WHISKEY GEORGE AND SUMATRA SAVANNAS - FIRST ANNUAL MONITORING REPORT (2010)
Franklin County

Impact: none applied

Mitigation: Whiskey George and Sumatra Savannas
Monitoring date: February 23 and March 4, 2010

SCOPE

Monitoring is conducted annually per the 2009 Whiskey George Basin/Sumatra Mitigation Plan (UWRMP Section 5.5.9). No FDOT impacts have been applied to the mitigation areas as of this report date.

PROPOSED MITIGATION

Background

In spring 2009, the Northwest Florida Water Management District (NWFWMD) initiated the Whiskey George Basin Hydrologic Restoration Project. The goal of this project is to restore historic surface water drainage patterns and wetland vegetative communities to enhance the quality and timing of surface water runoff flowing from the Whiskey George Creek basin into East Bay, an important estuarine system in the Apalachicola Bay system. Construction activities include the removal and recontouring of logging roads and adjacent ditches and the installation of low water crossings, ditch plugs, and culverts. These sites are located within the Tates Hell State Forest (THSF).

Restoration Activities

This project includes two separate restoration areas within the Whiskey George Creek watershed: Sumatra Savanna area (1,000 acres) and Whiskey George Savanna area (1,800 acres; **Figure 1**).

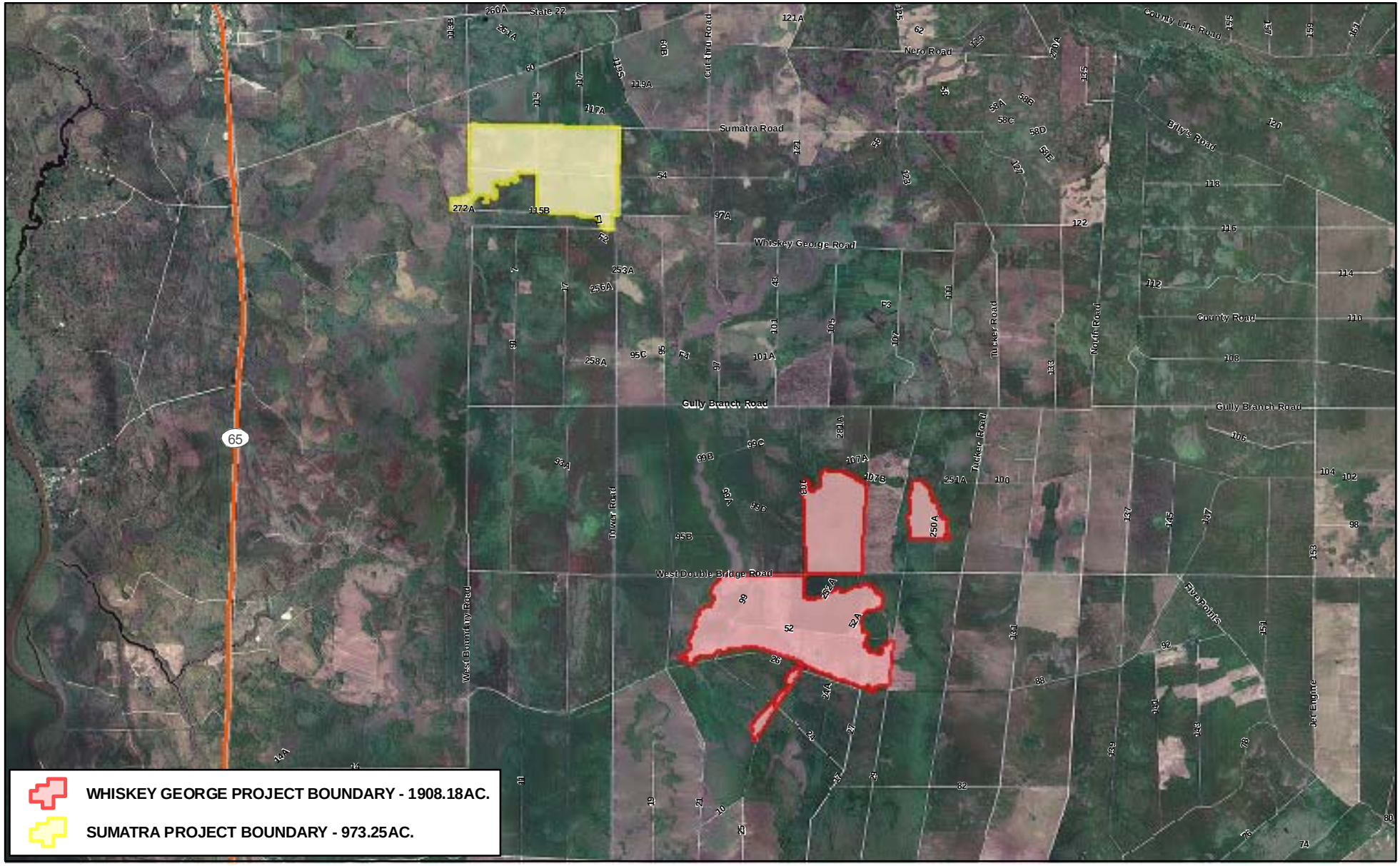
Sumatra Savanna. Historic surface water drainage patterns and vegetative communities were to be restored and enhanced throughout the Sumatra Savanna by:

- removing approximately 3.3 miles of dirt logging roads and adjacent ditches;
- constructing two hardened low water crossings; and
- installing two 30-inch diameter culverts.

Approximately 27 acres of former roads and ditches were restored to natural communities by replanting these areas with wiregrass and slash pine and/or cypress seedlings and establishing and maintaining an appropriate fire regime. No fire has occurred since the last site visit during January 2009. A fire regime appropriate to maintaining savannas and in concert with the THSF fire program will then be maintained by conducting prescribed burns approximately every two to five years. Post-restoration habitats will be comprised of hydric pine savannas (FLUCCS 626), hydric pine flatwoods (FLUCCS 625), cypress sloughs (FLUCCS 621), shrub wetlands (FLUCCS 690), slash pine swamp forest (FLUCCS 627), and mixed forested wetlands (FLUCCS 630).

Whiskey George Savanna. Within the Whiskey George Savanna historic conditions, *e. g.*, wet savannas, hydric pine flatwoods, and forested wetlands, were to be restored and enhanced by:

- removing approximately 2.7 miles of dirt logging roads and adjacent ditches;
- constructing four hardened low water crossings;
- constructing one earthen ditch plug; and
- construction/improvements at several culvert locations.



0 0.5 1 1.5 2 2.5 3 3.5 4 4.5 5 Miles

0 1 2 3 4 5 6 7 8 Kilometers

Figure 1 - Location Map

Tate's Hell - Sumatra and Whiskey George Savannas
Franklin County, Florida

Image: 2004 USGS NC
Sec 34, 35
Twp 05 S
Rng 07 W
Sec 16, 17, 21, 28, 29, 30, 31, 32, 33
Twp 06 S
Rng 06 W
Sec 2, 3, 25, 36
Twp 06 S
Rng 07 W

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Coordinate System: NAD 83 FSTPLN FEET

Date: 03/01/09 Rev. Date: xx/xx/xx PM: AMR GIS Analyst: JPB Map Document: FIGURE1_LOCATION.mxd Project Number: 4240-024-Y090 PDF Document: FIGURE1_LOCATION.pdf Plot Size: 8.5 x 11

Post-restoration habitats in the Whiskey George Savannas area will include a mix of hydric pine savannas (FLUCCS 626), hydric pine flatwoods (FLUCCS 625), and slash pine swamp forest (FLUCCS 627) with smaller areas of cypress (FLUCCS 621), Atlantic White Cedar swamps (FLUCCS 623), and mixed forested wetlands (FLUCCS 630). A fire regime appropriate to maintaining savannas and in concert with the THSF fire program will then be maintained by conducting prescribed burns approximately every two to five years.

WORK SCHEDULE

Hydrologic Restoration: Initiated January 2009.

Hydrologic Restoration: Completed April 2009.

Monitoring: Annual.

SUCCESS CRITERIA

The project's success criteria are:

- No more than 1% coverage of invasive exotic and 5% nuisance native and non invasive exotic species unless otherwise specified in a management plan;
- Increase in appropriate herbaceous, shrub, and/or tree species;
- Kind and total coverage of species appropriate for management goals; and
- Kind and total coverage of tree species appropriate for management goals.

The appended summary provides a listing of the general site observations (**Appendix A**), including photographic documentation (**Appendix B**), related to the success criteria. Some areas are in compliance, while others need more detailed assessment to see if the under- or over-excavation areas are having a negative impact on the project goals. That will be best assessed during or after the second growing season after the construction was completed.

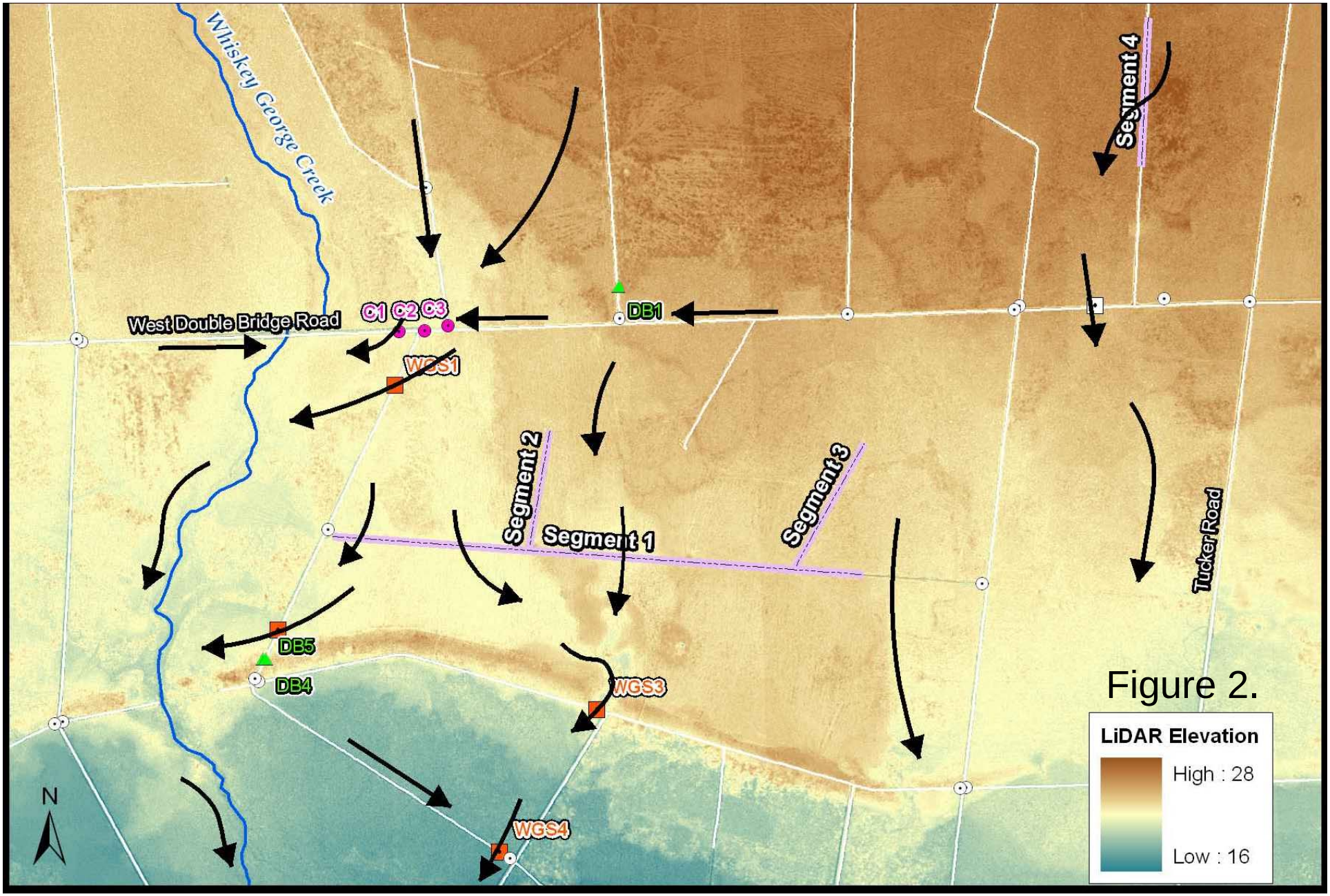
APPENDIX A. MONITORING SUMMARY

Monitoring at Whiskey George and Sumatra Tracts occurred on March 4th, 2010 and February 24, 2010, respectively. Air temperatures were typical of late winter in the Florida Panhandle with a low of 39° F and highs in the low 50's. The National Weather Service Station at Apalachicola Municipal Airport recorded significant rainfall (1.06 inches) one day prior to the March 4th survey. By early March, rainfall for 2010 was approximately 3.8 inches above normal for the year and nearly 4.5 inches greater than recorded during this period in 2009.

Overall, vegetative communities appear healthy with respect to diversity and absence of nuisance/exotic species; there has been no significant change in vegetative community structure since the previous survey conducted February 17, 2009. All proposed hydrologic restoration activities have been completed to varying degrees of success. The 2010 survey noted some erosion, unfilled ditching, and over-excavated road segments. The following descriptions summarize each hydrologic improvement. Photographic documentation is provided as **Appendix B**. **Figures 2** & **3** display the location of each hydrologic improvement referenced below.

<u>Sumatra Tract: Road Removal Segments</u>

- **Segment 5**: The majority of this segment has been under-excavated by 3-4 inches. There are occasional pockets of inundation within the road interior; however, the majority of the segment (60%) remains exposed. Vegetative coverage comprises nearly a third of the segment; see **Appendix B, Photograph 1**, and consists of early successional species, *i. e*., various rushes, sedges, wetland grasses, and titi (*Cliftonia* and *Cyrilla*), typical to the area. No nuisance or exotic species were observed. Approximately 75% of ditching remains visible. Portions of these ditches provide deep and persistent pockets of standing water as evidenced by the presence of water lilies (*Nuphar* sp.); see **Appendix B, Photograph 2**.
- **Segment 6**: Excavation grade is appropriate throughout most of Segment 6; see **Appendix B, Photograph 3**. An exception is an approximately 200 feet over-excavated section in the eastern reach; see **Appendix B, Photograph 4**. Road edges have 90-95% vegetative cover while recruitment remains sparse within the interior portions; see **Appendix B, Photograph 5.** Vegetation consists of early successional species, *i. e*., rushes, sedges, wetland grasses, and titi (*Cliftonia* and *Cyrilla*), typical to the area. No nuisance or exotic vegetation was observed. All ditching within this segment has been filled. Minor erosion was observed in places along the barren roadway and highly turbid water was noted in the adjacent roadside ditches The road access crossbar has not been installed at the eastern terminus (intersection with Tower Road).
- **Segment 7**: The portion of this segment occurring south of the Segment 5/6 intersection is generally over-excavated and characterized by widespread inundation (2-3 inches) and 10-20% aerial coverage by herbaceous and/or woody shrub recruitment; see **Appendix B, Photograph 6.** By contrast, the segment occurring north of the intersection is largely exposed (non-inundated), yet also poorly vegetated; see **Appendix B, Photograph 7**. What vegetation exists consists of early successional species, *i. e*., rushes, sedges, wetland grasses, and titi (*Cliftonia* and *Cyrilla*), typical to the area. No nuisance or exotic vegetation was observed. Approximately 5% of ditching remains throughout the segment. Minor erosion was observed along the earthen berm and turbid pockets of standing water were common within the decommissioned roadway.
- **Segment 8:** The eastern half of this segment has been appropriately excavated, and the grade of the road matches adjacent communities; see **Appendix B, Photograph 8**. Nearly two-thirds of this reach is vegetated with early successional herbaceous species. The western half of this segment has been slightly over-excavated by 3-4 inches. This reach was fully inundated with little to no vegetative cover; see **Appendix B, Photograph 9**. Less than 5% of ditching remains throughout this segment. No nuisance or exotic vegetation was observed.

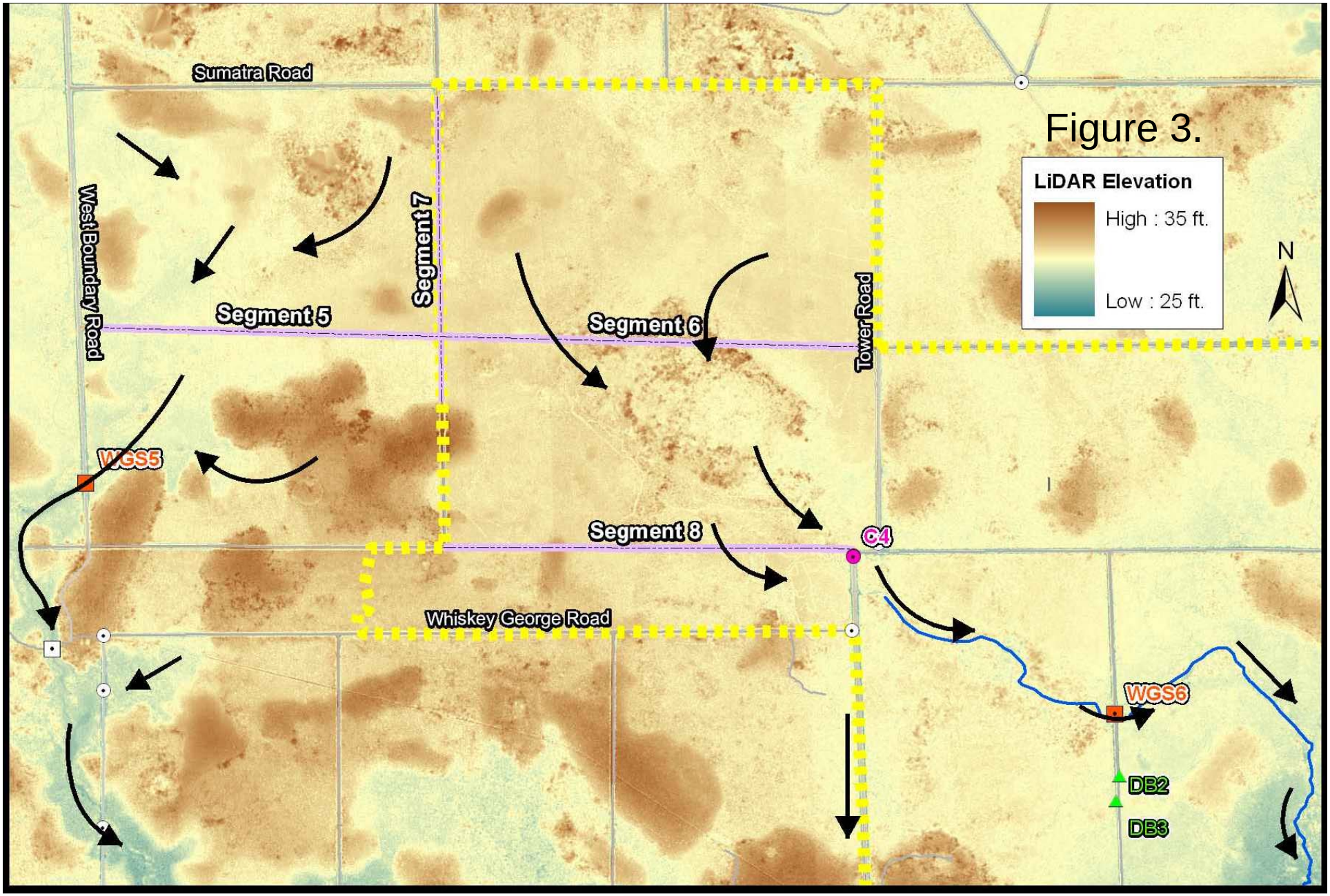


Hydrologic Improvements and Post-restoration Drainage Patterns in Project Area 1, Franklin County, FL.

- Existing Culvert
- Culvert Improvement
- Low Water Crossing
- Ditch Block
- Road Removal
- Existing Low Water Crossing
- Whiskey George Creek Basin
- Tate's Hell State Forest Boundary

0 0.2 0.4 0.8 Miles

Northwest Florida Water Management District
81 Water Management Drive
Havana, FL 32333-4712
(850) 539-5999
www.nwfwmd.state.fl.us



Hydrologic Improvements and Post-restoration Drainage Patterns in Project Area 2, Franklin County, FL.

- Existing Culvert
- Culvert Improvement
- Low Water Crossing
- Ditch Block
- Road Removal
- Existing Low Water Crossing
- Whiskey George Creek Basin
- Tate's Hell State Forest Boundary

0 0.2 0.4 0.8 Miles

Northwest Florida Water Management District
81 Water Management Drive
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Sumatra Tract: Low Water Crossing

- **WGS5**: This crossing has been appropriately graded and allows water movement from east to west with little-to-no sign of erosion; see **Appendix B, Photograph 10**. The side slopes appear to be properly stabilizing as sand accretion and herbaceous colonization are occurring over the stone-aggregate apron. Deep and persistent pockets of ponded water, as evidenced by the presence of water lilies, are present toeither side of the crossing. Off-highway vehicle (OFW) access barriers had not been installed at the time of survey.

Sumatra Tract: Culvert Improvement

- **C4**: Both culverts at this location are fully submerged; see **Appendix B, Photograph 11**. Banks are stabilizing with appropriate vegetation. No nuisance or exotic species were observed. Erosional areas were not observed and road integrity has been properly maintained. Water clarity in and around the culverts is appropriately tannic and non-turbid.

Whiskey George Tract: Road Removal Segments

- **Segment 1:** The western third of this segment, occurring between Segment 2 and the western terminus, appears to have been properly excavated so that road grade matches adjacent wetlands. At the time of survey, this reach was fully inundated (2-3 inches) and recruitment of herbaceous and woody shrubs remained sparse; see **Appendix B, Photograph 12**. Moderate erosion and bank instability was apparent surrounding a vehicle turnaround area at the western terminus. The remaining two-thirds of Segment 1 is best characterized as an undulating mix of deeply inundated (>4”), shallowly inundated (1-3”), and fully exposed wetland habitats; see **Appendix B, Photographs 13** and **14.** Vegetation consists of early successional species, *i. e*., rushes, sedges, wetland grasses, and titi (*Cliftonia* and *Cyrilla*), typical to the area. No nuisance or exotic vegetation was observed. Approximately 5% of ditching remains throughout the segment. No significant erosion was observed.
- **Segment 2:** Nearly two-thirds of Segment 2 appears under-excavated with approximately 75% of ditching remaining visible. Interior road segments exist as dry sandy uplands, fully vegetated with a mix of upland and facultative species; see **Appendix B, Photograph 15**. An exception is a 100-foot stretch at the southern extent of the segment which has been appropriately graded to match adjacent wetlands. This area is shallowly inundated (1-2”) and has approximately 75% cover by rushes, sedges, and wetland grasses; see **Appendix B, Photograph 16**. Flowering wetland plants such as redroot (*Lachnanthes* sp.), yellow-eyed grass (*Xyris* spp.), and meadowbeauty (*Rhexia* spp.) are also common within the southern reach. No nuisance or exotic vegetation was observed.
- **Segment 3**: The southern half of this segment is deeply inundated (4-6 inches) with little to no vegetative cover; see **Appendix B, Photograph 17**. Bladderwort (*Utricularia* sp.) is common throughout the deeper inundated portions. By contrast, the northern half of this segment exists as a shallowly inundated (≤3”) wetland with approximately 75% herbaceous groundcover; see **Appendix B, Photograph 18**. Vegetation within this reach consists of early successional species, *i. e*., various rushes, sedges, wetland grasses, and titi (*Cliftonia* and *Cyrilla*), typical to the area. Approximately 5% of ditching remains. No nuisance or exotic vegetation was observed.
- **Segment 4**: This segment is best characterized as an undulating mix of deep inundated (>6”), shallow inundated (1-3”), and fully exposed wetland habitats; see **Appendix B, Photographs 19** and **20.** Large woody debris is abundant throughout the segment. Vegetative cover is generally sparse (<25%) and is mostly comprised of various sedges, rushes, and wetland forbs. No

nuisance or exotic vegetation was observed. All ditching within this segment has been filled. No significant erosion was observed.

Whiskey George Tract: Low Water Crossings

- **WGS1**: This crossing has been appropriately graded to allow water movement from west to east with little-to-no sign of erosion; see **Appendix B, Photograph 21**. Sand accretion and herbaceous colonization are actively occurring over the stone-aggregate apron. No significant erosion was observed.
- **WGS2**: This crossing has been appropriately graded to allow water movement from west to east; see **Appendix B, Photograph 22**. A one-inch rain event had occurred within 24 hours of this survey. Water velocity was approximately 0.5 feet/second (f/s) through the crossing and maximum depth at the midpoint measured 0.4 feet. No erosion, bank instability, or shifting/washout of the stone apron was evident. Deep and persistent pockets of ponded water, as evidenced by the presence of water lilies, are present to either side of the crossing.
- **WGS3**: This crossing has been appropriately graded to allow water movement from north to south with little-to-no sign of erosion; see **Appendix B, Photograph 23**. Sand accretion and herbaceous colonization are actively occurring over portions of the stone-aggregate apron. A one-inch rain event had occurred within 24 hours of this survey.
- **WGS4**: This is the shallowest crossing of the four assessed within the Whiskey George Tract. A one-inch rain event had occurred within 24 hours of this survey, and despite the shallow grade the crossing did not appear to encumber hydrology which flows north to south; see **Appendix B, Photograph 24**. However, the hydrologic connection may become interrupted during drier periods due to the shallow nature of the grade. Sand accretion and herbaceous colonization are actively occurring over portions of the stone-aggregate apron.

Whiskey George Tract: Culvert Improvements

- **C1**: Invert elevation at C1 is appropriate for maintaining a persistent hydrologic connection; see **Appendix B, Photographs 25-26**. Evidence of mulching is apparent; however, vegetation remains sparse along the banks and some erosion/sedimentation is occurring to either side of the rip-rap apron. No nuisance or exotic vegetation was observed.

- **C2**: Invert elevation at C2 is appropriate for maintaining a persistent hydrologic connection; see **Appendix B, Photographs 27-28**. Evidence of mulching is apparent; however vegetation remains sparse along the banks. No significant erosion was recorded. No nuisance or exotic vegetation was observed.
- **C3**: Invert elevation at C3 is appropriate for maintaining a persistent hydrologic connection; see **Appendix B, Photographs 29-30**. No evidence of mulching is apparent and there is considerable erosion along the earthen banks and roadway. While bank stability is currently poor with little to no re-vegetation occurring, in-stream turbidity was minimal. No nuisance or exotic vegetation was observed.

Whiskey George Tract: Ditch Blocks

- **DB1**: Water level is approximately one foot higher on the north end of the ditch block (plug) than to the south (see **Appendix B, Photographs 31**) and water is bypassing the plug at the southeast corner; **see Appendix B, Photograph 32**. The plug appears to have been properly mulched; however, little to no revegetation is occurring. Reinforcement of the southeast corner will be necessary to prevent eventual failure of the structure. No nuisance or exotic species were observed.

- **DB4:** This plug has effectively blocked water passage through the ditch segment. Ditching north of the plug is completely inundated with stagnant water while the southward ditch is completely dry; see **Appendix B, Photographs 33-34**. WGS2, located approximately one-tenth mile north, alleviates the hydrologic pressure on this plug by allowing flow to redirect into the adjacent wetland. The area has been properly mulched but little revegetation is occurring. No nuisance or exotic species were observed. No significant erosion was recorded.
- **DB5:** This plug appears to have effectively blocked water passage through the ditch segment. However, a drift line of rafted debris along the east and southeast plug is suggestive of periodic water bypass during storm events. Some erosion, present along the southern end of the plug, is consistent with stormwater bypass. The area has been properly mulched moderate revegetation is occurring, mostly facultative grasses (*Dicanthelium* spp.) and minimal woody shrub recruitment (*Persea* sp.) Without more aggressive revegetation or earthen reinforcement this plug may be vulnerable to washout during an intense storm event. No nuisance or exotic species were observed.

1. Sumatra Tract. Segment 5. Under-excavated road segment

2. Sumatra Tract. Water lilies sustained in unfilled ditches.

3. Sumatra Tract. Segment 6. Appropriate grading

4. Sumatra Tract. Road Removal 16-3. Over-excavation

5. Sumatra Tract. Segment 6. Vegetative growth along road margins and interior.

6. Sumatra Tract. Segment 7. Over-excavation

7. Sumatra Tract. Segment 7. Non-inundated segment.

8. Sumatra Tract. Segment 8. Appropriate grading throughout eastern half.

9. Sumatra Tract. Segment 8. Over-excavation throughout western half.

10. Sumatra Tract. WGS5.

11. Sumatra Tract. Culvert Improvement – C4

12. Whiskey George Tract. Segment 1. Full inundation along western reach

13. Whiskey George Tract. Segment 1. Eastern terminus

14. Whiskey George Tract. Segment 1. Undulating grade

15. Whiskey George Tract. Segment 2. Under-excavated interior. Ditching remains

16. Whiskey George Tract. Segment 2. Appropriate grade at southernmost reach.

17. Whiskey George Tract. Segment 3. Southern half, deep inundation (4-6")

18. Whiskey George Tract. Segment 3. Northern half, shallow inundation (0-3")

19. Whiskey George Tract. Segment 4. Undulating wetlands w/ woody debris

20. Whiskey George Tract. Segment 4. Exposed wetland flats

21. Whiskey George Tract. WGS1

22. Whiskey George Tract. WGS2

23. Whiskey George Tract. WGS3

24. Whiskey George Tract. WGS4

25. Whiskey George Tract. C1. Circled area highlights minor bank erosion.

26. Whiskey George Tract. C1. Opposing side

27. Whiskey George Tract. C2. South-facing culvert

28. Whiskey George Tract. C2. North-facing culvert

29. Whiskey George Tract. C3.

30. Whiskey George Tract. C3. Moderate erosion in foreground

31. Whiskey George Tract. DB1.

32. Whiskey George Tract. DB1. Water bypassing ditch plug

33. Whiskey George Tract. DB4 facing north

34. Whiskey George Tract. DB4 facing south

35. Whiskey George Tract. DB5. Red line indicates water bypass potential

36. Whiskey George Tract. DB5. Erosion along southern bank.