Jacksonville
Where Florida Begins.

City of Jacksonville's Fecal Coliform TMDL Program

- **In the beginning: the City established a tributary monitoring program.**

- **Approximately 100 sites are monitored for field parameters and fecal coliform bacteria.**
- **Years of fecal coliform violations in Jacksonville tributaries have been documented.**
- **The “Red Dot Map” was created.**

Fecal coliform geometric mean 1993 - 99

Red dot equals geomean greater than 800 cfu/100mL

Larger the dot the greater the violation

Fecal Coliform Colonies per 100 mL

GTC	fec qtr 04
ARL11	766
ARL15	152666
ARL18	766
ARL20	66
ARL23	226
ARL3	566
ARL33	66
ARL453	26
ARL6	866
ARL8	66
BP64	26
BP67	26
BP71	26
BP165	6
BP265	6
CR123	3866
CR2	5666
CR21	1266
CR26	3666
CR+27	2466
CR+28	2466
CR+36	566
CR5	2666
CR64	2466
CR65	766
CR96	866
DC144	66
DC5	26
DC6	866
DEC1	66
DR1	266
DR2	6
DUC3	1666
DUC4	2266
DUC+	266
GC1	6
GC2	6
GC3	6
HC3	16666
IWW2	226
IWWD	6
IWWF	226
IWWG	266
IWWH	366
JC15	1626
JC+46	566
JC+41	666
JC5	666
LB1	366
LB2	66
LP3	+66
LP4	66
LP7	1126
MC3	3666
MC4	1766
OR13	266
OR3++	+66
OR3+6	26
OR3+8	276
OR+	866
OR+2+	6
OR8	226
PC2	166
PC3	6
PC8	166
SC1	566
SC3	766
SS1	54666
SS10	26
SS11	+66
SS16	+66
SS17	+66
SS18	1126
SS19	16+6
SS20	266
SS26	166
SS319	++6
SS+	2766
SS61	266
TC1	66
TR16	176
TR112	116
TR11+	866
TR122	226
TR128	266
TR23	166
TR3	26
TR314	266
TR316	176
TR3+	566
TR3T	226
TR+6	1266
TR+22	26
YWC1	26
YWC2	26
BB1	26
CR6	5666
DELT	1+66
DC+	266
BP65	26

Legend

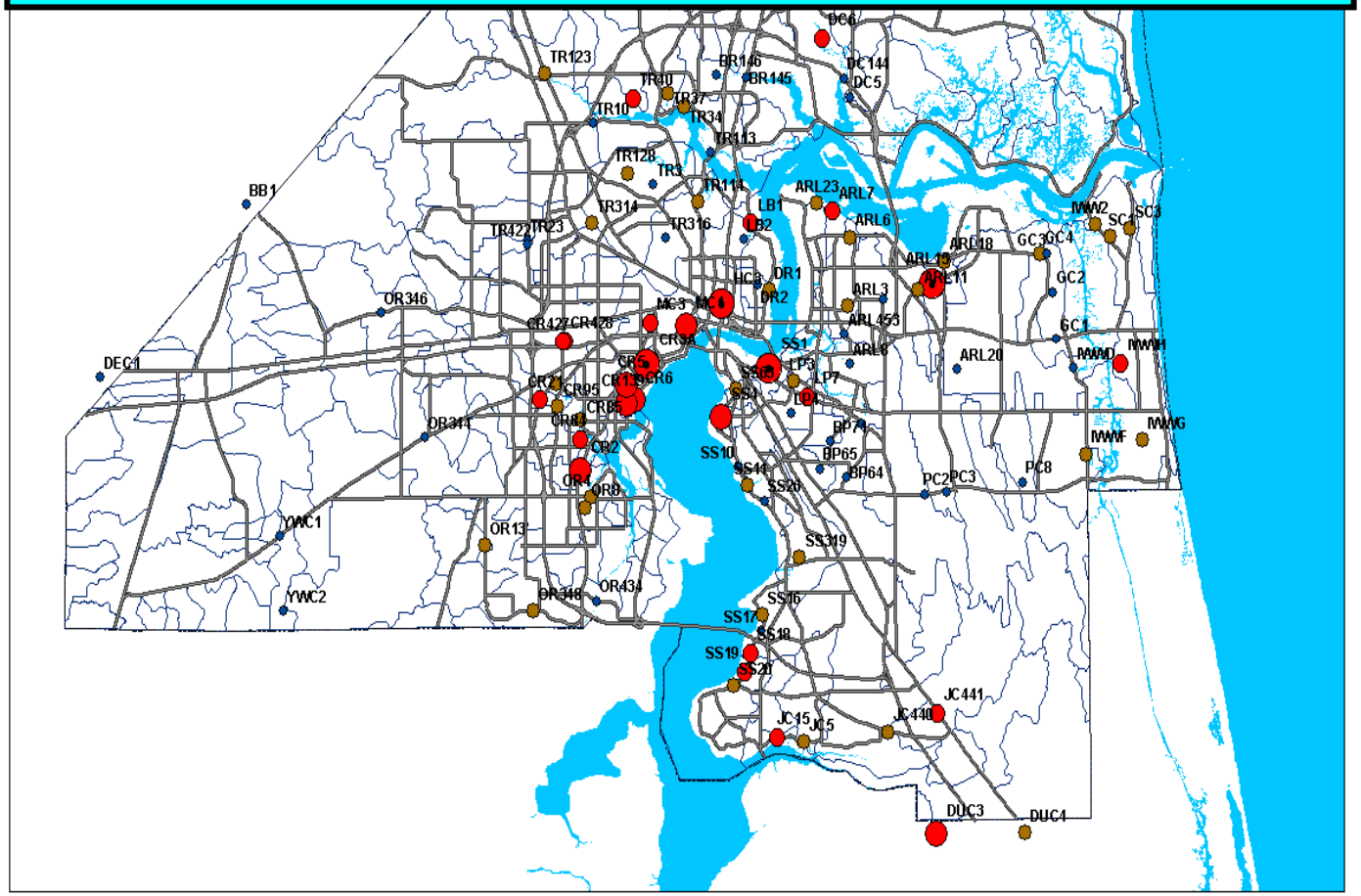
1st_qtr_04

- 0 - 200
- 201 - 800
- 801 - 2400
- 2401 - 8000
- >8000

Red dot equals greater than 800 cfu/100mL

Larger the dot the greater the violation

First Quarter 2004



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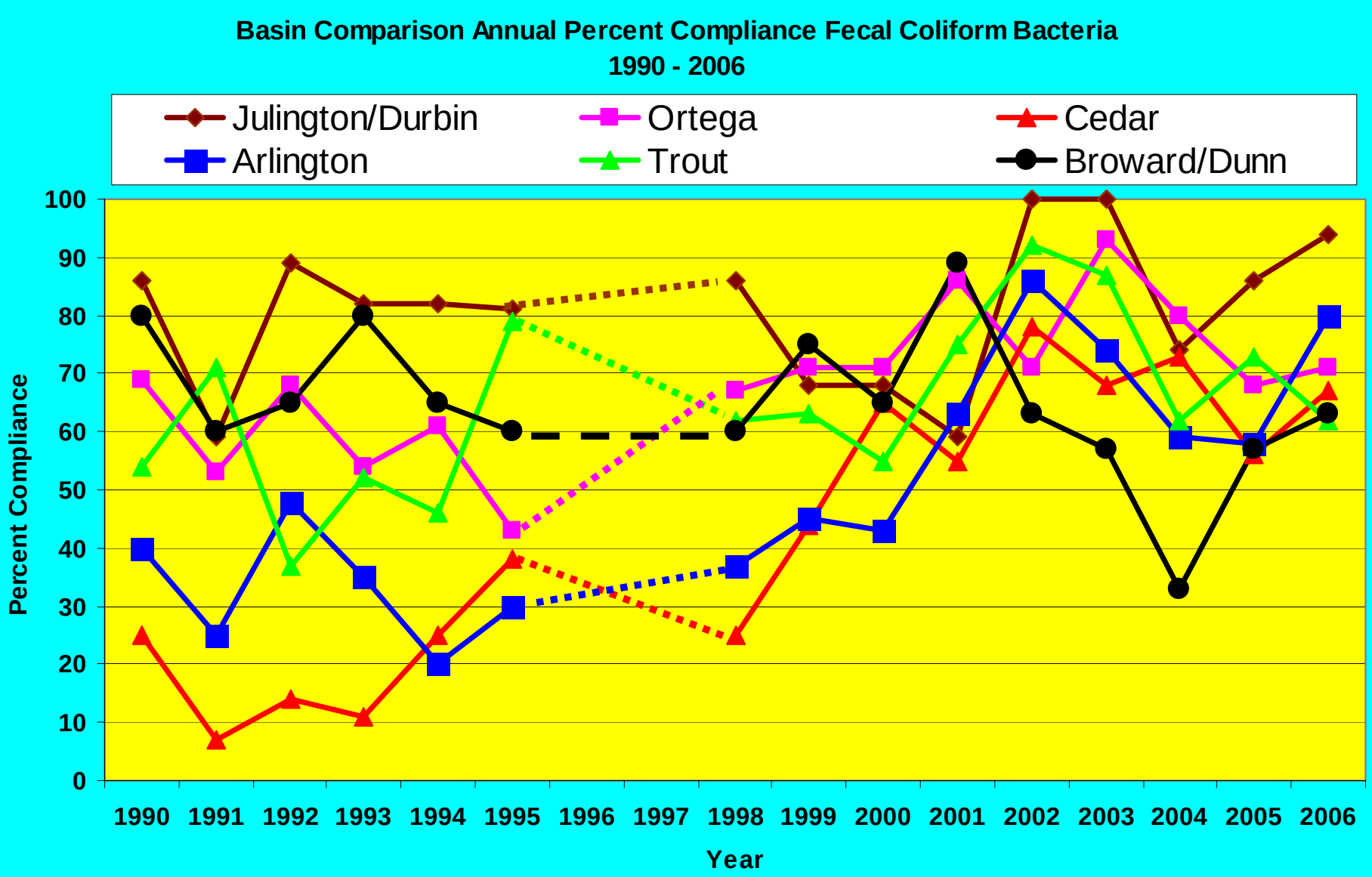
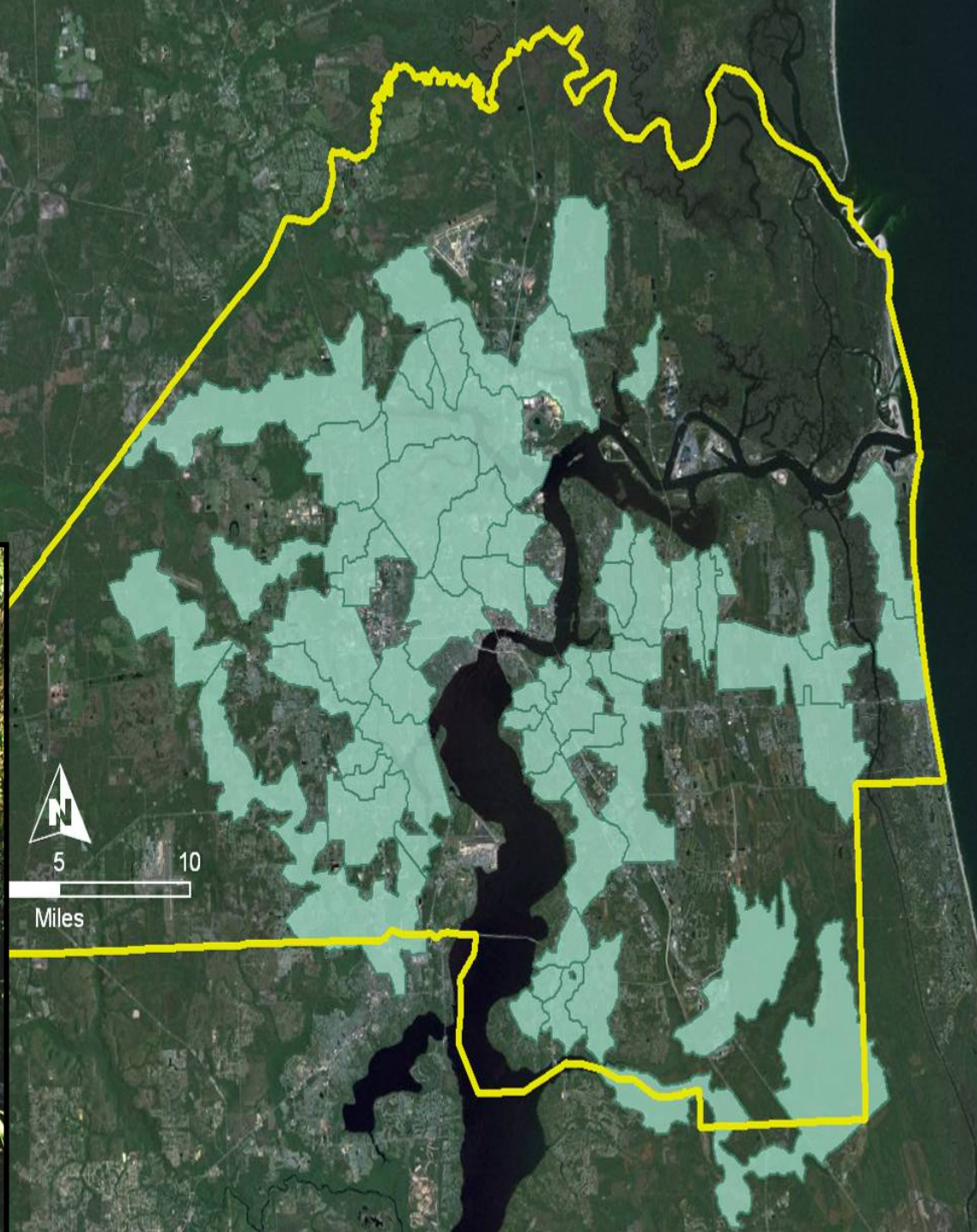
Drawn by:
Michael R. Thomas,
Environmental Quality Division
City of Jacksonville

Duval County Tributary Monitoring Stations
First Annual Quarter Fecal Coliform Data



Gradual improving trend, averaging 50 to 80 percent compliance with one-time grab maximum standard of 800 cfu/100mL

As of 2008 DEP has verified 55 WBIDs as impaired for fecal coliform bacteria



1997 Jacksonville gets serious about understanding the fecal coliform problem in local tributaries

- **Identify sources**
- **Take corrective action**
- **Continue monitoring**

The 1997 St. Johns River Summit

- **Bacteria in the tributaries were highlighted as an issue.**
- **Former Mayor John Delaney, former SJRWMD Executive Director Henry Dean and former speaker, Florida House of Representatives John Thrasher.**
- **Initiated the first Special Legislative Appropriation (SLA) from the Florida legislature to environmental issues in the lower St. Johns River. ($ 5-10 million per year to lower SJRB)**

Not all fecal coliform are from human sources…in 1998

the City funds "Microbial Source Tracking"

Study

Jacksonville Environmental Protection Board

Study

Use of Bacterial Antibiotic Resistance Patterns to Determine the Source of Fecal Contamination in Surface Waters of Jacksonville

performed by:

Valerie J. Harwood

Department of Biology

University of South Florida

2000 Better Jacksonville Plan Septic Tank Phase-Out Projects

Rank	Sanitary Nuisance Failure Area	No. Residences	Estimated Cost (Low)
1.	Pernecia/Johnnie Circle	242	3.3 million
2.	Murray Hill B	1245	18.5 million
3.	Lake Forest	1109	20.2 million
4.	Scott Mill Hill	541	12.8 million
5.	Glynlea (lower)	452	10.5 million
6.	Oakwood Villa Estates	2781	23.7 million
	Total	6731	89 million

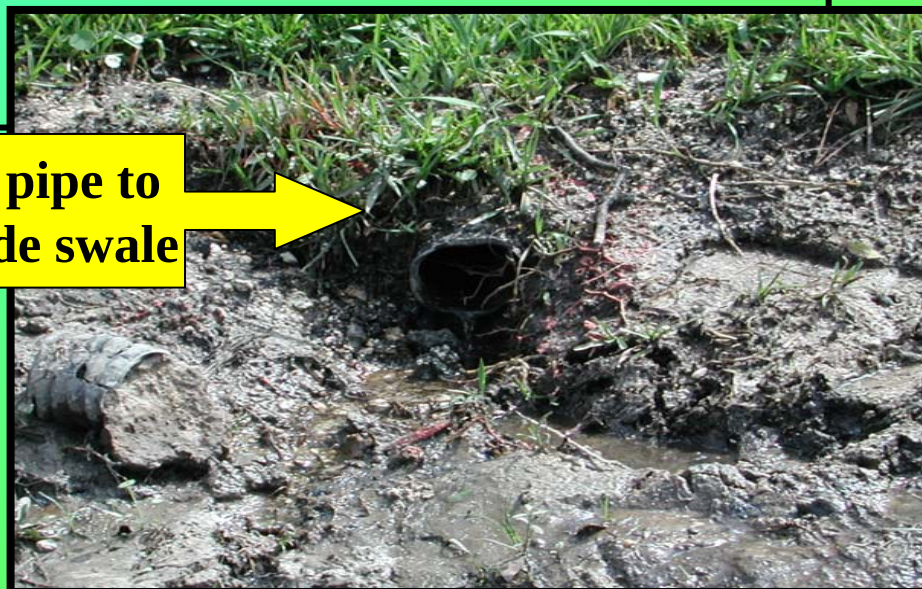
In 2003 the City proposes a "Reasonable Assurance Plan"

- **Proposes a plan to bring Duval tributaries into compliance for fecal coliform bacteria**
- **Forms a partnership with: COJ/EQD, COJ/PW, DCHD, FDEP & JEA**
- **The "Plan" was ultimately not approved by the US EPA but the partnership continued evolving into the Tributary Assessment Team (TAT)**

2005 City of Jacksonville Septic Tank Ordinance

- **Publicly owned water and sewer system must be expanded into areas with failing septic tanks.**
- **Criteria for ranking failure areas and creating "sanitary nuisance" designation.**
- **Establishes the "Failed Areas List"**

Illegal pipe to roadside swale



In-kind civil penalties paid as a result of sanitary sewer overflows fund the development of

Tributary Pollution Assessment Manual

Tributary Pollution Assessment Summary Report

FINAL JULY 2006

A report prepared for:

The Tributary Assessment Team

Jacksonville, Florida

Prepared by

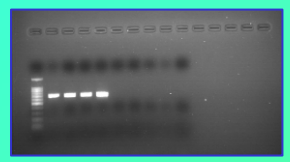
PBS&J
7406 Fullerton Street, Suite 350
Jacksonville, Florida 32256

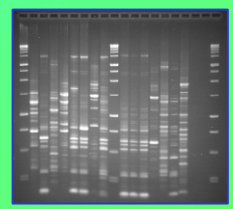
Tributary Pollution Assessment Manual

- Uses microbial source tracking techniques

Non-human

Human





Library-independent MST

Library-dependent MST

Tributary Pollution Assessment Manual

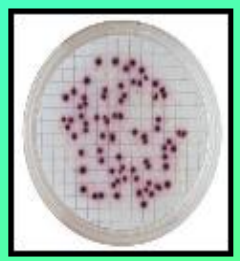
- Evaluated other source tracking tools: fluorometry, thermal imaging.
- Uses a partnership of responsible entities
- Weight of evidence approach for source ID
- Recommends corrective actions

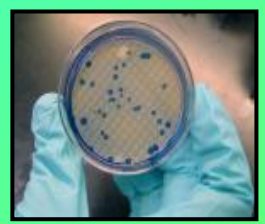
Fluorometry

Thermal Imagining

2007 Special Legislative Appropriation Funds for Tributary Assessment

- $380,000 Tributary Restoration Project
- $145,000 advanced MST analysis
- $120,000 to COJ for tributary restoration including creation of microbiology capabilities (fecal coliform analysis)





2007 Special Legislative Appropriation

- Public Service Announcements for:
  - pet waste
  - septic tank maintenance

FDEP in conjunction with the tributary basin working and technical groups are preparing tributary technical report and draft TMDLs

Newcastle Creek Technical Report (WBID 2235)

Draft November 2007

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DRAFT

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

Division of Water Resource Management, Bureau of Watershed Management

NORTHEAST DISTRICT • LOWER ST. JOHNS BASIN

TMDL Report

Fecal Coliform TMDL for Miramar Creek (WBID 2304)

David Wainwright

July 2005

Florida Department of Environmental Protection

Other fecal coliform related studies:

USGS Jacksonville Tributary Study (2000-2010)

- Pre and Post sanitary sewering water quality assessment.
- Quantify benefits of septic tank phase-out.

FDEP funded Septic tank assessment for nutrients and fecal coliform bacteria

Other corrective actions:

- JEA infrastructure rehab and maintenance
- Potential illicit discharge program
- Private lift-station inspection program

Questions?