

Basin Study Update

Board of County Commissioners (BCC) Meeting

December 9, 2025

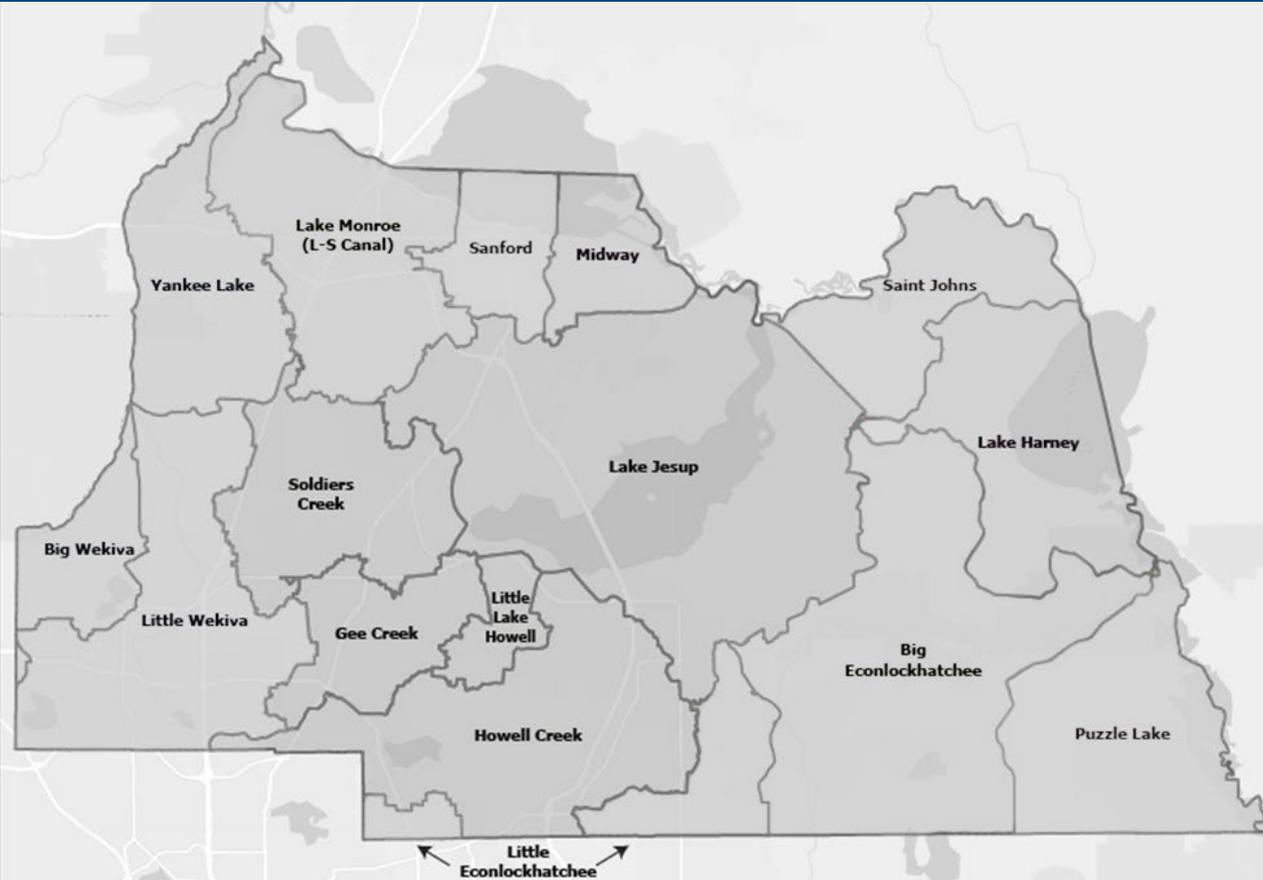
Purpose of Presentation

To present an update of the East County Basins Groups A and C (Soldiers Creek, Gee Creek Little Lake Howell, & Lake Jesup) Basin Study, and the East Basin Group B (Howell Creek) Basin Study

Agenda

- Basin Studies Overview
- Basin Studies Timeline
- East County Basins Groups A & C
- East County Basins Group B
- Next Steps
- Requested Action

Basin Studies Overview



- 16 Drainage Basins in Seminole County
- What is a Drainage Basin?
 - A drainage basin (also called a watershed) is an area of land where all the streams and rainfall drain into the same common body of water — such as a river, lake, or ocean.
 - It consists of surface water, lakes, streams, reservoirs, wetlands, and all underlying groundwater.
 - Basins are composed of smaller areas called Open Sub-Basins and Closed Sub-Basins
 - Open Sub-Basins connect to adjoining water bodies
 - Closed Sub-Basins have no connection to adjoining water bodies

Basin Studies Overview

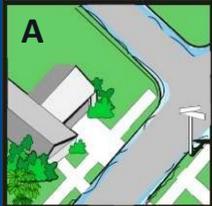
- Why are Basins Studied?
 - Studying a drainage basin provides essential insights for managing water resources. It helps assess flood risks, develop effective flood control measures, and maintain water quality at safe and sustainable levels.
- How are Basins Studies Used?



Basin Studies Overview

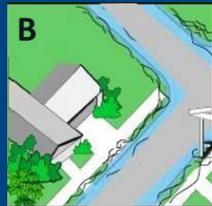
Key Terms

Level of Service (LOS)



“In the Gutter”

A – Flow contained within the storm drain systems or below edge of pavement (EOP)



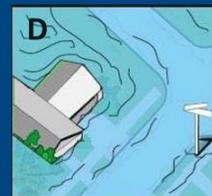
“In the Street”

B – Flow above road EOP and within right of way



“In Your Yard”

C – Flood above road EOP and/or outside of right of way



“In Your House”

D – Building structures flooding

Design Storm Events:

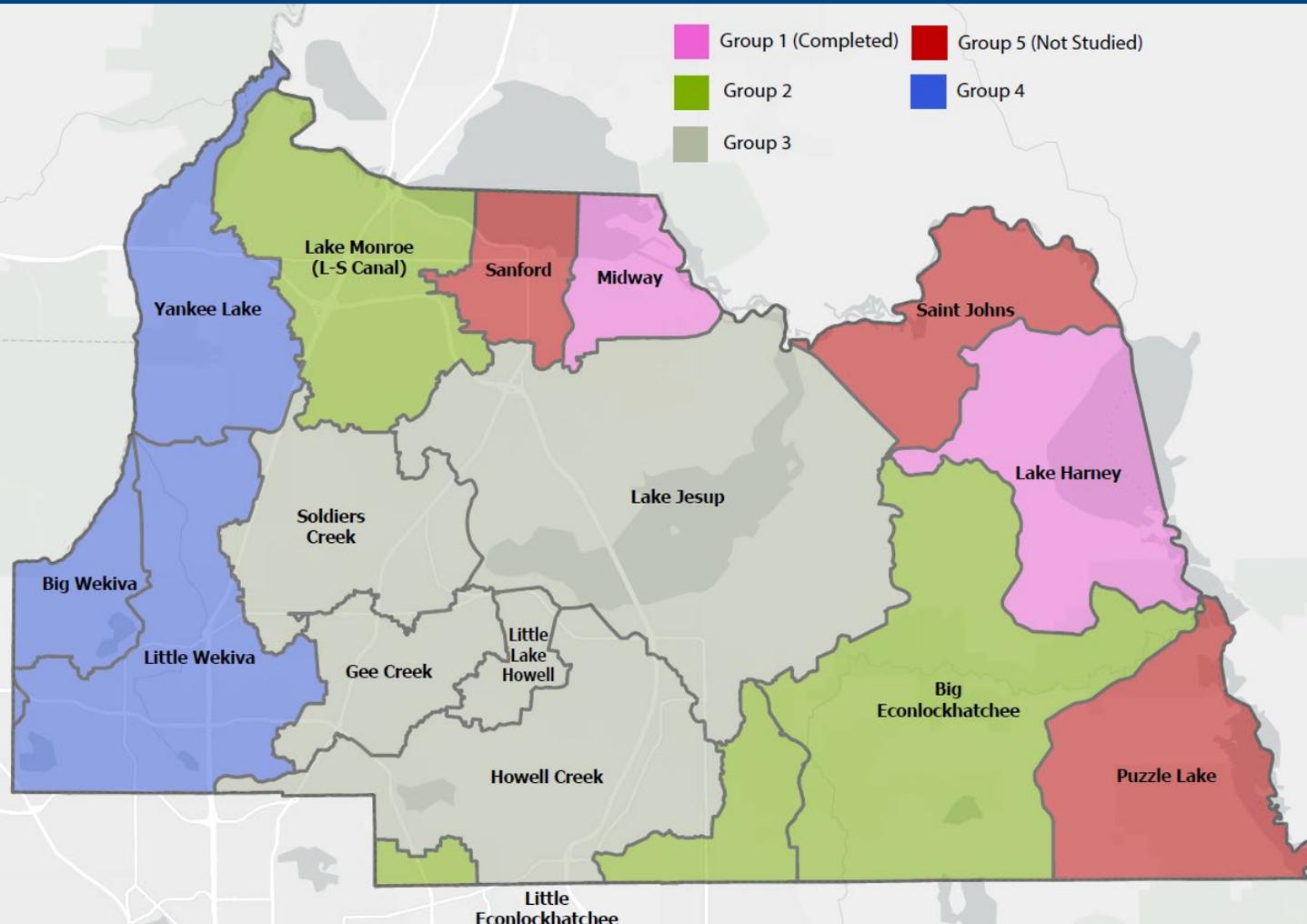
- 100-Year Storm: 1% chance of occurring in any given year
- 50-Year Storm: 2% chance of occurring in any given year
- 25-Year Storm: 4% chance of occurring in any given year
- 10-Year Storm: 10% chance of occurring in any given year

Basin Studies Overview

- **Project Ranking**
 - Projects ranked using County Stormwater Master Plan (SWMP) Evaluation criteria and scoring methodology

Seminole County SWMP Scoring Category	Weight Factor
(1) Flooding Protection	35%
(2) Water Quality	25%
(3) Operation and Maintenance (O&M)	5%
(4) Ease of Implementation	15%
(5) Alternative Funding Opportunity	10%
(6) Potential Benefits from Water Augmentation	5%
(7) Community Enhancement	5%
Total Score	100%

Basin Studies Overview



Approach

- 13 out of 16 basins are being studied
- Divided into five groups in a “Big Bang Approach” to update basin studies
- Began updating studies in 2019

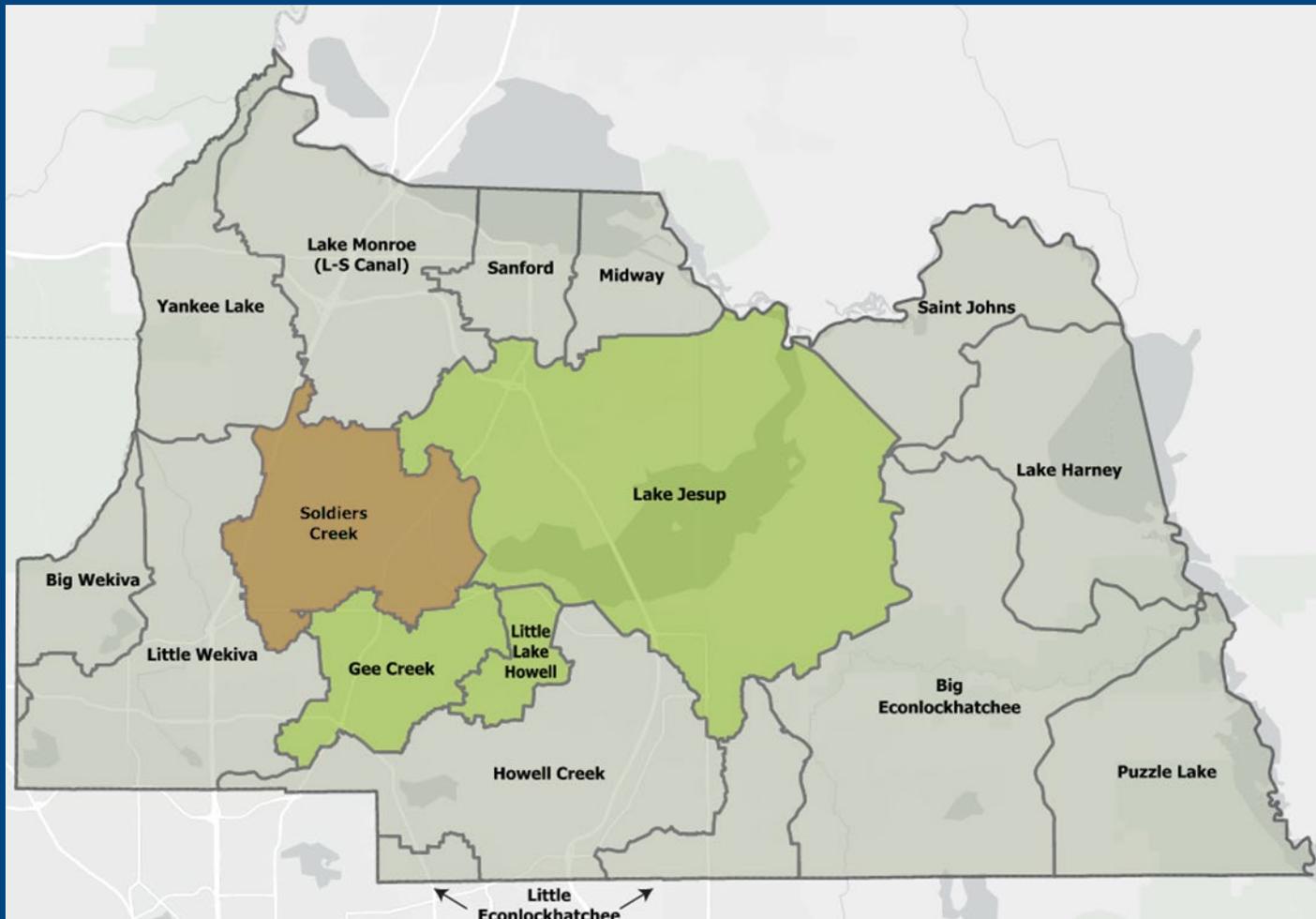
Basin Studies Timeline

Dates	Activities
2019-2025	<ul style="list-style-type: none"> • Update Basin Studies
2019-2025	<ul style="list-style-type: none"> • Held Public Meetings • Incorporated Public Comments
2025-2026 Board Authorization	<ul style="list-style-type: none"> • BCC Meeting – Dec. 9, 2025 (East County Basin Studies) • BCC Meeting – Jan 13, 2026 (Lake Monroe / Big and Little Econlockhatchee) • BCC Meeting – Jan. 27, 2026 (Yankee Lake, Big Wekiva, Little Wekiva)

East County Basins Groups A & C (Soldiers Creek, Gee Creek, Little Lake Howell & Lake Jesup) Basin Study

December 9, 2025

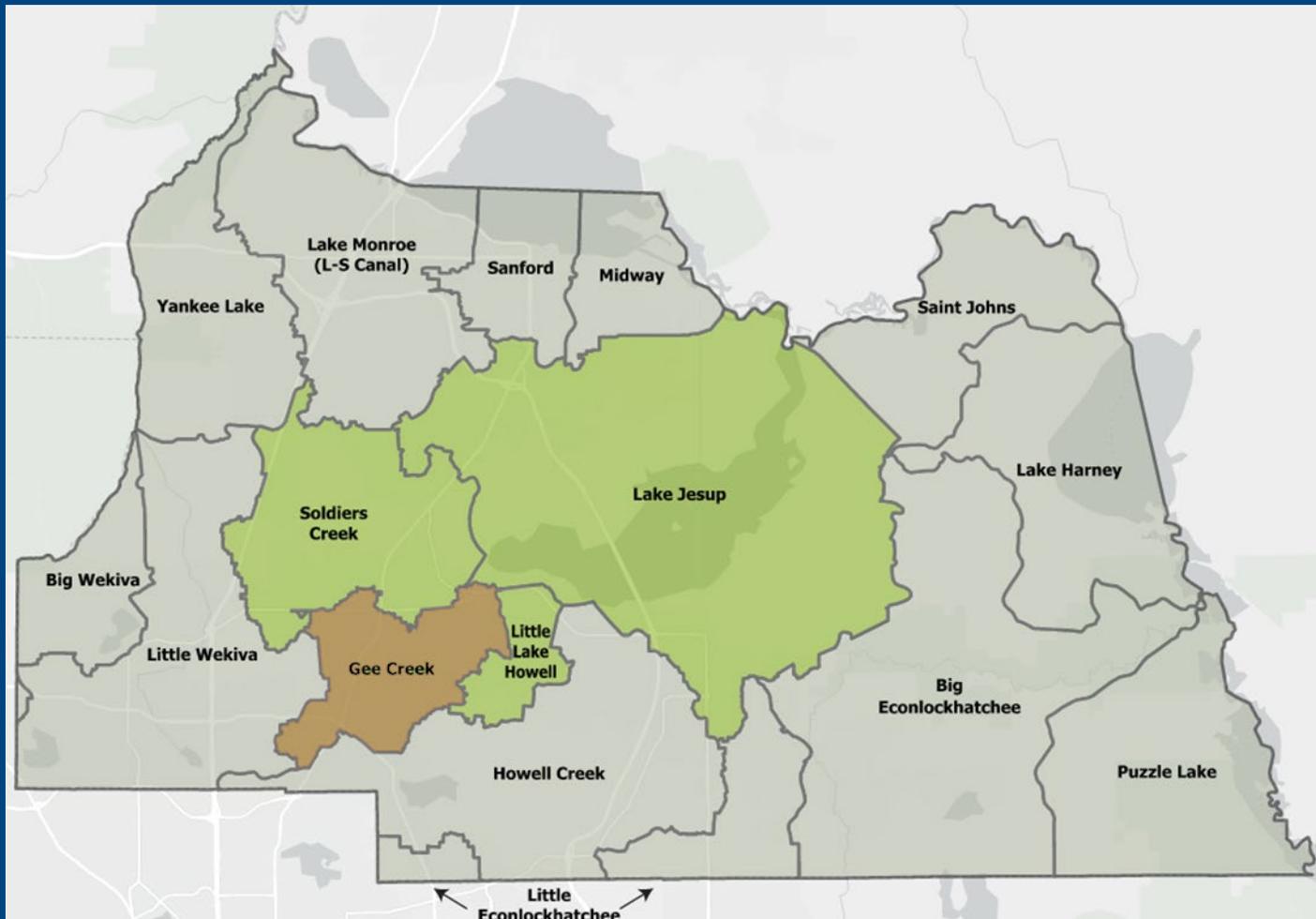
East Basins Groups A & C



Soldiers Creek Basin:

- 19.8 square miles
- Cities of Casselberry, Longwood, Sanford, and Winter Springs
- Basin Study 100% Complete
- Total of 7 Project Concepts
- Total 848 Sub-Basins
 - 180 Closed Sub-Basins

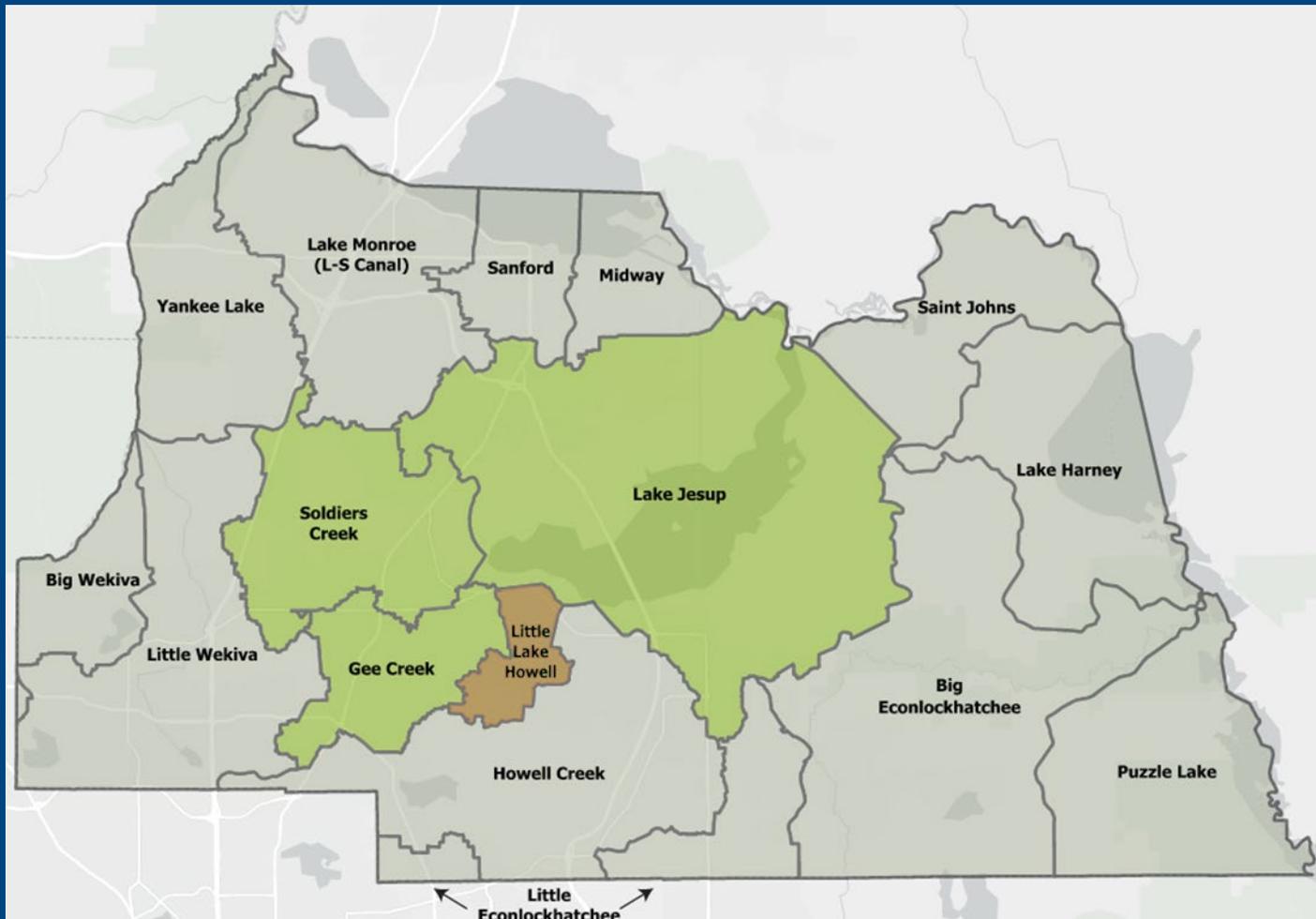
East Basins Groups A & C



Gee Creek Basin:

- 11.4 square miles
- Cities of Altamonte Springs, Casselberry, Longwood, and Winter Springs
- Basin Study 100% Complete
- Total of 1 Project Concept
- Total 566 Sub-Basins
 - 77 Closed Sub-Basins

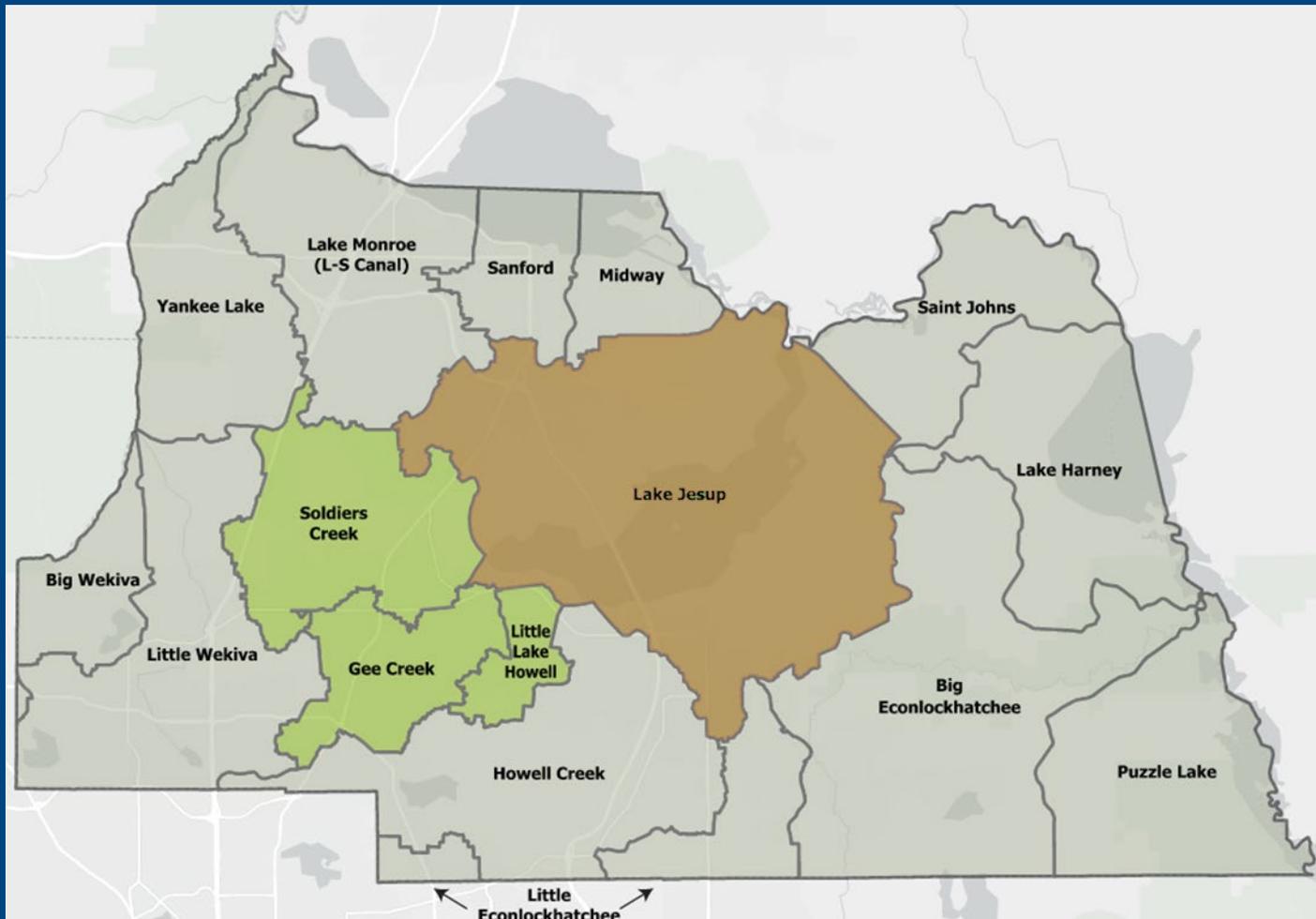
East Basins Groups A & C



Little Lake Howell Basin:

- 4.3 square miles
- Cities of Casselberry, and Winter Springs
- Basin Study 100% Complete
- Total of 5 Project Concepts
- Total 153 Sub-Basins
 - 31 Closed Sub-Basins

East Basins Groups A & C



Lake Jesup Basin:

- 63 square miles
- Cities of Lake Mary, Oviedo, Sanford, and Winter Springs
- Basin Study 100% Complete
- Total of 9 Project Concepts
- Total 2010 Sub-Basins
 - 593 Closed Sub-Basins

East Basins Groups A & C Project History

Dates	Activities
2023	<ul style="list-style-type: none"> • Basin Study Commenced • Public Meeting #1 • Basin Data Collection Complete
2024	<ul style="list-style-type: none"> • Basin Model Development Complete • LOS Alternative Analysis Complete • Initial Draft Basin Study Submitted
2025	<ul style="list-style-type: none"> • Submitted Final Draft Basin Study and CIP Reports • Public Meeting #2 • BCC Meeting – December 9th, 2025



East County Basins Lake Jesup, Soldiers Creek, Gee Creek & Little Lake Howell Watersheds Management Plan Project Recommendations

Board of County Commissioners Meeting
December 9, 2025



In Association with:



Project Overview

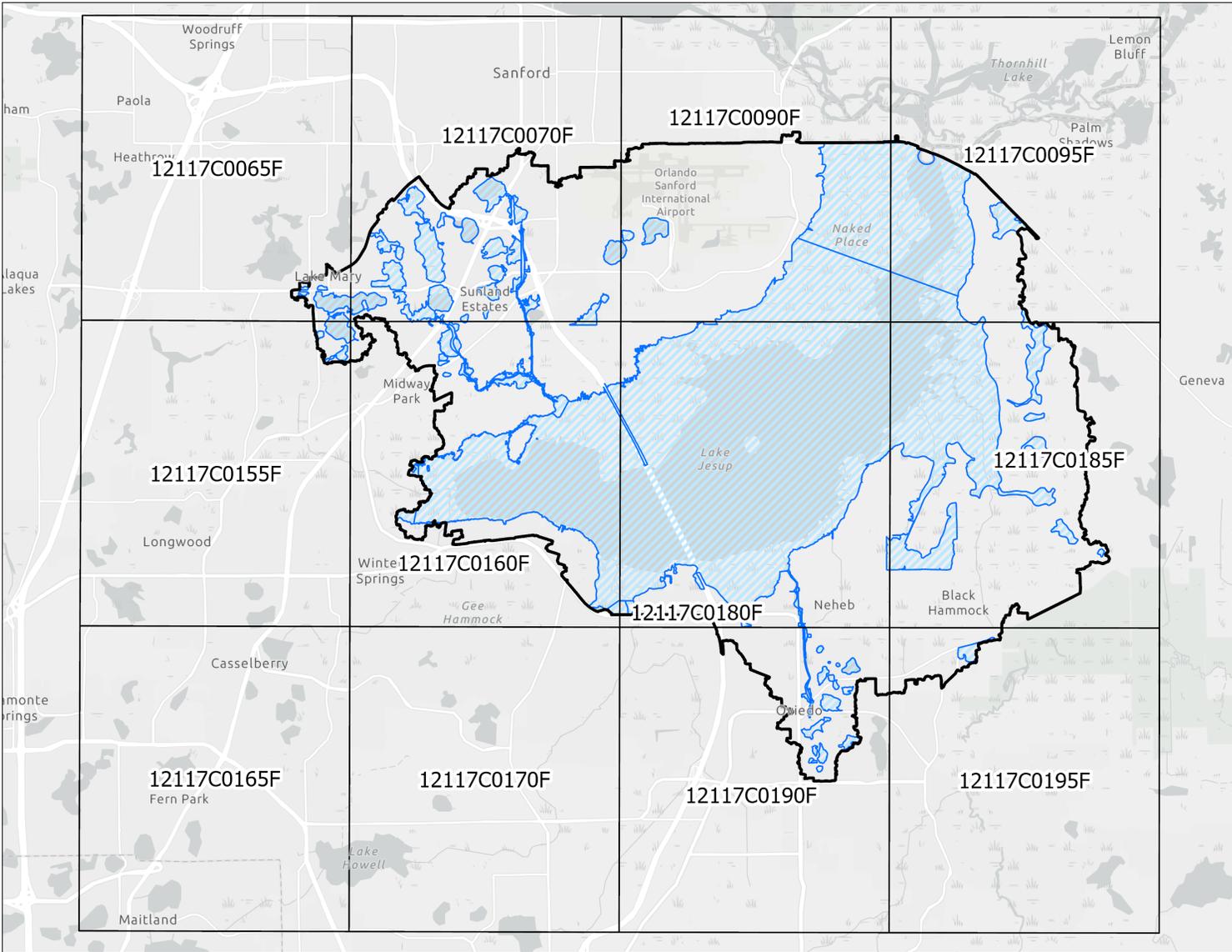
Scope of Work

- Develop a Hydrologic & Hydraulic model
- Flood Inundation Mapping
- Flooding Assessment
- Deficiency Identification
- Project Scoring and Recommendations
- Improvement Project Prioritization
- Evaluate Conceptual Capital Improvement Projects that will Serve to Alleviate Flooding

Lake Jesup Watershed Results

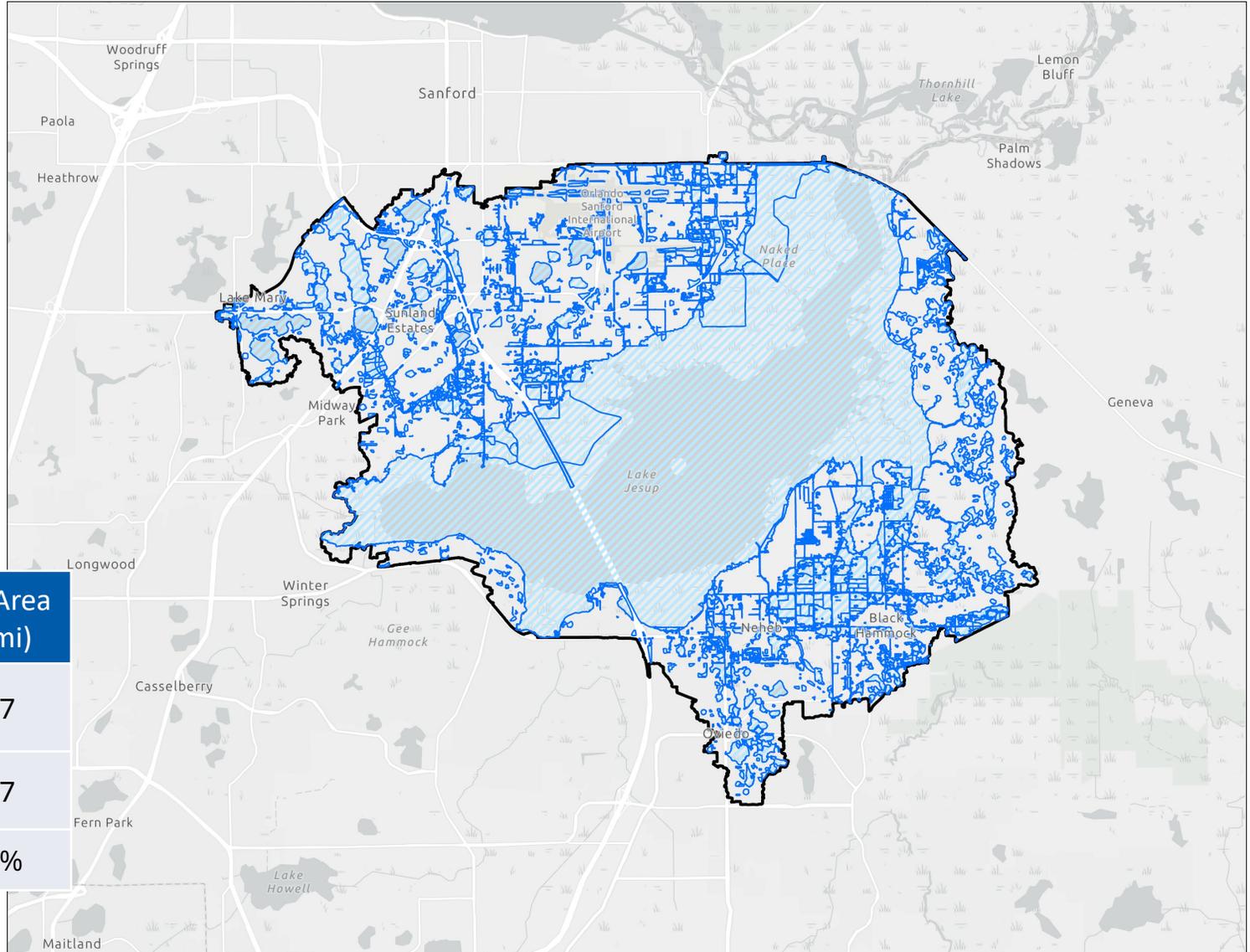
Lake Jesup FEMA Effective 100-Year Flood Map

- ❑ 28.7 square-miles of floodplain
- ❑ Used for Flood Insurance
- ❑ Maps are dated 2007
- ❑ Based on 2001 model
- ❑ Many flood prone areas are not mapped



Lake Jesup Project Delineated 100-Year Flood Inundation Map

- ❑ 34.7 square-miles of floodplain
- ❑ Mapped using new model that included changes in the basin from 2001 to 2019
- ❑ Mapped floodplain area increased by 21%

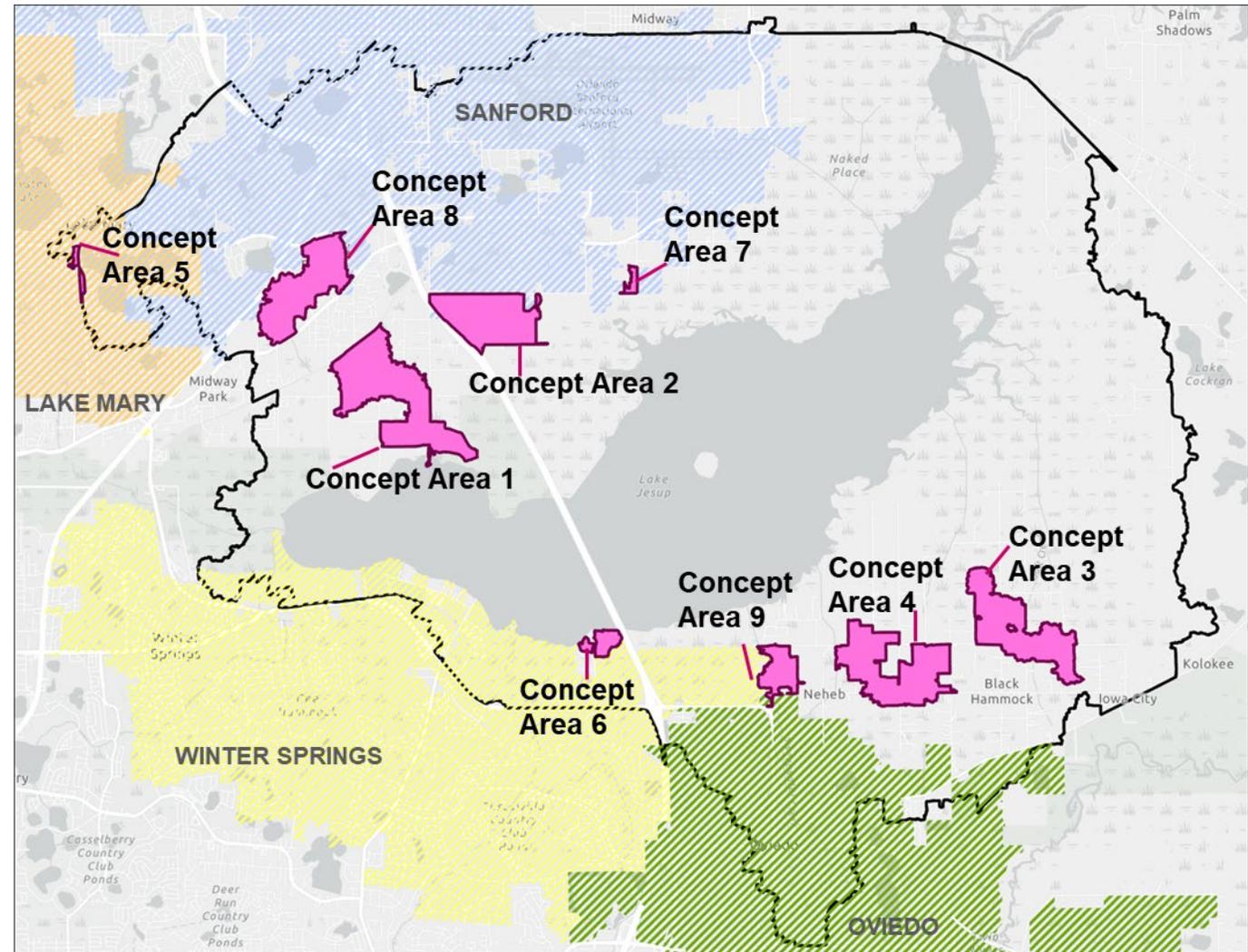


	Total Parcels	Total Buildings	Total Area (sq-mi)
Effective FEMA Flood Map	2,198	274	28.7
Project Delineated Flood Map	4,615	409	34.7
% Change	+110%	+50%	+21%

Lake Jesup Proposed Flood Improvement Projects

Alternative Concept Area	Name	Project Priority
Concept Area 1	North Carolina Run, Myrtle Street & South Sanford Avenue	9
Concept Area 2	Palm Way, Oakway & South Mellonville Avenue	5
Concept Area 3*	Stone Street & Howard Avenue	7
Concept Area 4*	Florida Avenue and Canal Street	8
Concept Area 5*	South Country Club Road	4
Concept Area 6	Lake Street Flooding	3
Concept Area 7	Pine Way Area Flooding	1
Concept Area 8	Sunland Estates	2
Concept Area 9	Deleon Street	6

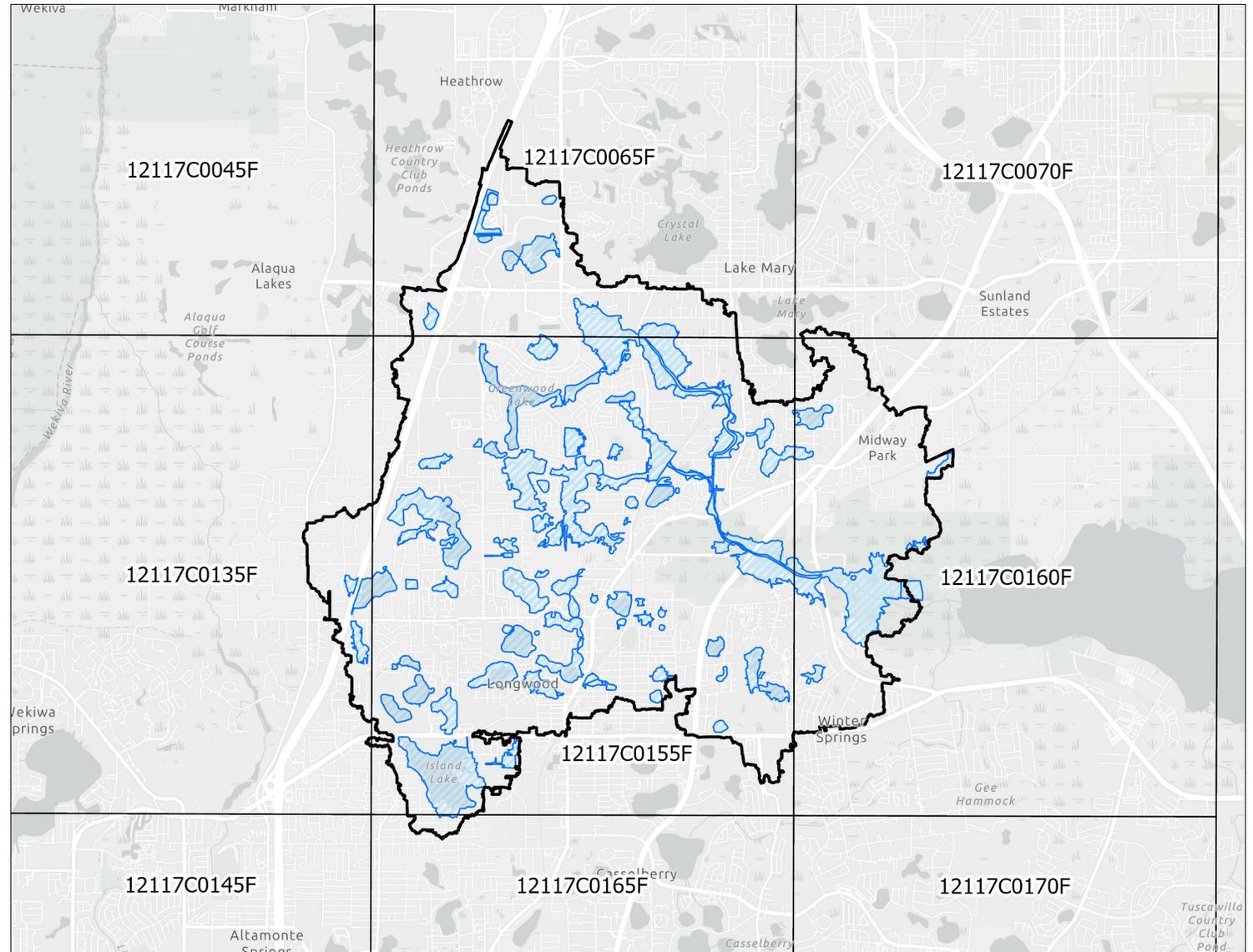
*Flood mitigation project that includes water quality benefit



Soldiers Creek Watershed Results

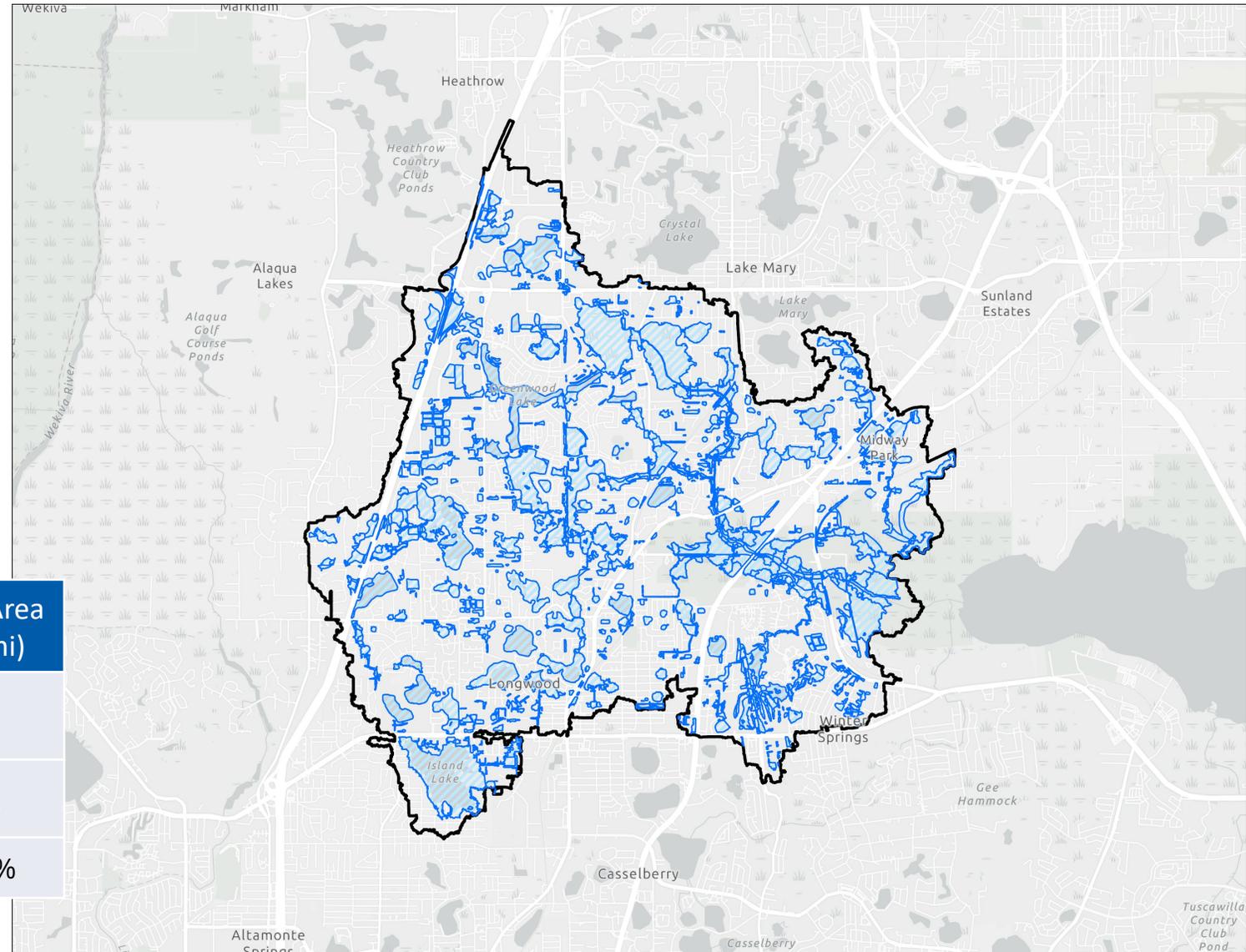
Soldiers Creek FEMA Effective 100-Year Flood Map

- ❑ 3.5 square-miles of floodplain
- ❑ Used for Flood Insurance
- ❑ Maps are dated 2007
- ❑ Based on 1996 model
- ❑ Many flood prone areas are not mapped



Soldiers Creek Project Delineated 100-Year Flood Inundation Map

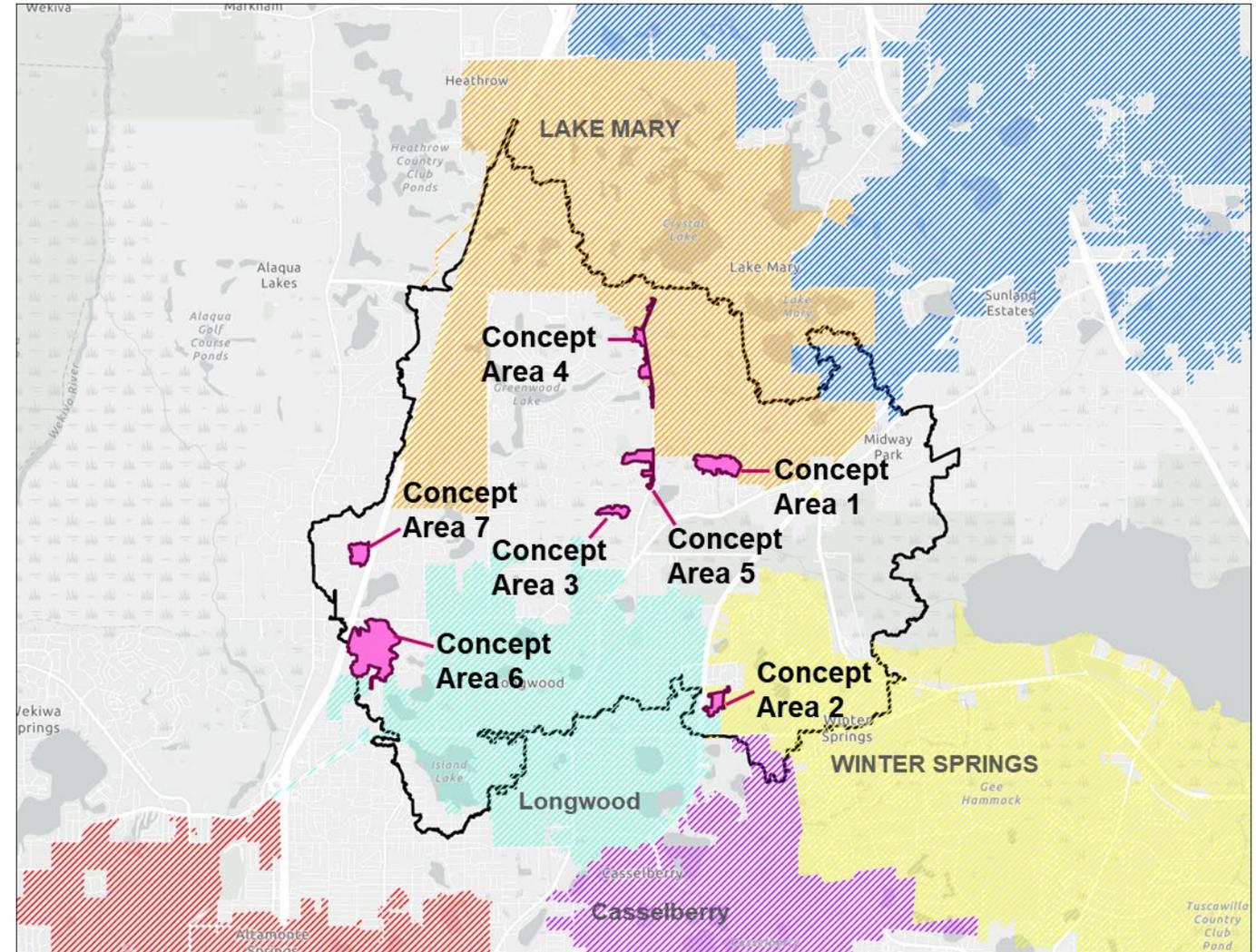
- ❑ 5.2 square-miles of floodplain
- ❑ Mapped using new model that included changes in the basin from 1996 to 2019
- ❑ Mapped floodplain area increased by 49%



	Total Parcels	Total Buildings	Total Area (sq-mi)
Effective FEMA Flood Map	2,060	313	3.5
Project Delineated Flood Map	3,677	574	5.2
% Change	+78%	+83%	+49%

Soldiers Creek Proposed Flood Improvement Projects

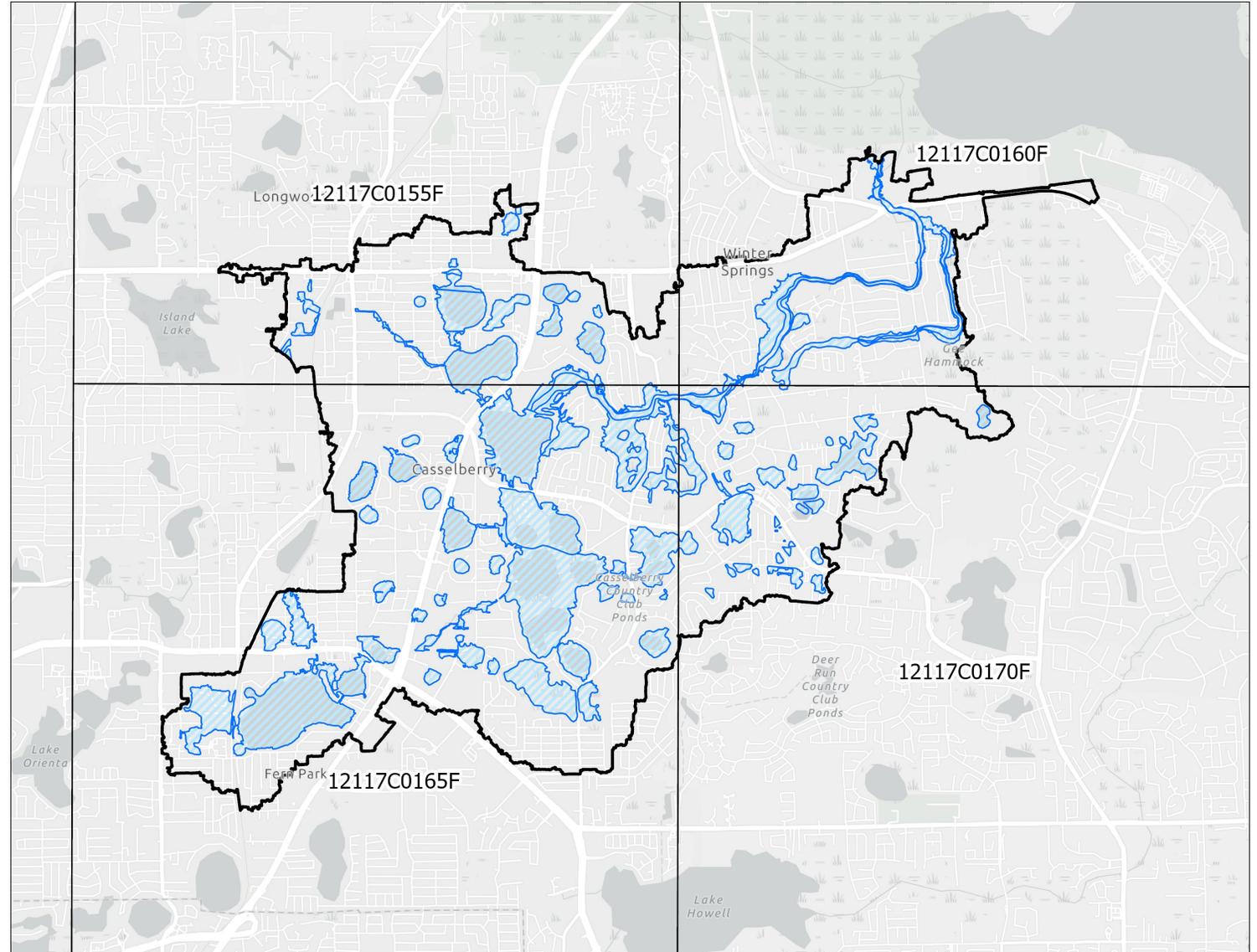
Alternative Concept Area	Name	Project Priority
Concept Area 1	Country Club Heights	2
Concept Area 2	Talmo Street / Lake Lucerne Area	5
Concept Area 3	Acorn Drive	6
Concept Area 4	Longwood Lake Mary Road (North)	4
Concept Area 5	Longwood Lake Mary Road (South)	3
Concept Area 6	Woodlands Subdivision	7
Concept Area 7	Rutledge Road	1



Gee Creek Watershed Results

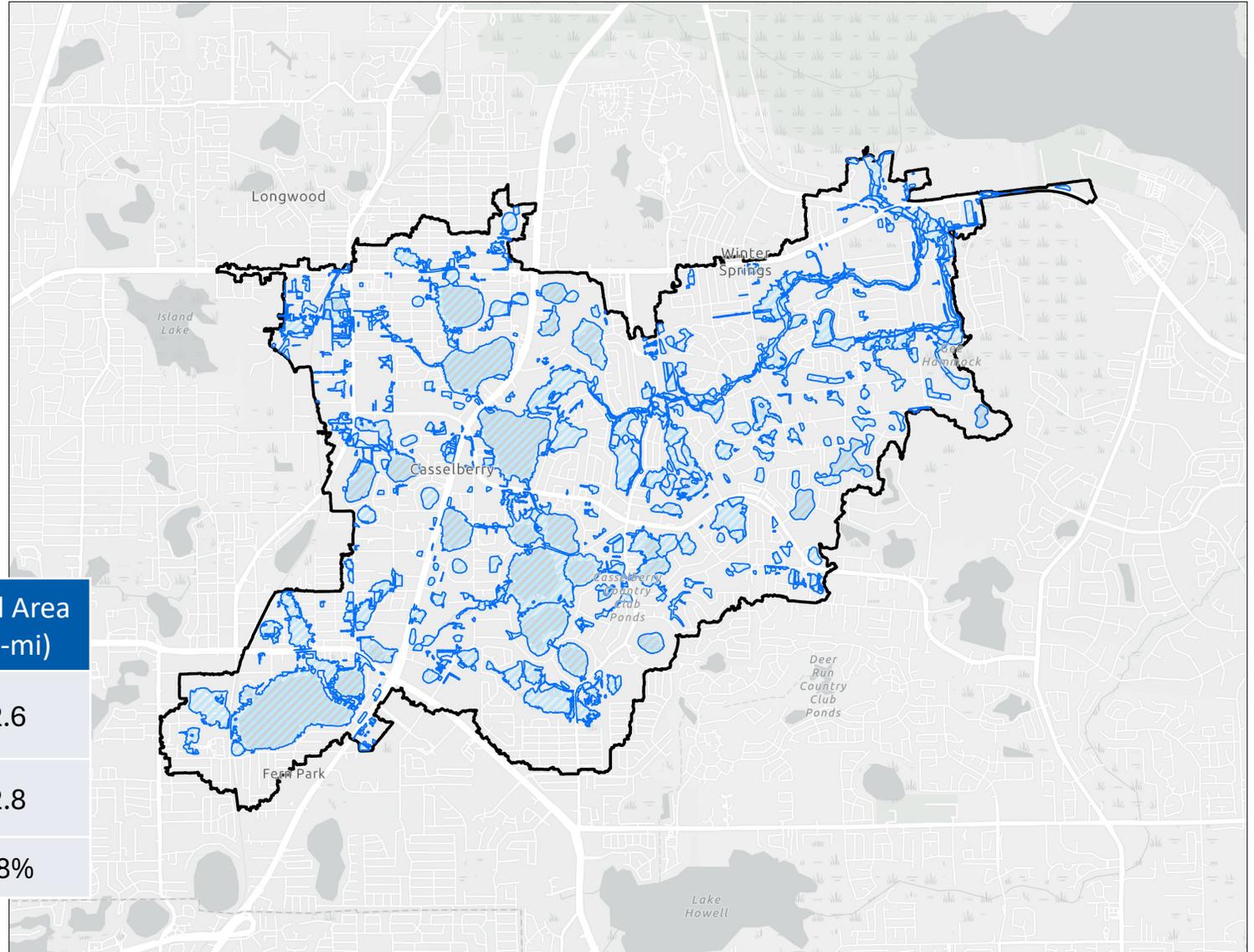
Gee Creek FEMA Effective 100-Year Flood Map

- ❑ 2.6 square-miles of floodplain
- ❑ Used for Flood Insurance
- ❑ Maps are dated 2007
- ❑ Based on 1996 model
- ❑ Many flood prone areas are not mapped



Gee Creek Project Delineated 100-Year Flood Inundation Map

- 2.8 square-miles of floodplain
- Mapped using new model that included changes in the basin from 1996 to 2019
- Mapped floodplain area increased by 8%

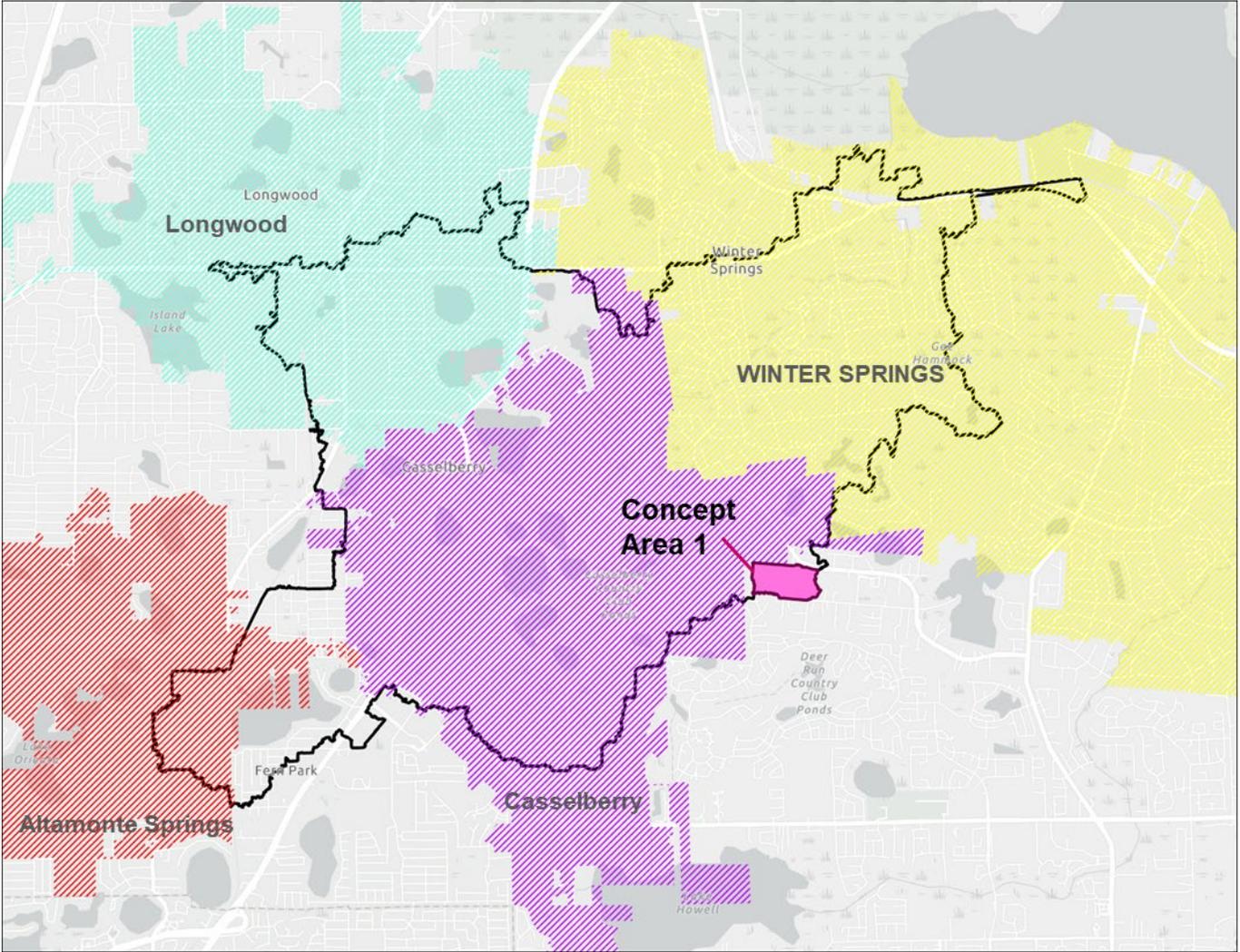


	Total Parcels	Total Buildings	Total Area (sq-mi)
Effective FEMA Flood Map	2,468	993	2.6
Project Delineated Flood Map	2,728	826	2.8
% Change	+10%	-17%	+8%

Gee Creek Proposed Flood Improvement Projects

Alternative Concept Area	Name
Concept Area 1*	Sterling Oaks / Spicewood Subdivisions

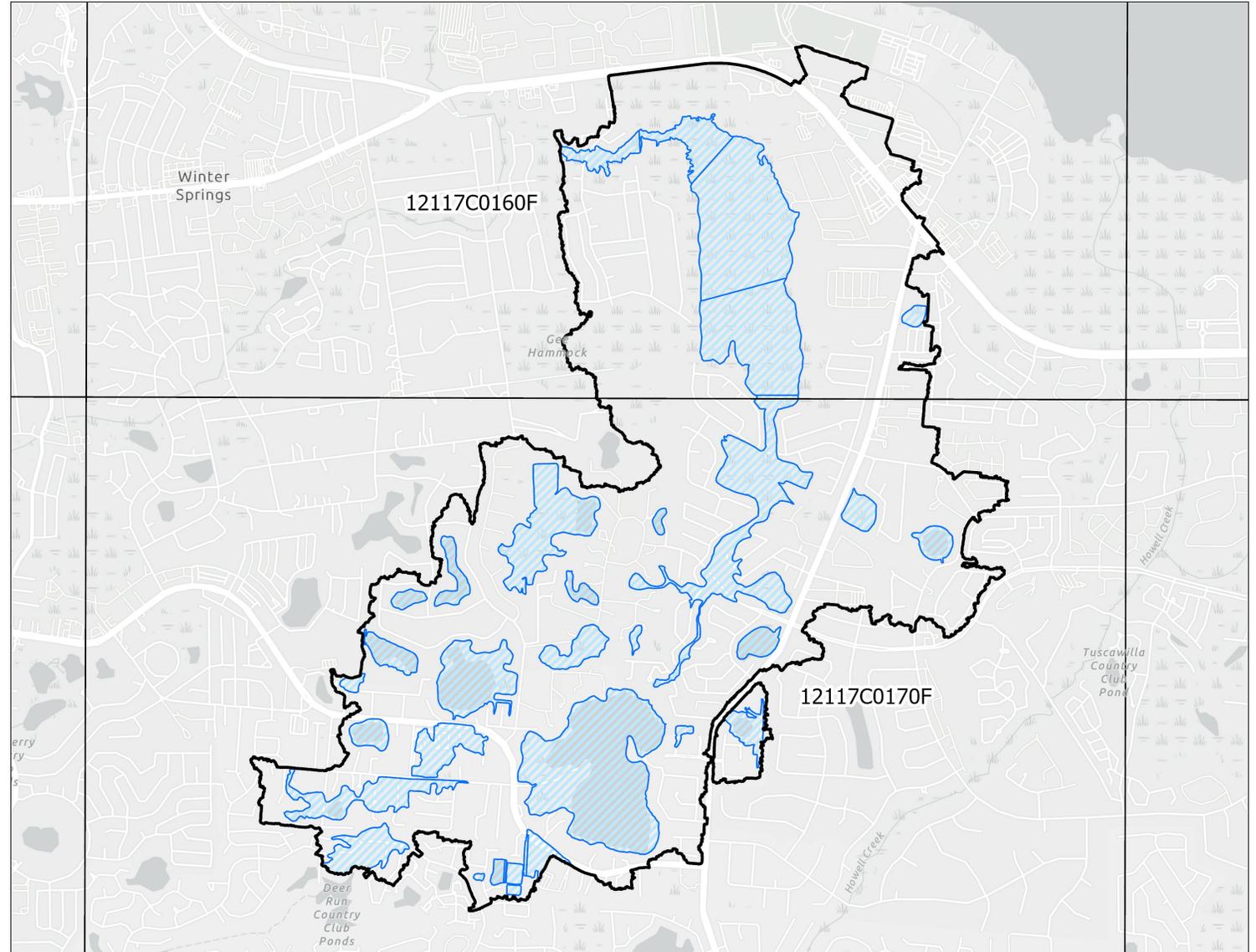
*Flood mitigation project that includes water quality benefit



Little Lake Howell Watershed Results

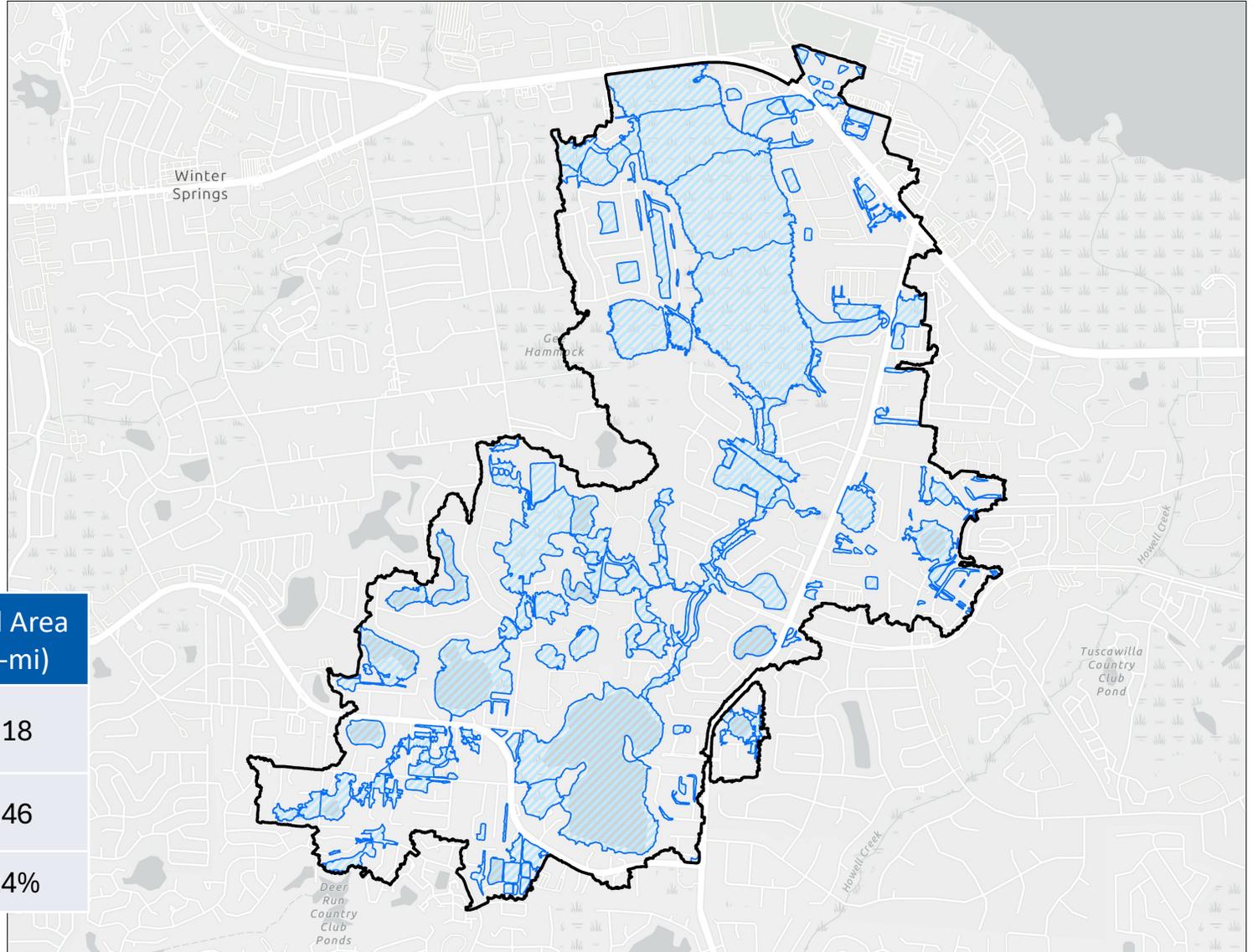
Little Lake Howell FEMA Effective 100-Year Flood Map

- ❑ 1.18 square-miles of floodplain
- ❑ Used for Flood Insurance
- ❑ Maps are dated 2007
- ❑ Based on 1997 model
- ❑ Many flood prone areas are not mapped



Little Lake Howell Project Delineated 100-Year Flood Inundation Map

- ❑ 1.46 square-miles of floodplain
- ❑ Mapped using new model that included changes in the basin from 1997 to 2019
- ❑ Mapped floodplain area increased by 24%

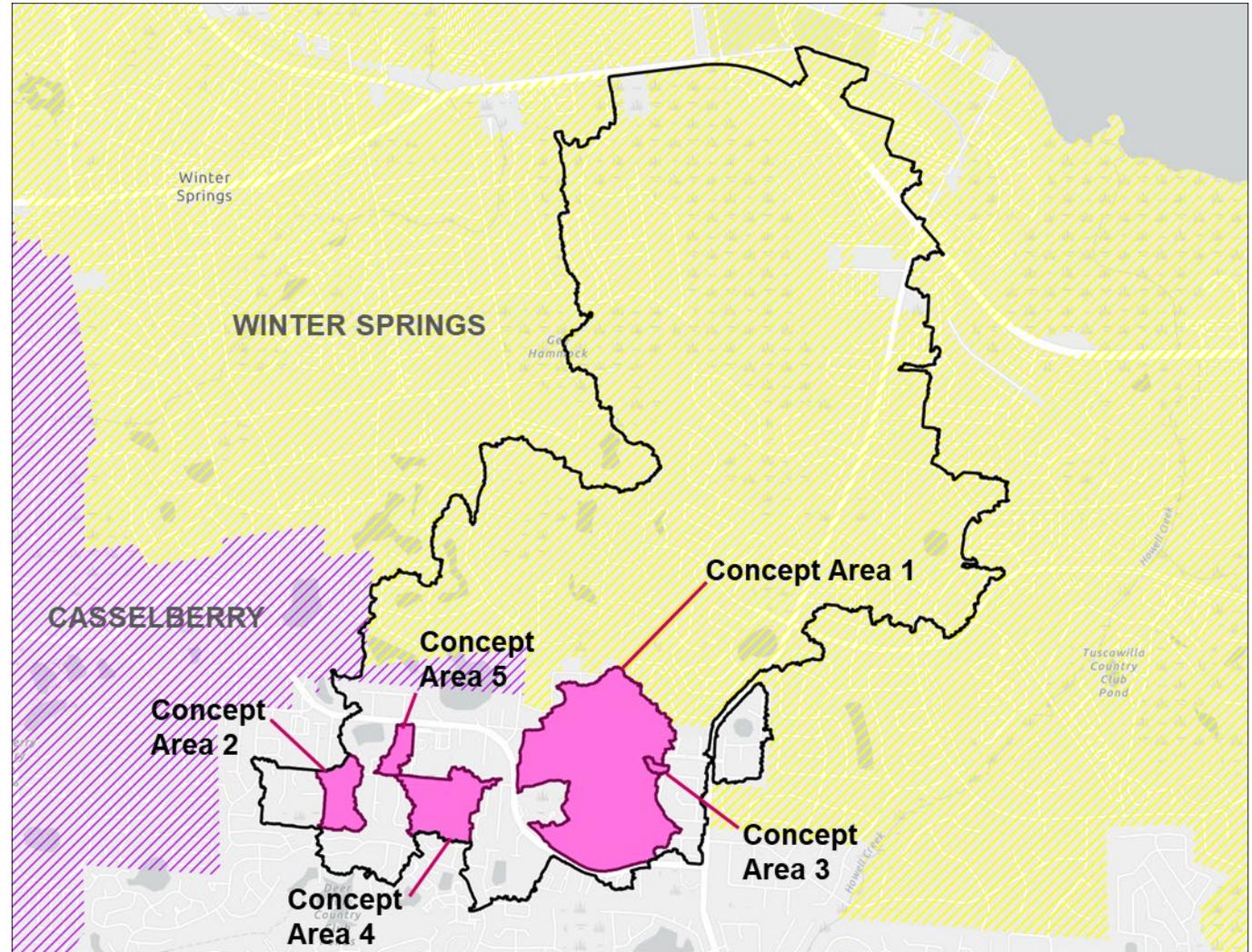


	Total Parcels	Total Buildings	Total Area (sq-mi)
Effective FEMA Flood Map	629	167	1.18
Project Delineated Flood Map	881	87	1.46
% Change	+40%	-48%	+24%

Little Lake Howell Proposed Flood Improvement Projects

Alternative Concept Area	Name	Project Priority
Concept Area 1	Little Lake Howell	5
Concept Area 2*	Sunset Road flooding	2
Concept Area 3	Tuska Bay Court	1
Concept Area 4*	Pond overtopping south of Center Drive	4
Concept Area 5*	Chinmaya Way flooding	3

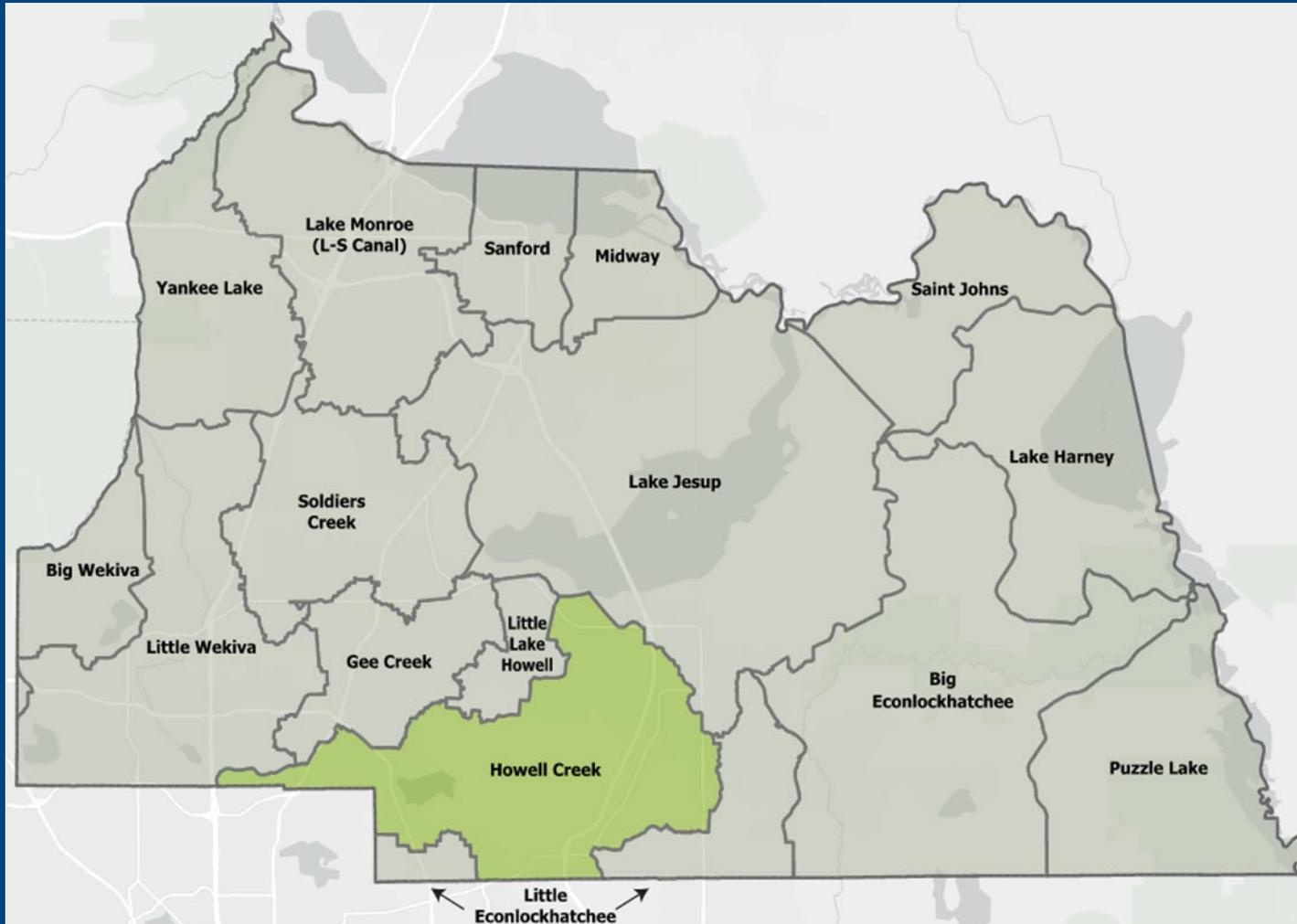
*Flood mitigation project that includes water quality benefit



East County Basins Group B (Howell Creek) Basin Study

December 9, 2025

East Basins Group B



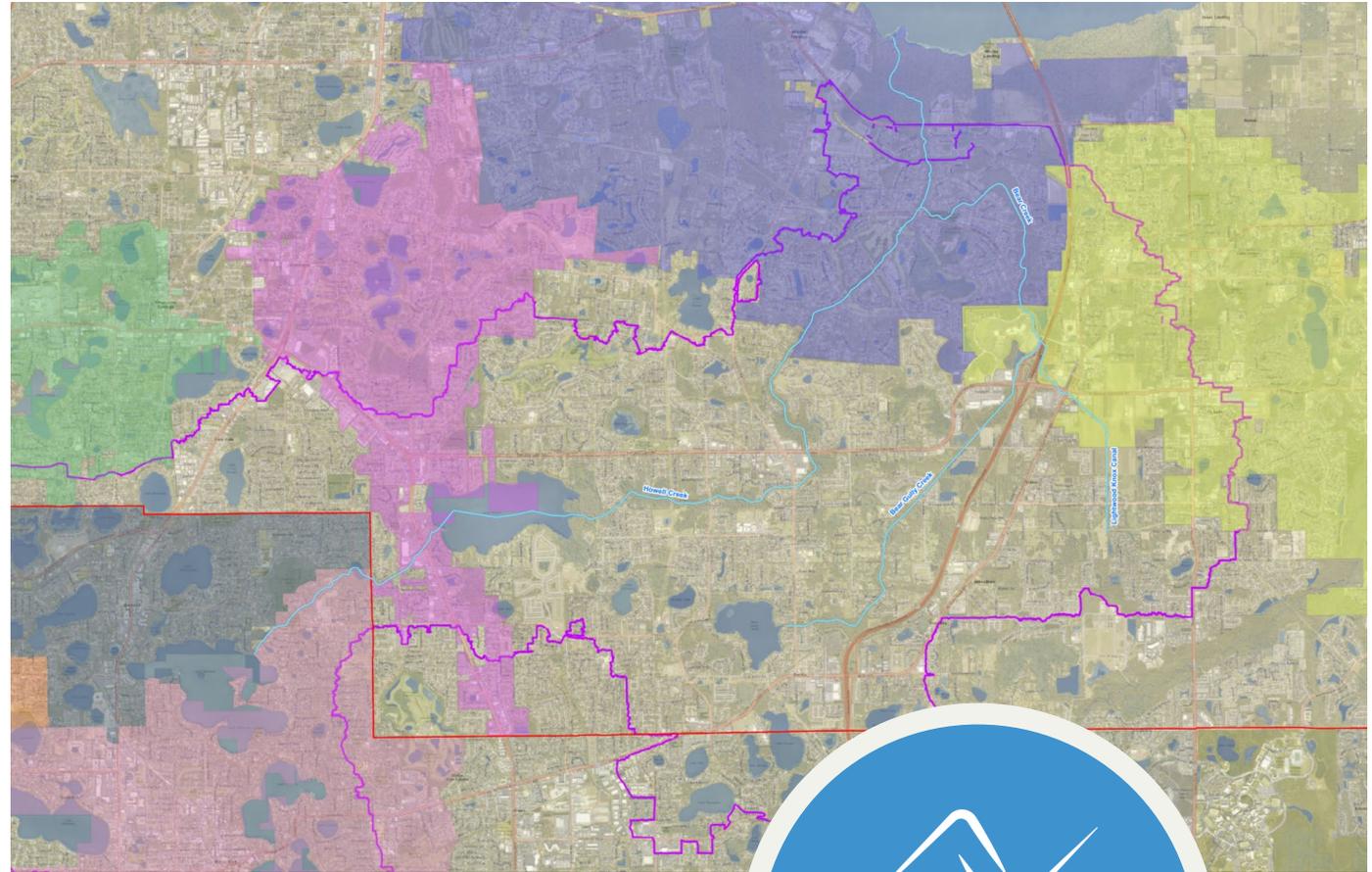
Howell Creek Basin:

- 54 square miles in Seminole County
- Cities of Altamonte Springs, Casselberry, Oviedo, and Winter Springs
- Basin Studies 100% Complete
- Total of 13 Project Concepts
- Total of 315 Sub-Basins
 - 8 Closed Sub-Basins in Seminole County

East Basins Groups B Project History

Dates	Activities
2023	<ul style="list-style-type: none"> • Basin Study Commenced • Public Meeting #1 • Basin Data Collection Complete
2024	<ul style="list-style-type: none"> • Basin Model Development Complete • LOS Alternative Analysis Complete • Initial Draft Basin Study Submitted
2025	<ul style="list-style-type: none"> • Submitted Final Draft Basin Study and CIP Reports • Public Meeting #2 • BCC Meeting – December 9th, 2025

Howell Creek Watershed Management Plan Update



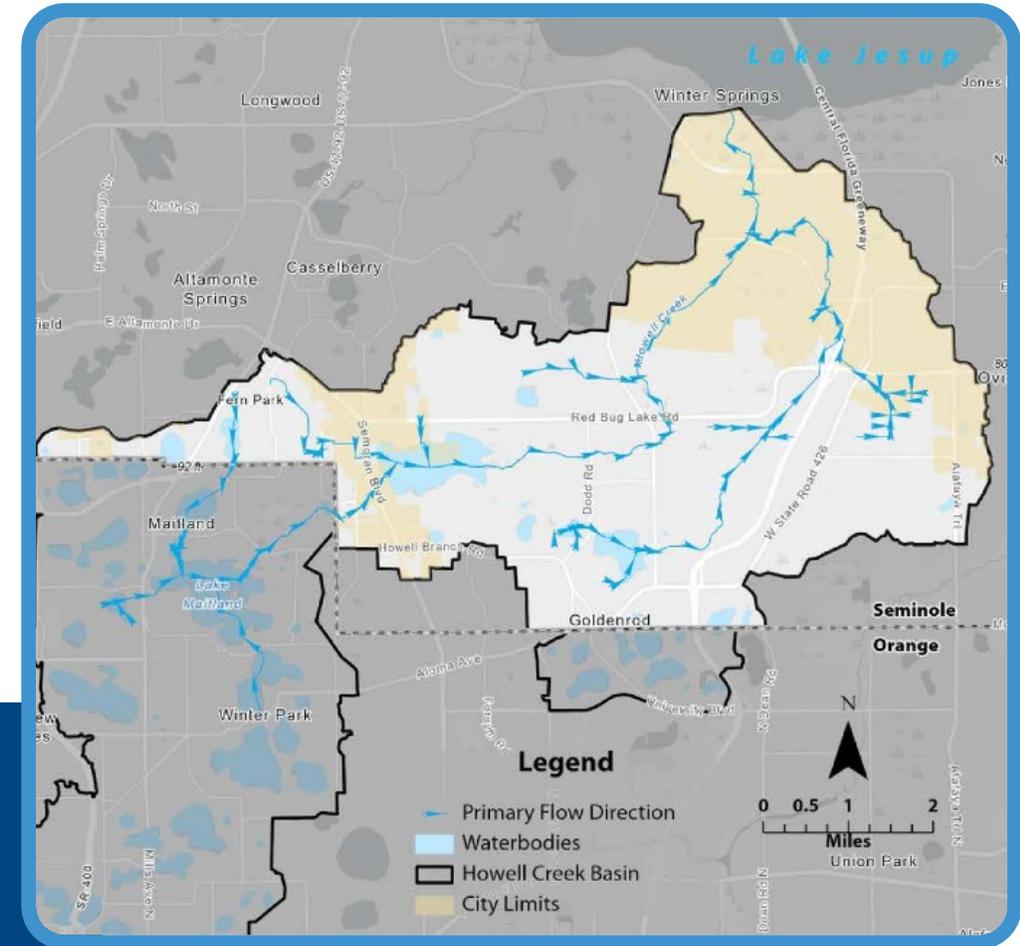
BCC Meeting
December 9 2025

Howell Creek Watershed (Group B)

- 54 square miles (35,000 acres)
- 20 square miles in unincorporated Seminole County

Major receiving waters

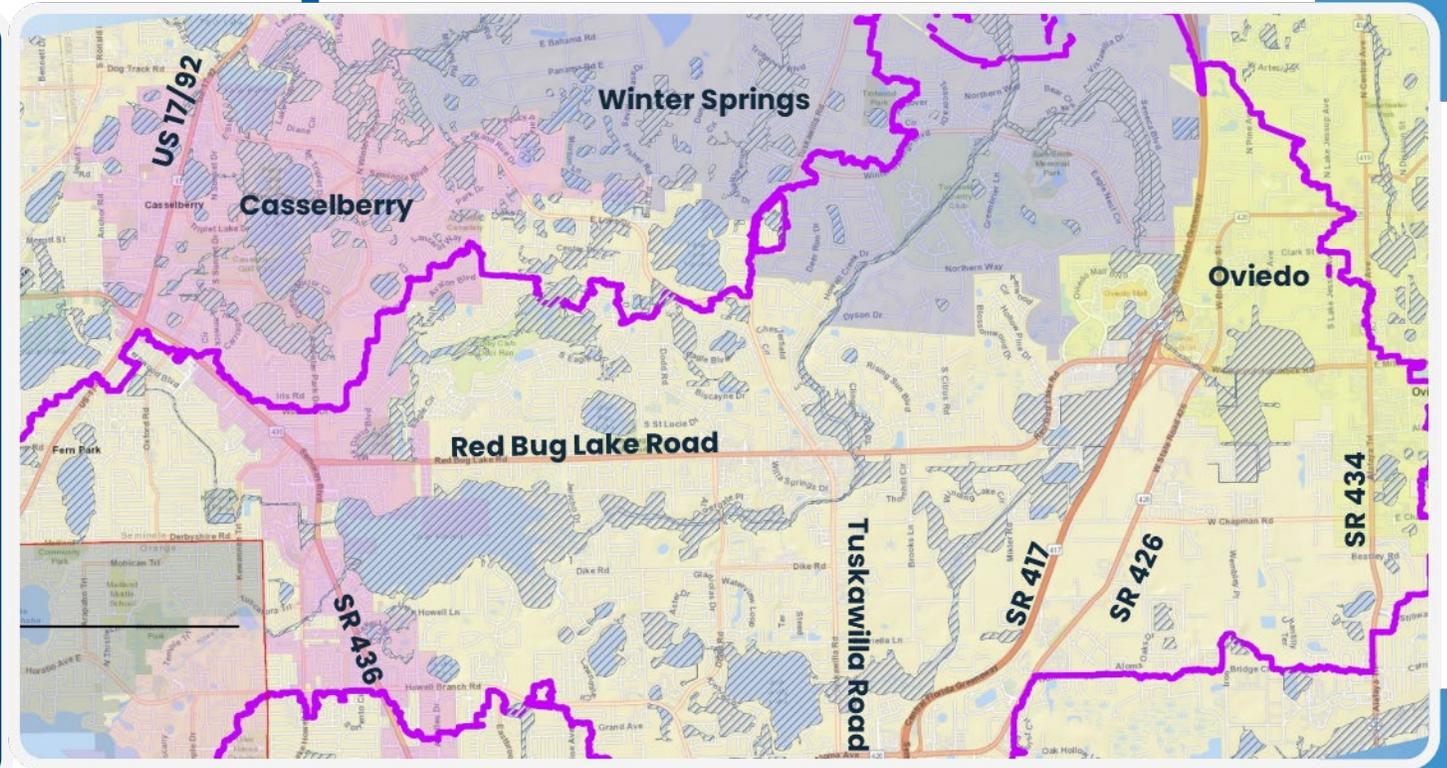
- Lake Howell/Howell Creek
- Bear Gully Lake/Creek
- Bear Creek
- Lightwood Knox Canal
- Red Bug Lake
- Lake Florence/Gaden Lake



Watershed also drains portions of Orange County and Cities of Orlando, Winter Park, Maitland, Eatonville, Altamonte Springs, Casselberry, Winter Springs, and Oviedo

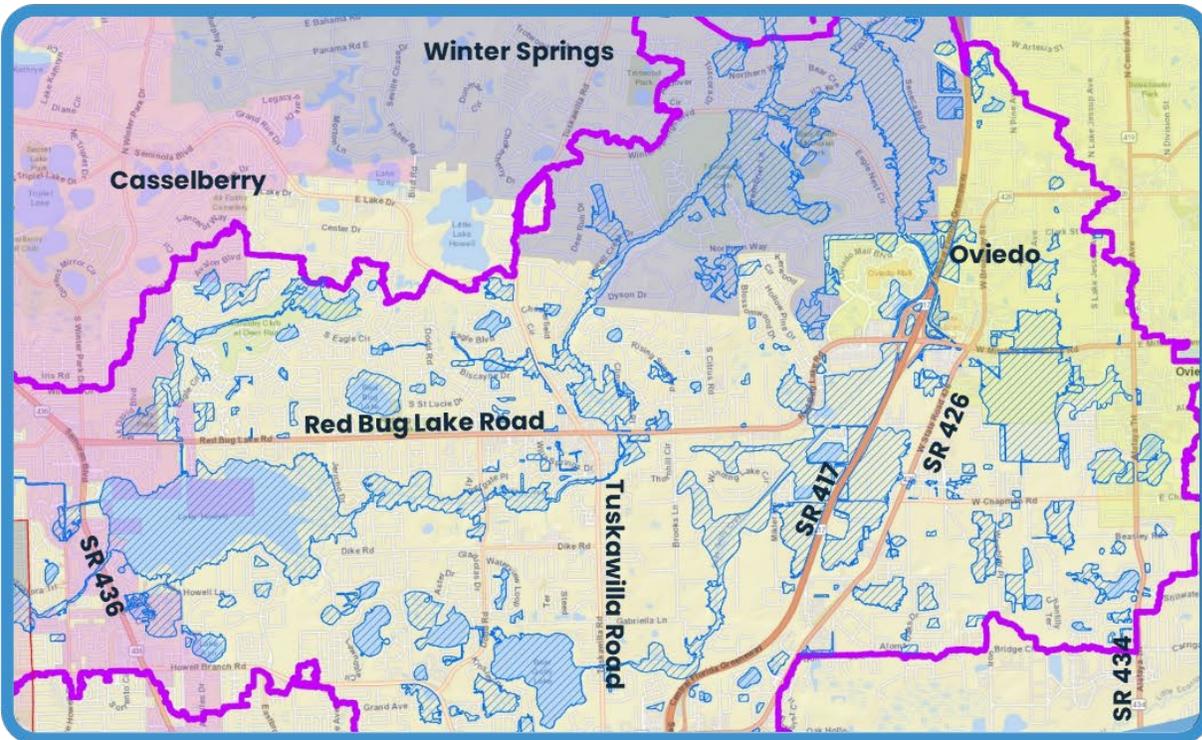
Howell Creek Effective FEMA Flood Insurance Rate Map

- Last major FIRM update done in September 2007
- Based on more limited study and modeling available at time
- Focuses on the riverine and lacustrine floodplains of major streams and lakes
- 5.8 sq. mi. of floodplain within Zones A and AE in unincorporated County portion of watershed



Howell Creek

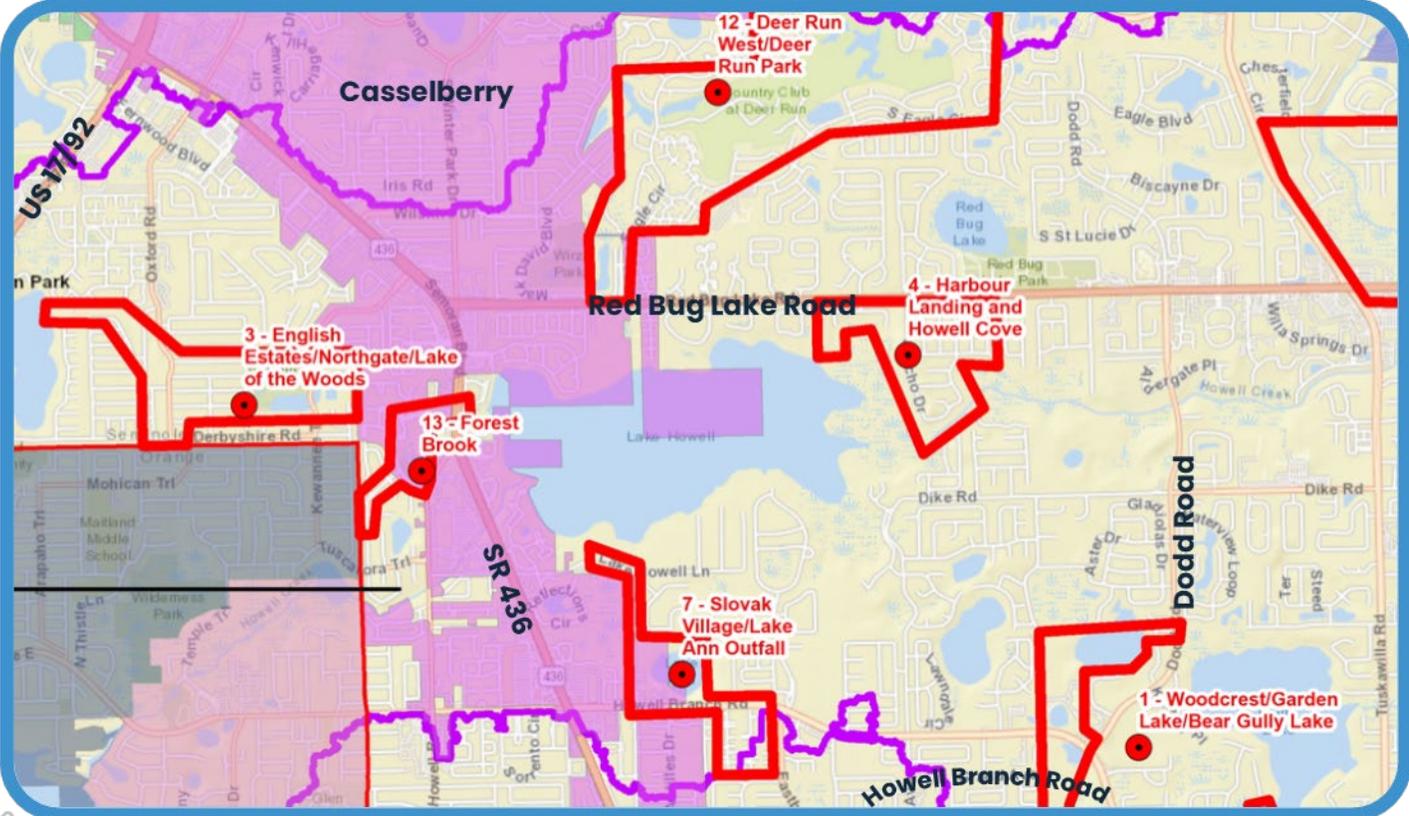
Modeled 100-YR Flood Zones



- Maximum expected extents of inundation for the 100-yr/24-hr design storm
- 6.5 sq. mi. of modeled 100-yr/24-hr inundated area in unincorporated County portion of watershed.
- Model results represent 12% more inundated area than effective FIRM

	FEMA Effective	Modeled 100-Yr
Inundated Area (sq. mi.)	5.8	6.5
Parcels within Floodplain	3,590	3,781
Est. Inundated Structures	289	471

Howell Creek Problem/Project Areas West of Tuskawilla Road

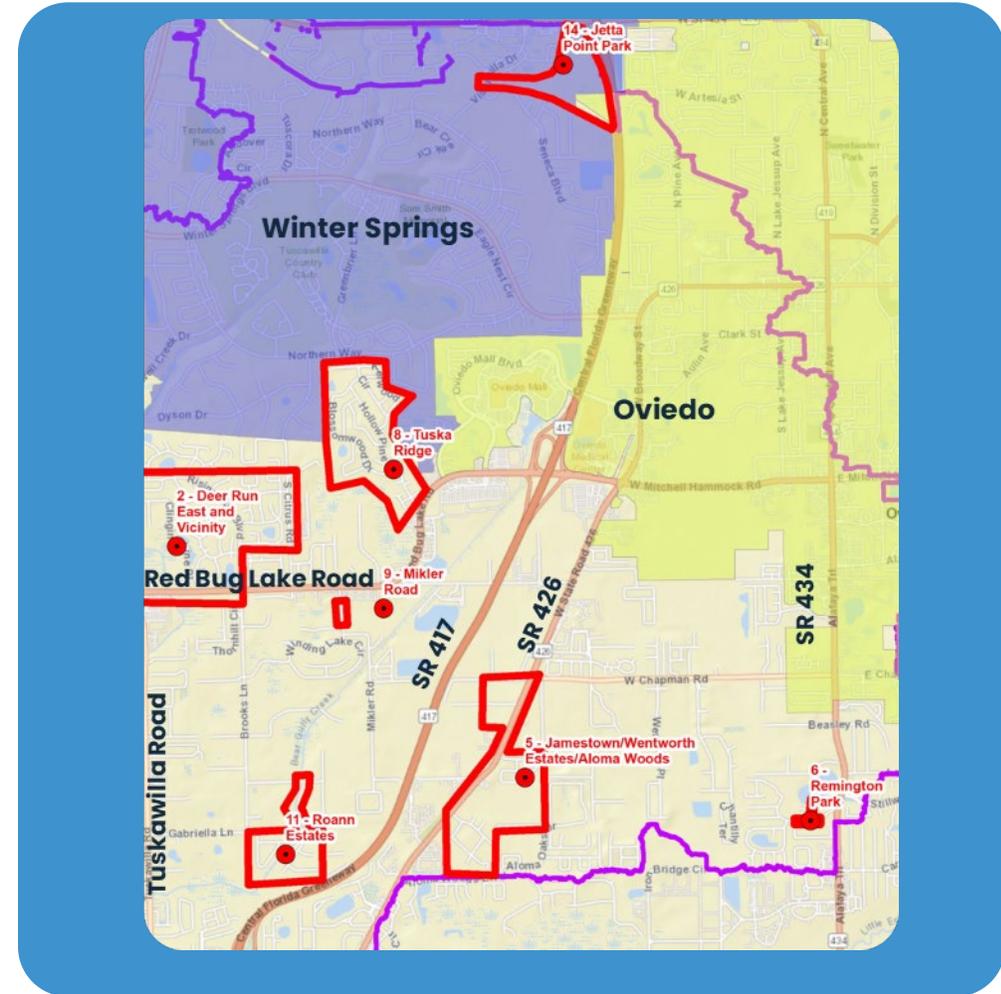


Project #	Location	Priority Rank (of 13)
1	Woodcrest/ Garden Lake	10
3	English Estates	2
4	Harbour Landing Howell Cove	7
7	Slovak Village	5
12	Deer Run Park	1
13	Forest Brook	3

Howell Creek

Problem/Project Areas East of Tuskawilla Road

Project #	Location	Priority Rank (of 13)
2	Deer Run East	8
5	Aloma Woods Outfall	4
6	Remington Park	9
8	Tuska Ridge	13
9	Mikler Road	12
11	Roann Estates	11
14	Jetta Point Park	6



Next Steps

East County Basin Studies:

- Provide models to Development Review for use as best available information
- Submit final approved studies for FEMA review

Next Steps

Overall Studies:

- **Lake Monroe / Big and Little Econlockhatchee –**
BCC Meeting January 13, 2026
- **Big and Little Wekiva, Yankee Lake Basins –**
BCC Meeting January 27, 2026
- **Finalize County's Stormwater Masterplan**

Requested Action

Board approval for acceptance into service of the Basin Studies for East County Basins Groups A, B, and C (Soldiers Creek, Gee Creek, Little Lake Howell, Lake Jesup, and Howell Creek), as recommended by staff.