Shell, Prairie, and Joshua Creeks Reasonable Assurance Plan

Implementation of Resource Management Actions to Address Mineralized Impairment of Surface Waters

Charlotte Harbor Watershed Summit
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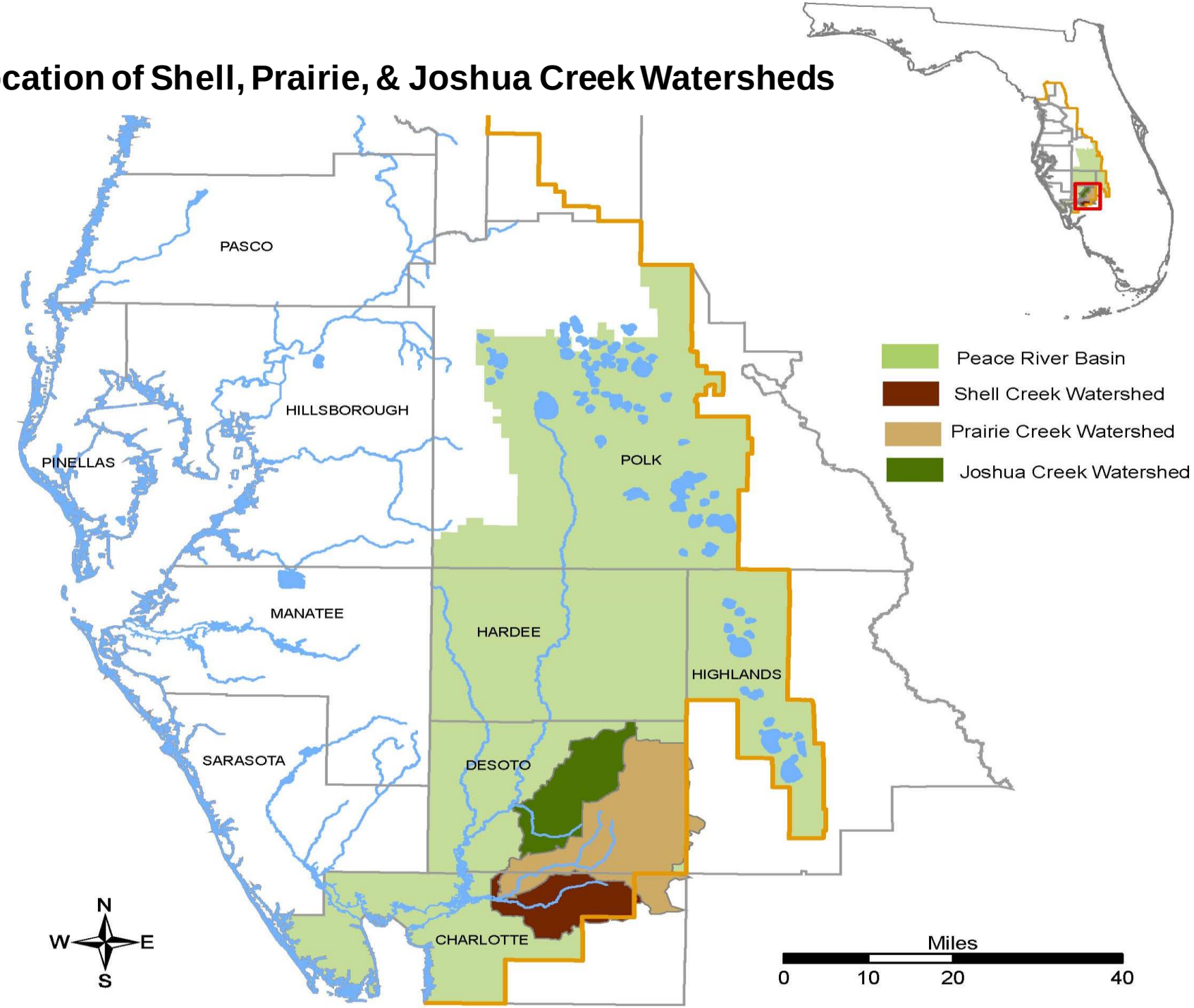
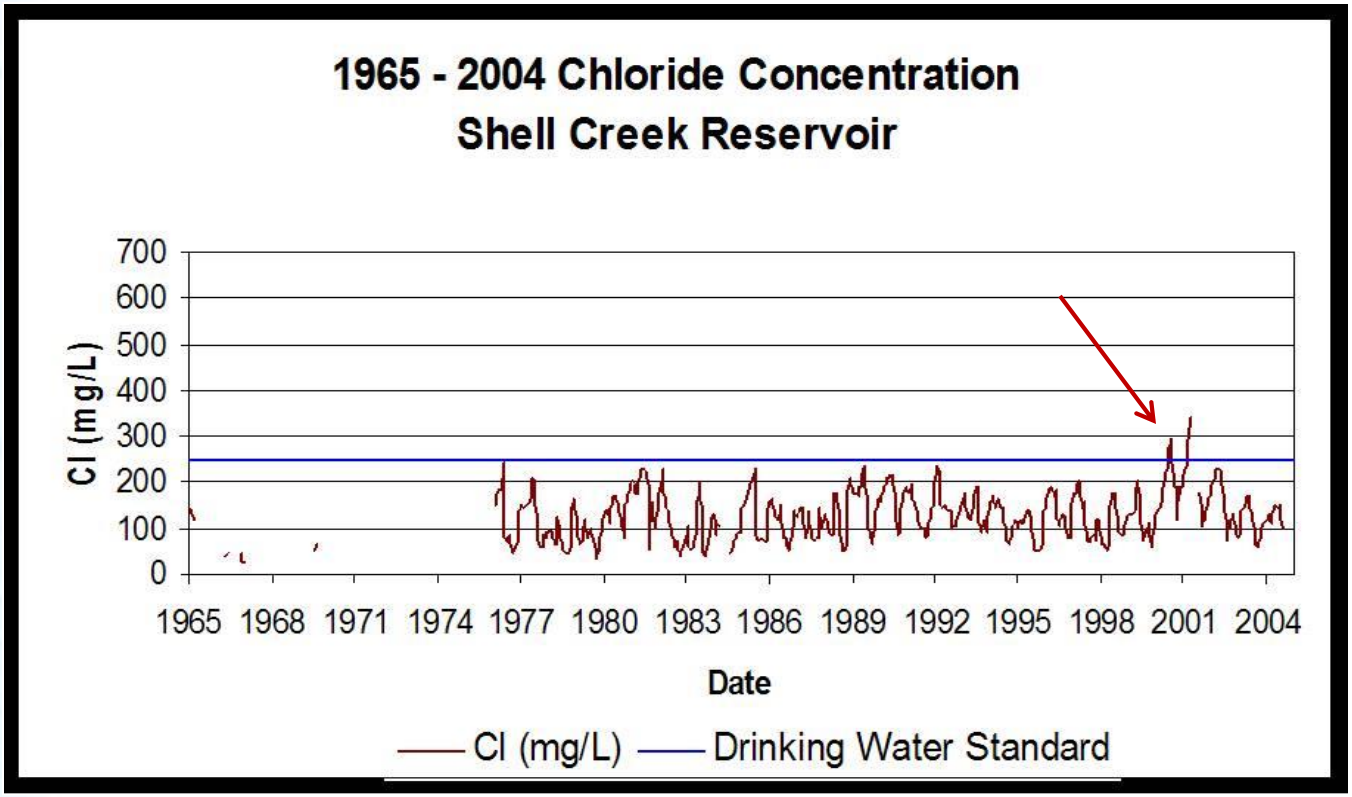
SWIM Section

Location of Shell, Prairie, & Joshua Creek Watersheds



City of Punta Gorda's Reservoir

1999-2001; Shell Creek Reservoir exceeds drinking water standards for Cl



2002; SPJC Stakeholder Group formed to address water quality issues

SPJC Stakeholders Group

- Federal Agencies (1)
- State Agencies (4)
- University of Florida (IFAS)
- Local Governments (7)
- Commodity Groups (3)
- Farm Bureaus (2)
- Environmental Organizations (2)
- Farms, Groves and Ranches (19)

In 2004, FDEP lists three Class I waters in Shell & Prairie Creek Watersheds as verified impaired under TMDL Rule

Water Segment	WBID	Water Body Type	Basin/Watershed	Impaired Area	Pollutants of Concern
Prairie Creek	1962	Stream	Peace River/ Prairie Creek	29 mi.	Sp. Conductance, TDS
Shell Creek	2041	Stream	Peace River/ Shell Creek	10.5 mi.	Sp. Conductance, Chloride, TDS
Myrtle Slough	2040	Stream	Peace River/ Shell Creek	6 mi.	Sp. Conductance, Chloride, TDS

Goal of the Stakeholders RA Plan

To improve water quality within the Shell and Prairie Creek watersheds to consistently meet Class I standards by ensuring that:

- Specific conductance below 1275 uS/cm at all times
- Chlorides below 250 mg/L at all times
- Dissolved solids below 1000 mg/L at all times.

Additionally, the plan is intended to reduce dissolved solids below the Class I monthly average of 500 mg/L

RA Plan Highlights

- Made possible by the SPJC Stakeholders formally coming together to address the water quality issues
- Defined Resource Management Strategies and monitoring networks used to assess progress toward meeting the water quality goals
- Established a ten year time frame to meet the goal, 2004 – 2014
- Bi-annual monitoring reports to FDEP to report water quality conditions and management actions

Summary of Management Actions

Resource Management Action	Managing Entity
Facilitating Agricultural Resource Management Systems (FARMS) Program	SWFWMD/FDACS
Shell, Prairie, and Joshua Creek (SPJC) Well Back-Plugging Program	SWFWMD FARMS
Quality of Water Improvement Program (QWIP)	SWFWMD
Environmental Quality Incentives Program	USDA
Mobile Irrigation Laboratory	USDA/NRCS
Education and Outreach	All stakeholders
IFAS Research Efforts	University of Florida
Water Quality/Quantity BMPs for Citrus	FDACS

FARMS Program

A Best Management Practice (BMP) cost-share reimbursement program for agricultural projects

- Alternative irrigation sources to reduce reliance on groundwater
- 48 approved Projects in SPJC with an estimated groundwater offset of approximately 8.1 MGD

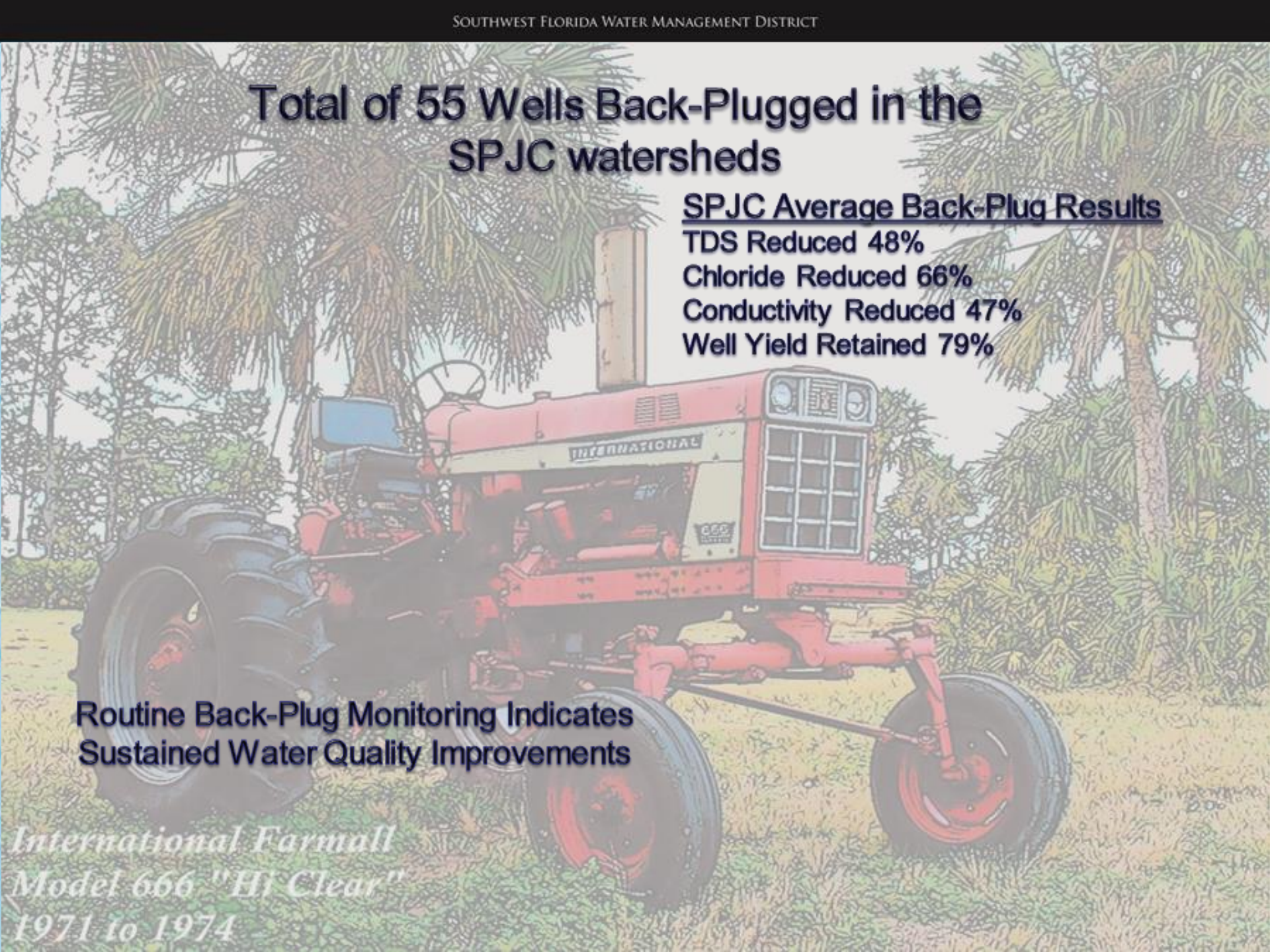
FARMS
Facilitating Agricultural Resource Management Systems

Total of 55 Wells Back-Plugged in the SPJC watersheds

SPJC Average Back-Plug Results

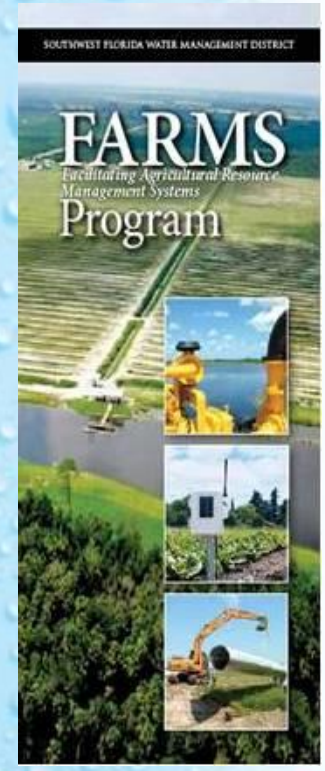
TDS Reduced 48%
Chloride Reduced 66%
Conductivity Reduced 47%
Well Yield Retained 79%

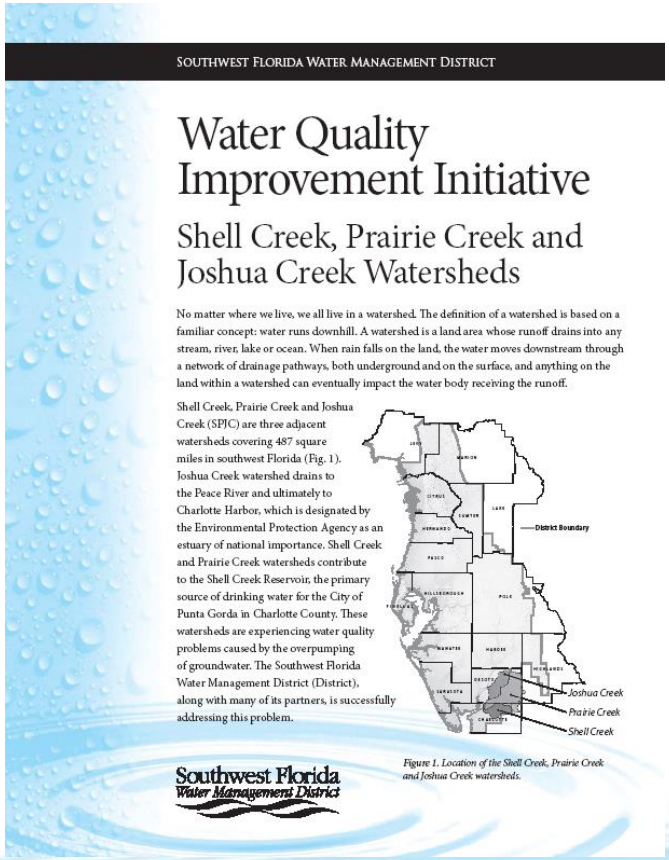
Routine Back-Plug Monitoring Indicates Sustained Water Quality Improvements



International Farmall Model 666 "Hi Clear" 1971 to 1974

Outreach and Education




SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT

Water Quality Improvement Initiative

Shell Creek, Prairie Creek and Joshua Creek Watersheds

No matter where we live, we all live in a watershed. The definition of a watershed is based on a familiar concept: water runs downhill. A watershed is a land area whose runoff drains into any stream, river, lake or ocean. When rain falls on the land, the water moves downstream through a network of drainage pathways, both underground and on the surface, and anything on the land within a watershed can eventually impact the water body receiving the runoff.

Shell Creek, Prairie Creek and Joshua Creek (SPJC) are three adjacent watersheds covering 487 square miles in southwest Florida (Fig. 1). Joshua Creek watershed drains to the Peace River and ultimately to Charlotte Harbor, which is designated by the Environmental Protection Agency as an estuary of national importance. Shell Creek and Prairie Creek watersheds contribute to the Shell Creek Reservoir, the primary source of drinking water for the City of Punta Gorda in Charlotte County. These watersheds are experiencing water quality problems caused by the overpumping of groundwater. The Southwest Florida Water Management District (District), along with many of its partners, is successfully addressing this problem.

Figure 1. Location of the Shell Creek, Prairie Creek and Joshua Creek watersheds.

Southwest Florida Water Management District

Before Well Back-Plug in 2003

2005

Irrigation with improved water quality greatly enhances crop performance, reduces water volume needed to prevent salt accumulation in the root zone, and reduces irrigation system maintenance.

Cost Expenditures in the SPJC Watersheds for Top Priority Resource Management Actions FY2013 and FY2014

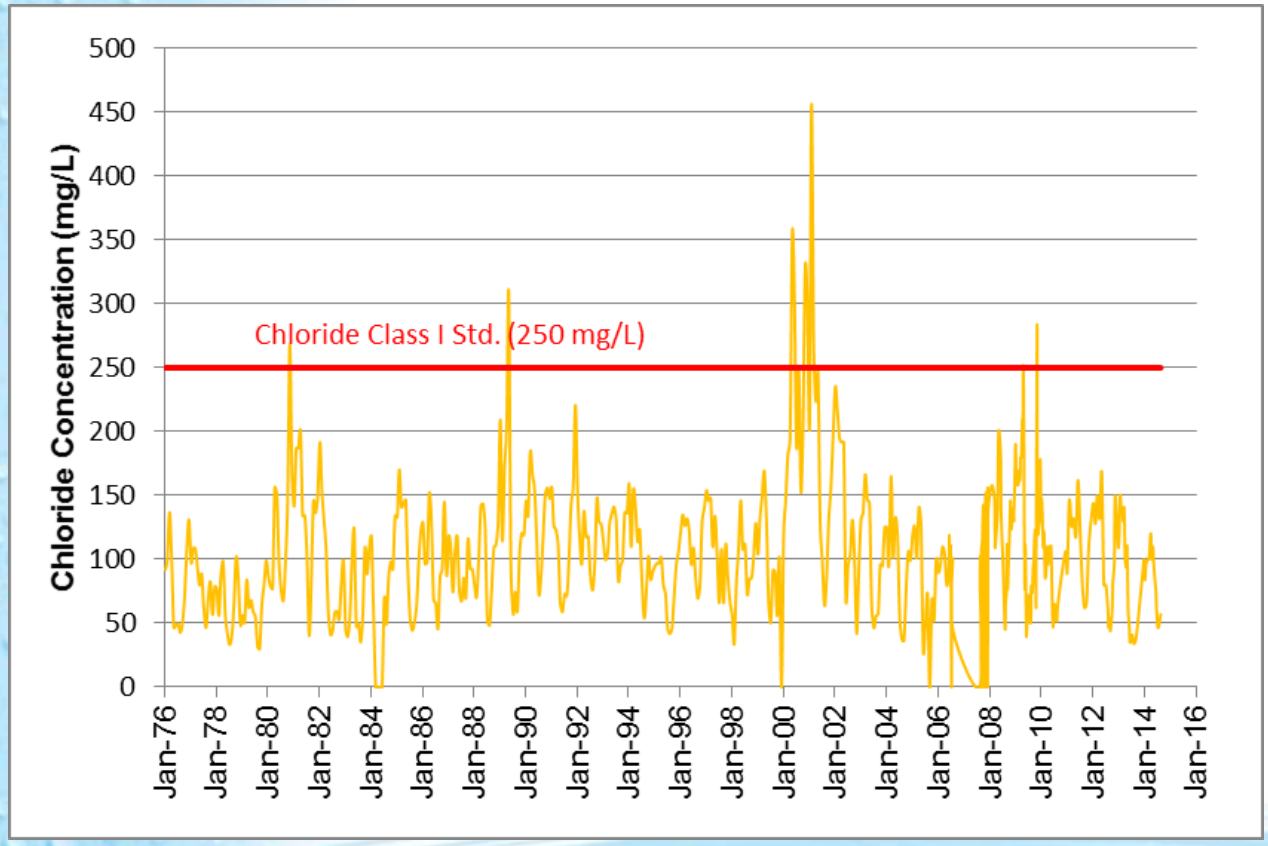
Resource Management Action	Total Expenditure
SPJC Well Back-Plugging Program FY13-FY14	$20,050*
FARMS Program FY13-FY14	$2,423,715*
Environmental Quality Incentives Program (EQIP) FY13-FY14	$840,212**
Quality of Water Improvement Program (QWIP) FY13-FY14	$24,000
Water Quality Monitoring & Laboratory Analysis FY13-FY14	$62,093
Total Expenditures FY2013 - FY2014	**$3,370,070**
Top Priority Resource Management Action Expenditures 2004 – 2014	$43,441,225
USGS WQ and Discharge Measurements at Key (3) Locations 2004 - 2014	$410,160
Total Expenditures 2004 – 2014	**$47,221,455**

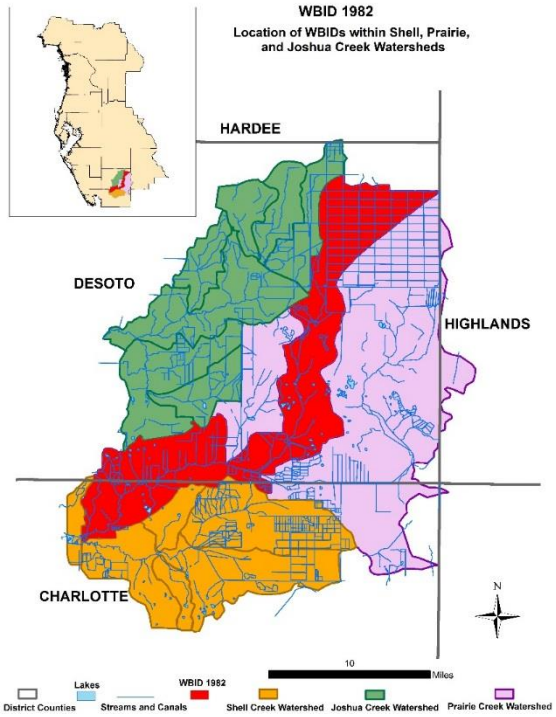
*These are District expenditures and do not include cooperator costs.
** These represent expenditures of federal dollars by the USDA

Summary of Findings in the Final Monitoring Report

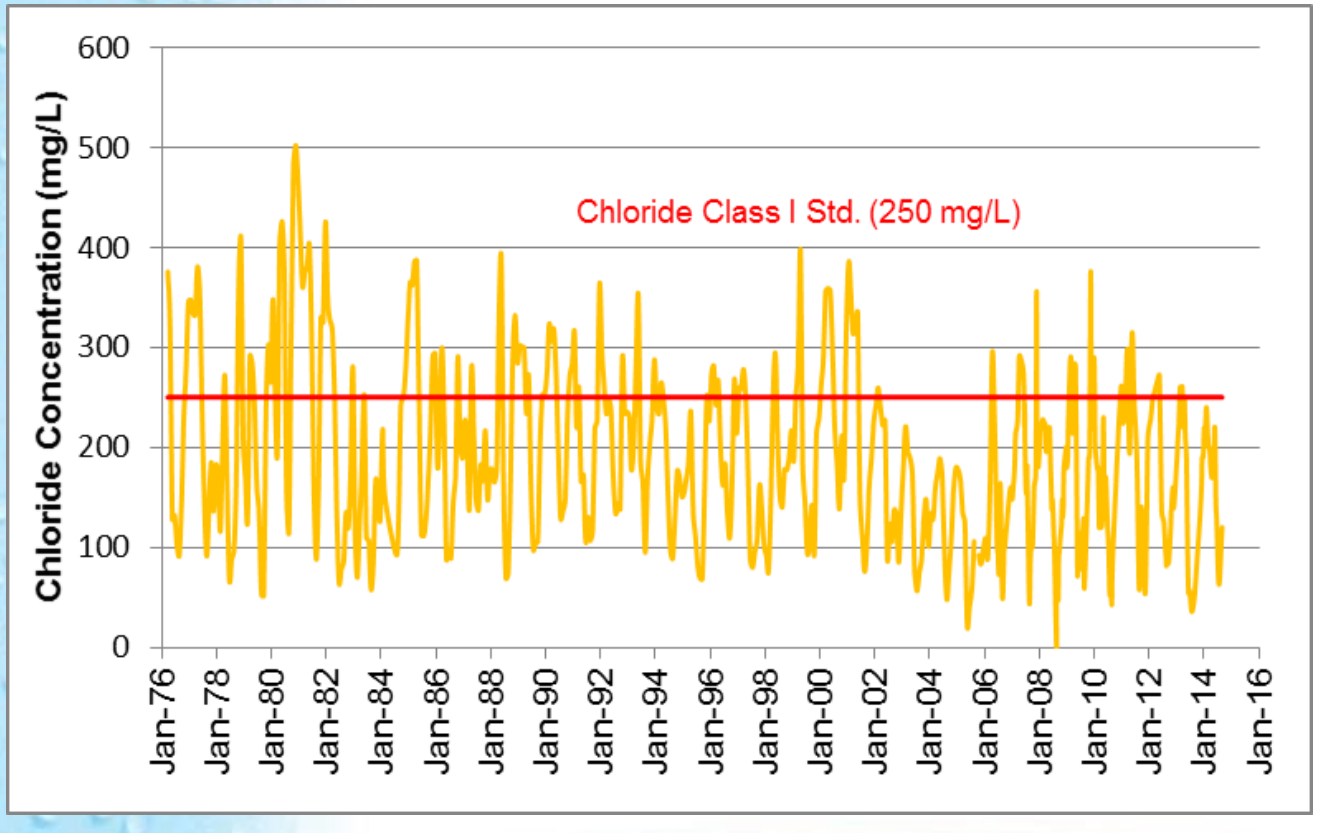
- The 2012 to 2014 Performance Monitoring Period was characterized with above average rainfall compared to the prior six years of drought conditions.
- Since the inception of the SPCWMP RA Document, there has been a significant investment by many stakeholders in management actions to improve water quality.
- These management actions have resulted in substantial improvements in water quality related to dissolved solids, specific conductance and chlorides.

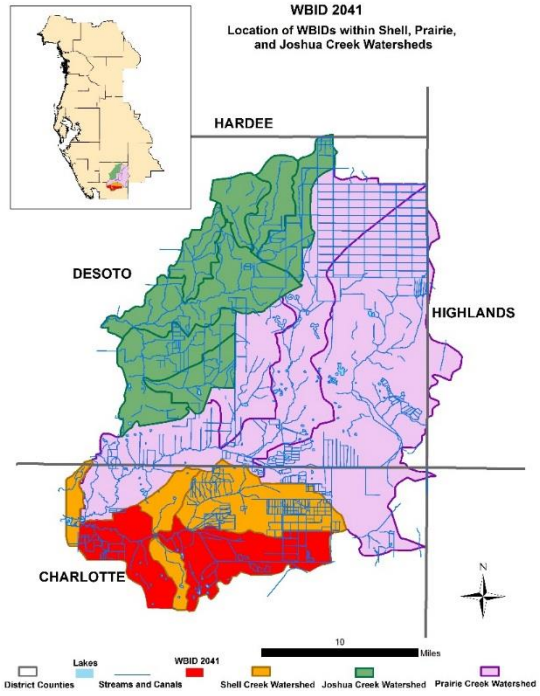
Prairie Creek @ Washington Loop Rd. Water Quality Results for Chloride
Key Monitoring Location WBID 1962



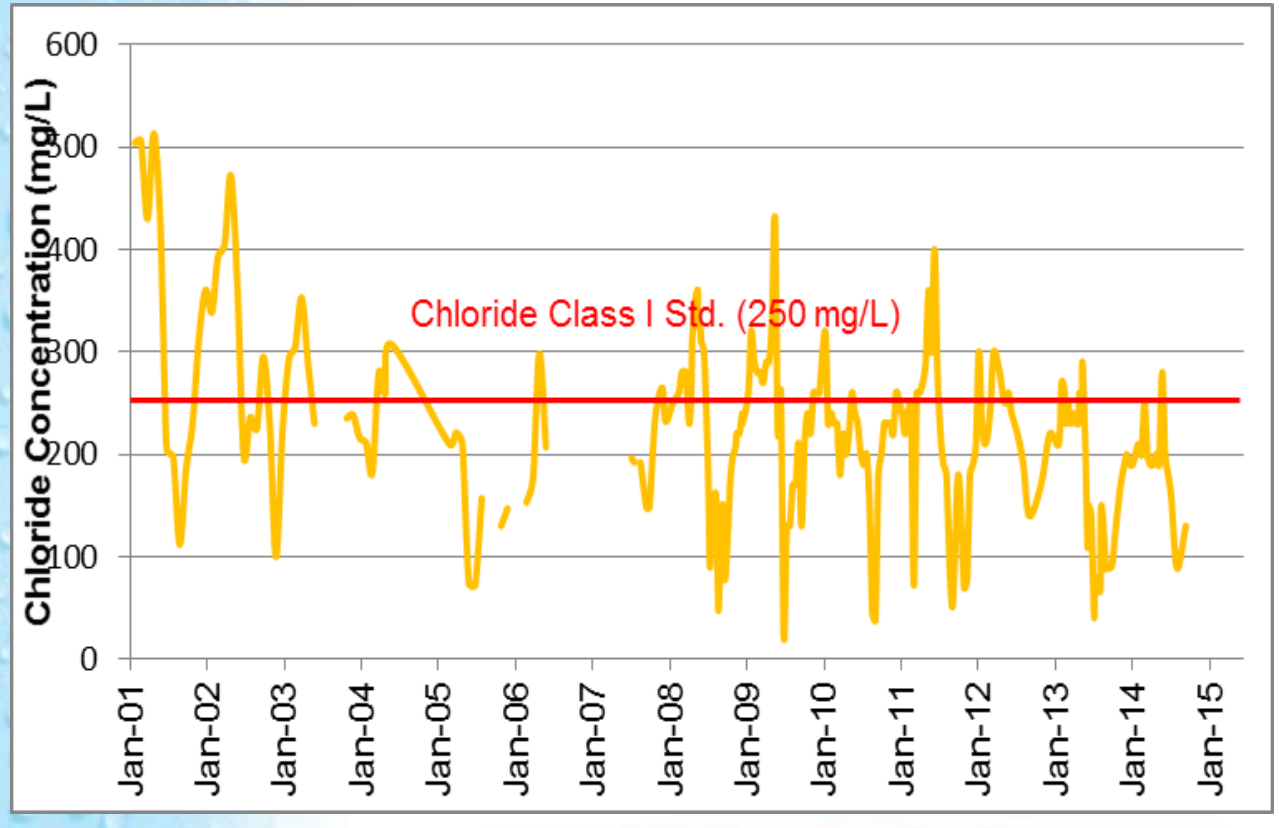


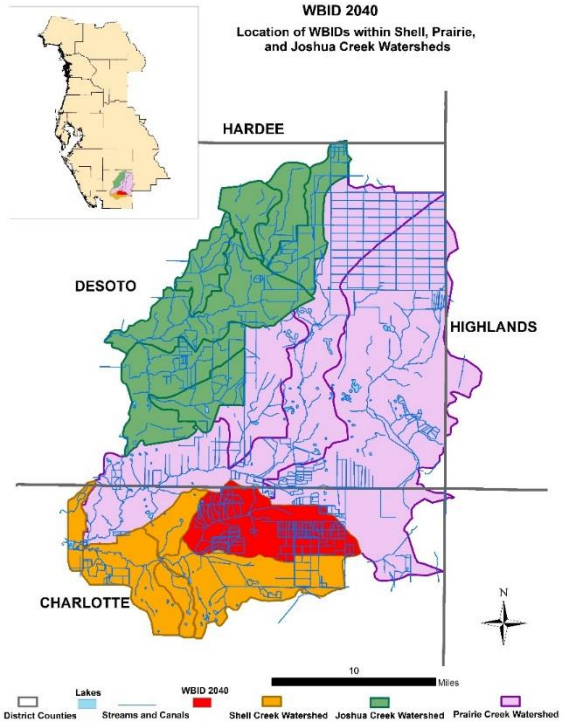
Shell Creek @ Washington Loop Rd. Water Quality Results for Chloride
Key Monitoring Location WBID 2041





Myrtle Slough @ SR31 Water Quality Results for Chloride
Key Monitoring Location WBID 2040





SPJC Status

- With Stakeholders consent, the District provided FDEP with letter indicating:
  - Prairie Creek no longer impaired for mineralization
    - Requested FDEP delist WBID 1962 and it was delisted
  - Shell Creek (WBID 2041) and Myrtle Slough (WBID 2040) still impaired but significantly improved
    - Additional improvement expected to be minimal due to natural conditions in Shell Creek
    - FDEP has included these two WBIDs on the most recent Adopted Verified Impaired List.
  - Stakeholder group will continue to implement BMP's
    - BMP's address additional issues (SWUCA) beyond impairment issue

Acknowledgements

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Questions?