



C-139 Regional Feasibility Study

**A Complete Water Resource
Perspective**

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Tom Kosier, PhD.



Environmental Resource Regulation Department

The C-139 "Region"

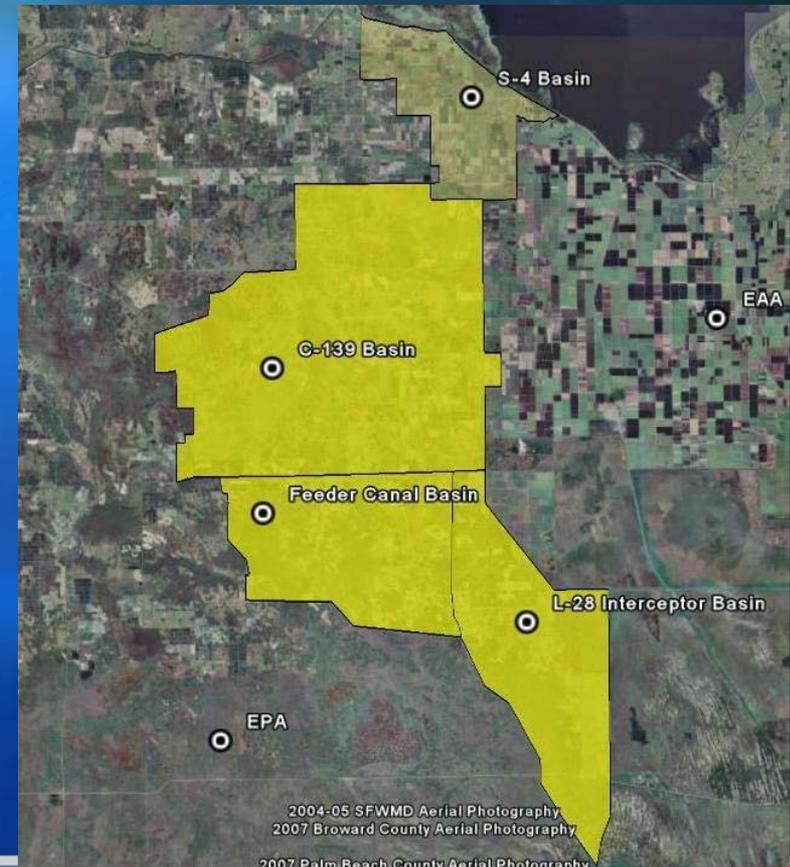
- *C-139 - one of several Everglades western tributaries*
- *Collectively known as the "Western Basins"*

Basins Tributary to Everglades

- C-139 Basin
- Feeder Canal Basin
- L-28 Basin

Potential Tributary Basin

- S-4 basin (Clewiston Canal)





Region Feasibility Studies History

- **1960 - 70's Army Corps of Engineers – “Hendry County Plan”**
- **1990 - 1991 SFWMD “Mock Roos Western Basin Study”**
- **2005 - 2006 SFWMD C-139 Basin Study**
- **2008 - 2011 C-139 Regional Feasibility Study**
 - **Phase 1 – current effort**
 - **Phase 2 – 2010 to 2011**

Attributes & Challenges: C-139 Basin

Current Attributes

- **Second largest tributary discharging to Everglades behind Everglades Agriculture Area (EAA)**
- **Mandatory Best Management Practices (BMP) source control program for Landowners**
- **Mandatory Farm outflow measurements not required**
- **Stormwater Treatment Area (STA) STA-5 & STA-6**
- **Dependency on groundwater for water supply**
 - **Surface water limited to Basin rainfall**



Attributes & Challenges: C-139 Basin

Challenges

- **Further reduce total phosphorus (TP) loads in Basin discharges**
- **Improve STA performance**
- **Increase Basin storage**
- **Land practices/production intensification due to economic conditions**
- **Management of water supply to promote conservation and improve water quality**
- **Ensure flood protection is maintained**

Attributes & Challenges: Feeder Canal Basin

Current Attributes

- **Third largest tributary discharging to Everglades behind EAA and C-139 Basin.**
- **No Mandatory BMP source control program for landowners**
 - **However, some Landowners have BMP plans through Everglades Resource Permit (ERP) or Florida Department of Agriculture and Consumer Services (FDACS)**
- **No STA treatment**
- **Dependency on groundwater for water supply**
- **Federal Critical/CERP Projects (Water Management Plan)**



Attributes & Challenges: Feeder Canal Basin

Challenges

- **Further reduce TP loads in Basin discharges**
- **Increase Basin storage**
- **Management of water supply to promote conservation and improve water quality**
- **Discharge limits to be determined**
- **Coordinate with Critical/CERP Projects**

Attributes & Challenges: L-28 Basin

Current Attributes

- Fourth largest tributary discharging to Everglades behind EAA, C-139 and Feeder Canal Basins
- C-139 Annex diversion of flows to STA-6 w/ Mandatory ERP BMPs (upon issuance of permit)
- Remaining landowners - No Everglades Forever Act (EFA) Mandatory BMPs & No STA treatment
- Dependency on groundwater for water supply
- Planned CERP Project (Water Management Plan)



Attributes & Challenges: L-28 Basin

Challenges

- **Further reduce TP loads in basin discharges**
- **Increase basin storage**
- **Management of water supply to promote conservation and improve water quality**
- **Coordinate with CERP Project**

Attributes & Challenges: S-4 Basin

Current Attributes

- **Consists of S-4 and Clewiston Canal**
- **Historically discharged to Lake Okeechobee and Caloosahatchee River**
- **Diversion Proposal - ~ 50% of basin discharge south to C-139 Region**
- **Mandatory BMPs, but No STA treatment currently in basin**

Attributes & Challenges: S-4 Basin

Challenges

- **Reduce TP loads to Lake Okeechobee and Caloosahatchee River by diverting excess flows south**
- **Storage and treatment of diverted flows (separation of systems to ensure no water quality impacts)**
- **Integrated water management with C-139 Region (protect flood control)**
- **C-139 Region water supply - potential stormwater recycling**

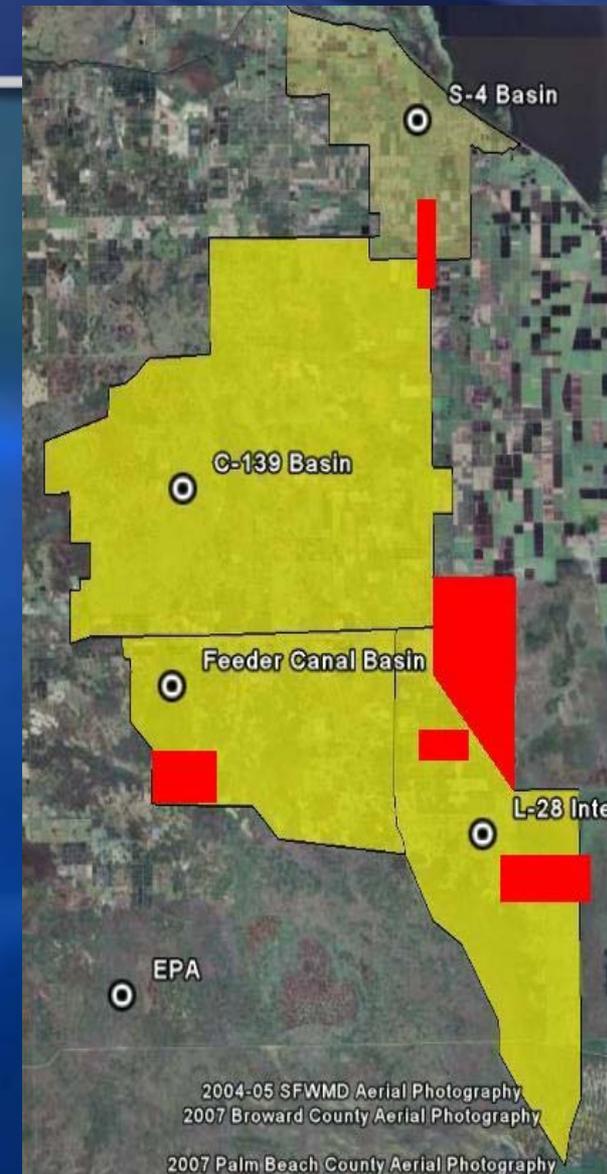
Basin Specific Projects: Existing & Currently Planned

Existing

- STA-5: Cells 1, 2 and 3
- STA-6: Sections 1 and 2
- C-139 Annex Pump Station

Planned

- Feeder Canal Basin: “Critical Project” (Tribe and ACOE)
- “Compartment C” under construction
- Potential S-4/Clewiston Canal Diversion to the south
- Feeder Canal/L-28 CERP Projects





C-139 Regional “Challenges” Summary

Develop an integrated regional approach beyond basin specific efforts to deal with these challenges

- **Water Quality & Quantity**
 - EFA mandates – basins not meeting goals
- **Stormwater Management**
 - High intensity rainfall events occur in short time period decreasing percent retained within basins
- **Water Availability**
 - Reliance on groundwater is affected by rainfall patterns and soils
- **Coordination/Integration of Projects**
 - ECP/LTP, CERP, Land Practices



C-139 Regional Perspective: Potential Solutions

- **Regional Storage**
 - **Benefit Water Quality, Water Availability**
- **Canal / Infra-structure modifications**
 - **Allow for more flexibility in movement of water for flood protection & regional storage/treatment**
 - **Develop interconnections between individual basins for excess stormwater recycling**
- **Operational Optimization**
 - **Take advantage of infra-structure to better manage regional water resources**
 - **Retain first wet season events to capture the first flush of nutrients**



Potential “Alternatives”

Regional Scale

- **S-4 excess stormwater south to storage area**
- **Caloosahatchee River excess stormwater south to storage area**
- **Use “Save Our Everglades” lands, if acquired, for regional storage treatment**
 - **C-139 Basin**
 - **Feeder Canal Basin**
- **Stormwater Management Improvements**



Potential Alternatives continued

Sub Regional Scale

- **Dissect region into hydrologic “sub-basins”**
- **Focus efforts on storage and treatment in sub-basins yielding highest cost efficiencies**
- **Potential projects on District lands east of “Compartment C” and downstream of S&M sub basin**



Potential Alternatives (continued)

Smaller Scale Alternatives

- **Cooperatively construct Above-Ground Impoundments (AGI) – improve above and beyond current requirements**
- **Addition of “Step Down” weirs at key topographical breaks**
- **Dispersed water storage and treatment program – solicitation for water management on public, private and tribal lands**
- **Canal sediment settling /collection basins**



Potential Alternatives (continued)

- **Advanced Treatment Technologies**
- **Retrofit current, bottom opening gates to “over the top” discharging gates**
- **Westward pumping stations on L-2**
- **“First Flush” Operating plans**
- **Cooperative Tail-water Recovery projects**
- **Others (as suggested)**



Coordinated Effort - Public Input and District Resources

Critical coordination

- **Stakeholder Input – through District PM**
- **Construction and Engineering issues**
- **Regional Modeling (integrated surface & groundwater)**
- **Land Management issues (exotics/nuisance vegetation)**
- **Operation of District facilities**
- **Regulatory issues**
- **Water Supply planning**
- **River of Grass restoration coordination**

- **Questions/Comments?**