

Modified Water Deliveries to Everglades National Park

Incremental Approach to the
Integrated Operational Plan for the
MWD and C-111SD Projects

Increment 1

September 3, 2014



Presentation Overview

Schedule

S-356 Pump Test Status Update

Goals and Objectives

H&H Operations Sub Team Report

H&H/Operations Discussion

Eco Sub Team Report

- T&E Species
- Non Regulatory
- Cultural Resources

WQ Surface/Ground Water Sub Team Reports

- Surface Water Monitoring
- Ground Water Monitoring
- Water Quality

Next Steps



Schedule



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Increment 1 Schedule

Draft Goals and Objectives	20 Aug
PDT Meeting #2	3 Sep
Draft Ops Strategy	17 Sep
Draft Monitoring Plan	24 Sep
Draft EA	7 Oct
PDT Meeting #3	15 Oct
Draft Final Ops Strategy/Monitoring Plan	21 Oct
Draft Final EA	30 Oct
DQC/TRB/DOI Review	31 Oct – 13 Nov
Public, S&A Review (begin)	1 Dec – 19 Jan
Sign FONSI/Initiate Operational Test	18/19 Feb



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S-356 Pump Test Update



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S-356 Repairs

- SFWMD readiness report identified repairs at S-356 needed prior to operation of the pumps
 - Repair intake apron
 - Repair pump damage (intake bells)
 - Excessive heat build-up inside the enclosure
 - Replace gages on gear boxes
 - Fix deficient trash racks
 - Pitting and corrosion on discharge pipes



S-356 Repairs - continued

- On-going activities
 - Coordination with SFWMD/ENP on proposal for repairs
 - SAJ-EN is working on scope, schedule and budget
- Tentative Schedule for Pump Repairs
 - Final Scope/Schedule/Budget 29 Aug
 - Contract Modifications 5 Sep
 - Repairs Complete 9 Oct
 - Begin Test 10 Oct



Goals and Objectives



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H&H/Operations Sub Team Report



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WCA-3A

WCA-3B



WCA-3A FLOW



**L-31N
SEEPAGE**

S12D

S333

S355A

S355B

S334

S336

S335

41

SW 8th St

Kramer Ave

94

N Wendall Dr

997

G211

S338

G-3273

Overview

- Management of WCA-3A
- L-31N Canal Seepage Management
- New Seepage Management
- Water Management Operating Criteria



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Management of WCA-3A

Includes existing:

- Rainfall Plan
- L-29 Canal constraint of 7.5 ft., NGVD
- Column 2 during S-12s CSSS Closure Period
- Water supply

New:

- S-333 flows no longer have a constraint at G-3273
- WCA-3A water level Action Line sets priority of S-333, S-356 flows to NESRS



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L-31N Canal Seepage Management

Includes Existing:

L-29 Canal constraint of 7.5 ft., NGVD

L-31N Canal range of 5.5 to 5.8 ft., NGVD

New:

S-356 flows to NESRS with no G-3273 constraint

S-356 flows of 250 cfs guaranteed until WCA-3A water level rises to Action Line



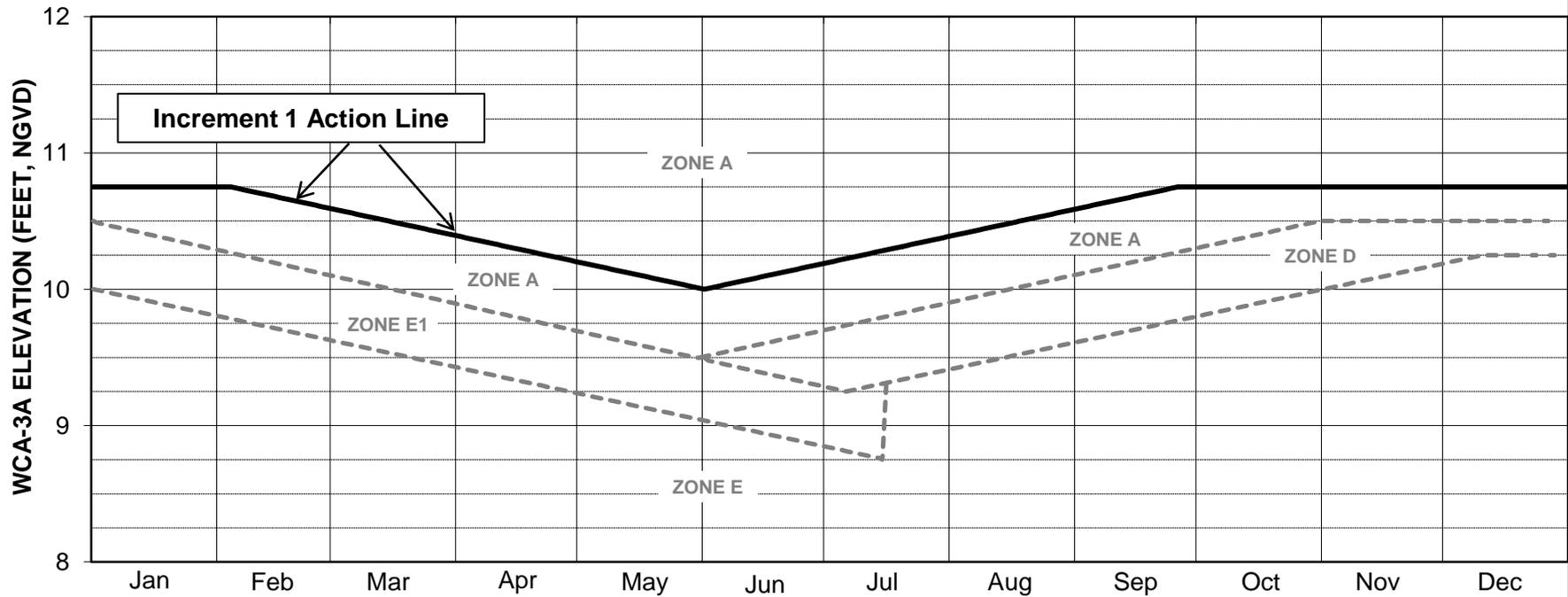
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New Seepage Management

- C-111 canal level is lower (Column 2) when:
G-3273 above 6.8 ft., NGVD
and
WCA-3A above Action Line
- S-197 flows up to 200 cfs if not detrimental to downstream
- S-357N testing protocol



DRAFT



NOTES:

WCA-3A Elevation is the average of Sites 63, 64, and 65.

Increment 1 Action Line is not part of the 2012 WCA-3A Interim Regulation Schedule.

For ease of reference, Increment 1 Action Line is shown with the 2012 WCA-3A Interim Regulation Schedule Zones.

Increment 1 Action Line to be referenced as indicated in the G-3273 Constraint Relaxation/S-356 Field Test and S-357N Operational Strategy.

CENTRAL AND SOUTHERN FLORIDA PROJECT

**G-3273 Constraint Relaxation/S-356
Field Test and S-357N
Operational Strategy**

Increment 1 Action Line

DATED: August 2014
US ARMY ENGINEER DISTRICT
JACKSONVILLE, FLORIDA



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Year-round when stage at G-3273 is below 6.8 and WCA-3A stage is below the Increment 1 Action Line

- S-333 has priority; S-356 use is secondary to S-333 but S-356 can and should be used subject to L-29 constraint
 - ▶ S-333 will be used to release up to the full rate prescribed by Rainfall Plan into NESRS subject only to the L-29 constraint.
 - ▶ S-356 will be used to control the stage in L-31N between 5.5 and 5.8 ft., NGVD to the extent there is capacity in L-29 without reducing the ability to release the full allocation through S-333.
 - ▶ Excess flow from L-30 through S-335 may be diverted into NESRS using S-356 if desired by the agencies.



Year-round when stage at G-3273 is above 6.8 and the WCA-3A stage is below the Increment 1 Action Line

- ▶ S-333 will be used to release up to the full Rainfall Plan into NESRS subject to the L-29 constraint and an assured minimum available capacity of 250 cfs through S-356.
- ▶ S-356 will be used to control the stage in L-31N between 5.5 and 5.8 feet NGVD with an assured minimum available capacity of 250 cfs through S-356 (S-356 limited priority over S-333), subject only to the L-29 constraint.



When G-3273 is above 6.8 and when the WCA-3A stage is above the Increment 1 Action Line from 1 November through 14 July (CSSS Closure Period)

- S-333 has priority
 - ▶ S-356 is not operated.
 - ▶ S-333 makes maximum releases to NESRS subject to L-29 constraint.
 - ▶ When L-29 constraint is reached or exceeded and;
 - S-12C and S-12D are full open, and
 - the discharge to tide from all of the WCAs are maximized to the extent that downstream condition allow, and
 - the SDCS has available capacity (combined pumping rate at S-332B,C,D is less than 1125 cfs maintaining stage in the lower half of the range).



When G-3273 is above 6.8 and when the WCA-3A stage is above the Increment 1 Action Line from 1 November through 14 July (CSSS Closure Period) - continued

- S-334 may be utilized up to a maximum flow rate of ??? cfs to maintain the L-29 canal stage at or below 7.5 ft., NGVD.
 - ▶ If S-334 is being utilized, C-111 structures (S-332B,C,D, S-176, S-177, S-18C, S-194, and S-196) will be operated according to the 2012 WCP Column 2 criteria and S-338 operated consistent with the 2012 WCP.
 - ▶ When the S-18C gate is fully open and S-18C HW exceeds 2.4 S-197 may be operated to release up to a maximum of 200 cfs. When S-18C TW falls below 2.3 for 24 hours, S-197 will be reduce as necessary to bring S-18C HW above 2.3 feet in 24 hours.



When G-3273 is above 6.8, and the WCA-3A stage is above the Increment 1 Action Line from 15 July through 31 October

- S-333 has priority with no use of S-334.
 - ▶ S-333 makes maximum releases to NESRS subject only to L-29 constraint
 - ▶ S-356 is not operated and S-334 remains closed.
 - ▶ C-111 structures (S-332B,C,D, S-176, S-177, S-18C, S-194, and S-196) are operated according to the 2012 WCP Column 2 criteria and S-338 operated consistent with the 2012 WCP.
 - ▶ When the S-18C gate is fully open and S-18C HW exceeds 2.4 S-197 may be operated to release up to a maximum of 200 cfs. When S-18C TW falls below 2.3 for 24 hours, S-197 will be reduce as necessary to bring S-18C HW above 2.3 feet in 24 hours.



Items Remaining for H&H/Ops Sub-team

- S-334 may be utilized up to a maximum flow rate of **???** cfs to maintain the L-29 canal stage at or below 7.5 ft., NGVD.
- S-357N testing protocol
- Performance measures
- Monitoring Plan



H&H/Operations Discussion



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Eco Sub Team Report

T&E Species



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Eco Sub Team Update

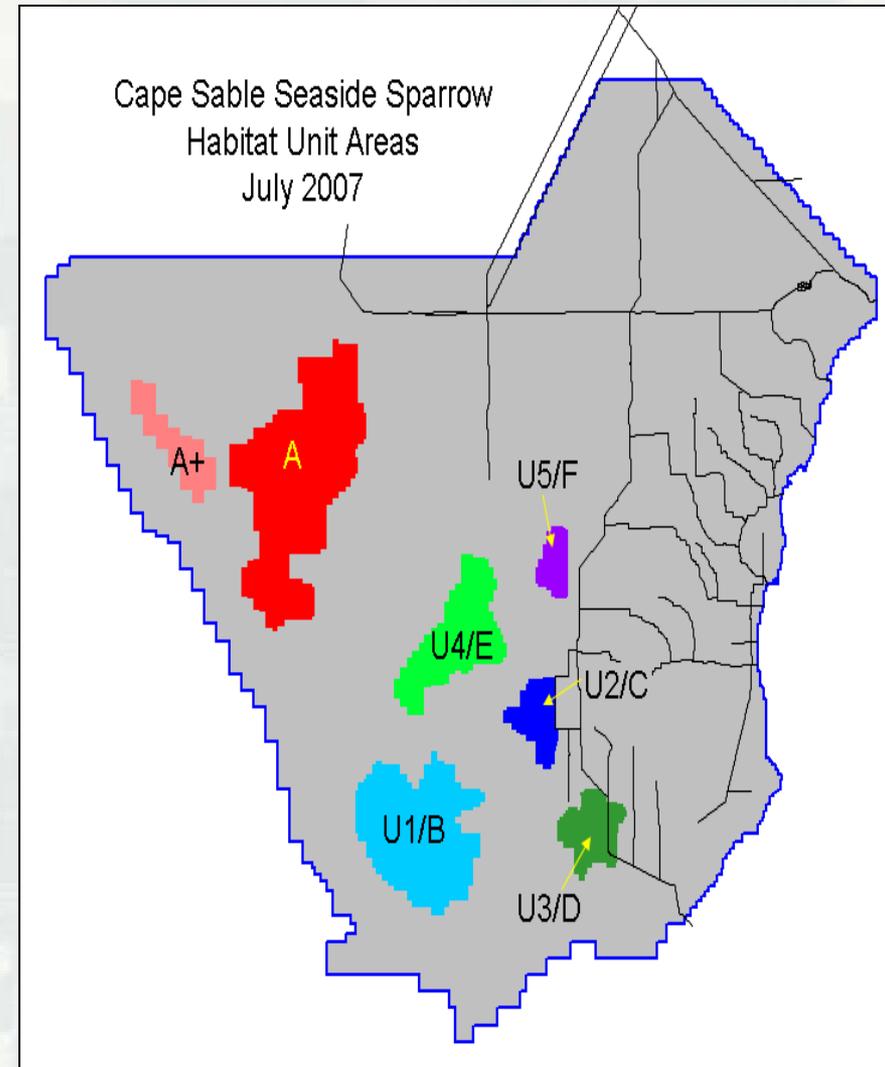
- Eco Sub Team met on August 11th and August 25th to discuss proposed field test species monitoring to measure potential hydrologic impacts within CSSS subpopulations and wood stork colonies located adjacent to Tamiami Trail and within NESRS.
- USACE will continue existing hydrologic and species monitoring plans to ensure that the Incidental Take as defined within the FWS 2010 BO is not exceeded.
- ENP presented proposal for monitoring to confirm ecological benefits of MWD. Document will be referenced within G-3273 Monitoring Plan.
- Eco Sub Team has not defined constraints/triggers to be incorporated into the operational strategy.
- Eco Sub Team to reconvene September 8th – adjust monitoring based on recommended alternative.



Cape Sable Seaside Sparrow

Monitor existing hydrological gages to measure potential hydrologic impacts within CSSS-subpopulations:

1. Sixty (60) consecutive days with water levels below ground surface elevation at related gages within CSSS-E, CSSS-F, and CSSS-C between March 1 and July 15.



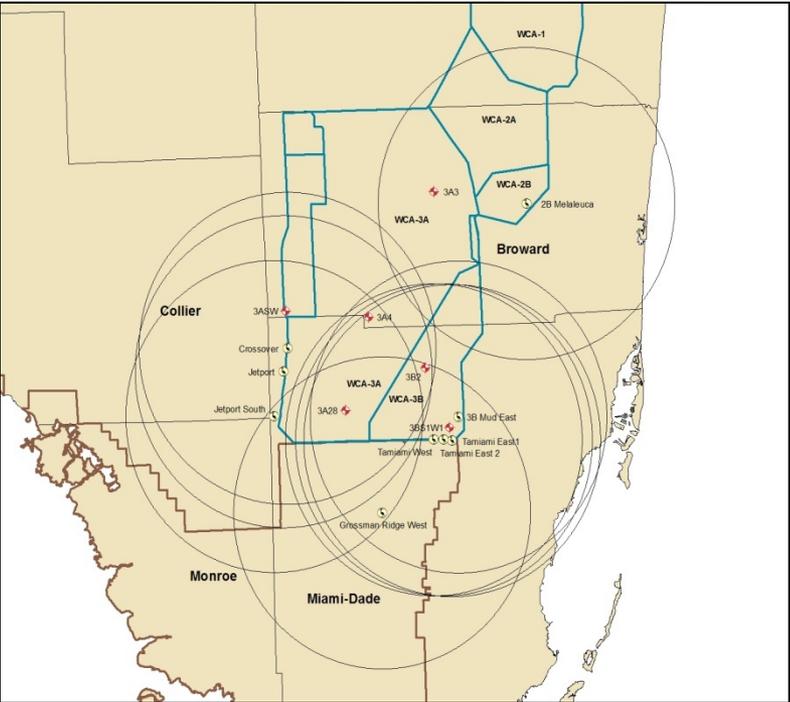
CSSS sub-populations (A-F) and designated Critical Habitat Units



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Wood Stork

Monitor existing hydrological gages to measure foraging depths and recession rates within TT-West, TT-East, TT-East 2, and Grossman Ridge West



Water Depth (centimeters)
< -9 cm
-9 to 4 cm
5 to 25 cm
26 to 40 cm
> 40 cm

Recession Rate (feet per week)
< 0.17
> 0.07 but ≤ 0.17
Preferred 0.06-0.07
≥ -0.05 but < 0.06
< -0.05

1. Strive to maintain areas of appropriate foraging depths (5-25 cm) within the CFA.
2. Strive to maintain a recession rate of 0.07 ft per week, with an optimal range of 0.06 to 0.07 feet per week from January 1 to June 1.



Eco Sub Team Report

Non Regulatory



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Eco Sub Team Report

Cultural Resources



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WQ Surface/Ground Water Sub Team Reports



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Surface Water and Groundwater Quality/Monitoring Sub Team

Status Report
S356 Field Test/G3273 Relaxation
PDT Meeting
3 September 2014



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Groundwater Monitoring - Levels

- Sub-team in general agreement about wells for groundwater level collection (all are on telemetry)
- Increment 1 objective is to determine where a groundwater level response is observed, to characterize area of influence for S-356 operations



Groundwater Monitoring Water Quality

- Baseline water quality summary using existing data in progress
- Sub-team in general agreement that groundwater quality sampling occur quarterly
- Draft final locations and analyte list in prep for next sub-team meeting. List of analytes to be monitored is identical to that of surface water
- Locations of monitor wells to be sampled still being honed (WCA-3B, L-30, L31NN, NESRS)
- Construction of an additional groundwater monitor well cluster proposed at S-356. Cost approximately \$60K.



Surface Water Monitoring – Levels and Flows

- Honing locations for monitoring surface water levels and flows (Draft Table)
- Additional input needed for locations of acoustic doppler measurements of surface water flows along L-29, and whether these are obtained across L-29 cross sections



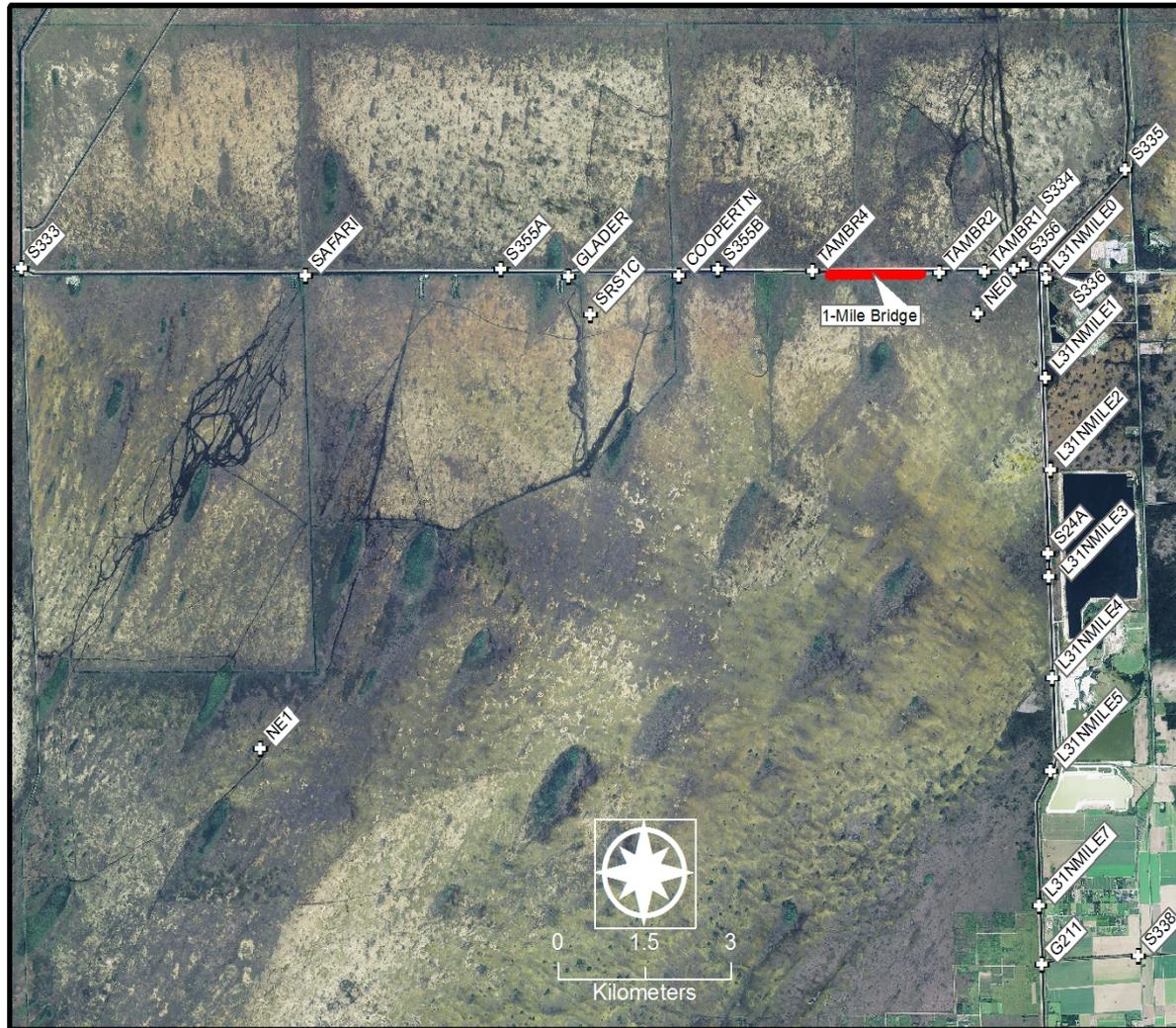
Surface Water Quality Monitoring

- Draft graphic and table of surface WQ monitoring locations, sampling frequency and analyte list developed by sub team
- Boundary structures and other key locations being monitoring
- Intent is to periodically evaluate surface water monitoring during the testing to determine if reduction/modification of SW WQ needed as testing proceeds
- Proposal to deploy hydrolabs at inflow and outflow of S-356 is being considered. Not currently in the draft surface water quality monitoring plan



Proposed

S356 Pump Test Surface Water Quality Monitoring



SRS1B is west of L67-Extension



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Proposed Surface Water Monitoring for S356/Increment 1 Test

Type	Station	Location	Agency	Water Quality Parameters	*Frequency and Sample Type	
					Flowing	Non-Flowing
S_WQ	TAMBR1	Culvert under US 41; 0.3 mi. west of S-334; a.k.a. FDOT Culvert 59	SFWMD	<i>TPO₄, Na, Ca, Mg, K, Cl, SO₄, Alk, DO, SC, T & pH</i>	Biweekly; grab; collection and analyses by SFWMD	Monthly grab; collection and analyses by SFWMD
S_WQ	TAMBR2	Culvert under US 41; 0.8 mi. west of S-334; a.k.a. FDOT Culvert 58	SFWMD	<i>TPO₄, Na, Ca, Mg, K, Cl, SO₄, Alk, DO, SC, T & pH</i>	Biweekly; grab; collection and analyses by SFWMD	Monthly grab; collection and analyses by SFWMD
S_WQ	TAMBR4	Culvert under US 41; 2.2 mi. west of S334; a.k.a. Culvert 56	SFWMD	<i>TPO₄, Na, Ca, Mg, K, Cl, SO₄, Alk, DO, SC, T & pH</i>	Biweekly; grab; collection and analyses by SFWMD	Monthly grab; collection and analyses by SFWMD
S_WQ	NEO	NESS marsh site 0.5 km south of FDOT Culvert 59 (TAMBR1)	ENP / SFWMD	<i>TPO₄, Na, Ca, Mg, K, Cl, SO₄, Alk, DO, SC, T & pH</i>	Monthly; grab; collection by ENP and analyses by SFWMD	Monthly; grab; collection by ENP and analyses by SFWMD
S_WQ	S355A	Approximately 5.5 mi. west of S-356. Tail Water	SFWMD	<i>TPO₄, Na, Ca, Mg, K, Cl, SO₄, Alk, DO, SC, T & pH</i>	Biweekly; grab; collection and analyses by SFWMD	Monthly grab; collection and analyses by SFWMD
S_WQ	S355B	Approximately 3.25 mi. west of S-356. Tail Water	SFWMD	<i>TPO₄, Na, Ca, Mg, K, Cl, SO₄, Alk, DO, SC, T & pH</i>	Biweekly; grab; collection and analyses by SFWMD	Monthly grab; collection and analyses by SFWMD