LAKE COUNTY
FLORIDA

Royal Trails Flood Study

Public Information Meeting #2
March 24, 2009

Inwood consulting engineers

Meeting Agenda

- 6:30 pm - Meeting Start
- 6:30 to 6:45 pm - Sign-in and Informal Discussion
- **6:45 to 7:15 pm - Formal Presentation**
- 7:15 to 8:00 pm – Public Comments & Questions
- 8:00 pm - End of Meeting

Public Comment Form / Speaker Card

Date: 03/24/09 Speaker Request Card Number

To be completed prior to making a comment, each speaker is limited to 3 minutes.

Public Meeting – March 24, 2009
Royal Trails Flood Study
Lake County, Florida

Please Print:

Name: _____
Last First Middle Initial

Address: _____
Street

_____
City State Zip Code

Telephone: ( ) _____
Area Code

Representing: Self _____ Firm _____
Government Agency _____
Civic Organization _____
Homeowners Association _____
Other _____

LAKE COUNTY FLORIDA

Royal Trails
Flood Study

Public Comment Form – General Issues & Comments

LAKE COUNTY FLORIDA

Royal Trails
Flood Study

Public Comment Form – Flooding & Drainage Issues

Your input is important to us! Please take the time to identify specific drainage problems or stormwater related concerns that you may have on your property within the Royal Trails Subdivision. Please submit this form and any related information to the following:

Royal Trails Flood Study
Attn: Mark Ellard, Project Manager
Stewood Consulting Engineers, Inc.,
3000 Dovera Drive, Suite 200
Oviedo, Florida 32765
Phone: (407) 971-0050 attn: Mark Ellard
Fax: (407) 971-0955 attn: Mark Ellard
E-mail: mellard@stewoodinc.com

Or

Royal Trails Flood Study
Attn: Mary Hamilton, Stormwater Project Manager
Lake County Public Works
437 Ardice Avenue, Eustis, Florida 32726
Phone: 352-483-9000
Fax: 352-483-9015
Email: mhamilton@lakecountyfl.gov

Please Provide a General Description/Location of Problem(s):

How often does this problem occur?
- ☐ Every time it rains.
- ☐ Only during heavy rains.
- ☐ Only if it rains on consecutive days.
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How long does the problem last?
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Does this problem cause property/structure damage?
- ☐ Yes
- ☐ No

If yes, please describe.

Has the County been notified about this problem?
- ☐ Yes
- ☐ No

Name: Address:
Phone:
Email:

Space for additional comments is available on the back side of the form.

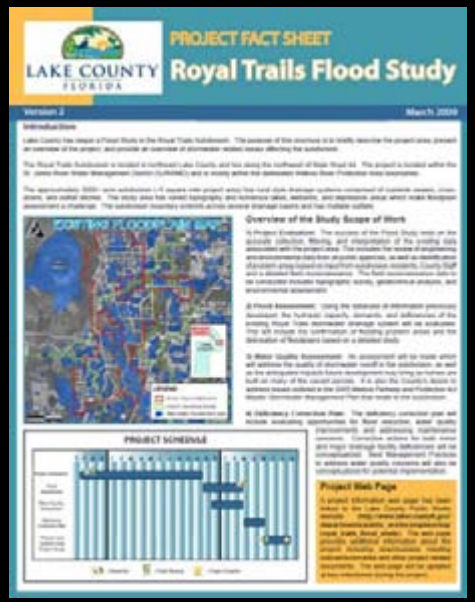
Presentation Overview

- ✓ **Purpose of Study**
- Data Collection
- Flooding Assessment
- Water Quality Assessment
- Deficiency Correction Evaluation
- Project Schedule & Milestones

Purpose of Study

- Assess Stormwater Management
  - Identify Drainage Deficiencies
  - Delineate Floodplains
  - Evaluate Water Quality Impacts
- Conceptualize Improvements

  Address Problems



Major Stakeholders

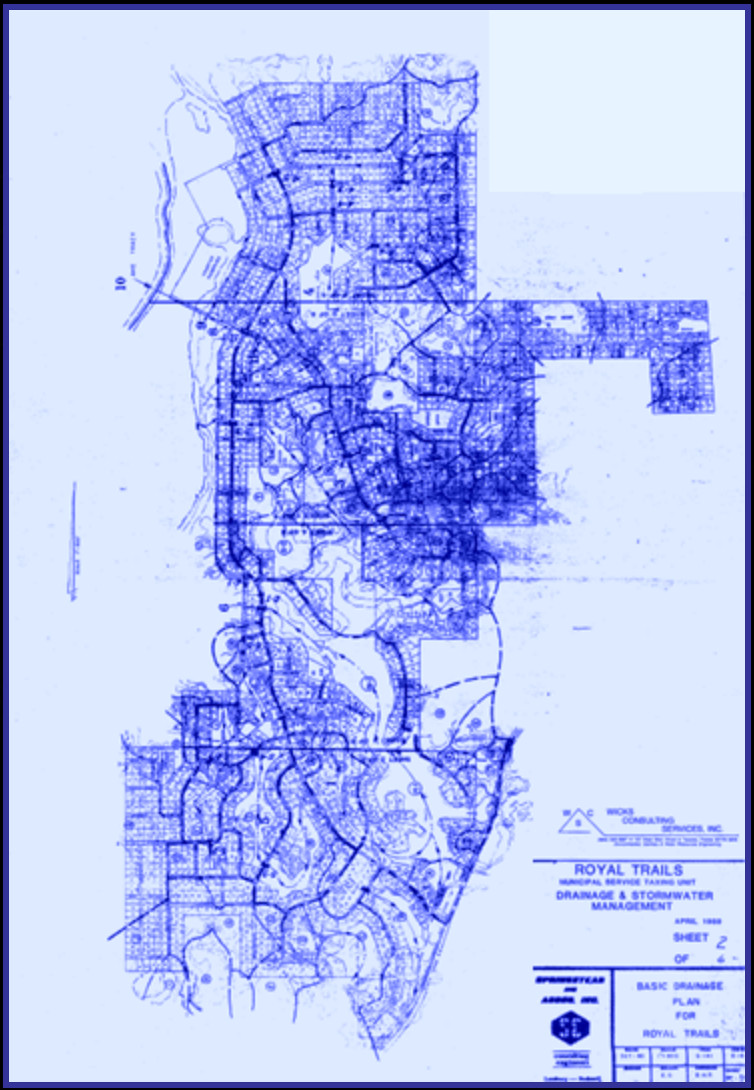
- Residents
  - Drainage Improvements
  - Flood Abatement

- Lake County
  - Delineate Floodplain Impacts
  - Assess Drainage Level of Service
  - Address Water Quality

- SJRWMD
  - Wekiva Parkway & Protection Act

Royal Trails Subdivision

- ~3000 Acres of Low Density Residential
- Developed in Early 1980s
- Much Left to Develop
- Interspersed Wetlands
- Stormwater Management by "Fill & Flow" between Wetland and Depressional Storage Areas
- Numerous Closed Basins



Royal Trails Subdivision

Rural Infrastructure –
Swales & Driveway Culverts

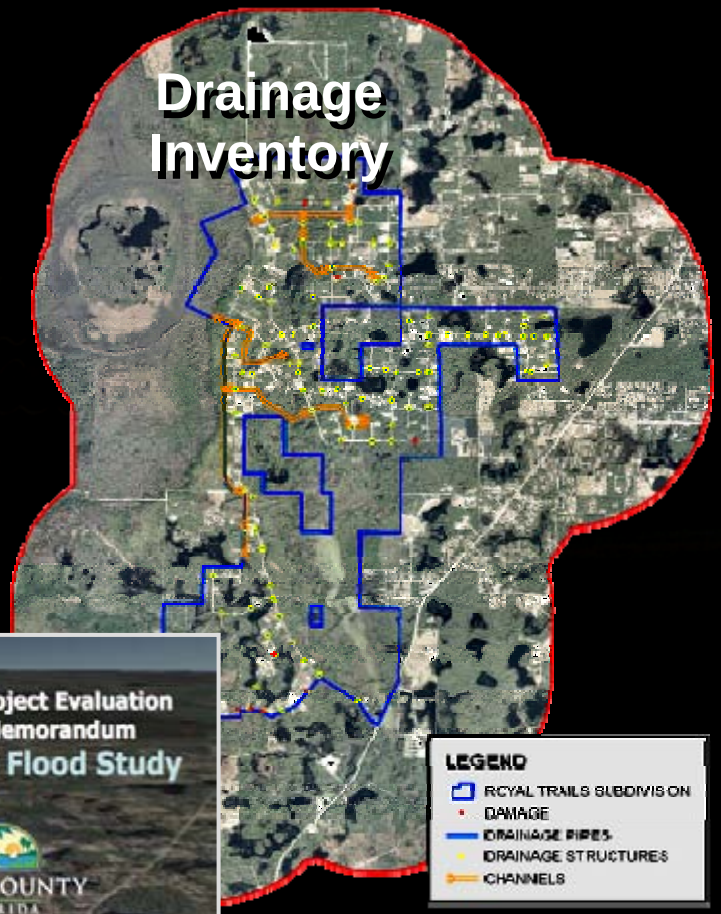
Inlets & Cross-Drain Culverts

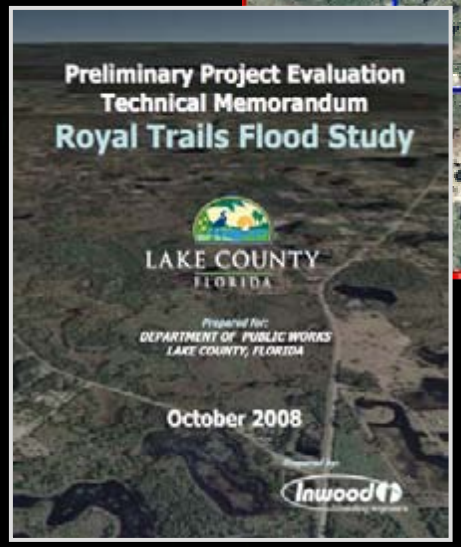
Outfall Ditches

Seasonally Dry Wetland and
Depressional Ponding Areas

Data Collection

- Drainage Infrastructure Inventory
- Review Existing Engineering Plans & Reports
- Surveying
- Soil and Groundwater Characteristics
- Wetlands
- Report in October 2008



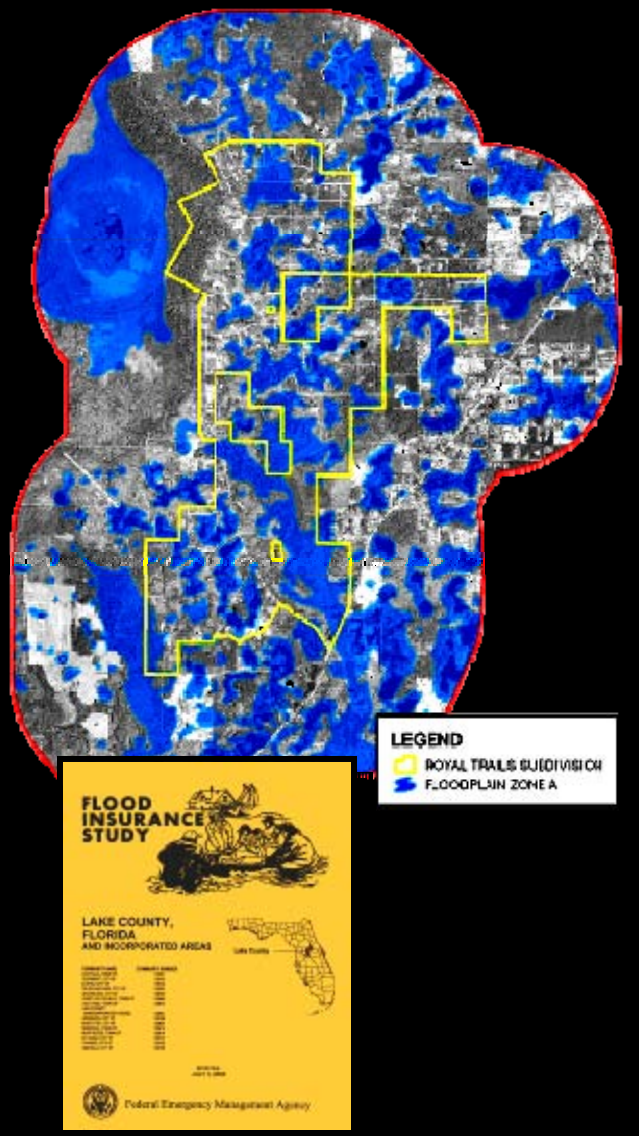


Flooding Assessment

- Flooding Resulting from Hurricane & Tropical Storm Events
- Drainage Structure Deficiencies

Flooding Assessment

- Existing FEMA Floodplains
- "Zone A" Floodplain Areas
  - Areas Determined to be Inundated by a 100-yr Storm
  - No Base Flood Elevation Determined
  - Approximate in Extent - No Detailed Study Conducted
  - Based on 5' contour elevations from 1970s or earlier
  - Difficult to Make Proper Lot Grading & Slab Elevation Determinations

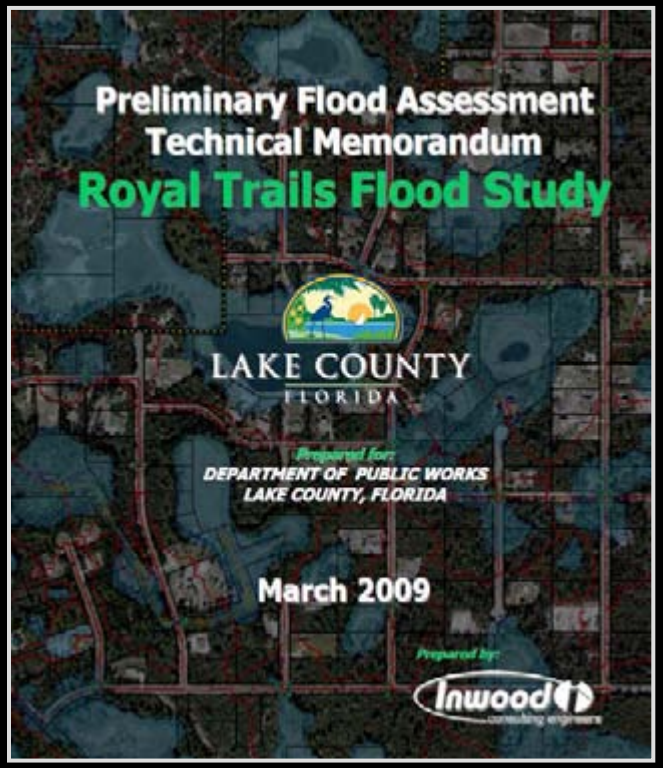


Flooding Assessment

- Detailed Floodplain Delineation
- Level of Service (LOS)

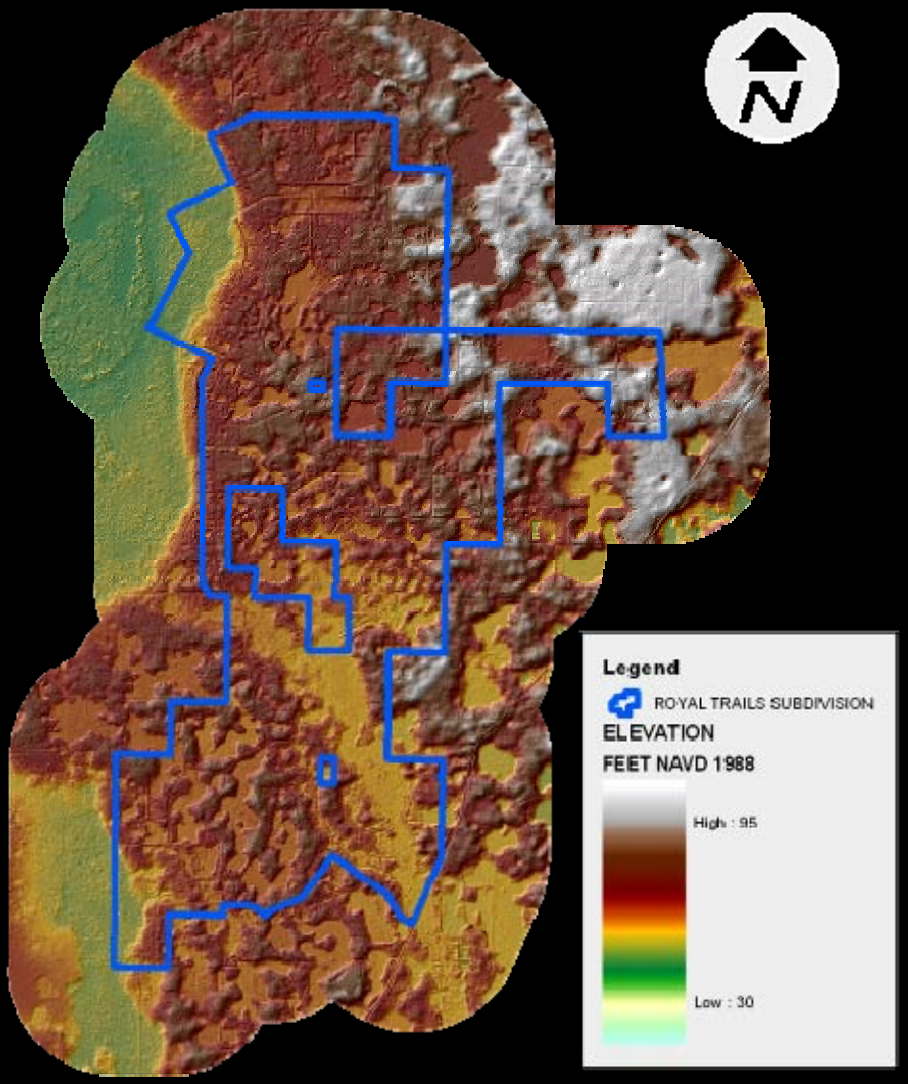
  Analysis of Drainage

  Structures



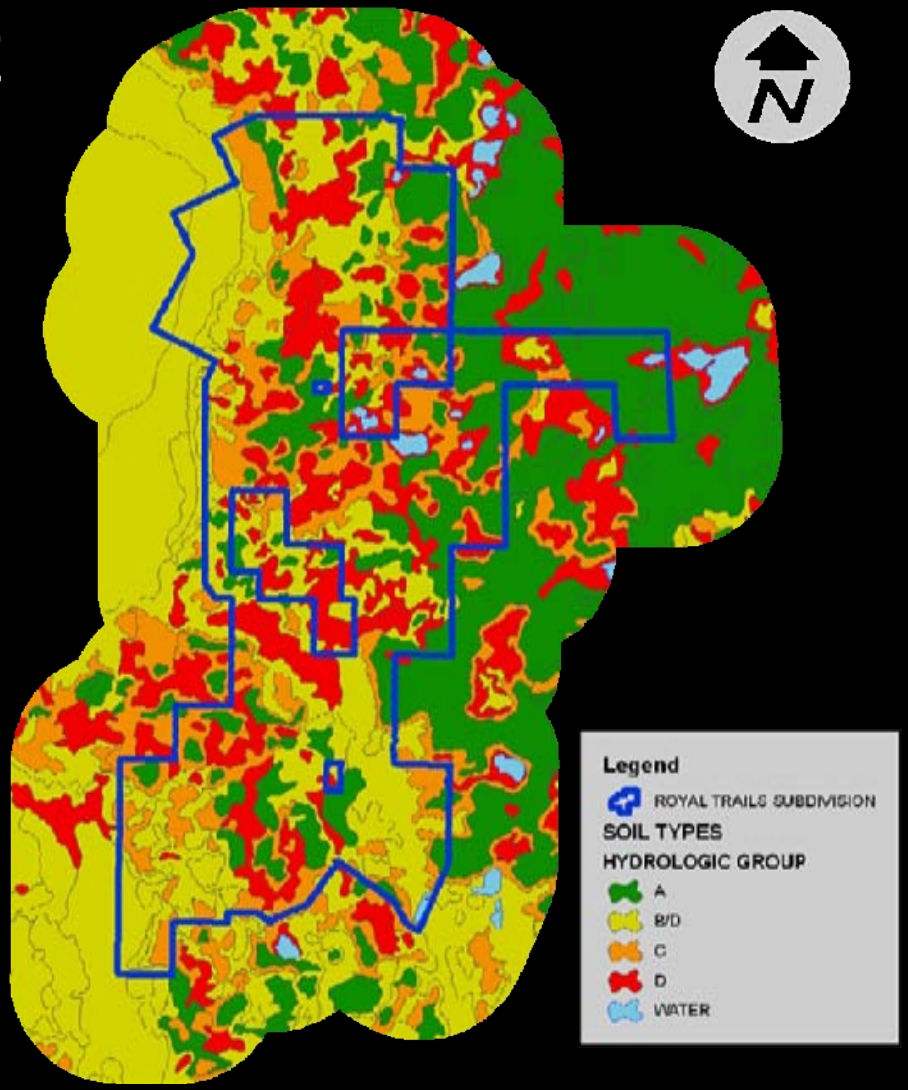
Flooding Assessment

- Model Development
  - Topography
    - County LiDAR Data
  - Drainage Patterns
  - Contributing Areas



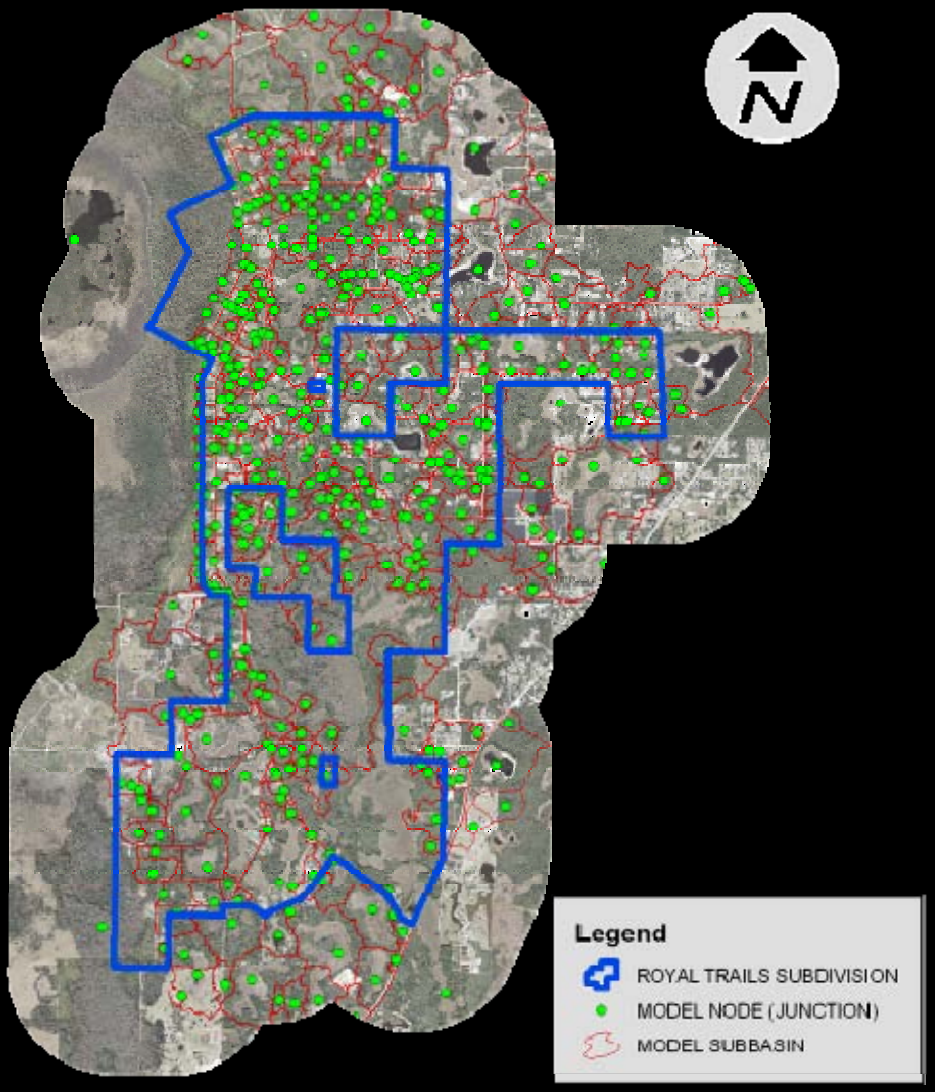
Flooding Assessment

- Model Development
  - Soils
  - Infiltration



Flooding Assessment

- Model Development
  - Ponds
  - Wetlands
  - Depressions
  - Primary Ditches
  - Culverts Under Roads
  - Overland Flow
  - Infiltration

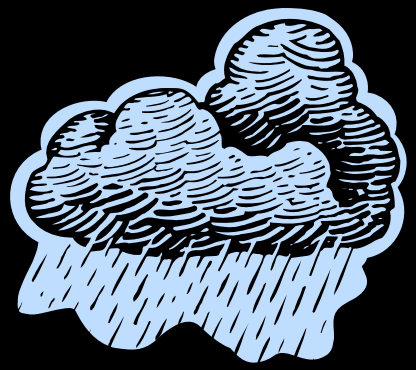


Flooding Assessment

- Model Development
  - Rainfall Events Vary
    - Average Annual Rainfall ~49-50”
    - Wet vs. Dry Season
    - Cumulative Rainfall
  - Model Average Wet Season Conditions

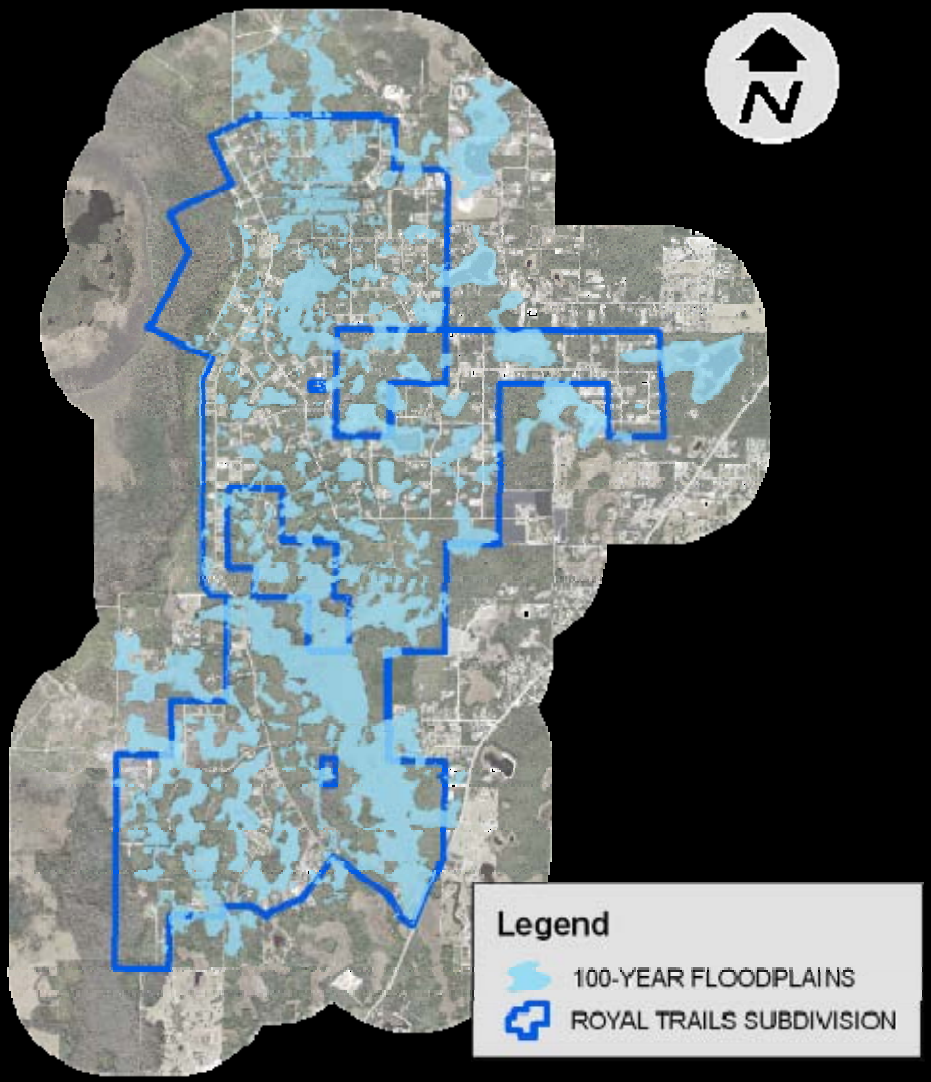
Flooding Assessment

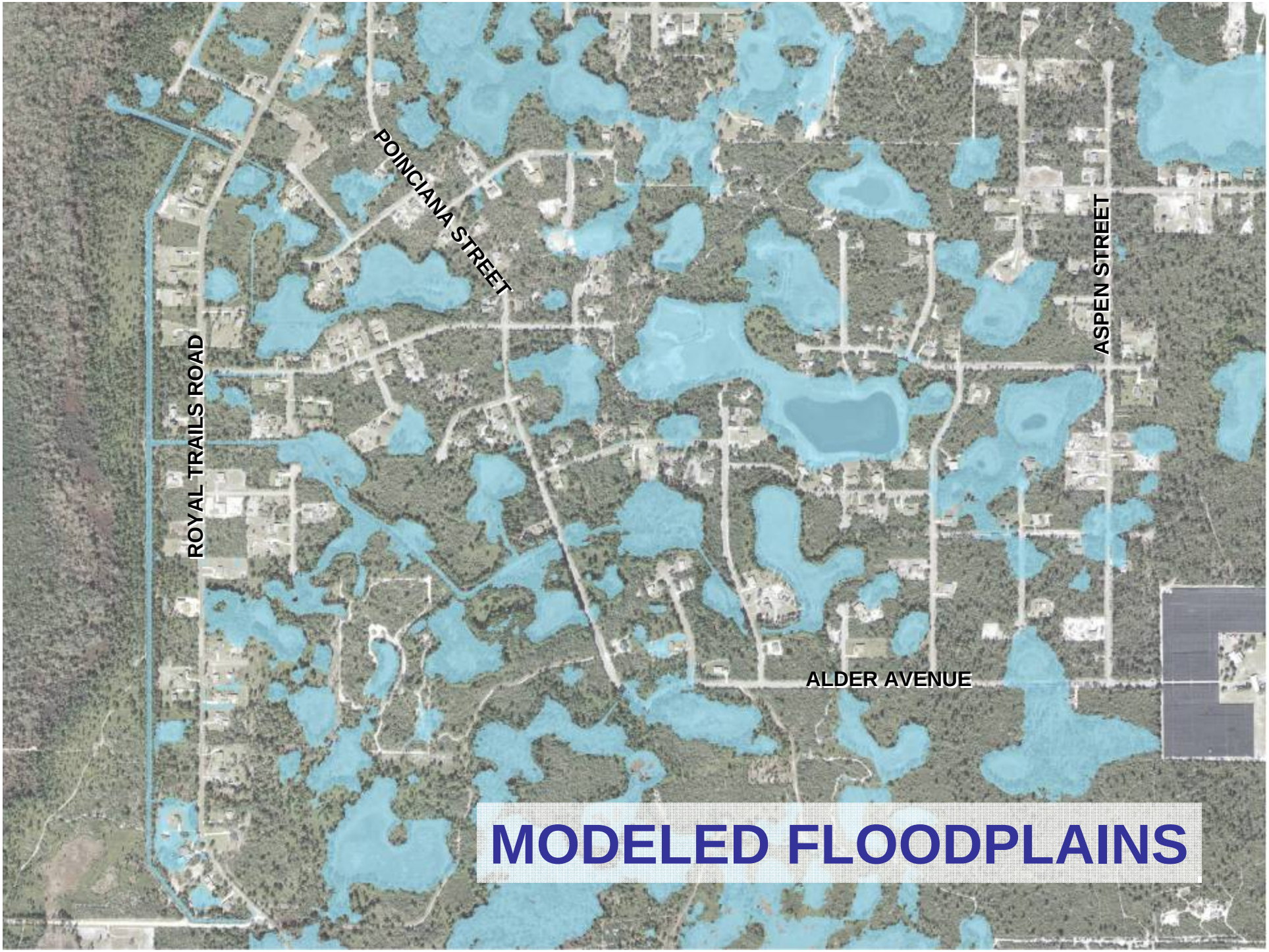
- Floodplain Development
  - 100 Year Frequency Storm
    - 1% Annual Chance of Occurrence
  - Peak Stage Elevation is Higher of:
    - 1 Day 100 Year Storm Events (11.3 inches)
    - 4 Day 100 Year Storm Events (14.7 inches)
  - Peak Stage Values Used for Mapping
    - Short Term Flash Flooding
    - Long Term Inundation



Flooding Assessment

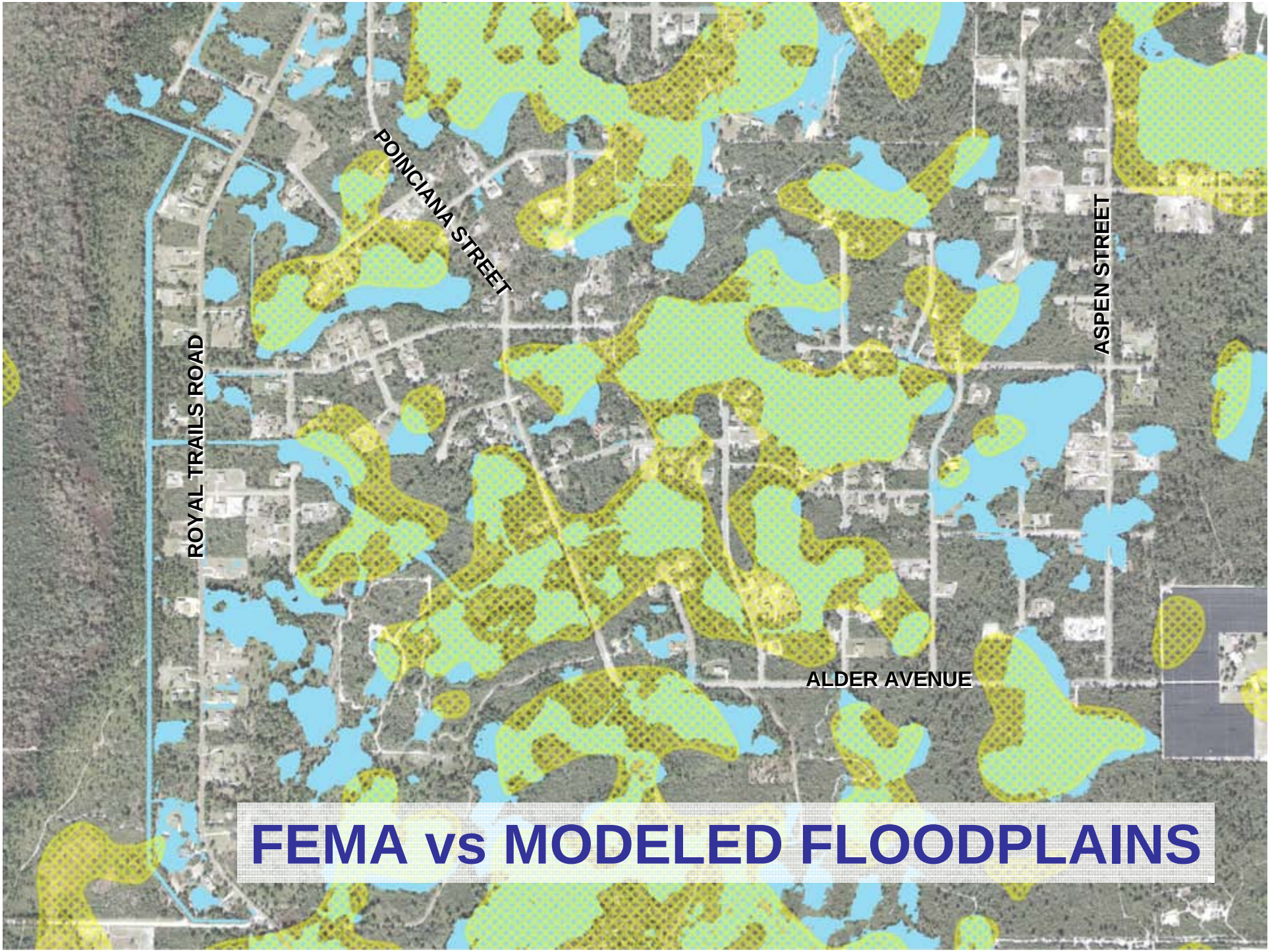
- Floodplains
- Accurate Elevations Based On:
  - Detailed Data
  - Detailed Modeling




POINCIANA STREET
ROYAL TRAILS ROAD
ASPEN STREET
ALDER AVENUE
MODELED FLOODPLAINS

MODELED FLOODPLAINS

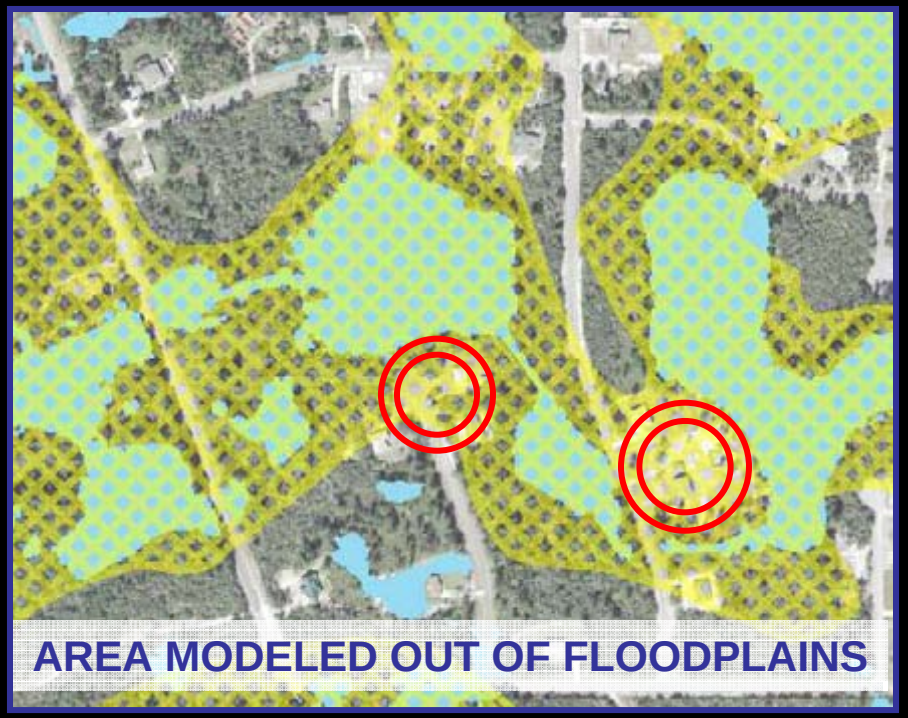
FEMA FLOODPLAINS

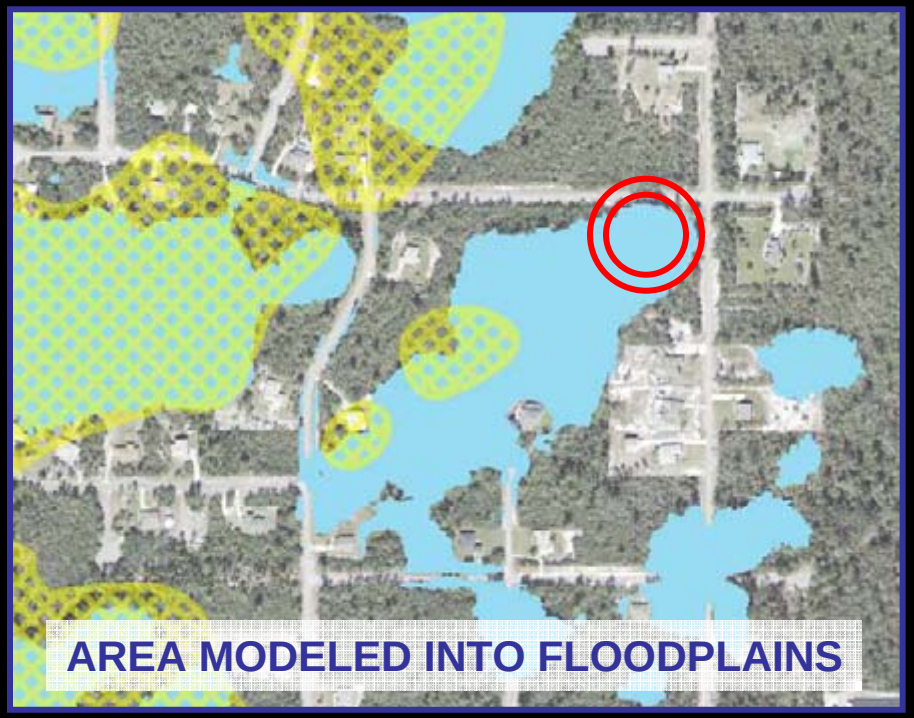


FEMA vs MODELED FLOODPLAINS

Flooding Assessment

- Total Floodplain Area
  - ~1120 acres FEMA
  - ~1055 acres Modeled
- Potential Structure Impacts
  - ~64 FEMA Floodplains
  - ~12 Modeled Floodplains





Flooding Assessment

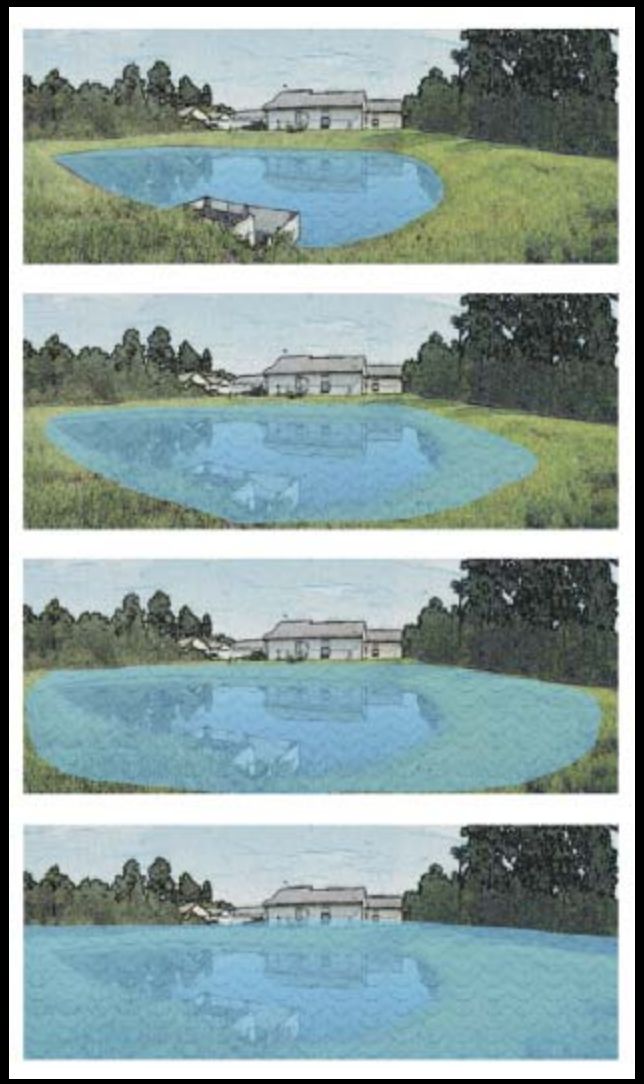
- Current Benefit
  - Homeowners Can Make Better Decisions About Protecting Property
  - County to Use as “Best Available Information”
    - Determining Development Impacts
    - Lot Grading Recommendations
    - Finished Floor Elevation Decisions
- Future Use
  - Results to be Made Available to FEMA
    - May be Relied Upon for Updating FIRMs for Flood Insurance Purposes

Flooding Assessment

- Level of Service Assessment
  - Identify Undersized or Non-functioning Drainage Infrastructure
    - Pipes
    - Cross-drains
    - Inlets / Catch basins
    - Swales
    - Outfall Ditches
  - Maintenance Needs

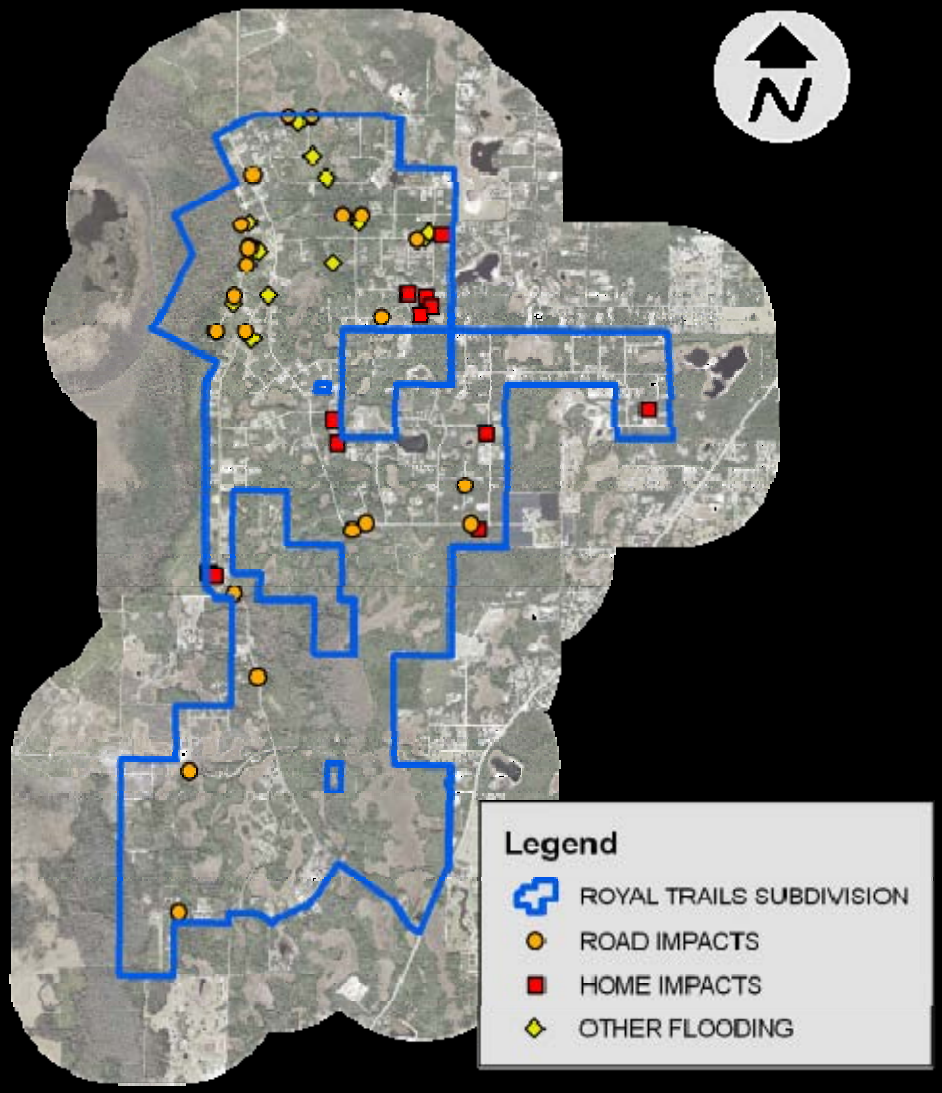
Flooding Assessment

- Level of Service Assessment
  - 100 Year Storm for Houses
  - 10 Year Storm for Streets
  - Pass / Fail



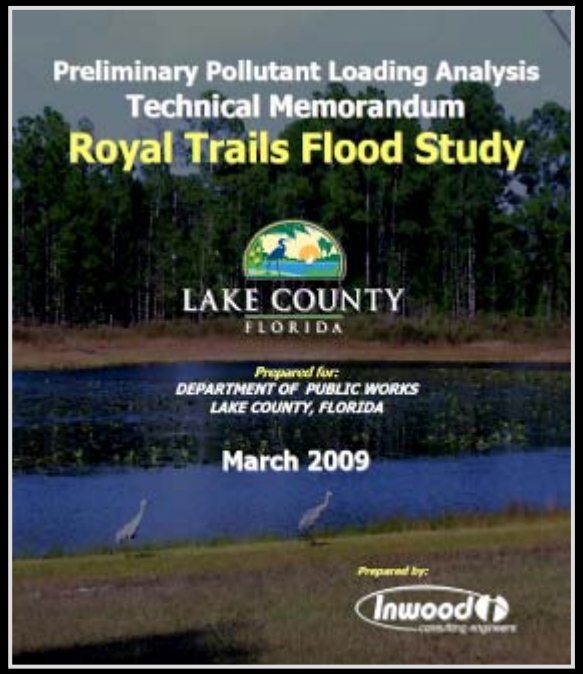
Flooding Assessment

- Modeled Flood Deficiencies
  - Roadway Locations That Appear to Overtop (22)
  - Homes That May Have Flood Impacts (12)
  - Other Flooding (sheds, septic tanks, car ports, etc.) That Appears to Occur (12)



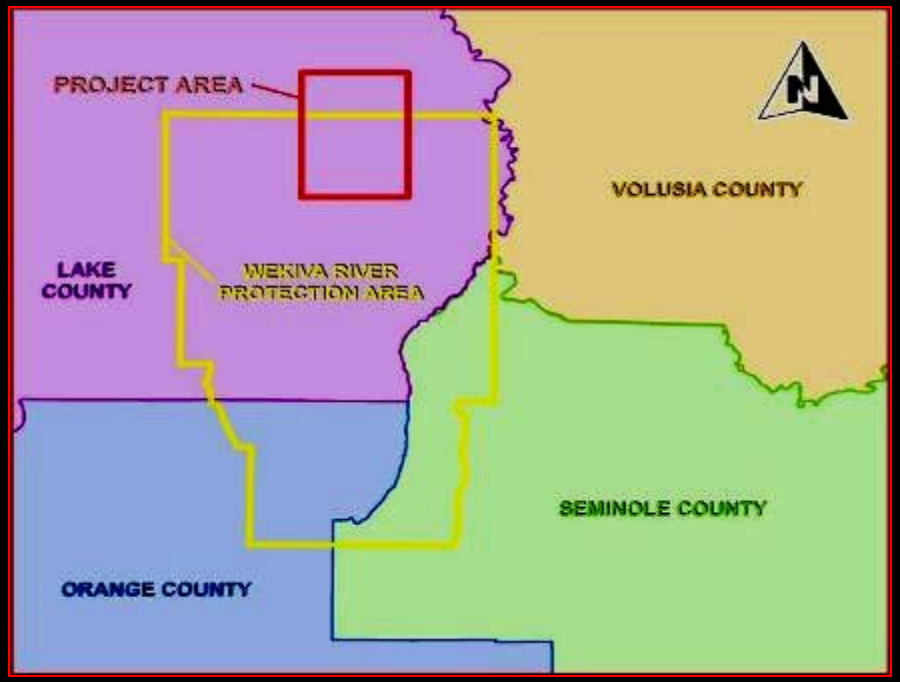
Water Quality Assessment

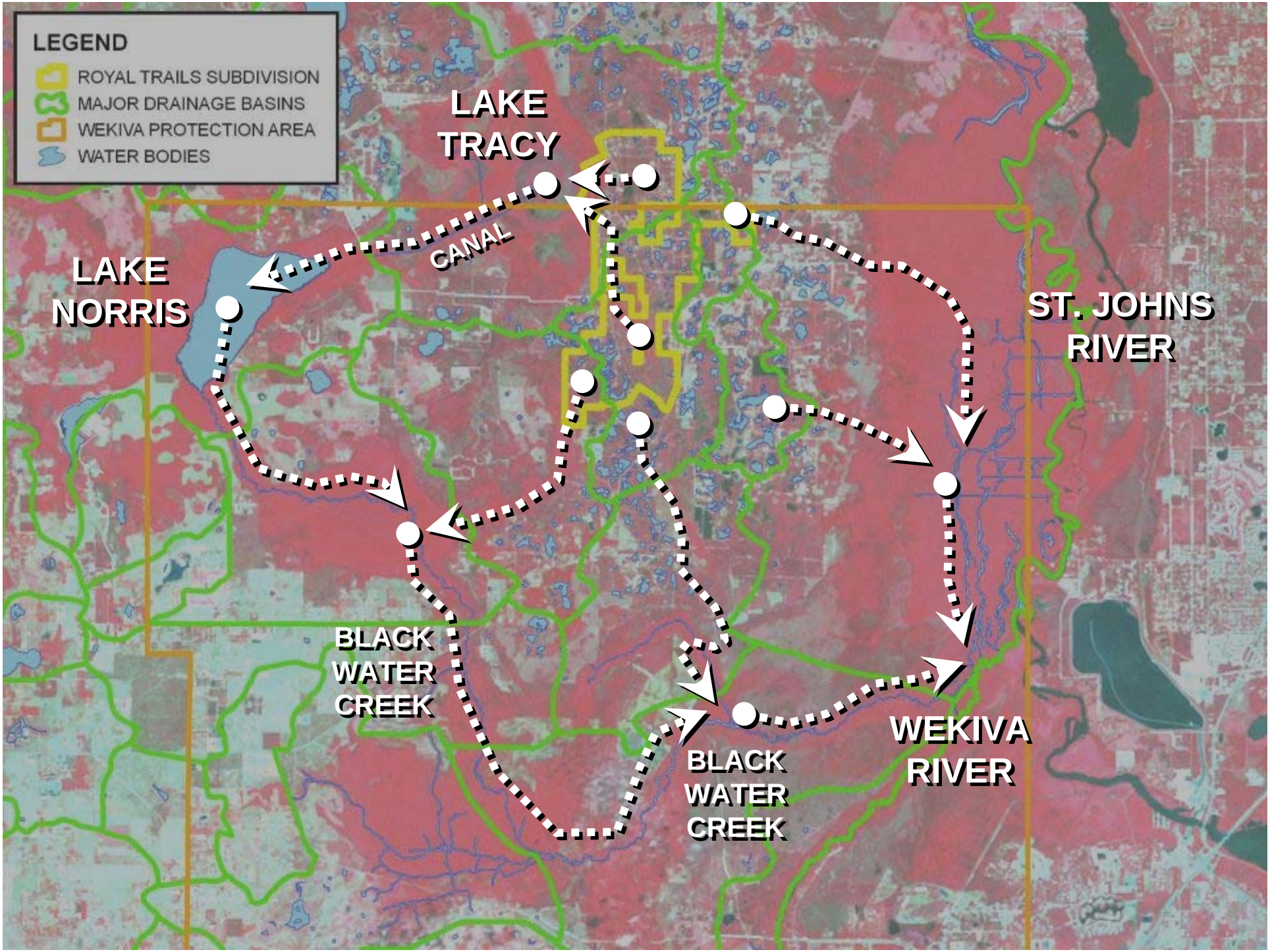
- Address Regulatory Requirements
- Evaluate Pollutant Sources
- Estimate Pollutant Loadings from Stormwater Runoff
- Identify Improvement Opportunities

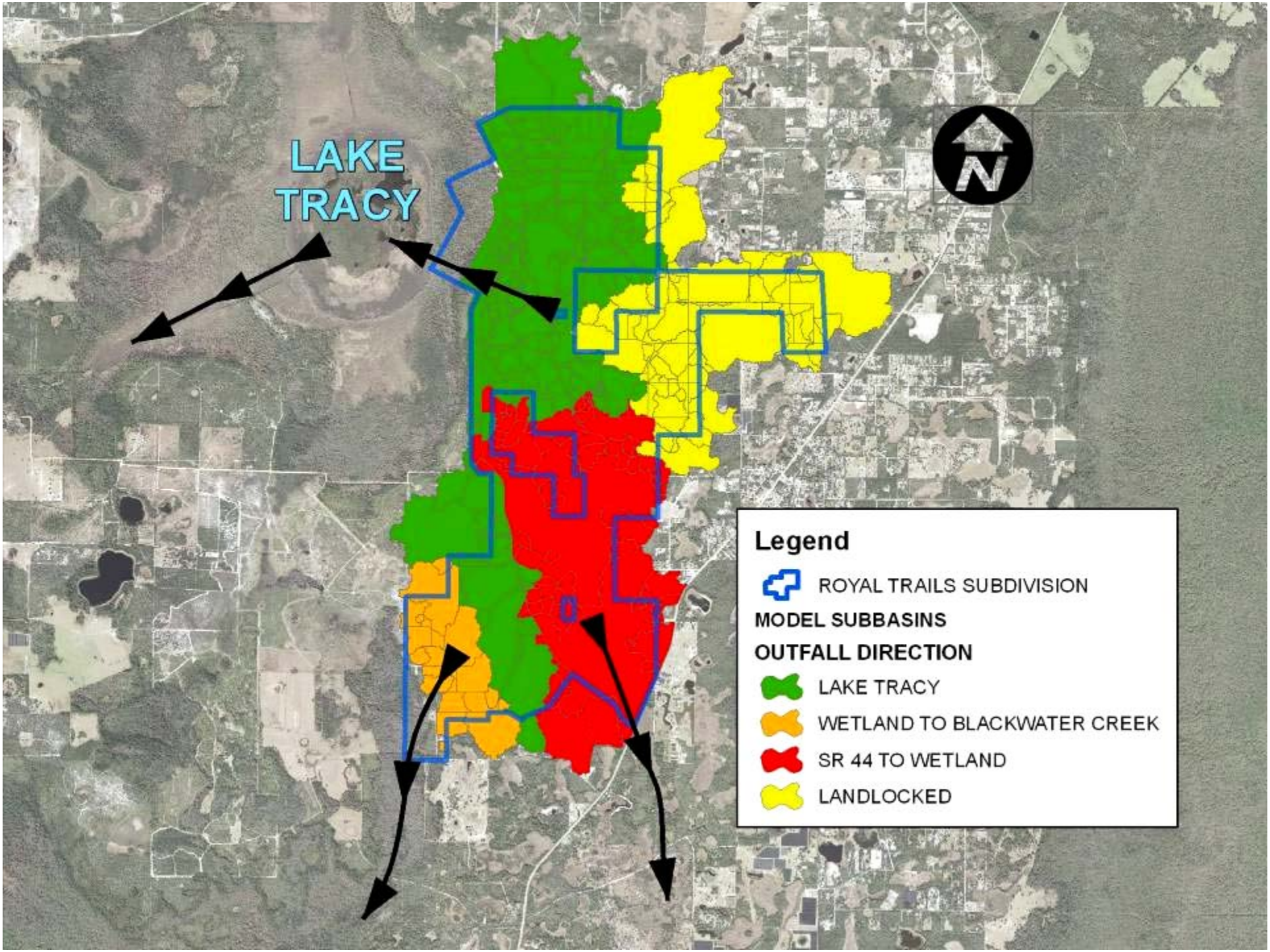


Water Quality Assessment

- State Designated Impaired Waters
  - Wekiva River
  - Black Water Creek
- Wekiva Parkway & Protection Act
  - Water Quality Improvement Focus
  - Multi-Agency Efforts

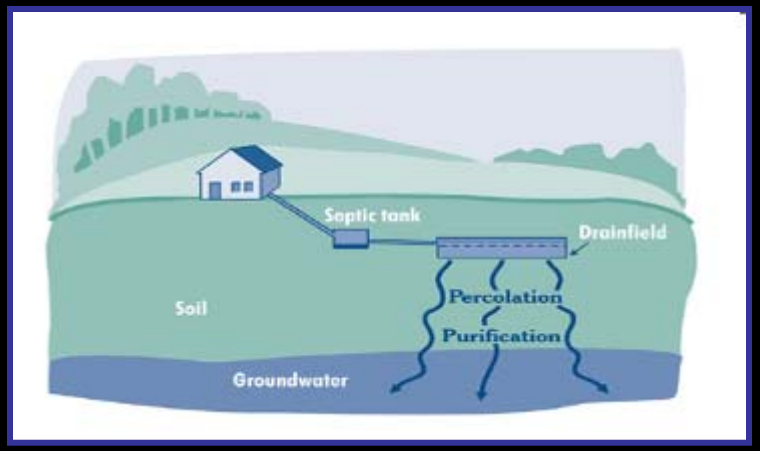



LEGEND
ROYAL TRAILS SUBDIVISION
MAJOR DRAINAGE BASINS
WEKIVA PROTECTION AREA
WATER BODIES
LAKE TRACY
CANAL
LAKE NORRIS
ST. JOHNS RIVER
BLACK WATER CREEK
BLACK WATER CREEK
WEKIVA RIVER


LAKE
TRACY
N
Legend
ROYAL TRAILS SUBDIVISION
MODEL SUBBASINS
OUTFALL DIRECTION
LAKE TRACY
WETLAND TO BLACKWATER CREEK
SR 44 TO WETLAND
LANDLOCKED

Water Quality Assessment

- Pollutant Sources
  - Over Fertilizing Yards
  - Erosion from Construction
  - Illegal Discharges
  - Failing Septic Tanks

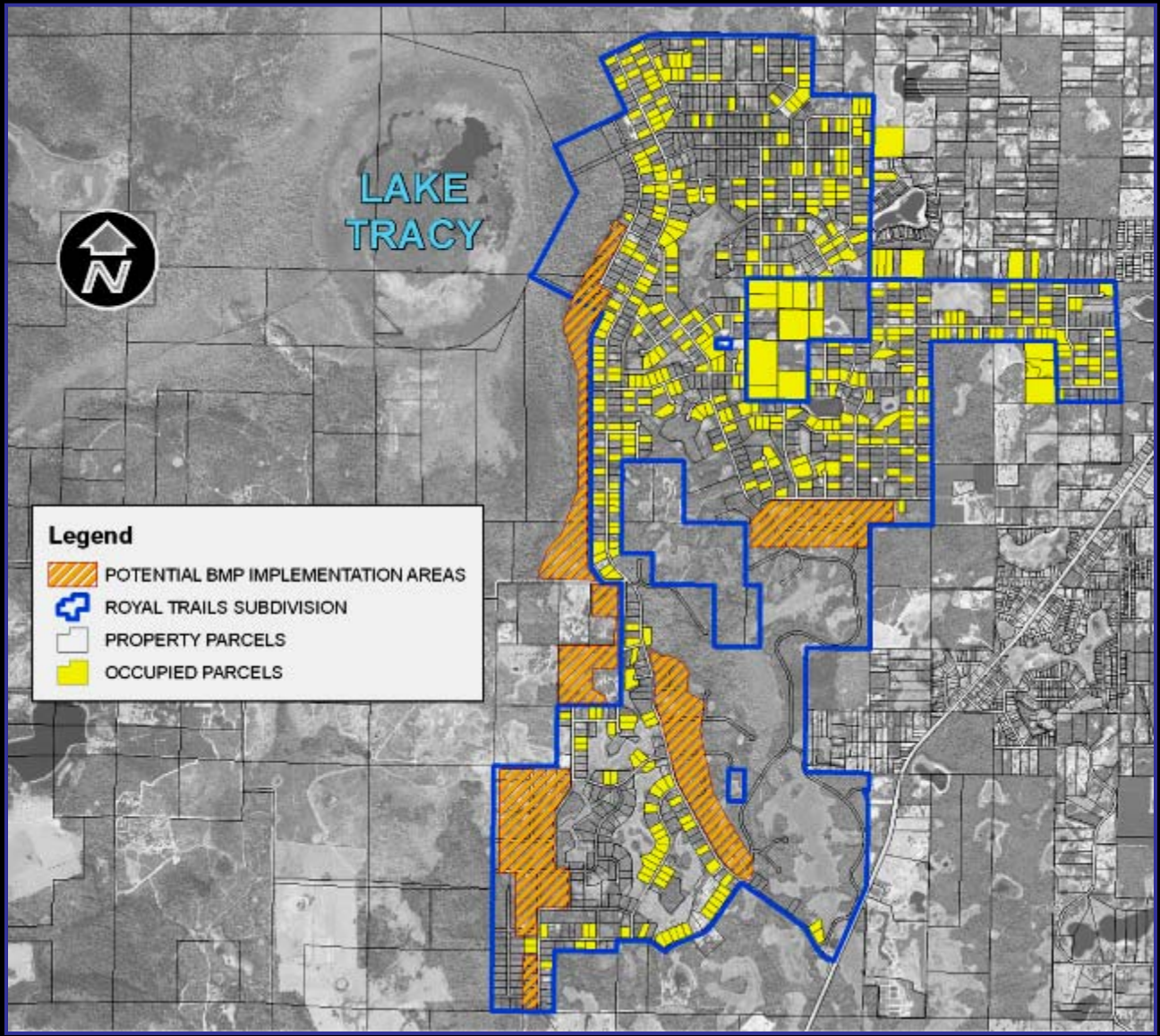


Water Quality Assessment

- Pollutant Loading Model to Quantify Impacts
- Identify Best Management Practices (BMPs) for Pollutant Reduction
- Available Land for BMPs
  - Enhanced Natural System Treatment
  - Retention / Swale Infiltration
  - Wet Detention Ponds
- Target Nutrient Reduction (nitrogen & phosphorus)

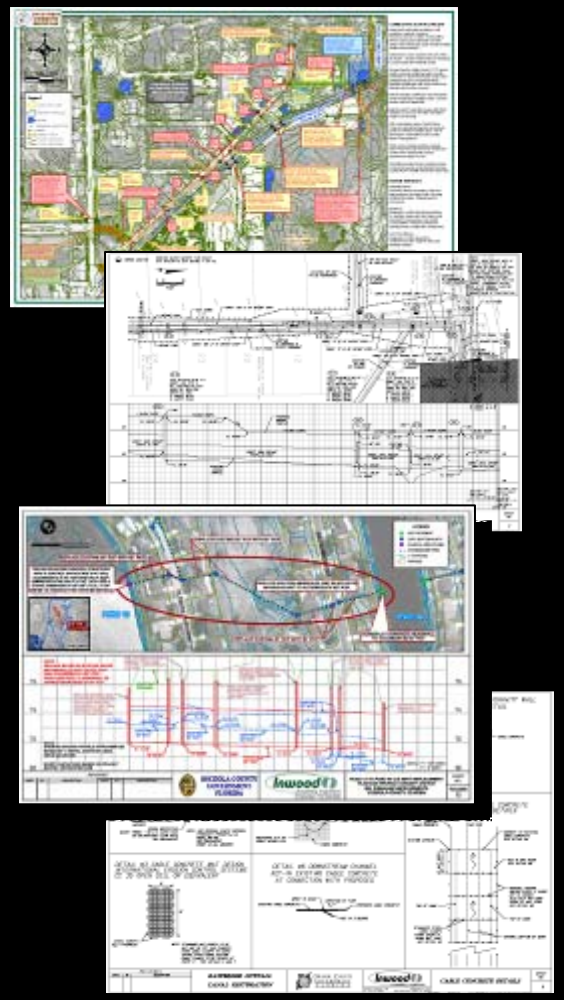
Water Quality Assessment

- Potential BMP Locations
- Vacant Land Near Outfall Locations

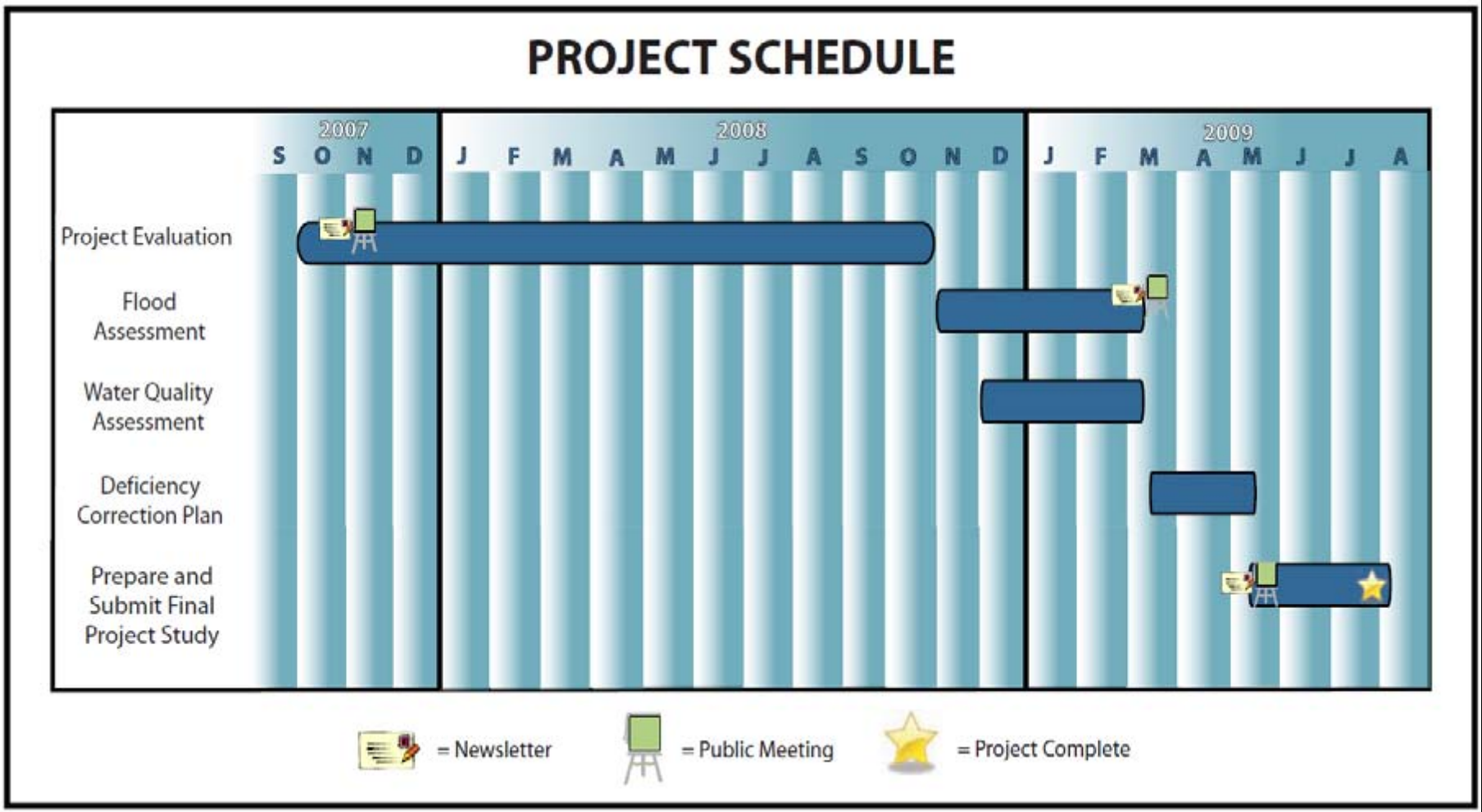


Deficiency Correction Evaluation

- Address Minor and Major Drainage Infrastructure Deficiencies
- Conceptualize Corrective Improvements
  - Flood Control
  - Water Quality
  - Reduce Maintenance

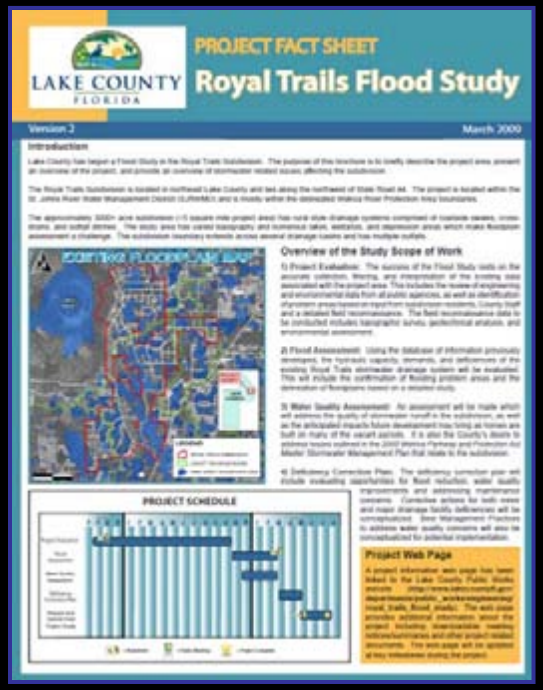


Project Schedule & Milestones



Additional Information

- Newsletters
- Project Fact Sheet
- Web Site



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Royal Trails Flood Study
Lake County, Florida

Please Print:

Name: _____
Last First Middle Initial

Address: _____
Street

_____
City State Zip Code

Telephone: ( ) _____
Area Code

Representing: Self _____ Firm _____
Government Agency _____
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Phone:

Email:

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LAKE COUNTY
FLORIDA
ROYAL TRAILS
A DEED RESTRICTED COMMUNITY
THANK YOU !
Inwood
consulting engineers