/10/01	6.42	2.00E+00		0.0	7.1	7.1	2.3	2.4	306
D SU	4/24/01	6.69	1.00E+00	1.6	0.0	9.8	11.4	2.5	2.7	348
D SU	5/8/01	6.32	6.80E+01	1.1	0.0	14.0	15.0	3.8	3.9	417
D SU	5/22/01	6.24	8.20E+01	3.4	0.0	11.8	15.2	3.4	3.6	466
D SU	6/5/01	5.93	7.20E+01	1.7	0.0	20.0	21.8	2.8	3.2	453
D SU	7/2/01	5.84	2.00E+02	6.0	0.1	22.5	28.6	1.9	2.2	447
D SU	7/17/01	5.87	5.00E+00	8.5	0.0	22.3	30.8	2.2	2.2	436
D SU	7/31/01	5.87	5.00E+00	7.5	0.1	20.7	28.2	2.4	2.4	393
D SU	8/14/01	5.83	5.00E+00	0.8	0.0	25.4	26.2	2.4	2.5	444
D SU	8/28/01	5.76	1.00E+01	9.0	0.0	13.2	22.3	2.5	2.5	359
D SU	9/11/01	5.75	5.00E+00	0.3	0.0	22.7	23.1	2.8	2.9	373
D SU	9/25/01	5.71	5.00E+00	5.3	0.0	16.5	21.8	2.9	2.9	387
D SU	10/9/01	5.94	5.00E+00	0.5	0.0	20.9	21.5	3.8	3.8	361