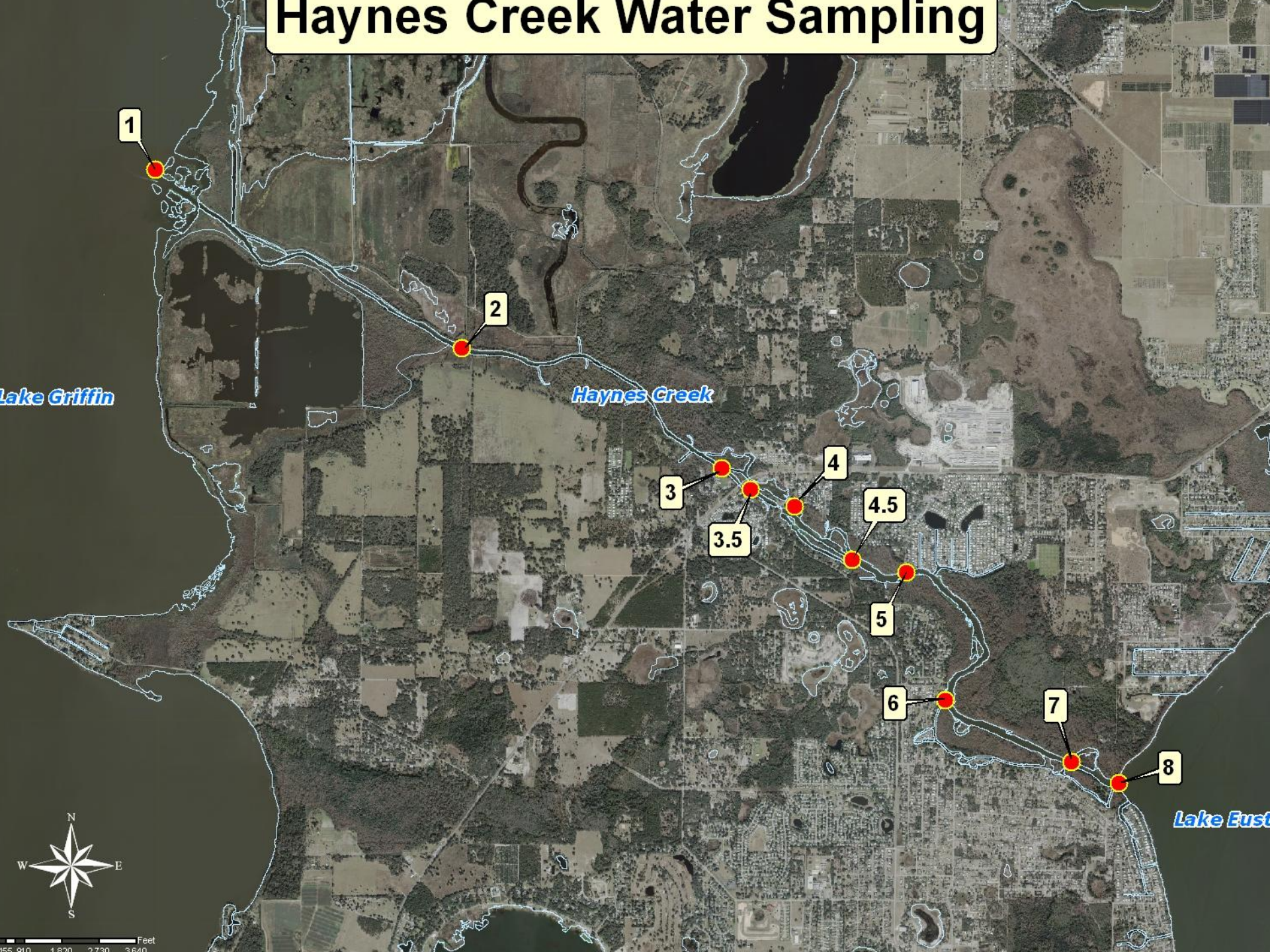
Summer 2009
Haynes Creek Bacteria Project

Contributors:

Lake County WRM Lab & AAL Program,

Lake County Water Authority,

Lake County Sheriff Marine Patrol


Haynes Creek Water Sampling
1
2
3
3.5
4
4.5
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6
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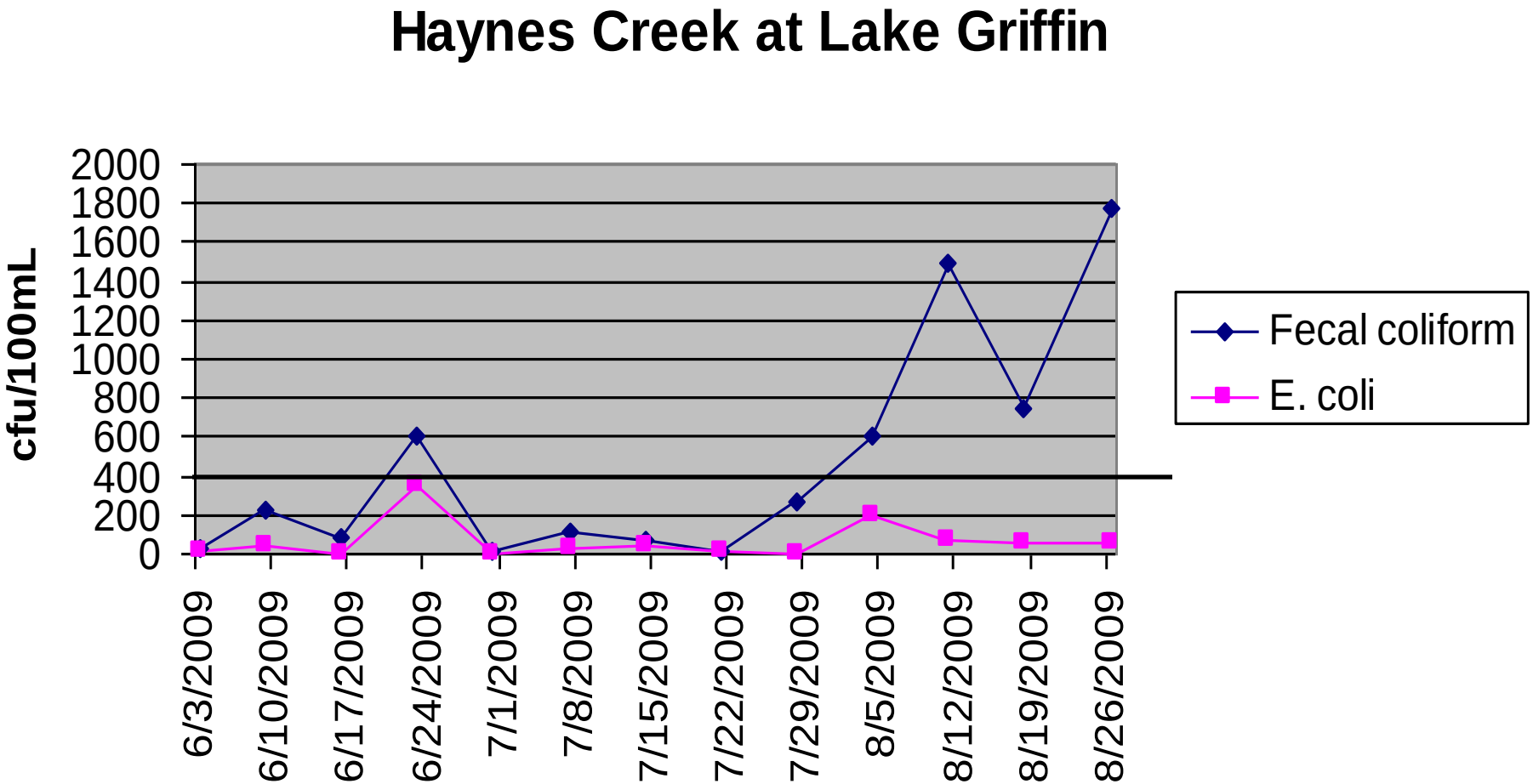
8
Lake Griffin
Haynes Creek
Lake Eust
N
W
E
S
Feet

Volunteers Collecting Samples

Site 1 – at Lake Griffin

Site 1


Haynes Creek at Lake Griffin
cfu/100mL
2000
1800
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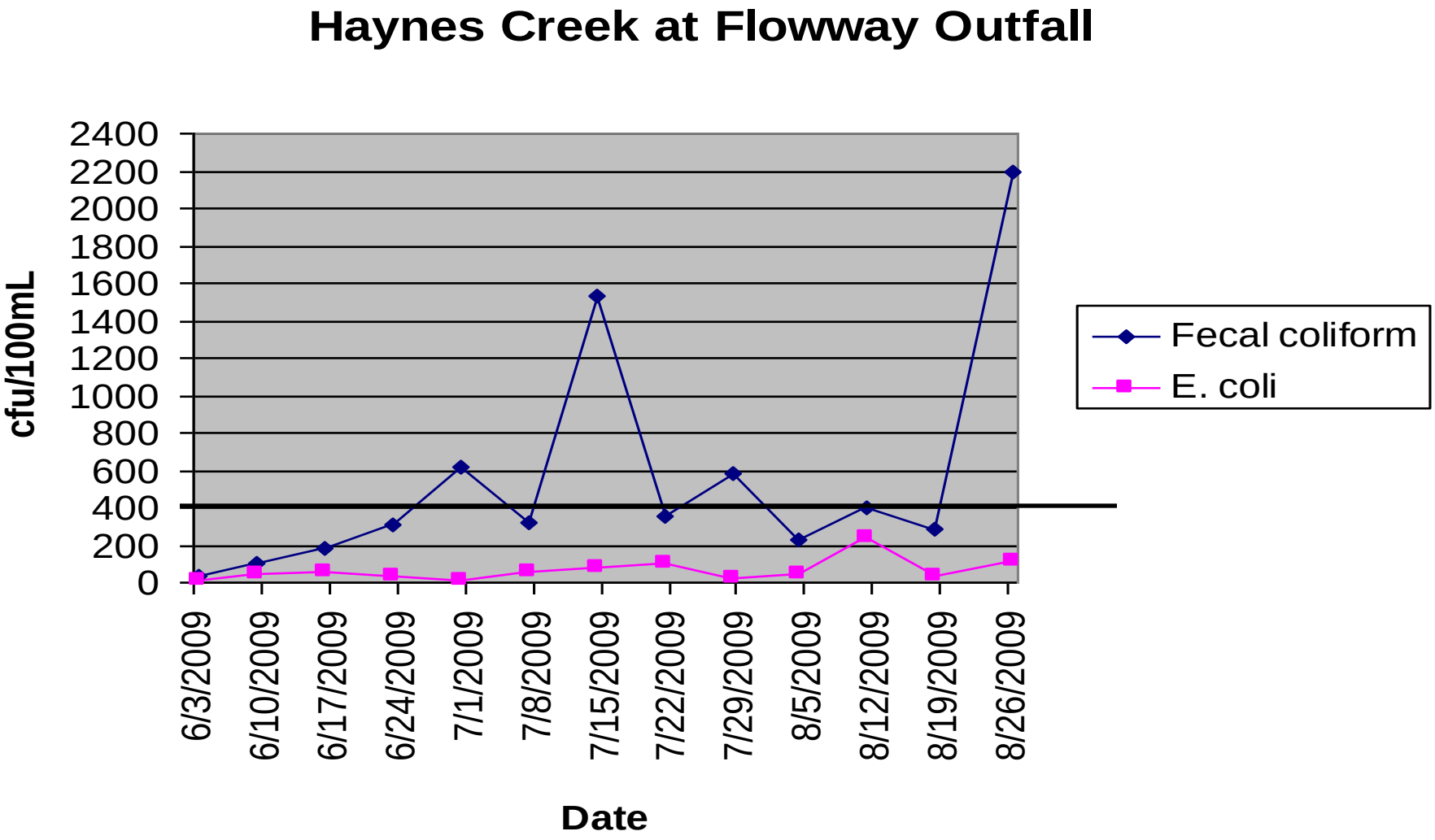
0
6/3/2009
6/10/2009
6/17/2009
6/24/2009
7/1/2009
7/8/2009
7/15/2009
7/22/2009
7/29/2009
8/5/2009
8/12/2009
8/19/2009
8/26/2009
Date
Fecal coliform
E. coli

Site 2 – at Flow way Outfall

Site 2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2400
2200
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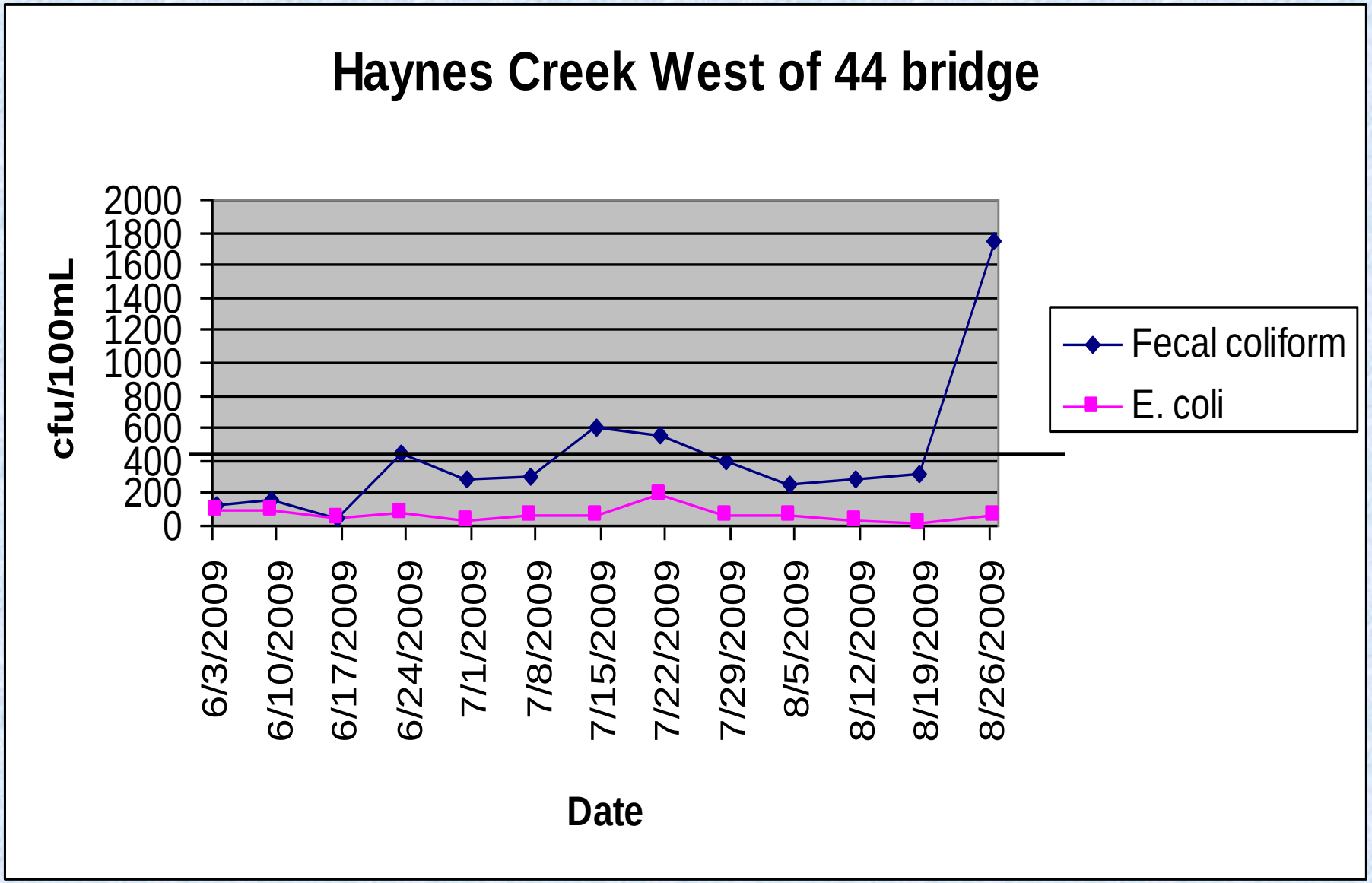
6/3/2009
6/10/2009
6/17/2009
6/24/2009
7/1/2009
7/8/2009
7/15/2009
7/22/2009
7/29/2009
8/5/2009
8/12/2009
8/19/2009
8/26/2009
Date
Fecal coliform
E. coli

Site 3 – west of 44 bridge

Site 3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6/3/2009
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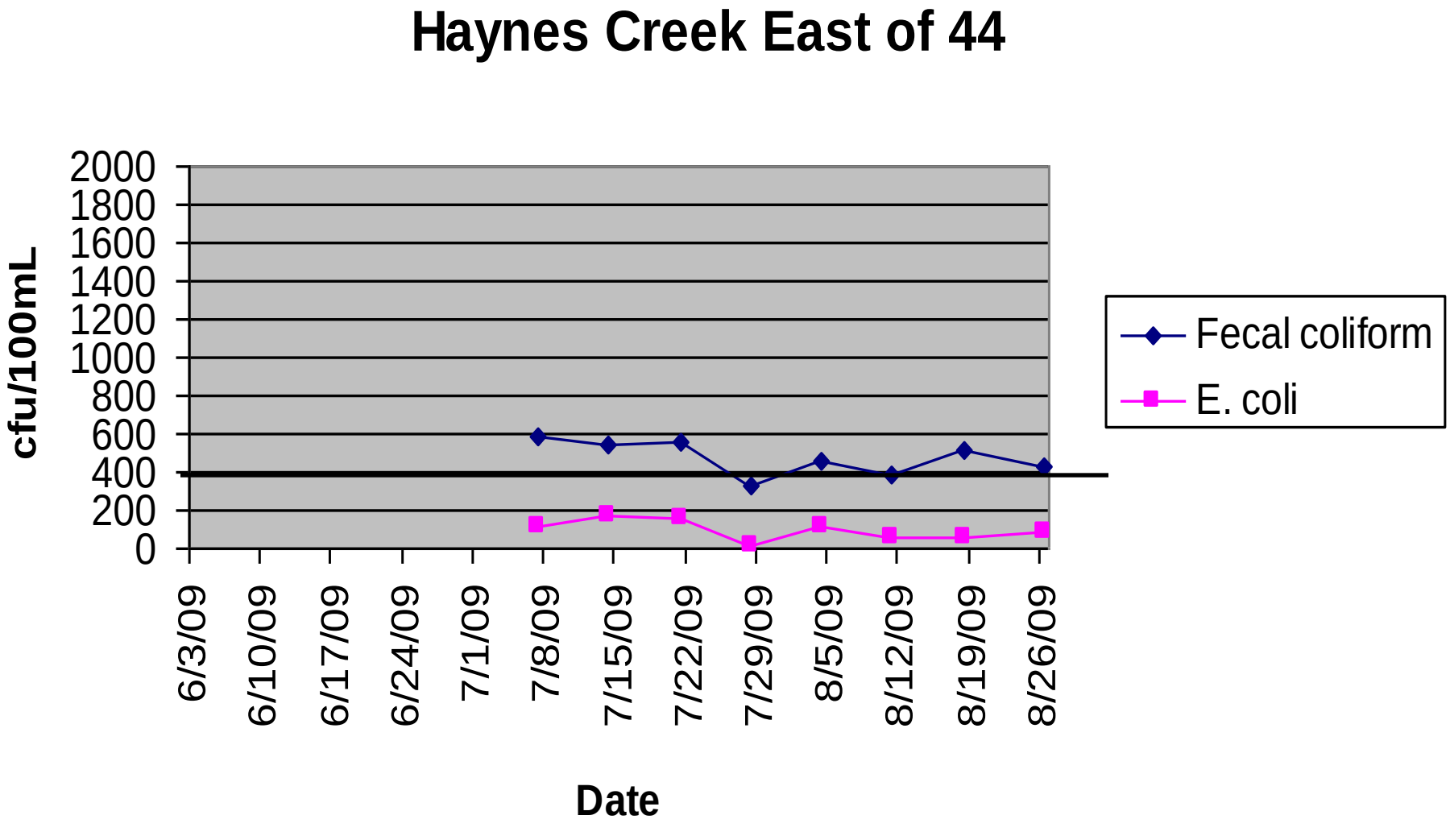
6/17/2009
6/24/2009
7/1/2009
7/8/2009
7/15/2009
7/22/2009
7/29/2009
8/5/2009
8/12/2009
8/19/2009
8/26/2009
Date
Fecal coliform
E. coli

Site 3.5 – East of 44 bridge

Site 3.5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6/3/09
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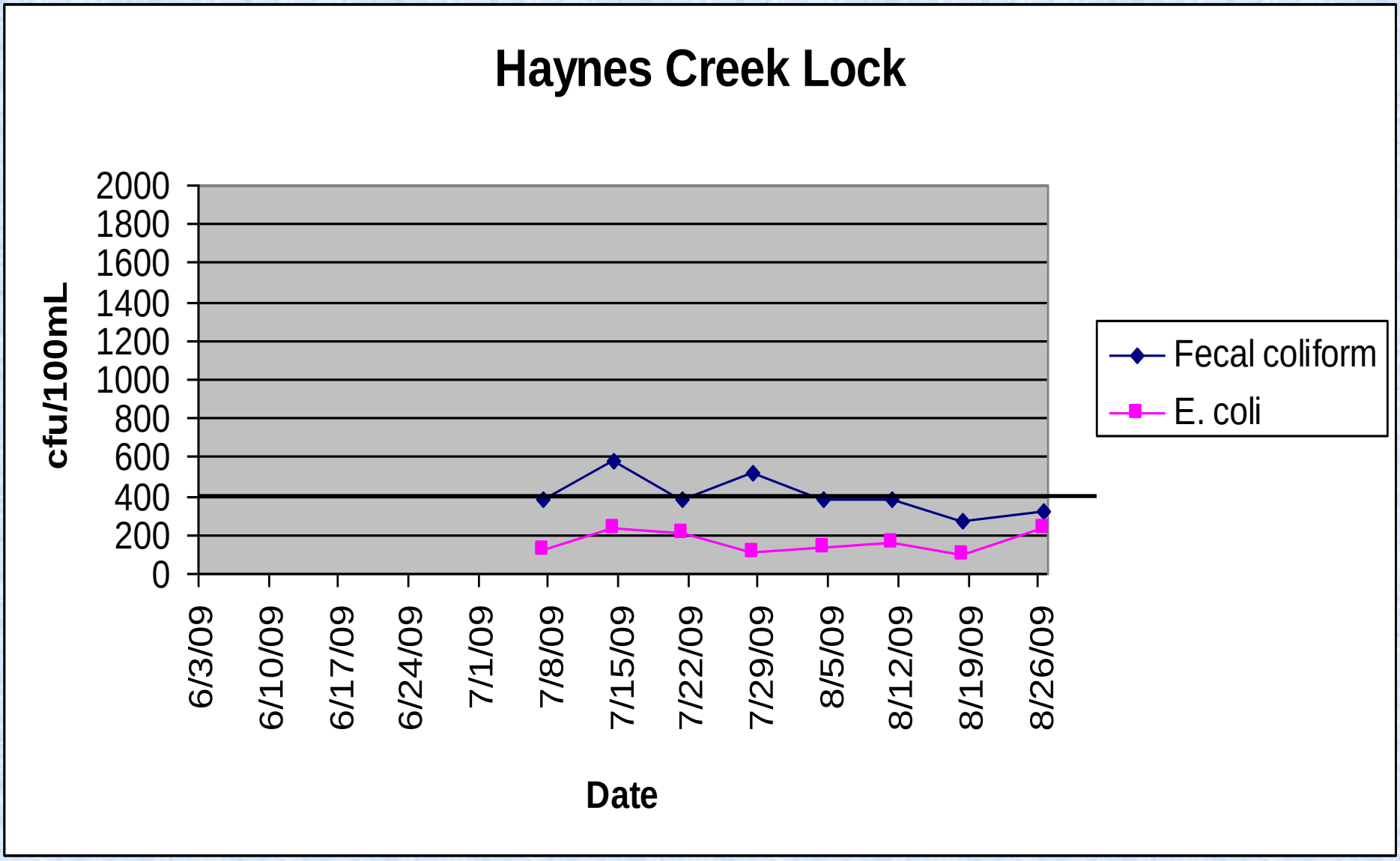
6/17/09
6/24/09
7/1/09
7/8/09
7/15/09
7/22/09
7/29/09
8/5/09
8/12/09
8/19/09
8/26/09
Date
Fecal coliform
E. coli

Haynes Creek Lock

Lock


Haynes Creek Lock
cfu/100mL
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1800
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6/3/09
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6/17/09
6/24/09
7/1/09
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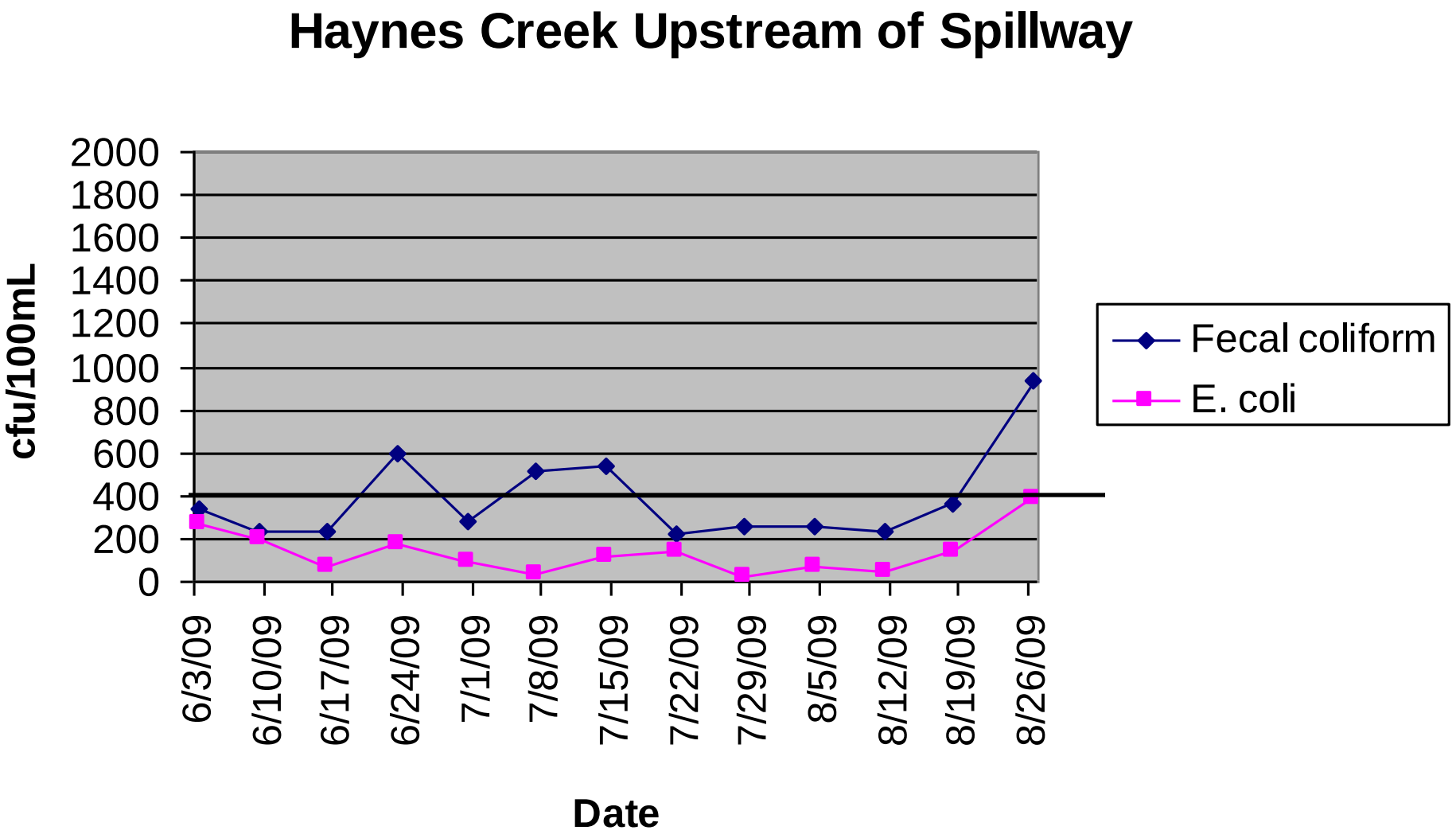
7/22/09
7/29/09
8/5/09
8/12/09
8/19/09
8/26/09
Date
Fecal coliform
E. coli

Site 4 – Upstream of spillway

Site 4


Haynes Creek Upstream of Spillway
cfu/100mL
2000
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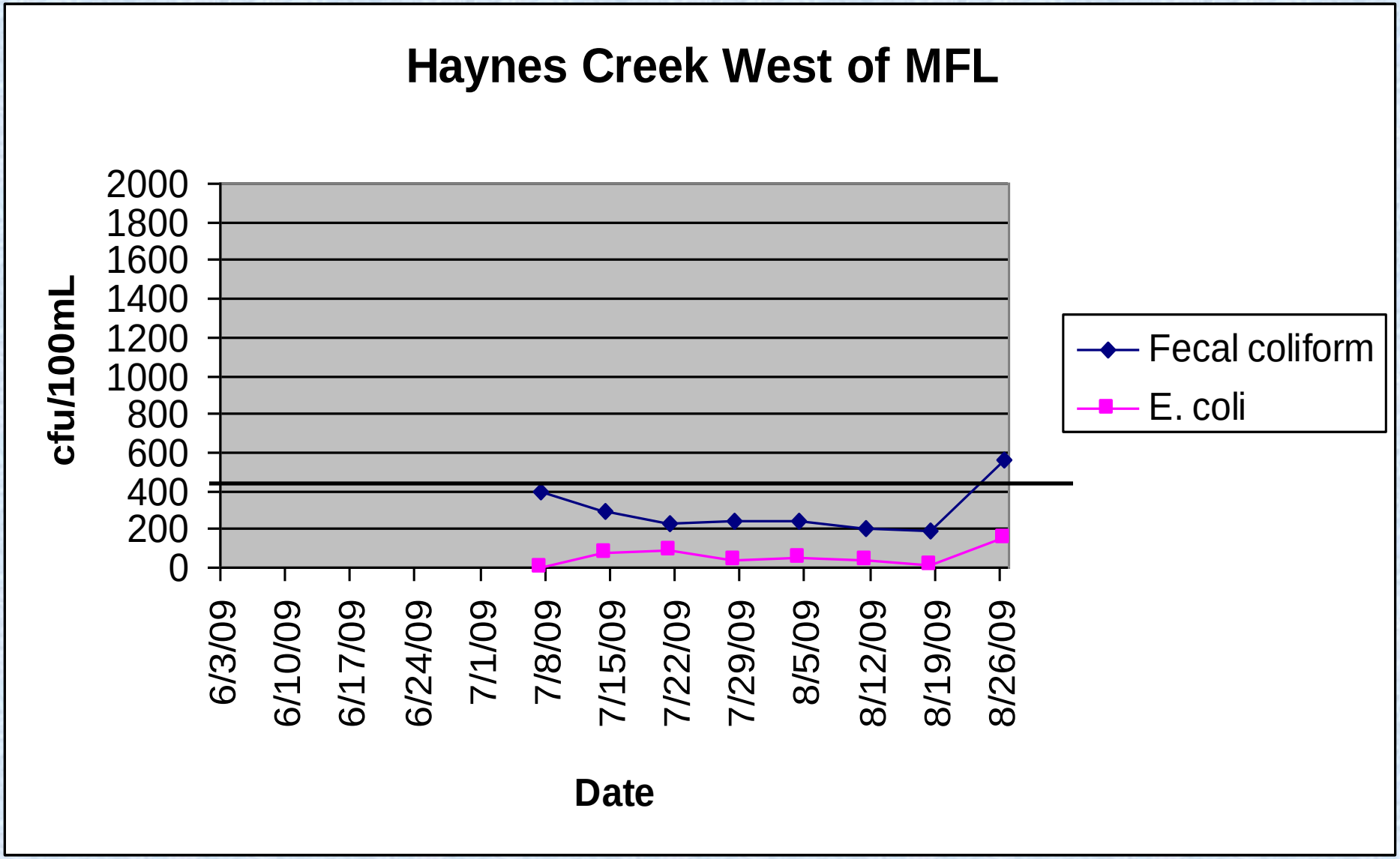
6/3/09
6/10/09
6/17/09
6/24/09
7/1/09
7/8/09
7/15/09
7/22/09
7/29/09
8/5/09
8/12/09
8/19/09
8/26/09
Date
Fecal coliform
E. coli

Site 4.5 – West of MFL

Site 4.5


Haynes Creek West of MFL
cfu/100mL
2000
1800
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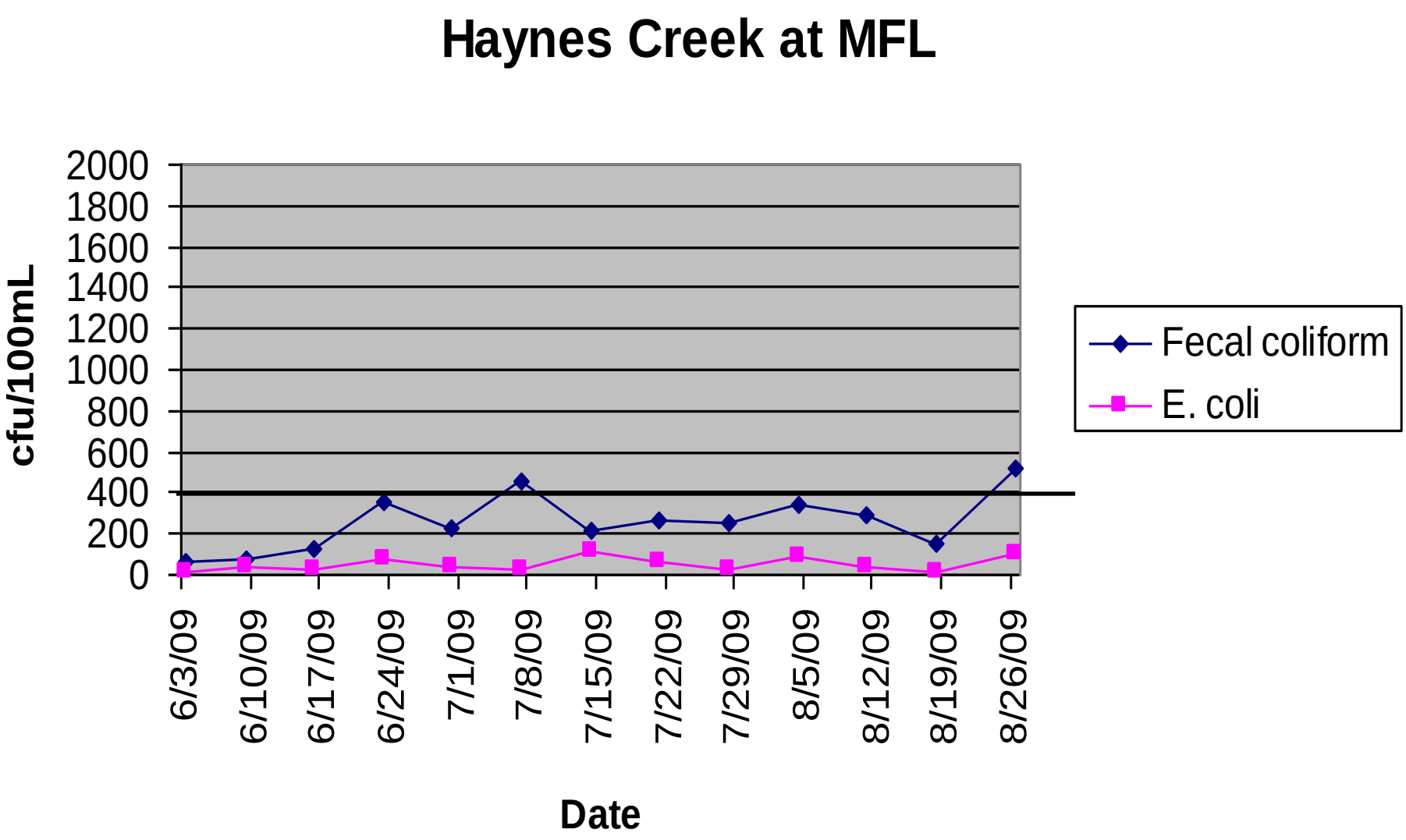
0
6/3/09
6/10/09
6/17/09
6/24/09
7/1/09
7/8/09
7/15/09
7/22/09
7/29/09
8/5/09
8/12/09
8/19/09
8/26/09
Date
Fecal coliform
E. coli

Site 5 – at MFL

Site 5


Haynes Creek at MFL
cfu/100mL
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1800
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1400
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6/3/09
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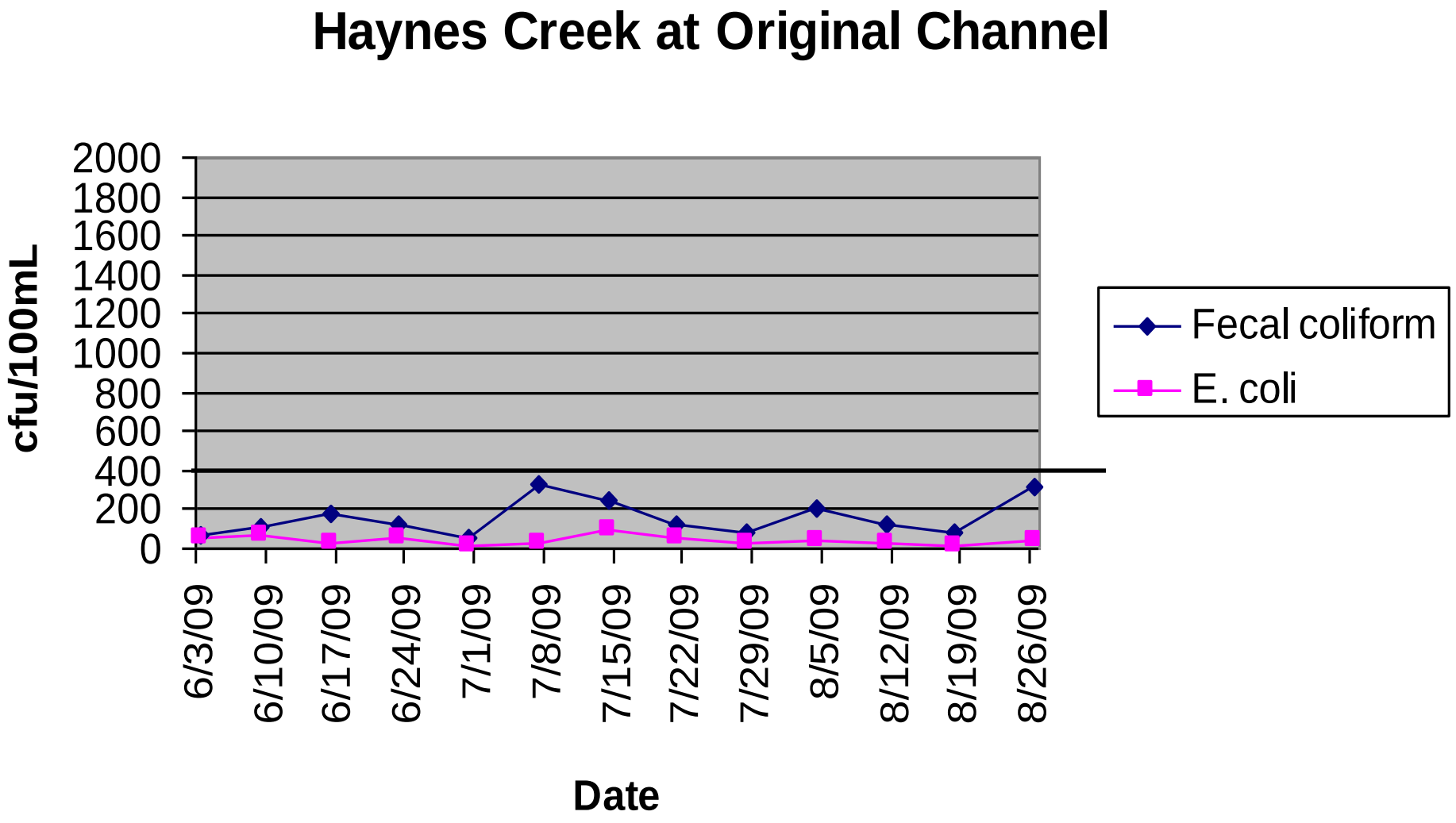
6/17/09
6/24/09
7/1/09
7/8/09
7/15/09
7/22/09
7/29/09
8/5/09
8/12/09
8/19/09
8/26/09
Date
Fecal coliform
E. coli

Site 6 – Original channel

Site 6


Haynes Creek at Original Channel
cfu/100mL
2000
1800
1600
1400
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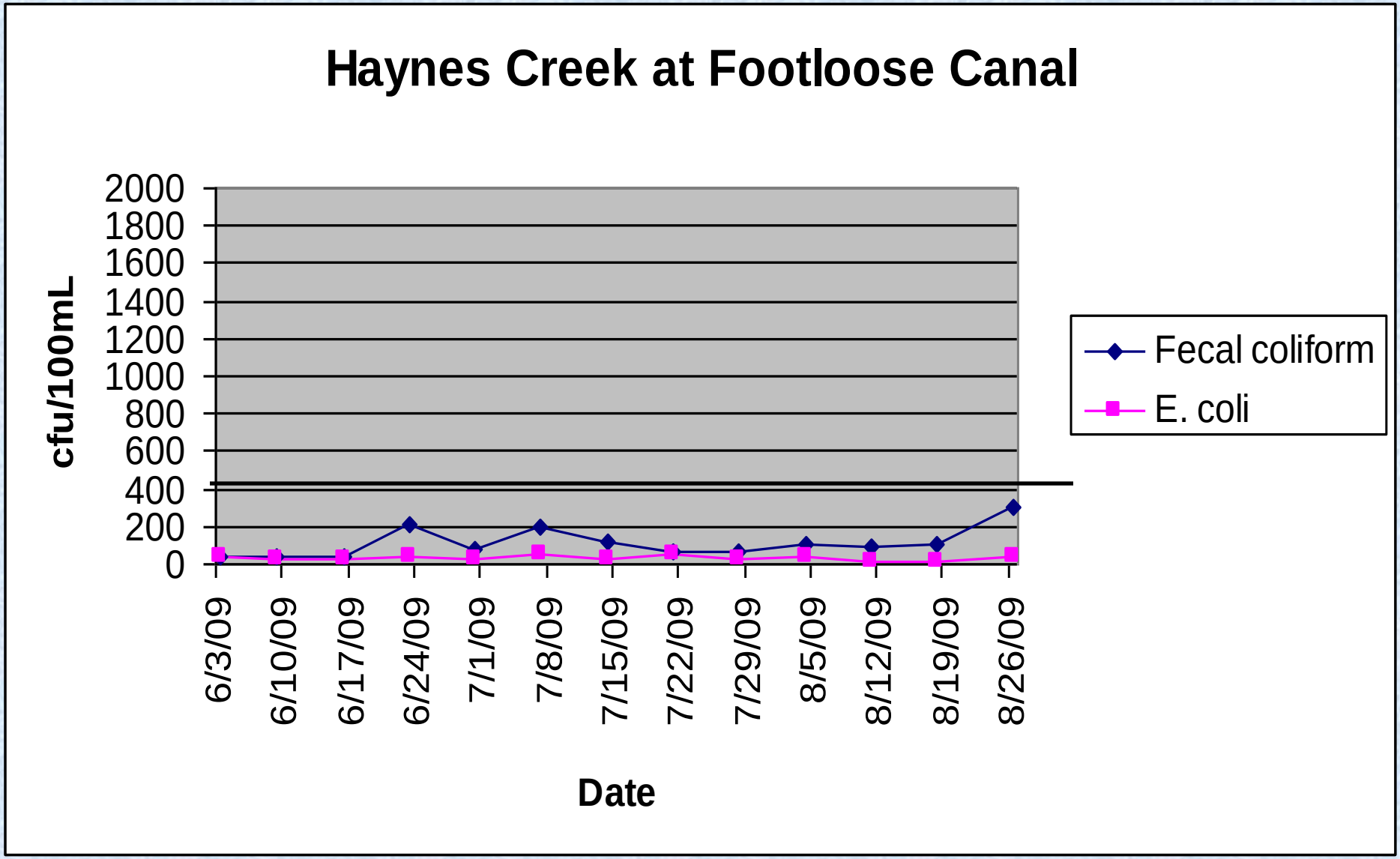
0
6/3/09
6/10/09
6/17/09
6/24/09
7/1/09
7/8/09
7/15/09
7/22/09
7/29/09
8/5/09
8/12/09
8/19/09
8/26/09
Date
Fecal coliform
E. coli

Site 7 – at Footloose Canal

Site 7


Haynes Creek at Footloose Canal
cfu/100mL
2000
1800
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1400
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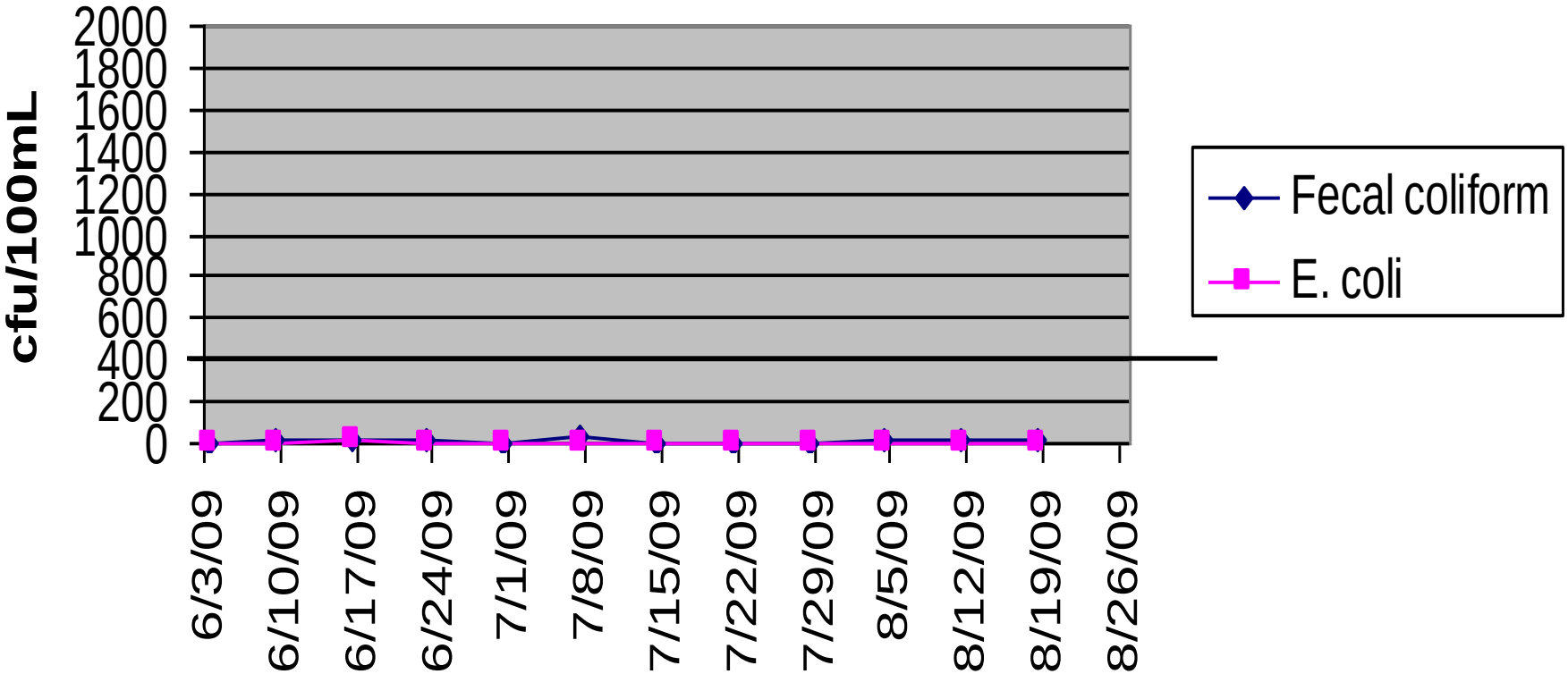
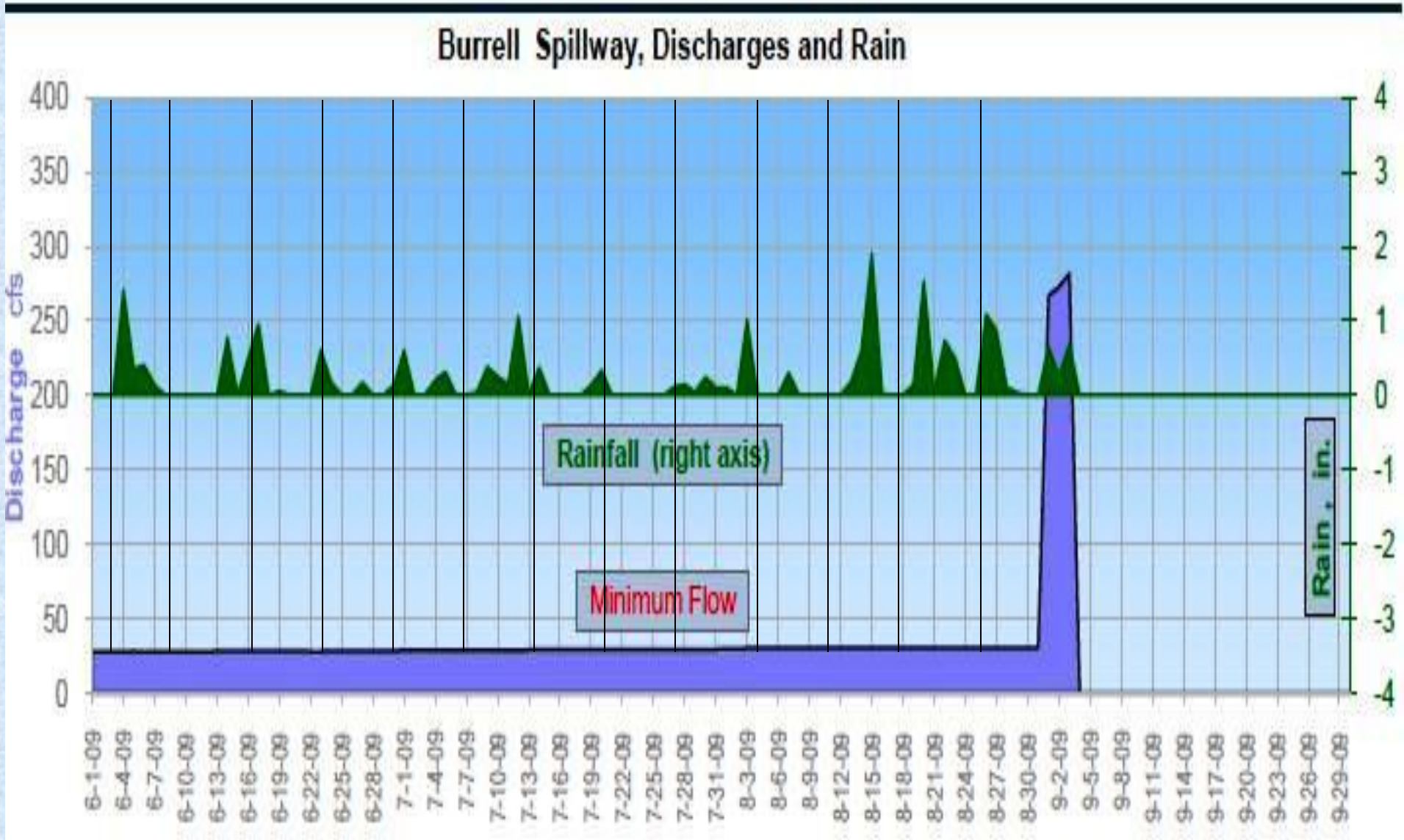
6/3/09
6/10/09
6/17/09
6/24/09
7/1/09
7/8/09
7/15/09
7/22/09
7/29/09
8/5/09
8/12/09
8/19/09
8/26/09
Date
Fecal coliform
E. coli

Site 8 – at Lake Eustis

Site 8


Haynes Creek at Lake Eustis
cfu/100mL
2000
1800
1600
1400
1200
1000
800
600
400
200
0
6/3/09
6/10/09
6/17/09
6/24/09
7/1/09
7/8/09
7/15/09
7/22/09
7/29/09
8/5/09
8/12/09
8/19/09
8/26/09
Date
Fecal coliform
E. coli

Rainfall Data for Project Time Period



62-302.530, Criteria for Surface Water Quality Classifications

- Class III: Recreation, Propagation and Maintenance of a Healthy, Well Balanced Population of Fish and Wildlife
  - Fecal coliform bacteria shall not exceed a monthly average of 200, **nor exceed 400 in 10% of the samples**, nor exceed 800 on any one day.

Bacteria Data

	HaynesCkGr		HaynesCkFW		HaynesCk44		HaynesCkE44		HaynesCkLock		HaynesCkUp		HaynesCkWMFL		HaynesCkMFL		HaynesCkOld		HaynesCkFoot		HaynesCkEus	
Date	Fecal	E.coli	Fecal	E.coli	Fecal	E.coli	Fecal	E.coli	Fecal	E.coli	Fecal	E.coli	Fecal	E.coli	Fecal	E.coli	Fecal	E.coli	Fecal	E.coli	Fecal	E.coli
6/3/2009	29	12	32	17	124	92					340	270			66	14	66	58	43	40	3	3
6/9/2009	220	44	104	48	156	100					230	200			80	40	116	72	38	28	10	7
6/16/2009	88	4	188	52	48	40					233	74			128	30	180	28	35	20	18	18
6/23/2009	612	348	304	34	450	80					600	170			350	70	124	52	208	44	20	6
6/30/2009	8	7	614	7	280	24					286	96			224	32	52	12	80	32	6	1
7/7/2009	108	32	320	60	300	60	590	120	380	120	520	30	400	0	450	20	335	22	197	49	32	5
7/14/2009	75	49	1532	80	600	60	540	175	580	230	540	115	290	80	210	112	240	90	120	24	8	1
7/21/2009	12	12	360	100	550	190	550	150	380	210	226	140	229	86	260	69	128	52	68	48	6	1
7/28/2009	270	0	580	20	400	60	330	20	520	108	260	20	240	32	250	26	80	23	66	23	6	4
8/4/2009	600	200	229	43	249	58	463	108	380	130	260	70	240	50	340	90	212	36	110	36	12	2
8/11/2009	1500	65	400	240	288	28	380	50	380	160	232	52	204	36	292	40	124	28	87	7	18	2
8/18/2009	740	60	284	32	316	20	515	50	270	100	364	136	187	14	147	7	83	9	99	12	19	5
8/26/2009	1780	60	2200	110	1740	70	430	90	320	230	935	391	560	147	520	96	310	40	300	40		

Nutrient Data

	June TN	June TP	July TN	July TP	August TN	August TP
Griffin	1.94	0.032	1.61	0.032	1.49	0.025
Flowway	1.66	0.034	1.5	0.027	1.57	0.031
W of 44	1.53	0.023	1.59	0.025	1.41	0.021
E of 44			1.5	0.020	1.40	0.026
Lock			1.53	0.028	1.63	0.034
Spillway	1.73	0.031	1.46	0.032	1.38	0.012
W of MFL			3.16	0.022	1.44	0.024
MFL	1.48	0.025			1.51	0.023
Old	1.42	0.028	1.39	0.024	1.54	0.025
Footloose	1.59	0.031	1.31	0.022	1.32	0.016
Eustis	1.57	0.026	2.35	0.050	1.79	0.011
discharge					1.62	0.87

Results are in mg/L

Summary of Data

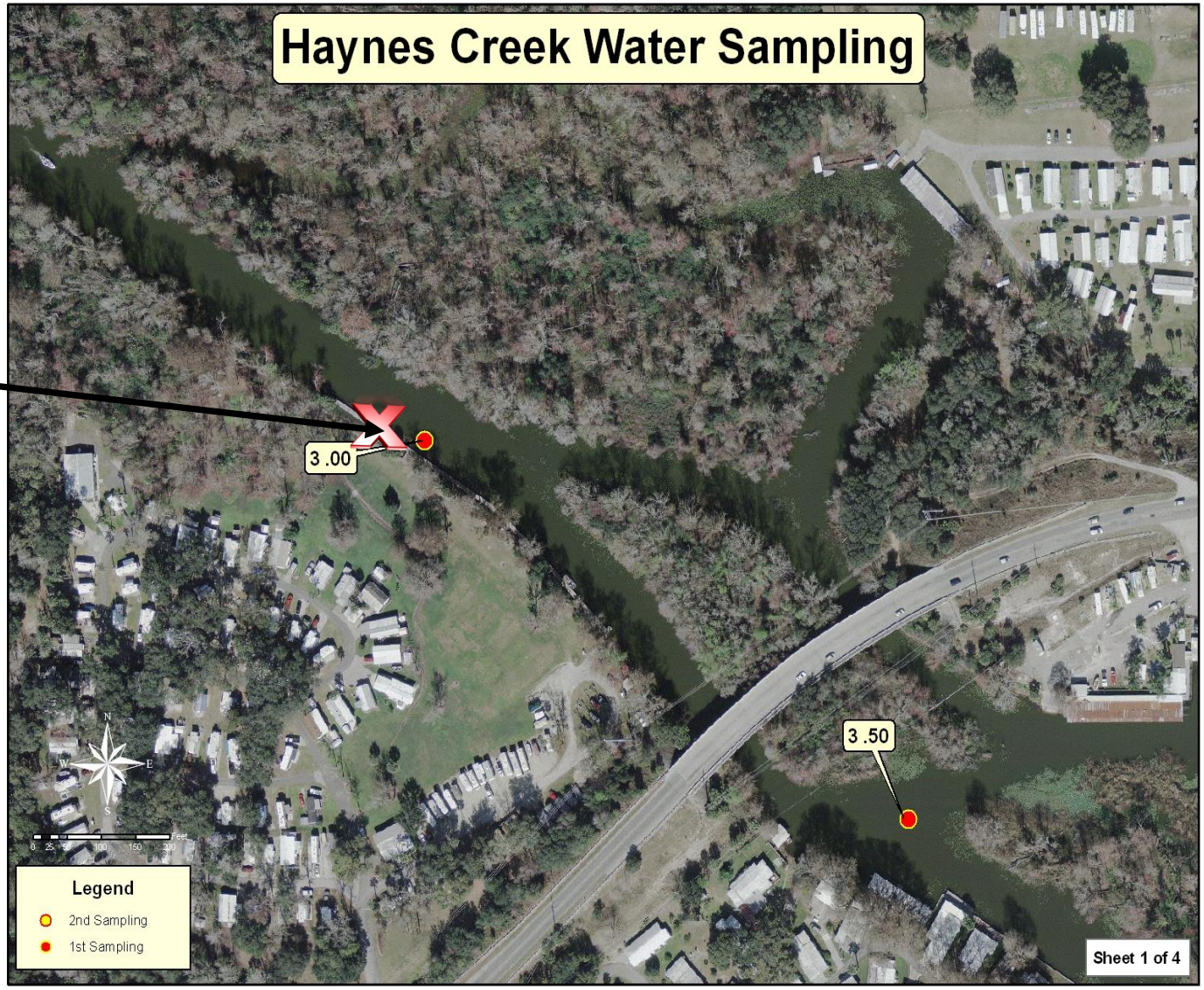
- Lk. Griffin - 5 of 13 samples were > 400 (38%)
- Flow way – 4 of 13 samples were > 400 (31%)
- W of 44 – 4 of 13 samples were > 400 (31%)
- E of 44 - 6 of 8 samples were > 400 (75%)
- Lock - 2 of 8 samples were > 400 (25%)
- Spillway - 4 of 13 samples were > 400 (31%)
- W of MFL - 1 of 8 samples were > 400 (12.5%)
- MFL - 2 of 13 samples were > 400 (15%)

- Original - 0 of 13 samples were > 400 (0%)
- Footloose - 0 of 13 samples were > 400 (0%)
- Lk. Eustis - 0 of 13 samples were > 400 (0%)

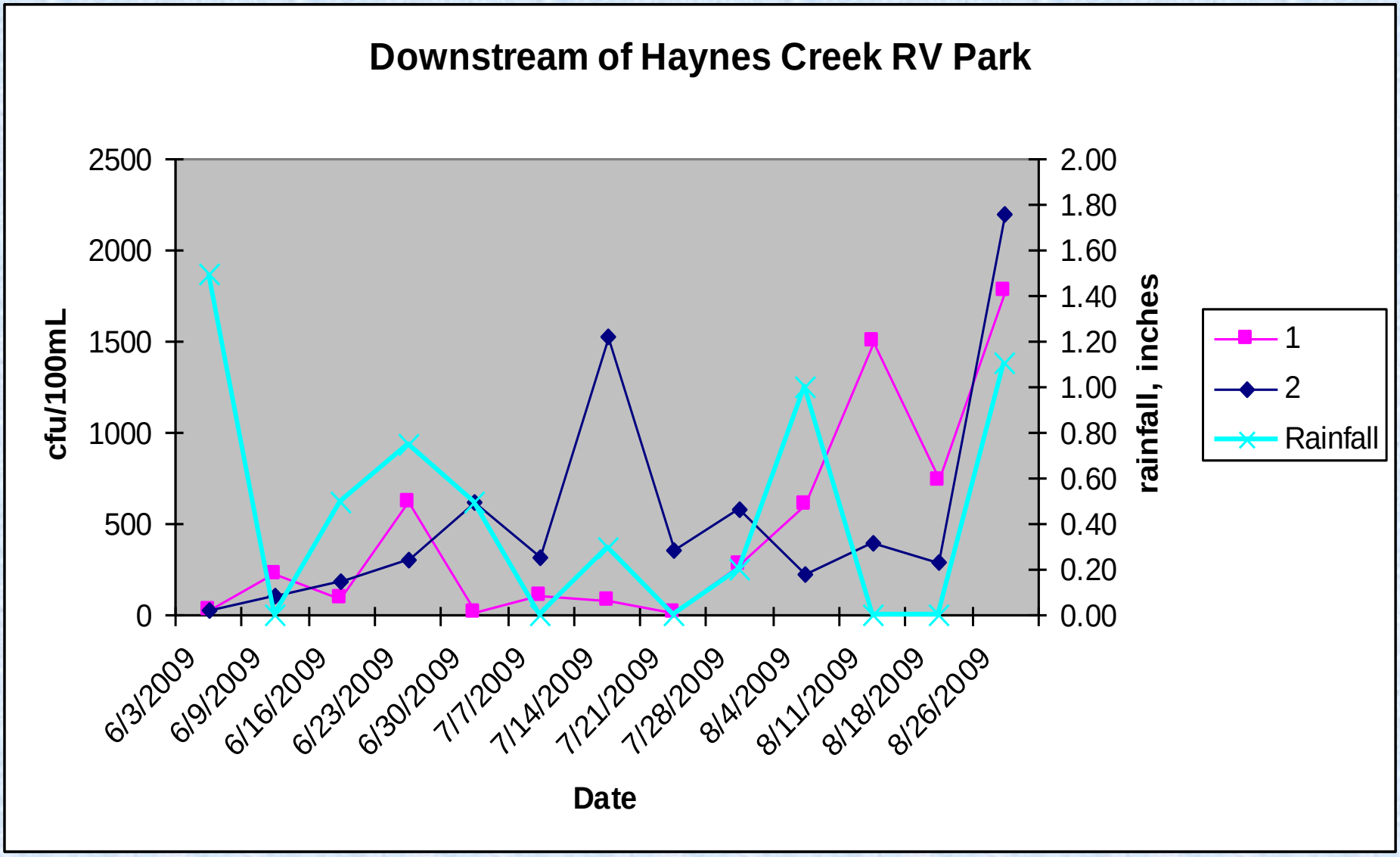
Initial Findings

Mobile Home Park with direct discharge to Haynes Creek immediately downstream of site 3 (observed on 8/26/09 event)

Fecal Coliforms from discharge were > 20,000 cfu/100mL



Rainfall data vs. Fecal coliforms




Lake County, Florida
5
4
3
2
6
1
7
8
GATOR LN
SNOWBIRD CR
CR 44

Data from Haynes Creek RV Park

Site	Fecal coliform	E. coli
1	580000	300000
2	2300	1300
3	4000	4000
4	5400	800
5	22400	4200
6	3310	940
7	3980	460
8	3840	180

What's Next?

- Continue working with Haynes Creek RV, Health Department, SJRWMD and FDEP? to stop discharge to Haynes Creek
- Walk the WBID in the 44 bridge area (east side)
- Other Suggestions?

Adopt-a-Lake Program Update

- Currently 48 sites adopted
- Average samples each month = 25
- WRM Lab has analyzed 422 samples for AAL program
- On-going Water Quality Improvement Projects (WQIPs)
  - Silver Lake
  - Lake Joanna
  - Lake Winona
  - Haynes Creek