Appendix 2-1: Annual Permit Report for the Picayune Strand Restoration Project, Phase 1 – Prairie Canal Backfill and Road Removal Component

Permit Report (May 1, 2012–April 30, 2013)
Permit Number: 0221670

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Contributors: Violeta Ciuca and Nimmy Jeyakumar

SUMMARY

Based on Florida Department of Environmental Protection (FDEP) permit reporting guidelines, **Table 1** lists key permit-related information associated with this report. **Table 2** lists the attachments included with this report. **Table A-1** in Attachment A lists specific pages, tables, graphs, and attachments where project status and annual reporting requirements are addressed. This annual report satisfies the reporting requirements specified in the permit.

The Prairie Canal Backfill and Road Removal component, which was Phase 1 of the Picayune Strand Restoration Project, was completed in 2007. Post-construction monitoring is being conducted under permit modification 0221670-008-EM. Hydrologic monitoring results for Water Year 2013 (WY2013) (May 1, 2012–April 30, 2013) are provided in this report. Water quality is no longer monitored within the Phase 1 footprint because the plugging of Prairie Canal eliminated permanent surface water sites for water quality sampling. Exotic vegetation mapping and control for WY2013 are reported in Attachments C and D of this report.

Work has also been completed on other phases of the Picayune Strand Restoration Project. This work is permitted under the United States Army Corps of Engineers (USACE) Picayune Strand Restoration Project – Road Removal Project Permit SAJ 2005-6598. Permits 0288313-001 and 0288313-003 have also been issued to the USACE by the FDEP for the Merritt canal and Faka Union canal phases of the project, respectively, and construction has commenced for both phases. Merritt Canal, south to where it joins the east-west portion of Merritt Canal, is scheduled to be plugged in early 2014. Road removal on lands between the Faka Union Canal and Miller Canal has been mostly completed. The Merritt pump station is scheduled to be operational in

[1] Contributed as a SFWMD contractor during the draft SFER production cycle.

January 2014, and the Faka Union pump station is scheduled to be operational in late summer 2014. The Faka Union Canal and the Miller Canal will not be plugged until the Southwestern Protection Feature (formerly the 6Ls Levee) and the Manatee Mitigation Feature is completed. The Miller Pump Station contract was issued in September 2013 and work will commence in January 2014. The Miller road removal and Miller Canal plugging will not be initiated under the Miller Pump Station contract. Both efforts require an increase in the congressional authorization for work to commence. In addition, the Manatee Mitigation Feature and Southwestern Protection Feature will not be initiated until the increase in congressional authorization occurs. In addition, the canal plugging activities are "conceptually" approved, which is contingent on "the results of additional hydrologic and hydraulic modeling effort associated with the project assurances (need for protection features)" and may require a "modification" to the permit prior to construction. Post-construction monitoring for these phases has not yet begun.

Table 1. Key permit-related information.

Project Name:	Picayune Strand Restoration Project, Phase 1 – Prairie Canal Backfill and Road Removal Component
Permit Number:	0221670
Issue and Expiration Dates: Permit #: 0221670 (original): Permit #: 0221670-008-EM (mod):	 Issued: 10/28/2005; Expires: 10/28/2010 Renewal/Mod Issued: 6/11/2010; Expires: 6/10/2015
Project Phase:	Post-Construction
Permit Specific Condition Requiring Annual Report:	17
Reporting Period:	May 1, 2012–April 30, 2013
Report Lead:	Kimberly Chuirazzi kchuiraz@sfwmd.gov 561-682-2425
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Table 2. Attachments included with this report.

Attachment	Title
A	Specific Conditions and Cross-References
B	Hydrologic Data
C	Picayune Strand Restoration Project Restored Footprint Exotics Mapping and Control Coordination, Annual Summary Effectiveness Assessment Report
D	Picayune Strand Restoration Project – Addendum to Annual Effectiveness Assessment Summary

INTRODUCTION

PROJECT DESCRIPTION

The Prairie Canal Backfill and Road Removal Project was the first phase of the Picayune Strand Restoration Project. The Picayune Strand Restoration Project is a Comprehensive Everglades Restoration Plan (CERP) project to restore the hydrological and ecological function of the region by establishing pre-development sheetflows and hydroperiods. The first phase of this larger restoration effort consisted of the elimination of channelized flow in the Prairie Canal.

PROJECT LOCATION

The project is located in the eastern portion of the Picayune Strand Restoration Project area (**Figure 1**). The project area is located in an area previously known as Southern Golden Gate Estates. The Prairie Canal and roads to be removed are located in Sections 1, 2, 11, 12, 13, 14, 23, 24, 25, 26, 35, and 36 of Township 50 South Range 28 East; and Sections 1, 2, 11, 12, 13, 14, 23, 24, 25, 26, and 35 of Township 51 South Range 28 East. The filled Prairie Canal forms the border between the two areas.

PROJECT OBJECTIVE

The objectives of the project are (1) restoration of the historic hydrologic regime, including overland sheetflow, and historic water levels and durations (hydroperiods) through backfilling of Prairie Canal and degradation of roads east of Merritt Canal; (2) recolonization of the construction footprint by native vegetation by controlling the invasion of exotic and nuisance vegetation; and (3) restoration of historic plant and animal communities.

PROJECT HISTORY

The first phase of this larger restoration effort consisted of the elimination of channelized flow within Prairie Canal. To accomplish this, numerous earthen plugs were constructed along the seven miles of the canal. Also, all 65 miles of roads east of Merritt Canal, except portions containing cultural sites, were demolished and degraded or filled to ground level. The area is located directly west of Fakahatchee Strand Preserve State Park. Source material for the canal plugs and swale blocks consisted of spoils from the original canal and swale excavations, as well as from the demolition and degradation of the berms and roads. More fill was available in the northern portion of the canal, so more of the canal was filled in this area, while plugs were used to fill the southern portion of the canal.

Work began in 2004 on the portion of the canal and roads north of 79th Street. Hydrologic effects were apparent in this area beginning in the 2005 rainy season. Plugging of the canal and road demolition was completed on March 4, 2007, and effects began to be seen in 2007 in the area south of 79th Street. These effects are discussed in more detail in the *Hydrologic Improvements* section of this report.

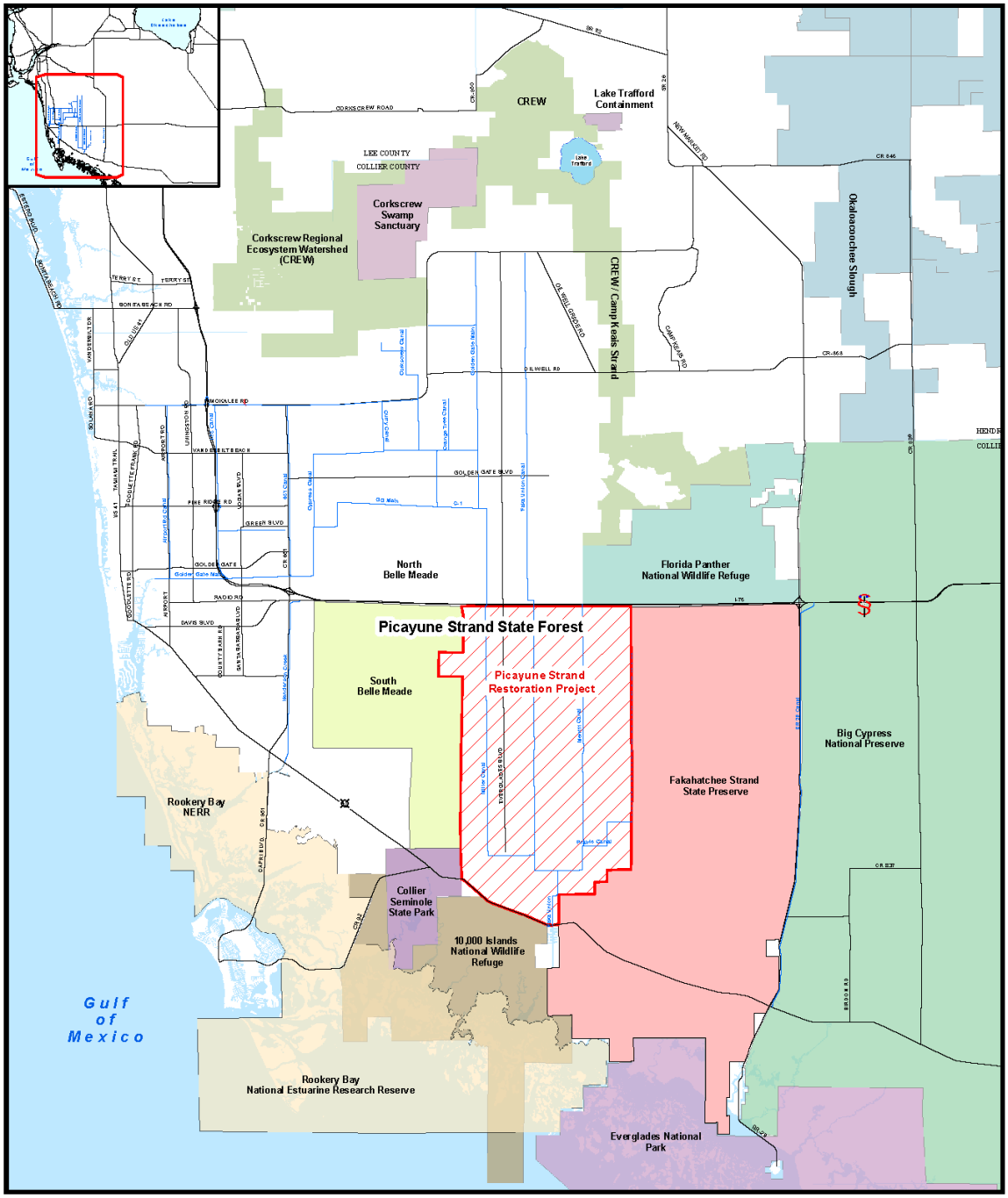


Figure 1. Picayune Strand Restoration Project area and surrounding areas. [Note: Prairie Canal extends up along the border between the Picayune Strand Restoration Area and Fakahatchee Strand State Preserve.]

PERMIT HISTORY

Permit 0221670-001-GL was issued by FDEP to the South Florida Water Management District (SFWMD) for the Prairie Canal Backfill and Road Removal Project on October 28, 2005. Specific condition 9 of the permit modifications, beginning with 0221670-004-GL, requires that water level and water quality monitoring be conducted, in accordance with the Prairie Canal Restoration Fish and Wildlife Resource Monitoring, Vegetation Monitoring and Construction Protocol Plan, dated October 14, 2002, and amended on September 14, 2005. Specific condition 17 of permit modification 0221670-004-GL requires the submittal of an annual report detailing the progress of the project for five years after the completion of construction. The annual report must include a discussion of results obtained from the monitoring plan mentioned earlier in the paragraph. Modification 0221670-008-EM was issued on June 11, 2010, to modify the post-construction monitoring protocol for this project. At this time, per specific condition 9, the Modified Prairie Canal Monitoring Plan (Version 2) replaced the previous monitoring plan.

MONITORING AND REPORTING HISTORY

Past reporting for this project has been included in Volume I, Appendix 7A-2 of the *2008 South Florida Environmental Report* (SFER), 2009 SFER, and 2010 SFER, and in Volume III, Appendix 2-1 of the 2011 SFER, 2012 SFER, and 2013 SFER.

PROJECT STATUS

The first canal filled was Prairie Canal, the easternmost canal in the Southern Golden Gate Estates development, which did not require construction of a pump station. The upper two miles of Prairie Canal was filled with adjacent spoil in spring 2004. The lower five miles of the north-south portion of Prairie Canal was plugged in fall 2006, with substantial amounts of additional fill added from fall 2006 through June 2007, as the roads east of Merritt Canal were degraded. Additional degrading of spoil along the roads east of Merritt Canal and along Prairie Canal was done in winter–spring 2012. The logging trams east of Merritt Canal were degraded during winter–spring 2011.

Work on the lands between Merritt and Faka Union canals commenced in 2010. Road removal began in spring 2010, and was substantially complete by December 2012, although some work remains in the area around the Merritt Canal pump station. Logging trams in this phase were degraded in winter–spring 2011. The Merritt pump station is scheduled to be operational in January 2014, and Merritt Canal, down to where it joins Prairie Canal, is scheduled to be plugged in March 2014.

Work on the lands between Faka Union and Miller Canals commenced in fall 2011. Road removal began in fall 2011, and as of summer 2013, most of the work has been completed. Some final sections of these roads will have to be completed during the 2013–2014 dry season. Degrading of the logging trams in this area was done from summer 2011 through winter 2012. The Faka Union pump station is scheduled to be operational in summer 2014. However, timing of plugging the Faka Union Canal down to where it joins Miller Canal will be dependent on a hydrologic analysis currently being done on the potential effects on private lands to the west of the project.

Work on the lands west of Miller Canal is scheduled to commence in fall 2013, and to be complete in 2017. When the north-south portion of the Miller Canal is plugged, the East-West Stair-Step Canal, from Prairie Canal west to Miller Canal, will also be plugged, leaving only the portion of Faka Union Canal open from where all four of the canals come together, down to the Gulf of Mexico. Several additional components of construction are scheduled to occur during this period. There will be a substantial amount of work remaining above the tieback levee that extends

between and east and west of the pump stations. These lands will not be rehydrated. However, since the project is an environmental restoration project, not just a hydrologic restoration project, roads remaining in this area will also be removed, as will spoil along the canals and any remaining roads. Protection levees or other structures needed to protect adjacent private lands will also be built. A manatee mitigation site will be located near the Port of the Islands community at the south end of the Faka Union Canal along Tamiami Trail.

WATER QUALITY MONITORING

Because the Prairie Canal has been backfilled, water was not flowing at any of the water quality monitoring stations during WY2013, and monitoring was not conducted. Consequently, there is no water quality data to report.

HYDROLOGIC MONITORING

Post-construction monitoring under permit modification 0221670-008-EM does not require hydrologic monitoring. It was required by the baseline monitoring under the United States Army Corps of Engineers (USACE) Picayune Strand Restoration Project – Road Removal Project Permit SAJ 2005-6598. This permit required that Appendix H of the project's project implementation report be used for baseline monitoring (USACE and SFWMD, 2004). It is expected that post-construction monitoring for this permit will require hydrologic monitoring, so for consistency, we have continued to report the hydrologic data even though it is not currently required.

WEATHER

Daily rainfall and wetland or potential evapotranspiration (ETp) data were retrieved from the SFWMD's DBHYDRO database for a weather station (SGGEWX) in the project area (**Table 3**). Annual average rainfall in the Southwest Rain Area is 54.12 inches (**Table 4**) (2013 SFER – Volume I, Chapter 2; Abtew et al. 2013). The Picayune Strand Restoration Area received 56.24 inches during WY2013 (**Table 4**), indicating above average rainfall for the area for the water year. WY2013 rainfall (56.24 inches) was similar to WY2012 (55.84 inches), but was 13.39 inches higher than WY2011, a dry year. Annual ETp for WY2013 was 53.45 inches, compared to 50.43 inches in WY2012. For most months, ETp was higher than rainfall, except during the wet season (June–October) (**Table 4** and **Figure 2**). June and October 2012 were the wettest months for the area. From November 2012 to March 2013, the area was dry, with ETp far higher than rainfall. WY2013 dry season rainfall was 12.84 inches, 82 percent of historical average. WY2013 daily rainfall is depicted in **Figure 3**, and daily ETp is shown in **Figure 4**. Data used for these analyses are provided in Attachment B.

Table 3. Hydrologic monitoring stations and database Dbkeys.

Site Name	Dbkey	Parameter
SGGEWX	OR084	Rainfall
SGGEWX	OR083	Evapotranspiration

Table 4. Water Year 2013 (WY2013) (May 1, 2012–April 30, 2013), historical average monthly rainfall, and WY2013 evapotranspiration (ETp).

Months	Rainfall (inches)		ETp (inches)
	WY2013	Historical Average	WY2013
May	4.76	4.03	5.77
June	5.43	9.13	4.75
July	6.86	8.73	5.05
August	11.39	8.26	4.71
September	10.31	8.20	4.00
October	9.41	4.05	3.8
November	0.08	1.55	3.79
December	0.46	1.43	3.17
January	0.08	1.92	3.54
February	1.9	2.15	3.83
March	0.82	2.46	5.55
April	4.74	2.21	5.49
TOTAL	**56.24**	**54.12**	**53.45**

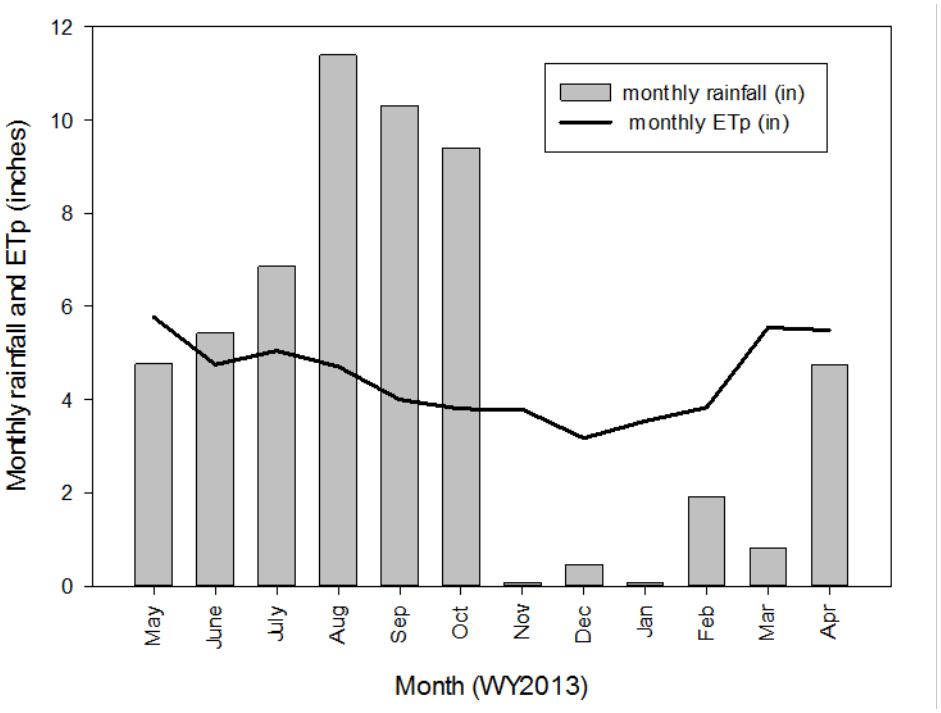


Figure 2. Monthly rainfall and ETp at the Picayune Strand Restoration Project for Water Year 2013.

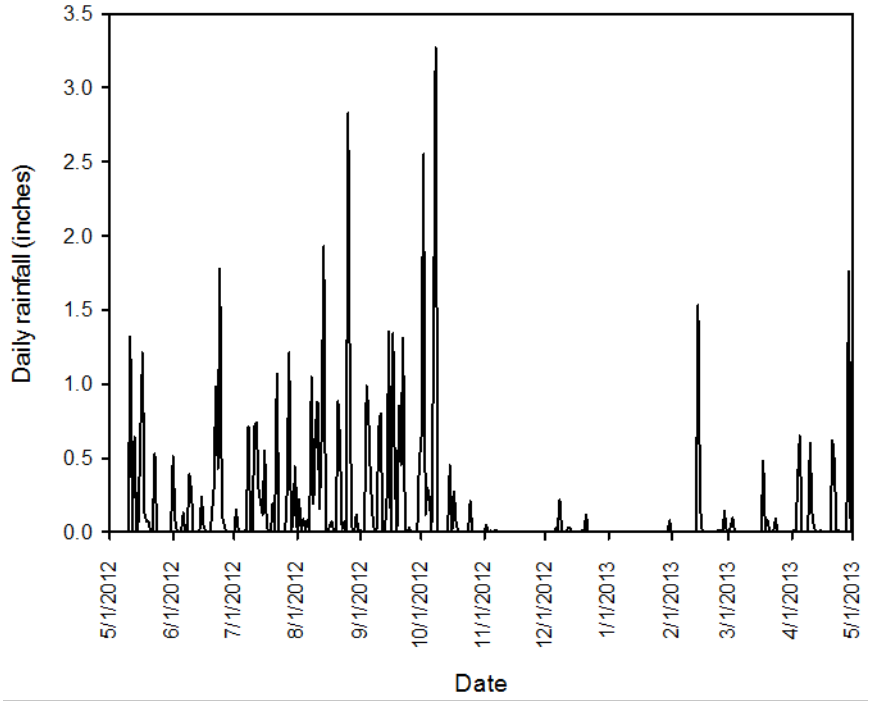


Figure 3. Daily rainfall in the Picayune Strand Restoration Project area for WY2013.

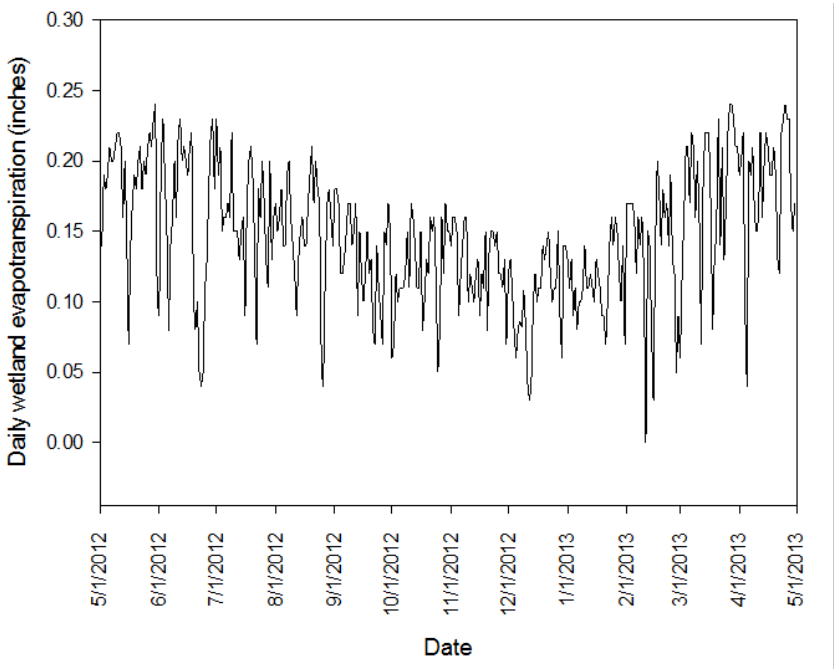


Figure 4. Daily evapotranspiration in the Picayune Strand Restoration Project area for WY2013.

GROUNDWATER LEVELS

For this phase of the project (Prairie Canal Backfilling and Road Removal), groundwater level is monitored at seven stations to the east of Merritt Canal (**Table 5** and **Figure 5**). The stations have been renamed since the permit was issued. The original and current names are provided in the table. **Figures 7** through **13** depict WY2013 water levels and depths at each of the seven stations for the water year. Generally, groundwater levels reflect rainfall conditions in the area. Data used for these analyses are provided in Attachment B.

Table 5. Water quality and groundwater level monitoring stations coordinates and database Dbkeys.

Latitude	Longitude	Status	DBHYDRO Station Name	Former Station Name	DBHYDRO Dbkey
260835.68	812811.048	Existing	SGT1W5	SGGE5SW	PT049
260635.995	812834.49	Existing	SGT2W5	SGGE10SW	PT059
260535.218	812739.212	Existing	SGT2W6	SGGE11SW	PT061
260319.78	812956.813	Existing	SGT3W5	SGGE16SW	PT069
260227.5	812747.2	Existing	SGT3W6	SGGE23SW	PT071
260252.501	812628.314	Existing	SGT3W7	SGGE17SW	PT073
260138.427	812842.013	Existing	SGT4W6	SGGE22SW	PT087

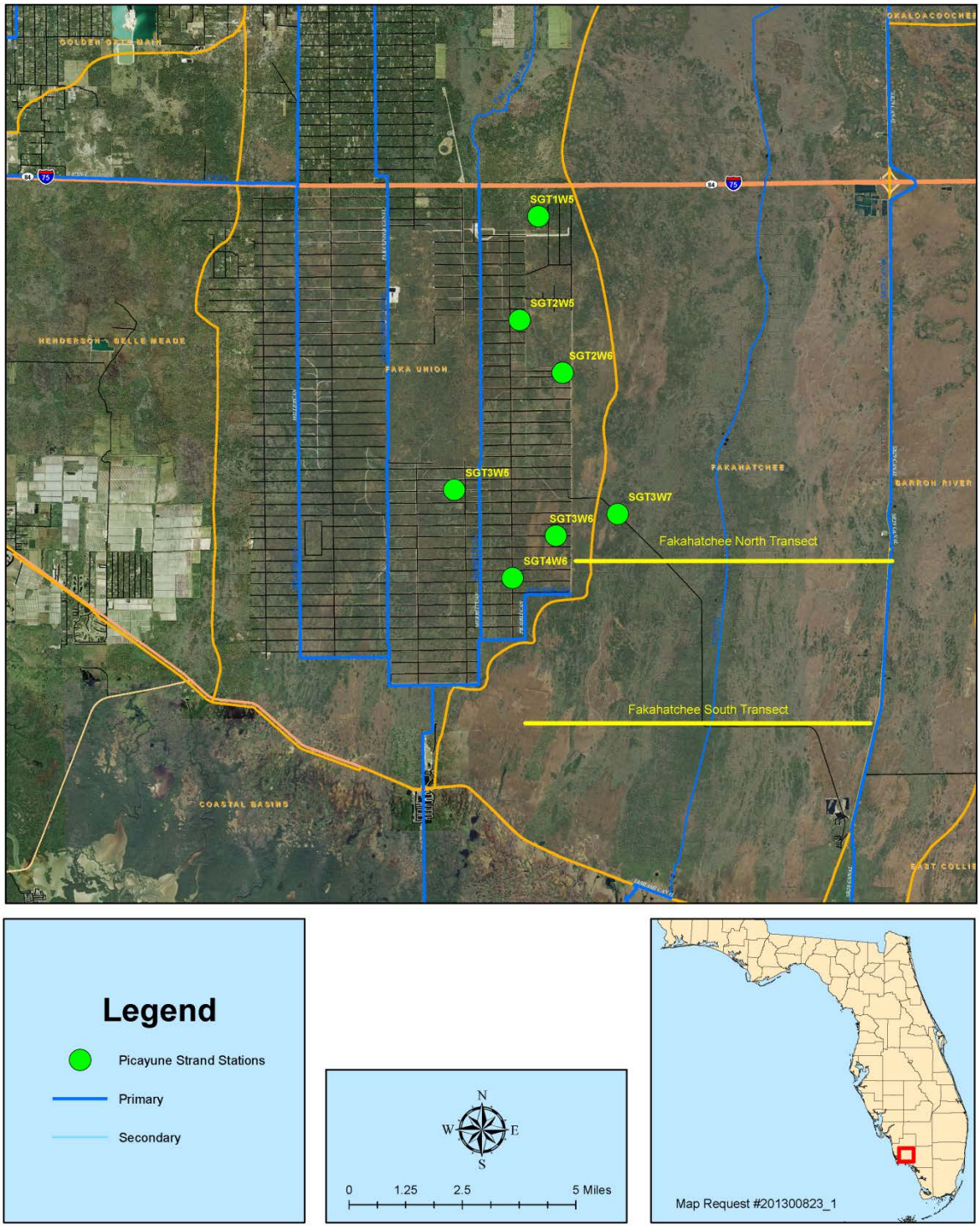


Figure 5. Map showing water quality and hydrologic monitoring stations in the Picayune Strand Restoration Project area and the general location of the Fakahatchee North and South well transects.

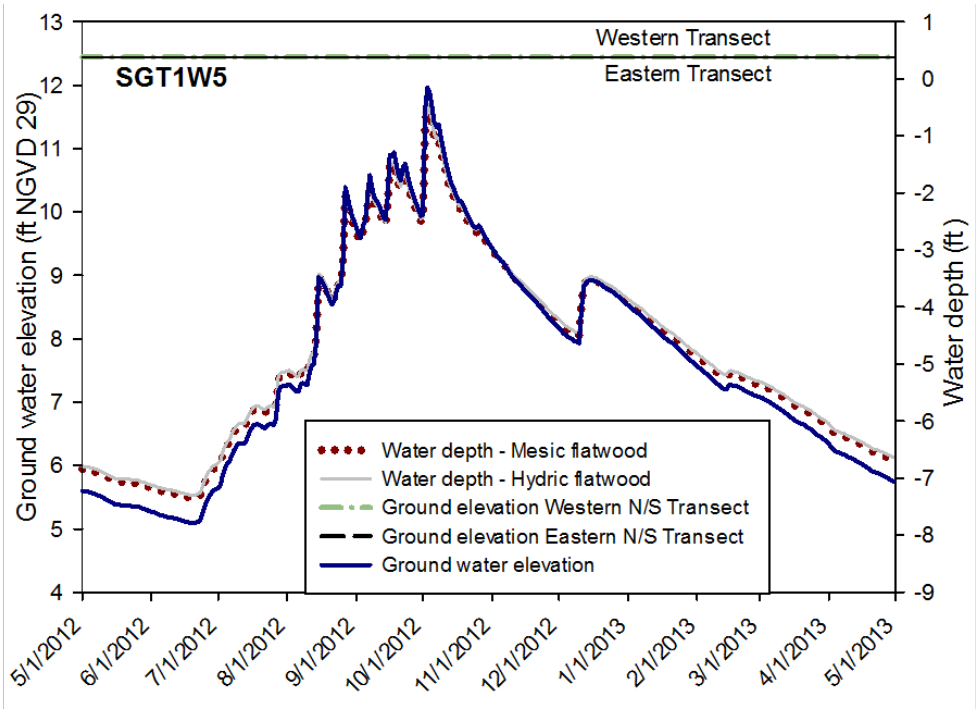


Figure 6. Ground elevation, groundwater elevation, and water depth for well SGT1W5 for WY2013.

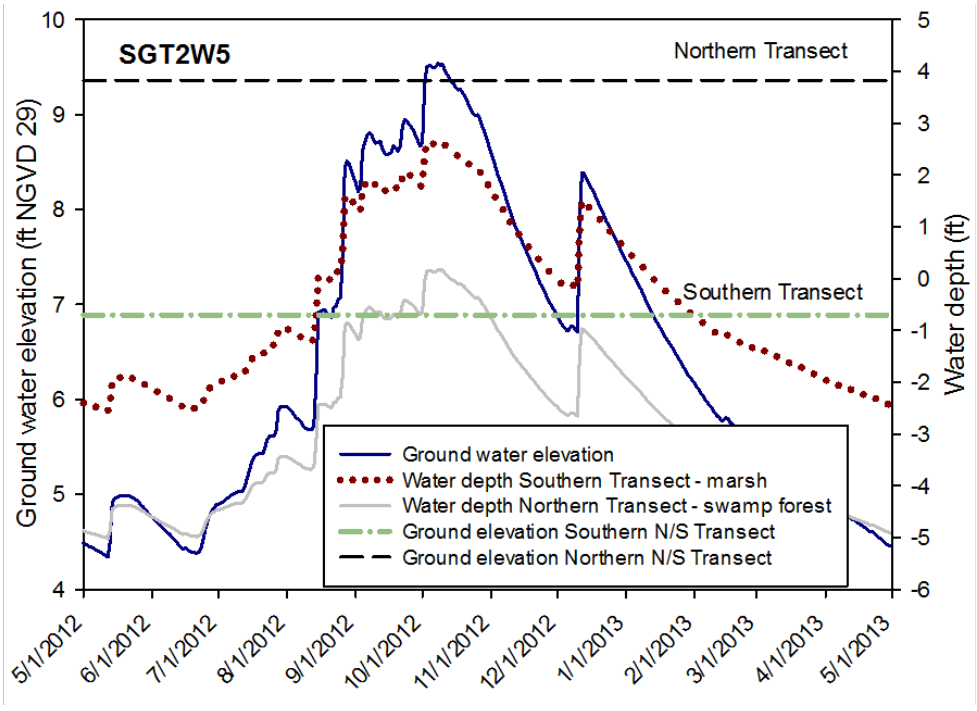


Figure 7. Ground elevation, groundwater elevation, and water depth for well SGT2W5 for WY2013.

Key: ft – feet; NGVD 29 – National Geodetic Vertical Datum of 1929; N/S – north–south.

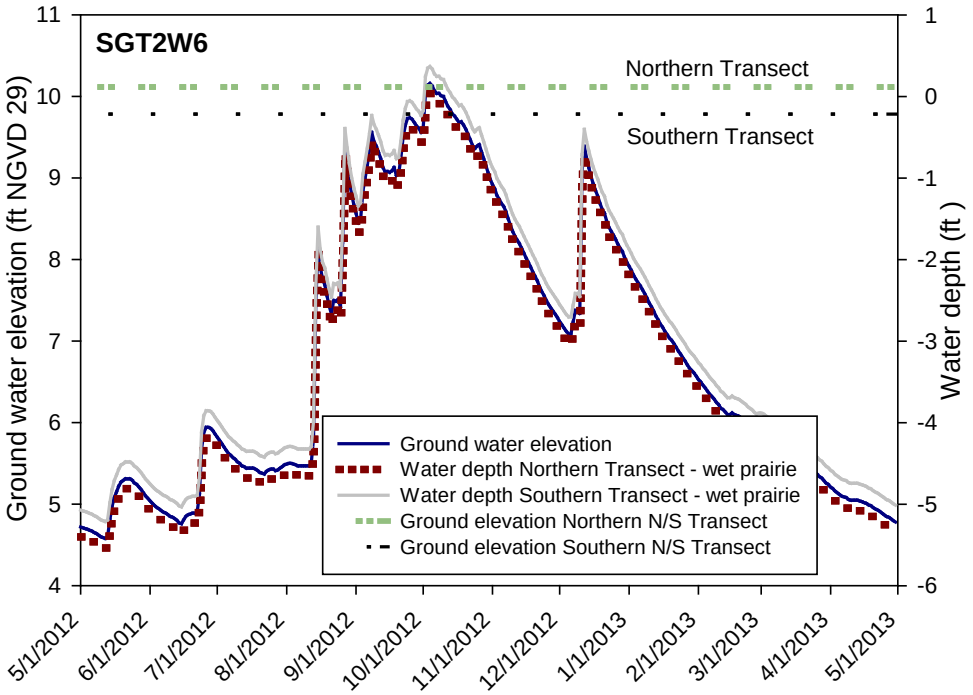


Figure 8. Ground elevation, groundwater elevation, and water depth for well SGT2W6 for WY2013.

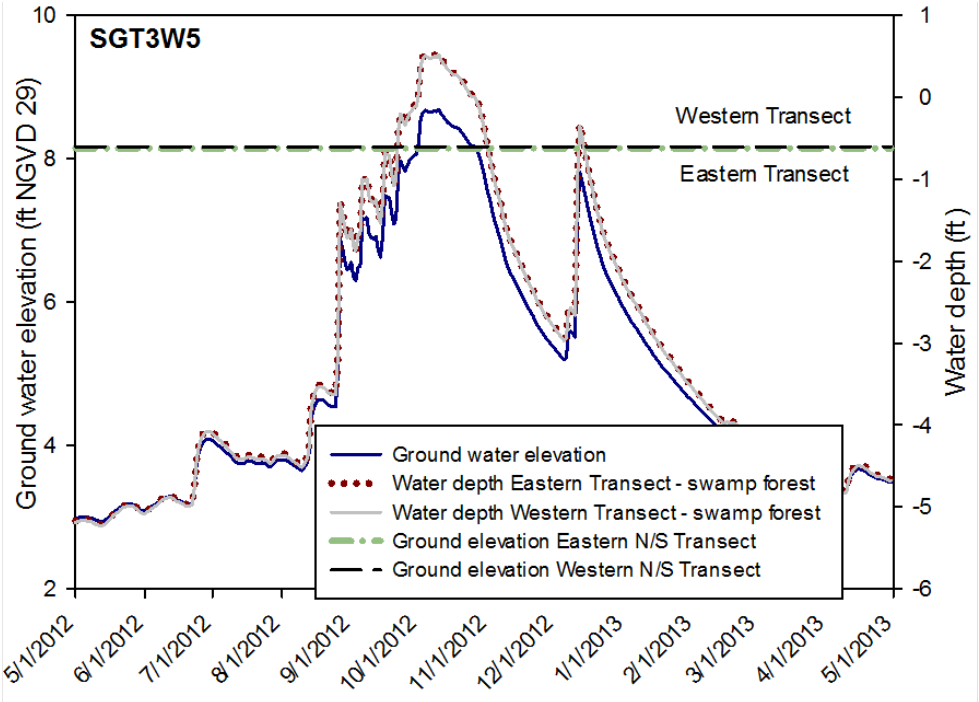


Figure 9. Ground elevation, groundwater elevation, and water depth for well SGT3W5 for WY2013.

Key: ft – feet; NGVD 29 – National Geodetic Vertical Datum of 1929; N/S – north–south.

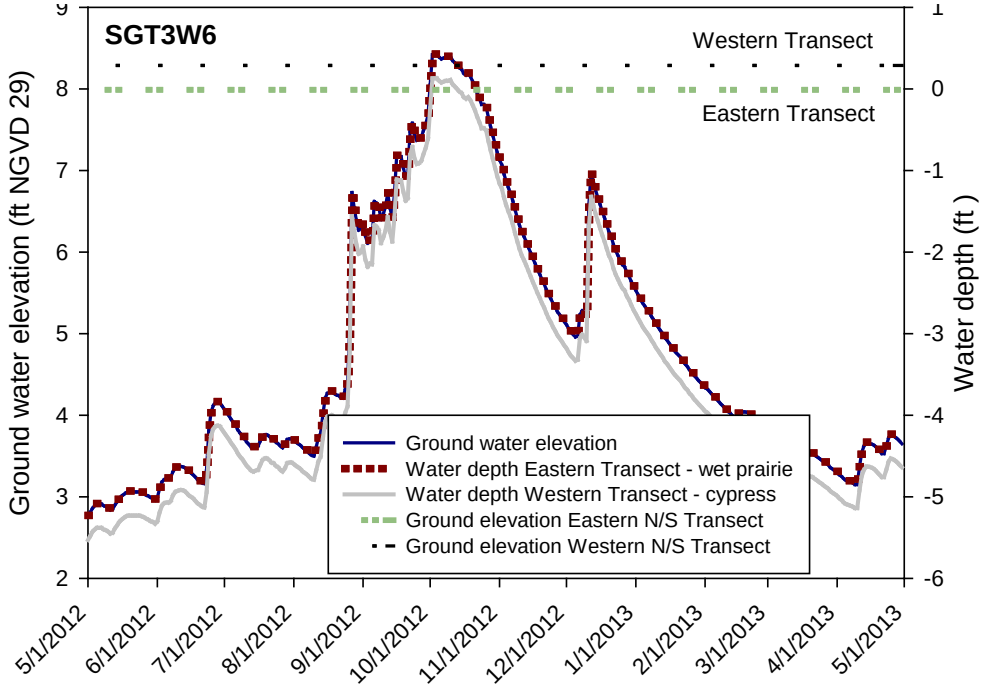


Figure 10. Ground elevation, groundwater elevation, and water depth for well SGT3W6 for WY2013.

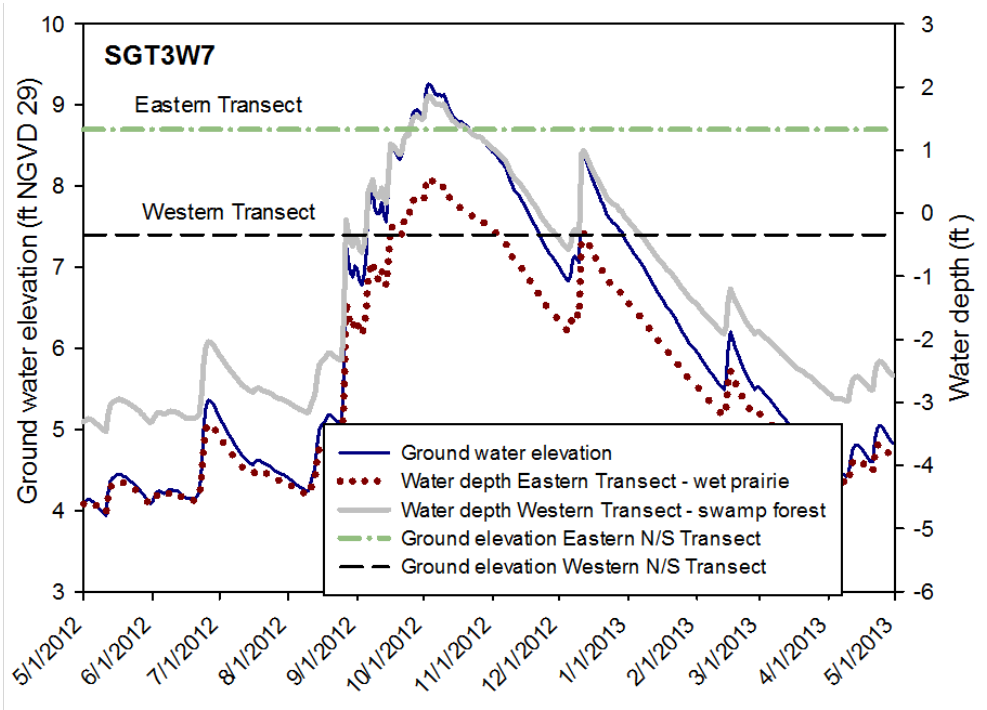
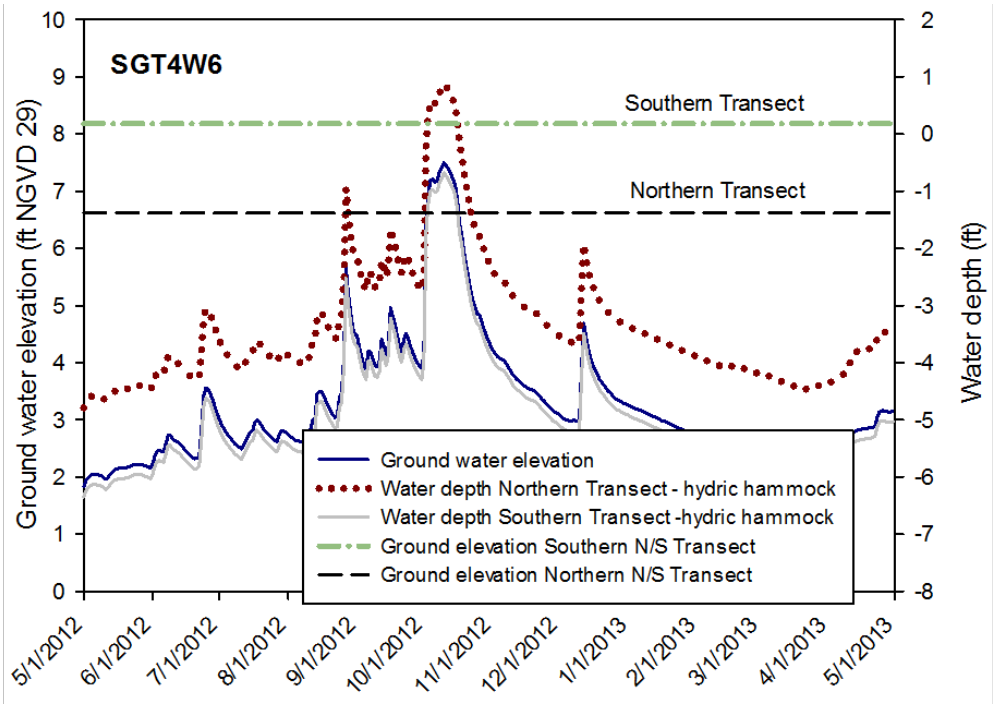


Figure 11. Ground elevation, groundwater elevation, and water depth for well SGT3W7 for WY2013.

Key: ft – feet; NGVD 29 – National Geodetic Vertical Datum of 1929; N/S – north–south.



Key: ft – feet; NGVD 29 – National Geodetic Vertical Datum of 1929; N/S – north–south.

Figure 12. Ground elevation, groundwater elevation, and water depth for well SGT4W6 for WY2013.

A reference on the natural system's hydrologic regime (hydroperiods and water depths) for the various plant communities of the Picayune Strand is shown in **Table 6** (Duever, 2008).

Table 6. Hydrologic regimes of major Southwest Florida plant communities.

Southwest Florida Plant Communities	Hydroperiod (months)	Seasonal Water Level (inches)	
		Wet	Dry (1,10)*
Xeric Flatwood	0	≤-24	-60, -90
Mesic Flatwood, Mesic Hammock	≤1	≤2	-46, -76
Hydric Flatwood, Hydric Hammock	1 - 2	2 - 6	-30, -60
Wet Prairie, Dwarf Cypress	2 - 6	6 - 12	-24, -54
Marsh	6 - 10	12 - 24	-6, -46
Cypress	6 - 8	12 - 18	-16, -46
Swamp Forest	8 - 10	18 - 24	-6, -36
Open Water	>10	≥24	< 24, -6
Tidal Marsh, Mangrove, Beach	Tidal	Tidal	Tidal

* 1 = average year low water , 10 = 1-in-10 year drought

HYDROLOGIC IMPROVEMENT

In past years, water levels were measured at 24 groundwater wells placed along two transects within Fakahatchee Strand Preserve State Park (**Figure 5**). These water levels were then compared to show changes in hydrologic condition before and after Prairie Canal was filled. These transects are designated as Fakahatchee North Transect and Fakahatchee South Transect. In past reports, the hydrologic effects of restoration efforts could be seen by comparing the drawdowns experienced in WY2003 for the North and South transects to those in the current water year. Though not required by permit, this supplemental information has been provided in past reports. This data is unavailable for WY2013 because no volunteer was available to collect the data, so this comparison could not be provided for the current report. General statements on hydrologic improvement are still possible and are provided in the following paragraph.

While there are portions of the Picayune Strand Restoration Project area that have already shown significant hydrologic improvement, most of these improvements to date are near Prairie Canal and in the Fakahatchee Strand Preserve State Park to the east of the former Southern Golden Gates Estates development. Based on 26 years of monthly water level monitoring documenting the effects of Prairie Canal across Fakahatchee Strand, we know that the effects of the canals can extend 1 to 1.5 miles from the canal during the wet season, and 2 to 3 miles during the dry season. The canals are only 2 miles apart. Consequently, even though Prairie Canal has been mostly filled since 2007, lands to the west of the canal are still being affected by drainage from Merritt Canal, and lands to the south are still being affected by the unfilled East-West Stair-Step Canal. Additionally, the main flow-way through the old development enters from the north in the vicinity of Merritt Canal, and arcs close to Prairie Canal in the north-south middle of the project area before curving west again to where the Faka Union Canal crosses Tamiami Trail. Thus, when Merritt Canal is filled, we expect to see additional hydrologic restoration along Prairie Canal, as well as additional improvement in the southern portion of the area when the East-West Stair-Step Canal is plugged. While plugging Prairie Canal is providing some benefits to the inland portion of the project area, few, if any, of these benefits are reaching the estuarine areas because most of the newly created overland flow is being recaptured by the East-West Stair-Step Canal, from which it is routed as point discharge into Faka Union Bay.

EXOTICS MAPPING AND CONTROL

Mapping of exotic and nuisance vegetation continued in WY2013 within the footprint of the filled Prairie Canal, the cleared road and house demolition footprints east of Merritt Canal, and the soil inversion sites off Miller Boulevard. Exotic control efforts were also conducted during the water year. These mapping and control efforts are documented in Attachments C and D.

VEGETATION TRANSECT MONITORING

Vegetation monitoring will not be required again until WY2014. The report should be provided as an attachment to next year's annual report.

WILDLIFE MONITORING

Aquatic fauna monitoring for the Merritt Canal phase will begin in the first wet season following the first full year after the canal has been filled. Aquatic fauna will initially only be sampled at plots near monitoring wells next to or east of the Merritt Canal, as water levels further west will still be affected by Faka Union Canal drawdowns. These monitoring events are not scheduled until after Merritt Canal is filled, because no detectable benefits are expected to be realized until after the canal filling is completed and water levels have had a chance to assume a

natural hydrologic cycle. For the other wildlife and estuarine parameters, monitoring will commence after all three pump stations are operational, the entire Picayune Strand Restoration Project is complete, and one full wet season has passed.

WORKS CITED

Abtew, W., L. Cadavid and V. Ciuca. 2013. Chapter 2: South Florida Hydrology and Water Management. In *2013 South Florida Environmental Report – Volume I*, South Florida Water Management District, West Palm Beach, FL.

Duever, M. 2008. The Pre-Restoration Status of Wetlands Within and Near Picayune Strand. South Florida Water Management District, West Palm Beach, FL.

USACE and SFWMD. 2004. Comprehensive Everglades Restoration Plan Picayune Strand Restoration (Formerly Southern Golden Gate Estates Ecosystem Restoration) Final Integrated Project Implementation Report and Environmental Impact Statement. United States Army Corps of Engineers, Jacksonville, FL and South Florida Water Management District, West Palm Beach, FL.

Attachment A: Specific Conditions and Cross-References

Table A-1. Specific conditions, actions taken, and cross-references presented in this report for the Picayune Strand Restoration Project, Phase 1 – Prairie Canal Backfill and Road Removal Component (CERPRA permit 0221670).

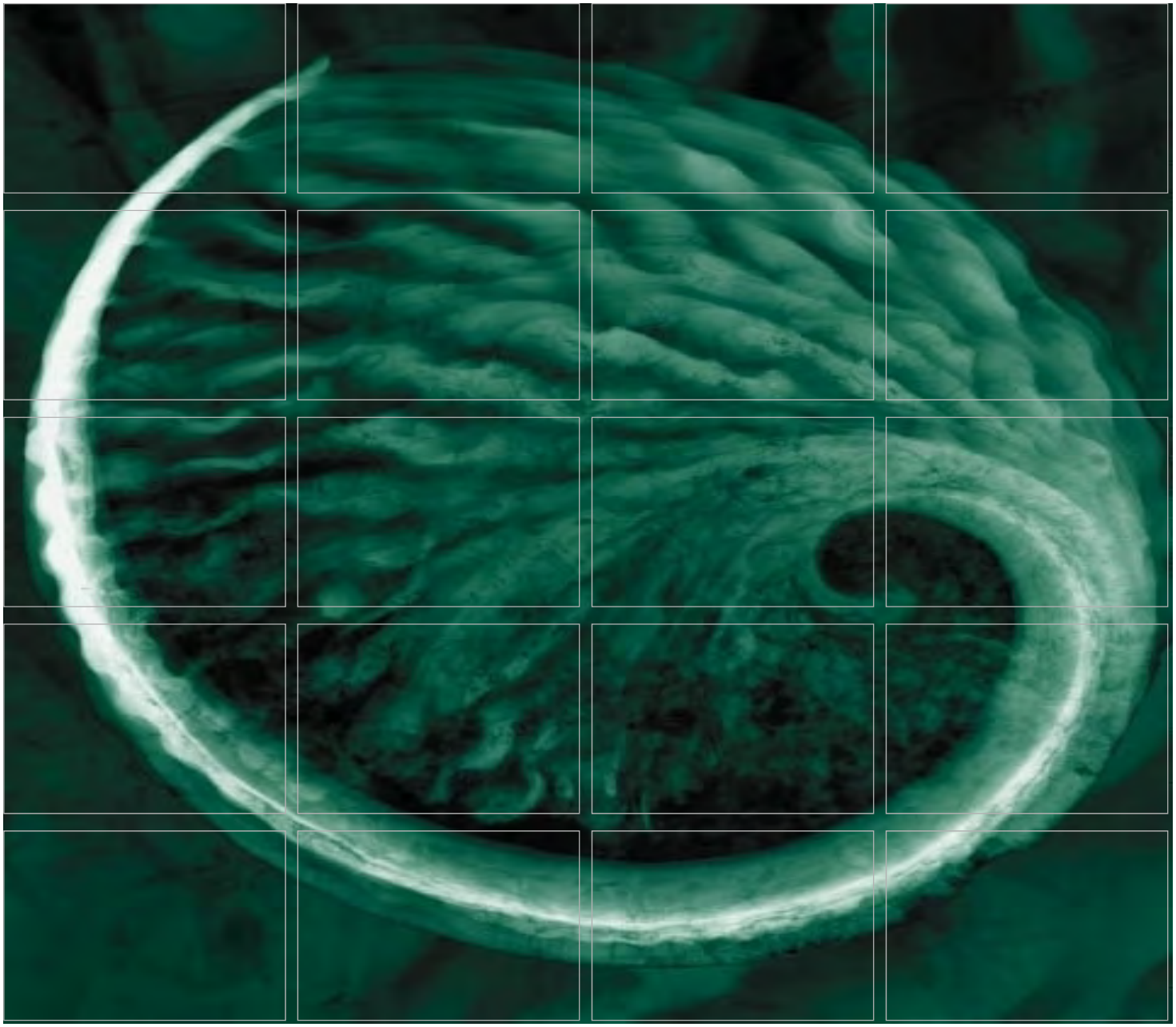
Specific Condition	Description	Applicable Phase	Action Taken	Reported in 2014 SFER Vol. III, App. 2-1 in:			
				Narrative (page #'s)	Figure	Table	Attachment
9	Water Quality	Pre-construction and during construction until Prairie Canal is fully filled/plugged	Because Prairie Canal has been backfilled, water was not flowing at any of the water quality stations during WY2013, so monitoring was not conducted.	6			
9	Weather: Rainfall and Evapotranspiration at Station SGGEWX	Post-construction	Continuous automatic weather recordings were collected.	6 - 9	2 - 4	3 - 4	B
9	Water Levels at 7 Stations: SGT1W5 (formerly SGGE5SW) SGT2W5 (formerly SGGE10SW) SGT2W6 (formerly SGGE11SW) SGT3W5 (formerly SGGE16SW) SGT3W6 (formerly SGGE23SW) SGT3W7 (formerly SGGE17SW) SGT4W6 (formerly SGGE22SW)	Pre- and post-construction	Continuous water level recordings were collected.	9 - 14	5 - 112	5	B
9	Vegetation Transects	Pre- and post-construction	Vegetation monitoring is no longer required every year. It will not be required again until WY2014 (Year 7 post-construction).	15			
9	Wildlife Monitoring	Pre- and post-construction	Wildlife monitoring is no longer required.	15 - 16		4	
17	Project Status	All	Project status is provided.	5 - 6			
9	Hydrologic Improvement	Pre- and post-construction	This year, water levels were not monitored in the 24 groundwater wells monthly in Fakahatchee Strand. Water level was continuously recorded in 7 groundwater wells within the project area.	15			B
9	Exotic Footprint Mapping and Control	Post-construction	Invasive native and exotic species were mapped and controlled along the construction footprints.	15			C, D

Attachment B: Hydrologic Data

This project information is required by Specific Condition 8 of the Picayune Strand Restoration Project, Phase 1 – Prairie Canal Backfill and Road Removal Component permit (0221670), and is available upon request.

Attachment C: Picayune Strand Restoration Project Restored Footprint Exotics Mapping and Control Coordination, Annual Summary Effectiveness Assessment Report

This report, dated June 15, 2013, was provided to the South Florida Water Management District by Environmental Resources Management under Work Order #4600001953-WO3.



Picayune Strand Restoration Project
Restored Footprint Exotics Mapping and Control Coordination–*Annual Summary Effectiveness Assessment Report (June 2013)*

Prepared for:
South Florida Water Management District
Fort Myers Service Center
2301 McGregor Boulevard
Fort Myers, Florida 33901

Work Order No. 4600001953-WO3

June 15, 2013

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South Florida Water Management District

Picayune Strand Restoration Project Restored Footprint Exotics Mapping and Control Coordination

Annual Summary Effectiveness Assessment Report (June 2013)

Work Order No. 4600001953-WO3

June 15, 2013

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1.0 INTRODUCTION

Environmental Resources Management-Southeast, Inc. (ERM) was retained by the South Florida Water Management District (SFWMD) to provide Biological/Ecological Monitoring, Assessments, Consultation, and Coordination Services under Contract No. 4600001953, dated June 30, 2010. Work Order No. 4600001953-WO3, between the SFWMD and ERM, was issued for Exotic and Nuisance Native Vegetation Control Coordination and Vegetation Monitoring for the Picayune Strand Restoration Project. At the request of the SFWMD, this work is being performed by ERM and our subcontractor, The Institute for Regional Conservation (IRC), which has been providing such services related to the Picayune Strand Restoration since 2008.

The scope of work included in the subject Work Order includes mapping exotic and nuisance vegetation within the footprint of the filled Prairie Canal, the cleared road and house demolition footprints east of Merritt Canal, and the soil inversion sites off of Miller Boulevard. The scope of work also included the coordination of exotic control efforts conducted by Applied Aquatic Management, Inc. (AAM), which is operating under separate contracts with the SFWMD and US Army Corps of Engineers (ACOE), and Earth Balance, Inc. (EB) which is operating under a separate contract with the SFWMD.

ERM's Work Order was executed by the SFWMD on March 1, 2011; however, the documentation of vegetation monitoring and exotic control efforts reported under the subject work order dates back to February 1, 2011. The Annual Summary Effectiveness Report for FY2012 documents project work from November 8, 2011 to September 7, 2012, which marked the completion of re-treatments of the demolition sites of the Prairie Canal phase. Because of a delay in the availability of funds from the SFMWD during the past fiscal year, FY2012 funds were utilized into FY2013, beginning with treatment of fall flowering grasses. This Annual Summary Effectiveness Report for FY 2013 differs from previous reports in that it covers through June 2013 only, a departure from previous reports.

This Annual Effectiveness Summary Report for FY 2013 documents the scope and effectiveness of control treatment efforts by the District's contractors. The report documents our assessment of exotic and invasive species cover data since the previous year treatments. Therefore, the coverage data presented in this report were collected in FY 2013 to detail the areas treated by the field crews; however, changes in conditions noted in the field and discussed herein are based upon comparison of the FY 2013 data vs. post-treatment conditions documented in FY 2012, as

summarized in the Annual Effectiveness Summary Report for FY 2012 (ERM 2012).

2.0 METHODS

ERM's subcontractor, IRC, surveyed and mapped exotics by vegetation type and provided the data directly to the exotic control contractors funded by the SFWMD and ACOE. Providing data directly to the contractor represented the most cost-effective method for data transfer. IRC also conducted follow-up surveys to assess effectiveness of treatments. Two geodatabases were utilized: one to record field data and the other to delineate exotic infestations by vegetation type and track treatment.

2.1 FIELD DATA COLLECTION AND GEODATABASE

Initial and subsequent annual field surveys were conducted of the contract area to determine invasive species cover at full recovery post-treatment (i.e., just prior to the next treatment). These surveys enabled the direction of new control efforts and evaluated the success of previous treatments. Ground-truthing methodology consisted primarily of vehicle (or bicycle) surveys along the removed road footprints, with foot surveys conducted in native vegetation types around old home sites and in areas adjacent to the footprints. Field ground-truthing focused heavily on known and suspected areas of exotic plant species infestations in the priority areas set by SFWMD. Remote sensing was utilized to determine areas of suspected exotic plant species infestations, based on similar aerial photograph signatures. These efforts followed general construction schedules for PSRP, relating mostly to time-since-construction/land clearing activities. Therefore, surveys are essentially based on stratified random sampling, covering as many signatures as possible in the field.

Field data were recorded in the IRC_Master_GDB.mdb geodatabase (ArcView 9.3 personal geodatabase), based on the FNAI Florida Invasive Plants Geodatabase project (http://fnai.org/invasivespecies.cfm), with modifications. Taxonomy for all plant species in the geodatabase follows Wunderlin and Hansen (2011). All Florida Exotic Pest Plant Council (FLEPPC) Category I and II species were recorded in the field, as they were in the FNAI methods (FLEPPC 2011) (http://www.fleppc.org/list/list.htm). Modifications included the expansion of the scope of species mapped, including native nuisance species and some non-FLEPPC-listed exotic species. Additional exotic species, not yet listed by FLEPPC, which have been noted to exhibit invasive behavior in Collier County, included West Indian Pennisetum (*Pennisetum umpolystachion*) and signal grass (*Urochloa arrecta*). Additionally, species that may or may not exhibit invasive behavior, such as smutgrass (*Sporobolus indicus* var. *pyramidalis*) and shrubby false

buttonweed (*Spermacoce verticillata*), among others, were mapped. These species, along with several other less common species, covered nearly all roadsides prior to clearing in the Picayune Strand project area. These species will be monitored to determine if they begin to become establish in the "undisturbed" adjacent areas in a manner that would be considered "invasive". Persistent landscape species at home sites were mapped, whether they were FLEPPC-listed or not, in the event these species become a problem in the future. Two native species, cattail (*Typha domingensis*) and common reed (*Phragmites australis*), that have the potential to become nuisance species were also mapped.

Another important departure from the FNAI methodology was the incorporation of survey track logs (polyline feature class) with percent cover of dominant exotic species along the track route to strengthen the data set for production of polygon maps. Lastly, additional vegetation type data and additional point data were collected beyond the original FNAI geodatabase scope.

Hand-held Trimble Geo-Explorer and Thales Mobile Mapper GPS units were utilized in the field for data collection. Both units have ArcPad software and were utilized primarily with one polyline feature class (discussed above) with custom designed data fields (drop-down menus for vegetation type and exotic plant species density/cover codes exported from the geodatabase (IRC_Master_GDB.mdb). Five point feature classes were utilized to further document other exotic species, rare plants, rare or exotic animals, other points of interest, and fixed point photographs. Both GPS units allow for the use of digital aerial photography while in the field to help ensure location of signatures in question.

Polyline data were collected by streaming data by distance (5m). When more precise vertices were needed (<5m) they were added to the polylines manually, while streaming. Each time a new vegetation type or the same vegetation type with distinctly different exotic species canopy coverage was entered in the field, a new line segment was initiated. Streaming continued until either vegetation type or exotic species canopy coverage changed, at which time the segment was ended. The fields of the associated database were populated accordingly. When more precision was needed, such as narrow (<5m wide), but distinct vegetation types, manual points (using the 30 point averaging feature) were taken to assist when digitizing. Besides vegetation type and canopy coverage of exotics, a comments field was utilized to describe co-dominants to assist in final habitat type determinations for the polygon map. These data were entered in the IRC_Master_GDB.mdb geodatabase in the "field_survey_tracklog" feature class.

While conducting initial surveys of road footprints within the Faka-union and Merritt phase and logging trams in Prairie Canal phase, a temporary feature class was created to add fields with drop-down menus to record data for exotics and vegetation types visible in areas immediately outside (adjacent) of the footprints. These data primarily consisted of vegetation type and Brazilian pepper (*Schinus terebinthifolius*) cover, depending on visibility from the trails in the center of the cleared road footprints. These data will be processed and added to the 'field_survey_tracklog' feature class, with adjacent habitat data converted to text in the comment field.

Exotic species with less extensive coverage were recorded into a point feature class closely following the FNAI methodology. For example, common species such as Brazilian pepper generally were recorded using the polyline method. Uncommon exotic species, incidental occurrences, and those without distinct patches (i.e., not evenly distributed within a vegetation type), were primarily recorded as points. These species included, but were not limited to cogongrass (*Imperata cylindrica*) and old world climbing fern (*Lygodium microphyllum*). All species noted in the field were incorporated into the polygon map following fieldwork.

Observations of threatened or endangered plant species were recorded using the GPS, as well as notes on abundance, phenology, and host plant (for epiphytes). State of Florida-listed orchids and bromeliads were the most commonly recorded species, none of which were Federally-listed species. Areas with a high probability of rare plant occurrence were not given preference for ground-truthing. Instead, rare plants were observed by chance, while focusing on the primary goal of traversing as many exotic plant species-infested habitat types as possible. These data were entered in the IRC_Master_GDB.mdb geodatabase in the "rare_plant_pts" feature class.

Occasionally, when near the center of a characteristic vegetation type, exotic plant species infestation, or other ecologically significant landscape feature, a fixed-point photograph location was established. These locations were not marked in the field; however, a GPS point was collected and stored in the "Photo_pts" feature class in the IRC_Master_GDB.mdb geodatabase.

Photographs were taken in cardinal directions starting with the north, and then shooting adjacent areas in a clock-wise pattern. Any interesting plants or features were also photographed with a zoom lens. Most photographs were taken in portrait orientation due to the thick vegetation, and additional photographs of the canopy were taken occasionally. Photographs from each fixed point were stored in a separate directory and provided in digital format to the SFWMD.

An additional point feature class was maintained for observations of any other interesting landscape features. This included plant species not previously known from PSRP (but not considered rare in South Florida), as well as other features, such as abandoned camps, junk piles, etc. Vegetation type features needing more precision than streaming with the polyline were recorded into this feature class. The referenced point feature class averages 30 location coordinates, instead of simply the first location coordinates, as used in the polyline streaming method. This is often the case for small unique vegetation types in areas of poor GPS signal, such as dense canopy areas with high, multipath error. These data were recorded in the "Misc_pts" feature class in the IRC_Master_GDB.mdb geodatabase.

Finally, animal signs or direct observations of rare or exotic animals were occasionally recorded as point data. These generally included visual observations of individuals, burrows, nests or signs of any significant finds within PSRP boundaries. These data were stored in the "rare_animal_pts" feature class in the IRC_Master_GDB.mdb geodatabase.

2.2 POLYGON GEODATABASE

A polygon geodatabase, PSRP_vegetation_GDB.mdb, was utilized to synthesize exotics survey data from the IRC_Master_GDB.mdb geodatabase in a final format. Annual updates of exotic species cover recorded in this geodatabase reflect full-recovery, post-treatment (i.e., immediately before next treatment) exotic species cover values. The polygon map was digitized manually, initially starting with existing data from Natural Resources Conservation Service (NRCS) vegetation map (Burch et al. 1997) and past maps done by Mike Barry, as a Division of Forestry employee in 2002-2004. These data were used as a base and were modified as ground-truthing progressed section by section. Existing and historical (1940) vegetation types were recorded along with exotics cover data, where possible.

The polygon geodatabase is an on-going work-in–progress, which can be updated over time with the addition of new ground-truthing data and editing the polygons. Ground-truthed areas can be viewed as "complete" data, while other areas remain in "draft" data format, until additional data are collected. "Draft" areas have been based on aerial photo-interpretation and extrapolation/interpolation of the closest ground-truthing data. For example, this fiscal year, data taken from road footprints was extrapolated to signatures between roads for the Merritt

phase. A 'Yes/No' field was included for all polygons, indicating if the polygon had been ground-truthed; however, it is important to note that only a portion of the larger polygons with 'Yes' values may have been actually ground-truthed. This is because the Yes/No field is populated after hand-digitizing polygons by selecting polygon records that intersect the field survey track log. If the track log enters a large area of similar signature, it was assumed to be the same, until shown differently with additional field data.

A variety of existing data resources went into the production of the polygon vegetation geodatabase. Aerial photography utilized for this project ranged from infrared to true color, from 1995 to 2012. Black and white photography from the 1940s was utilized for historical vegetation types. As mentioned above, actual GIS data from broader-scale mapping efforts done by NRCS (Burch et al. 1997), prior to the subject project, served as a base for the development of a more detailed, ground-truthed map. In addition, elevation data processed from 2007 LiDAR data were utilized to delineate polygons. These relatively recent elevation data have greatly increased the accuracy of the polygons. Finally, aerial sketch mapping data received from SFWMD in 2011 also were utilized to populate exotic cover fields.

All of the data in the ground-truthing feature classes (points and polyline) were incorporated manually into the polygon geo-database. Large polygons generated from existing NRCS layers and Florida Department of Forestry (FDOF) polygons formed the base layer. Subsequently, polygons in ground-truthed areas were further modified, following aerial photograph signatures identified by the field survey track log feature class. Multiple years of aerial photography were examined to assist with signature recognition. The 2007 LiDAR data also were utilized when digitizing polygons to discern differences where aerial signatures were ambiguous.

Fields in the attribute table of the polygon feature class were populated for vegetation types for (i) current conditions, (ii) 1940's or "pre-drainage" conditions, and (iii) percent cover of exotic species. Field notes from comment fields in the field geodatabase were entered into the polygon attribute table when applicable. All point feature classes were examined while digitizing to help identify and populate data fields.

Vegetation types followed the Comprehensive Everglades Restoration Plan (CERP) codes (Rutchey et al. 2006); see:

http://science.nature.nps.gov/im/units/sfcn/docs/Vegetation%20Classification%20-%20v6.15.09.xls.

Any vegetation types not found in the referenced report, but encountered in PSRP during field work, will be proposed for addition to the classification system. If acceptable to the SFWMD, the vegetation types will be entered into the system. Other vegetation classification systems were secondarily designated using crosswalks created for the purpose of automatically populating data fields from the CERP codes. FNAI natural communities were provided along with CERP habitat types for each habitat type polygon, following the FNAI natural communities' guidelines (see: http://www.fnai.org/NaturalCommGuide.cfm).

Florida Land Use Cover and Forms (FLUCFCS) were also utilized, based on FDOT definitions (FDOT 2009), but these general codes were not updated following recent evaluation of the system by Florida Fish and Wildlife Conservation Commission (Kawula 2009). NRCS (Burch et al. 1997) vegetation types were re-populated using the crosswalk. The NRCS crosswalk was utilized originally to populate general (Level 2 or 3) CERP fields in the base layer of the polygon geodatabase, but recent mapping efforts are at a much more detailed scale, even without ground-truthing data.

Existing ground-truthing data were incorporated into the polygon map for a specific area by hand digitizing polygons around signatures crossed and identified by polylines from the field survey track log feature class. Subsequent digitizing continued outward (extrapolation) from the ground-truthed areas. Therefore, the attribute table was populated with values based on aerial photograph signature interpretation and LiDAR data, according to similarity of the closest ground-truthed polygons. Exotic species coverage data were entered into the attribute table, according to general similarity and proximity to ground-truthed signatures.

A Yes/No field in the geodatabase identifies which polygons intersect with ground-truthing point or polyline data. As noted earlier, not all areas of all polygons were ground-truthed; therefore, when interpreting areas actually ground-truthed, the line data should be viewed overlaying the polygon map. Some signatures in areas not ground-truthed (i.e., extrapolated areas) also may have employed lower precision habitat type classifications of the South Florida vegetation classification system, if signatures were less than obvious. As a result, these areas should be identified as important for future ground-truthing efforts when resources are available. Finally, when digitizing and populating the fields of the attribute table in areas not yet ground-truthed, areas with signatures that were difficult to discern, often included comments such as "Needs

Ground-truthing" or may mention alternative classification system values that may be applicable.

2.3 COORDINATION OF EXOTIC CONTROL CONTRACTORS

IRC was available for onsite orientation of the exotic control contractor upon the initiation of each control effort. IRC was also available as needed for interpretation of maps, plant identification, discussion of priorities, or adjustment of control methodologies during treatments. Survey data in the form of maps and point data were loaded into the contractor's Garmin GPS units to ensure the treatment of all known locations of invasive exotics.

Contractor's progress was tracked by collecting GPS units utilized by the contractor. Any new locations of invasive exotics found by the contractors were also added to the geodatabases. Using the crew's weekly GPS track logs also allowed IRC to go directly to known infestations that lacked track data to determine if the locations had been overlooked, the location simply lacked signal, or if crew members without GPS units had performed the treatment. Spot assessments were conducted in the field randomly throughout the year to ensure ongoing treatments did not miss such areas, while the treatment crews were mobilized. Fieldwork by IRC for spot assessments included taking GPS track logs into the 50-foot buffer areas around the cleared areas to verify the distance treatment had extended into the buffer area and to assess how much was missed or re-sprouting. Emphasis was placed on identifying areas missed by the contractor to allow additional treatment, before they demobilized from the area.

2.4 ASSESMENT OF EFFECTIVENESS OF TREATMENTS

Bimonthly Status Reports, including status maps, noting exotic and nuisance vegetation treatment areas have been submitted to the SFWMD. Problems encountered during treatments were discussed, as well as justifications for priorities or actions taken in the field. Lists of exotic and nuisance, vascular, plant species observed within the footprints were prepared using taxonomy following Wunderlin & Hansen (2011). At the end of the fiscal year, final reports have been prepared to summarize treatments and to assess effectiveness of the previous year's treatments.

Annual field surveys were conducted of the contract area to determine invasive species cover at full recovery post-treatment (i.e., just prior to the next treatment) to direct new control efforts and evaluate the success of

previous treatments. As much as possible, the field teams re-visited the areas treated in the previous fiscal year. Most of the survey data are typically collected from February to July; however, starting in fiscal year 2011, initial survey work for new areas also occurred in the fall and winter months. Initial surveys are more time consuming than annual re-visits, making the earlier start necessary.

Re-surveys for this report are as yet incomplete due to the change in timing of this report in June, as some of the logging trams in the Prairie Canal phase have not been surveyed, as yet. These will be completed in the next month, prior to re-treatment, which also has not occurred. Therefore, some of the data in the tables provided herein may change when data for the entire fiscal year is presented again in September 2013.

New data were "cleaned-up" in the geodatabase (IRC_Master_GDB.mdb) and then utilized to update the polygon geodatabase (PSRP_vegetation_GDB.mdb, see section 2.2). Exotics cover values for each year have been maintained in the referenced geodatabase. As treatments have continued over multiple years, values have varied less, as target species typically remain at the same low cover values (i.e., maintenance levels). However, lower priority species, which have not been targeted, often require more adjustments.

Comparisons were made and maps produced showing cover by all exotic species combined, by FLEPPC category and by groups of species targeted by control efforts. Combined exotic species cover estimates were made by summing the median values of cover classes (i.e. <1% = 0.5, 1-5% = 3, etc.) for each polygon by the designated group in an external table linked by the OBJECTID field in the PSRP_Vegetation_GDB.mdb geodatabase. In this manner, maps can be generated by using the OBJECTID field in ArcView, and queries using Access can be utilized for summarizing the extent of infestations by other fields in the geodatabase, such as phase, footprint, and habitat type.

As discussed in past reports, using the groups of summed data can result in misrepresentations. Therefore, individual species data should be consulted when questions arise. Using total invasive species cover would result in an overestimate, if for example; one or more exotic species was growing beneath another exotic species. If only one or two individuals (<1%) of multiple species are found in a large polygon, the program would default to the next one or two cover classes (1-5% or 5-25%), thereby generating an overestimate. In general, the more invasive species found in a polygon, the higher the probability of overlapping cover, which could result in an overestimation. This is especially the case where both

woody and herbaceous species are present, with each group occupying different strata of the same patch of ground.

To develop a summary of the study area, cover class median values (i.e., <1% = 0.5, 1-5% = 3, etc.) are multiplied by acreages and tallied by the groupings for subsequent analysis. It should be noted that these coverage estimates are based on many independent locations, or records in the geodatabase. The final sums for acreage by cover class have been compared to previous years. If target species values increased, an effort was made to understand why, and recommendations have been made to correct the problem. In some cases, this leads to management decisions to discontinue treatment of specific targets, as current methods were not working, or no alternative methods were possible, given budgetary or other factors.

3.0 RESULTS AND RECOMENDATIONS

This report summarizes work completed by ERM and IRC under ERM's contract with the SFWMD and the exotic and native nuisance vegetation control efforts of Applied Aquatic Management, Inc. in Fiscal Year 2013 through June 1, 2013. This report is not timed with the completion of all treatments planned for this fiscal year because the District's multi-year contract with ERM terminates on June 30, 2013. In previous years, the Annual Summary Effectiveness Report has summarized work completed under the budget for the full fiscal year. As a result, the manner in which work and field conditions have been documented in this report departs from the approach in prior years.

SFWMD-funded treatments discussed in this report begin with utilization of FY 2012 funds from SFWMD in Merritt Canal phase demolition sites because acquisition of funding was delayed last fiscal year (ERM 2012). Next, work began on the ACOE-funded treatment of jaraguá. Subsequently, FY 2013 funds were utilized for the re-treatment of Prairie Canal and Merritt phase road, canal, and logging tram footprints, and demolition sites. No work in the Faka-union Canal phase has been completed to date.

Assessment of overall coverage by exotic and nuisance species was performed by comparing 2013 cover to data for the previous year. In general, FLEPPC-listed exotic and nuisance species have been maintained at or below maintenance levels in the Prairie Canal phase footprints and demolition sites, Merritt phase cleared footprints, and some headway has been made in the Merritt phase demolition sites. The cover values presented herein represent pre-treatment levels, or full recovery, since the treatments completed during the last fiscal year.

3.1 WEATHER AND WATER LEVELS

Typically at the end of the fiscal year we report annual statistics of temperature, precipitation, and water levels. However, due to the timing of the report, we will defer such details to the report to be prepared in September 2013. This is specifically due to the rainy season having just begun and not knowing what the hydrologic period will be like, especially for the Prairie Canal phase, which may influence cover assessed in the next fiscal year. The previous Annual Effectiveness Summary Report discussed how lack of rainfall influenced vegetation (ERM 2012). Water levels remained low for the most part (October 2012 being an exception)

throughout the period reported herein and, thus, were not a factor in treatments or in limiting upland species cover.

However, brief mention of the most important variables affecting treatments is warranted. A frost occurred on December 22, 2012, but the damage appeared to be light and only in the very open areas. The most significant impact of the freeze was making treatment of lantana more difficult with foliar spraying. Eventually, this species will be treated using Garlon IV when Brazilian pepper treatments are conducted again.

3.2 INITIAL GARLON TREATMENTS WITHIN MERRITT CANAL PHASE DEMOLITION SITES (Continued from FY 2012)

Upon completion of the exotics re-treatments for the Prairie Canal footprint and demolition sites, for fiscal year 2012, ending on September 7, 2012, crews shifted over to the Merritt Phase Demolition sites. These treatments of Brazilian pepper were conducted between September 10, 2012 and October 29, 2012. Crews could continue to work at this location, as water levels had not yet risen due to the intact drainage system. Crew efforts began where they previously left off with initial treatments at the end of 64th Ave SE west of Merritt in the unblocked section, moving southward covering approximately 549 acres (Table 1, Figure 1). This acreage included several areas of lead tree, Brazilian pepper infestations, and miscellaneous exotic hardwoods associated with former home sites. Lead tree was treated with 30% Garlon IV. Crews worked the areas around the home sites, using abandoned roads and trails as boundaries, to treat all disturbed areas associated with the home sites and the surrounding impacted natural areas. The original plan was to treat exotic grasses, especially cogongrass, at these locations; however, due to the rainy weather that occurred during this time period, crews switched to treating Brazilian pepper and other hardwoods using Garlon IV, which is less likely to be washed off by afternoon rains.

3.3 INITIAL FOLIAR TREATMENTS WITHIN MERRITT CANAL PHASE DEMOLITION SITES (Continued from FY2012)

Approximately 292 acres were covered by crews the week of November 1, 2012 and from November 12 to November 21, 2012 at the demolition sites of the Merritt Phase (Table 2, Figure 2). Crews primarily targeted cogongrass. These areas included disturbed areas in and around multiple abandoned home sites, including at least two large patches of cogongrass, which was partially treated last year. Hand crews carefully and systematically treated areas around these larger sites, so as to target any

smaller patches. Additionally, using ACOE funds, the field crews treated 102 acres at the demolition sites in the unblocked areas just south of 69th Ave SE.

Just prior to foliar treatments, crews had completed initial treatment of Brazilian pepper and other hardwoods. While crews swept the area for Brazilian pepper and hardwoods, they also recorded locations of cogongrass using the GPS units. These locations were loaded into the geodatabase and used to generate maps showing the locations of cogongrass for the crews to eradicate. Additional ground-truthing was conducted in these areas to delineate the larger patches.

3.4 FOLIAR RE-TREATMENTS OF JARAGUÁ WITHIN MERRITT CANAL PHASE AND PRAIRIE CANAL PHASE FOOTPRINTS (Continued from FY 2012)

Approximately 761 acres were traversed using a swamp buggy the week of November 8, 2012 searching for jaraguá (Table 3). Targeting jaraguá in the fall, during the flowering peak, makes it easiest to locate. All of the previously known infestations north of 80th Ave SE in the Prairie Canal Phase and north of 69th Ave SE in the Merritt Phase were treated prior to seed maturation (Figure 3). Because of time constraints and high water during this time period, neither the few small infestations in the southern portions of the Prairie Canal Phase, nor infestations in the southern Merritt Phase (primarily centered on the roads just north and south of Stewart), were treated. However, additional jaraguá infestations were treated in subsequent weeks, while crews targeted other species.

In general, the infestations in the Prairie Canal Phase had not changed appreciably since the last treatments in 2011. These infestations remain small, but persist, with newly seeded individuals around the previously logged points. In the Merritt Phase, jaraguá has expanded substantially, which is not surprising, since areas treated last year had not become fully vegetated. These areas included the cleared road footprints and the roads in the vicinity of the first recorded and largest patch of jaraguá in the PSRP. These observations appeared to suggest that a seed bank may exist, but if we are consistent with treating these areas, we could maintain the presently observed low coverage by this species.

Rigorous treatment of this species is planned again in the fall of 2013. However, because crews are becoming more familiar with this species in its sterile condition, sporadic treatment of this species when found in green condition did occur in subsequent re-treatments, within both Merritt and Prairie Canal phases conducted through June 2013.

3.5 FOLIAR RE-TREATMENTS WITHIN MERRITT CANAL PHASE ROAD AND LOGGING TRAM FOOTPRINT BUFFERS (HAND CREW)

Approximately 1082 acres were covered by a hand crew during the period starting the week of November 29, 2012 and ending April 8, 2013 (Table 4). Emphasis was placed on the re-treatment of large patches of cogongrass (now largely bare ground) and surrounding areas with light and scattered cogongrass (Figures 4 and 5).

A frost occurred on December 22, 2012, but the damage appeared to be light and only in the very open areas. Therefore, frost damage did not influence the re-treatments.

Roughly 226 acres were covered between 58th and 64th Ave SE, west of Merritt Phase where cogongrass infestations are scattered between the roads. Of this, 168 acres were treated between 50th Ave SE and 58th Ave SE, primarily east of the Merritt Phase and especially in the block near the pump station. Last year, the team had treated several large cogongrass patches. Additionally, 102 acres were treated at the demolition sites, in the unblocked areas just south of 69th Ave SE.

One block, between 60th and 62nd West of Merritt, was covered to complete a large, but generally scattered (<25% cover) patch, which had been left unfinished. This was accomplished on a day the crews could not continue planned work due to a controlled burn that escaped (briefly) to the east of the Merritt Canal, making it unsafe to continue working in that area. The extra clean-up of this block will assist significantly with keeping the nearby footprints clean.

A large area was covered along the western edge of the Merritt Canal. Last fiscal year, several large patches of cogongrass were treated using a swamp buggy, but the species persisted in densely vegetated edges. Crews swept these areas, hitting the widely scattered individuals in the woods. Because crews kept finding more cogongrass to spray and were keeping the crew leader busy mixing and filling backpack sprayers, the laborers did get a little carried away in terms of distance from the canal. Though not planned, this will assist in controlling cogongrass in the footprints nearby.

Crews continued south of the unblocked areas working around previously treated patches on the road buffers. They especially focused around 104th to 108th west of DeSoto where several large infestations occurred. The crew completed the initial treatments on patches farther away from the canal. These blocks included some areas of scattered higher ground, so it is important to control cogongrass, as it is unlikely

restoration will flood out the cogongrass in such areas. Hand crews found several new infestations, including several large (around 1-2 acre) patches. These areas have been treated, and we have GPS location data for future re-treatments efforts.

Finally, crews swept portions of the actual cleared footprint where torpedograss (*Panicum repens*) had been noted during initial treatments. This was done to improve control, as torpedograss is difficult to locate in dense vegetation where hand coverage is preferred. Crews were knowledgeable and sprayed a variety of other exotic grass species while sweeping for torpedograss, including Burma reed (*Neyraudia reynaudiana*), vaseygrass (*Paspalum urvillei*), guineagrass (*Panicum maximum*), pennisetum (*Pennisetum purpureum* and *P. polystachion*), and common reed (*Phragmites australis*).

3.6 FOLIAR RE-TREATMENTS WITHIN PRAIRIE CANAL PHASE ROAD AND CANAL FOOTPRINTS AND BUFFERS

Approximately 3,038 acres were covered by an EB crew, funded by SFWMD during this reporting period, starting January 28, 2013 through April 26, 2013 (Table 5). This was a new crew with two licensed applicators and two laborers, utilizing two swamp buggies to re-treat the footprints in the Prairie Canal Phase (Figures 6 and 7).

Percent cover for treatments of most species, especially the highest priority species, such as cogongrass and torpedograss, has been low. However, there were many fairly dense patches of lower priority species, which were not treated last year due to budget constraints. The crews carefully covered the entire footprint and systematically sprayed some of these medium priority species as well.

Specifically, crews have expanded treatments to include thalia lovegrass (*Eragrostis atrovirens*), which had been slowly expanding in previous years. The crews were already familiar with this species from work in Charlotte County. They are also making every effort to hit natalgrass and Bermudagrass in the footprints. Bermudagrass had expanded substantially, as it was not treated last season. Vaseygrass was also targeted, but due to the time of year, we suspect a certain amount will be missed, at least in the southern section. Regardless, crews have demonstrated good abilities to recognize this grass, even prior to flowering.

This new crew was qualified for this effort and has demonstrated good identification skills and sound methodology for systematically covering

the area. They have repeatedly located new cogongrass infestations in the buffer area, showing they are covering the edges, as well.

Work began near 126th and Patterson, moving northward and focusing first on the road and canal footprints (Figures 6 and 7). Then the crew began re-treating the highest priority areas of the demolition sites in the Broken Wing Ranch area, starting north of the tie-back and working towards 79th. At the demolition sites, crews navigated to known points with the swamp buggy, but then got off the buggy to cover the area around these former (primarily cogongrass) patches thoroughly by hand.

Approximately 5.9 acres of Brazilian pepper also was treated at the demolition site at the end of 66th East of Patterson (Table 6). This was treated because a significant amount was missed in earlier re-treatments, largely due to the tangled mess from the dead Brazilian pepper and large amounts of debris and downed fencing remaining at the old home sites.

Re-treatment of portions of the soil remediation sites (only torpedograss) also was initiated April 29th, 2013, which will be reported in the next reporting period. Crews did not attempt a full treatment of the soil sites, only focusing on the most important, known areas of torpedograss infestation.

3.7 MELALEUCA RE-TREATMENTS IN PSRP

Approximately 3,880 acres were covered by an AAM hand crew, funded by FWC, during this reporting period, from February 6 through March 26, 2013 (Table 7) (Figures 8 and 9). The goal was to re-treat areas previously treated in fiscal year 2011. Treatment coverage was accomplished primarily by mobilizing a small hand crew to known locations of infestations, using a swamp buggy. This large area was not 100% traversed using this method, although the crew leader is experienced using this method and does well in locating most infestations. It is understood that some melaleuca may remain hidden in some of the tree islands.

Work began in the Miller extension area where crews previously re-treated dense patches of melaleuca. Crews found modest numbers of re-seeded saplings at most locations. In Bad Luck Prairie, saplings were found at almost all locations. Because this area is so extensive, the crew also encountered and treated several previously missed patches and/or individual larger trees. One such patch was visible from U.S. 41 across the ditch, which the contractor had wanted to spray for almost two years, while traveling that route almost weekly.

After completing the areas south of the canals and Lynch, the crews finished retreating the first block and partially completed the second block, between Everglades and the Miller Canal. Then they moved to the west of the Miller canal and have been working their way northward. They have been treating saplings at almost all locations. While the overall densities of melaleuca have been low, the crew occasionally found small dense patches missed in previous treatments.

Between March 4, 2013 and March 26, 2013, much of the re-treatments had been completed, so most of the time was spent furthering initial treatments in the long blocks between 62nd and 68th (both sides) west of Miller (Figure 9). Treatment coverage in these initial treatment areas was accomplished by mobilizing a small hand crew and walking systematic transects through the blocks. These blocks were 100% traversed using this method, although some dense areas of melaleuca less than one or two meters in height were left when the time to treat them was insufficient. These areas were mapped and will be re-visited. All mature trees and most of the areas with the smaller trees were treated. Work in these dense areas was tedious and slow.

3.8 FOLIAR RE-TREATMENTS WITHIN MERRITT CANAL PHASE ROAD AND LOGGING TRAM FOOTPRINT BUFFERS

Approximately 1,778 acres were covered by a crew of consisting of one licensed applicator and one laborer (AAM), using a swamp buggy (Table 8). This work funded by ACOE during this reporting period. Work started April 9, 2013 and ended May 27, 2013. Emphasis was placed on the re-treatment of the road footprints, differing from the treatments in the Merritt phase discussed earlier in the report (Section 3.5).

Percent cover by exotic grasses, primarily cogongrass were generally low, but crews did encounter additional dense patches never before treated. During this re-treatment crews have expanded targeted species to include natalgrass (*Melinis repens*) and a few other lower priority species, as the control of high priority species has been fairly successful thus far.

The crew began at the southern end of the Merritt phase at the T-canal (Figure 10). They continued northward up to the unblocked area, then worked the cleared area of spoil along the Merritt Canal, checking the large treated patches along the canal. Once north of the unblocked areas, they continued treating the road footprints (Figure 11). Work north of the unblocked areas went much slower due to higher cover by exotics, especially natalgrass, which had not been systematically treated to date.

This AAM crew continues to do exemplary work in the Picayune, working diligently to cover areas thoroughly.

3.9 OVERALL EXOTIC AND NUISANCE SPECIES COVER

It is important to track percent cover of invasive exotic species from year to year to assess the effectiveness of exotic control efforts. Total cover presented in this report represents sampling and pre-treatment cover for fiscal year 2013 and is compared to pre-treatment cover from 2012. The pre-treatment cover for 2013, thus, represents the exotics cover to be treated, and re-treated (what remains alive of the total cover following first treatments) this fiscal year. These data are provided directly to the exotic control contractor, often with commentary on what seems to have been missed or had not been effective the prior year at the specific location to be treated. The direction of change since 2012, as analyzed in more detail in this report, will give additional insight to the overall effectiveness of treatments conducted in 2012 and outlined in the Annual Effectiveness Summary for FY2012 (ERM 2012).

Because of the change in reporting schedule this year (to June), not all footprint surveys or re-treatments for this fiscal year have been completed at the time of this report. Therefore, some of these analyses may be premature, and some of the numbers may change before the report that will be issued in September.

Field Data Collected Fiscal Year 2013

This fiscal year a total of 301 km of polyline data with habitat type and invasive exotic cover were collected and loaded into the field_survey_tracklog feature class of the IRC_Master_GDB.mdb (see Section 2.1) (Table 9). This is less than, but similar to the 464 km of polyline data collected during fiscal year 2012 (ERM 2012).

These data include re-assessment of a majority of the previously treated road footprints, recently cleared logging tram footprints, and sampling of demolition sites in the Prairie Canal and Merritt phases. In the Faka-union phase, a portion of the recently cleared roads and logging tram footprints were sampled for the first time, including habitat and exotic cover data for the adjacent buffer areas outside the cleared footprints. The road and most of logging tram footprints from I-75 south on Everglades to just north of 80th Ave SE were surveyed. Additional surveys may be conducted over the summer, depending on weather conditions and treatment schedules.

While assessing exotics cover, other data were incorporated into the polygon map. Maps with notes taken in the field were sometimes utilized when GPS units malfunctioned or, in some cases, when areas were visited briefly for other tasks, such as field crew coordination meetings. Additionally, new GPS data from exotic control contractors and notes/discussion with the contractor were utilized. Finally, aerial sketch mapping completed in Fiscal Year 2011 also was utilized in map production.

Many additional locations of invasive exotic species were recorded, totaling 889 new points in FY 2013, out of the existing Picayune Strand State Forest total of 8,503 points (Table 10). These points were taken during the field surveys and by exotic control crews, using Garmin GPS units. Data from these units were downloaded weekly.

A total of 60 invasive exotic species and two native nuisance species were mapped using points, polylines, and polygons in areas treated as a part of PSRP (mostly in Prairie Canal and Merritt phases). Over 100 species have been recorded thus far and incorporated into the geodatabase for the entire State Forest. No additional species were added to the geodatabase for Picayune Strand State Forest from the work completed to date in FY 2013, which is not surprising given that most of the demolition sites have already been surveyed. The demolition sites have been the most diverse sources of invasive exotics in PSRP. IRC and herbicide crews will continue to be vigilant for new invasive species, especially as we continue to conduct initial surveys within the Faka-union phase.

We are also tracking several additional non-invasive species. A list from the Merritt demolition sites was presented in the FY 2010 report (Barry 2010). A few, including a spiny legume, have not been positively identified, as yet, but treatments have thus far been effective on this non-native species. Mike Barry currently has a live potted specimen at his residence for identification purposes; it is healthy, but has not flowered.

As noted in Section 2.2 above, these additional field data were incorporated into hand-digitized polygons in the geodatabase. As discussed in Section 2.4 above, comparisons of exotic species cover were made between fiscal years, with this year's report focusing on trends observed since FY 2011 only. As discussed above and in previous reports, consideration of the data must be based on a clear understanding of the potential biases in data groupings.

Prairie Canal Cleared Footprints

Total infested acreage coverage by all exotic and nuisance species

combined in the cleared footprints of Prairie Canal phase in 2013 was 1,764, which is roughly the same as the 1,758 acres recorded in 2012, out of a total 1,768 acres analyzed (Table 11) (Figure 12). Actual acreage covered by invasive exotic species, by summing acreage multiplied by canopy cover (see Section 2.4), was estimated to be 239 acres in 2012 and has risen to 397 acres in 2013 (Table 12). Total percent cover was estimated at 13.5% in 2012 and has risen to 22.4% estimated in 2013.

Total infested acreage by FLEPPC I species has changed little from 1,762 in 2012 to 1,757 in 2013 (Table 11) (Figure 13). However, an increase is observed when actual aerial coverage is calculated, with 47 acres (2.7%) in 2012 and up to 72 acres (4.1%) in 2013 (Table 12). Cogongrass and torpedograss, the only species systematically targeted in last year's treatment due to budget constraints (ERM 2012) did not show an increase. This increase is largely attributable to other species, especially Brazilian pepper and Lantana, which in certain road footprints have become very evident. Also, Burma reed has regenerated at low cover values in many areas, including where they flooded out in 2008. This year EB crews systematically targeted all FLEPPC I species, except Brazilian pepper, which will require work by hand crews on many of the road footprints next fiscal year.

In the cleared footprints, total FLEPPC II species have changed little, reflecting largely that we have not yet targeted all of these species systematically (Tables 11 and 12) (Figure 14). Total cover of FLEPPC II species was 67 acres (3.8% of the site) in 2012 and 66 acres (3.7%) in 2013. Some species, such as caesar weed, have been largely ignored in treatments. Because much of the caesar weed distribution is patchy in larger areas of the footprints, the survey methodology is insufficient to detect subtle changes.

Total infested acres of non-FLEPCC listed Species increased from 1,736 acres in 2012 to 1,748 acres in 2013. Again, this is out of 1,768 total acres, illustrating that nearly all of the cleared footprints have some cover by these non-native species (Table 11) (Figure15). Actual cover has increased from 136 acres (7.7%) in 2012 to 261 acres (14.7%) in 2013 (Table 12). The values for 2012 reported herein are actually lower than those reported last year (ERM 2012). An error in the actual 2012 field survey data collected for 98th Ave SE, which was transferred to the polygon, was discovered, which was corrected following the submittal of the report. Also, although not as dramatic, an increase was observed from 2010 to 2011 and from 2011 to 2012 (ERM 2011, ERM 2012). This illustrates that, in general, we have made headway on more aggressive, targeted, invasive exotic species, such as cogongrass, while the lower priority species continue to spread, since we have not been treating them.

Several species have been targeted and their treatment stepped up (starting in 2011) after noticing their increased cover in the field (ERM 2011, 2012). However, due to budget limitations and what seemed to be low treatment success, many of these species were not treated in the previous fiscal year, most notably Bermudagrass. This year a substantial increase was observed with 327 infested acres in 2012 to 441 acres in 2013, with the actual cover rising from 6.8 (0.4%) to 15.9 acres (0.9%). EB crews resumed treatment of all Bermudagrass in the footprints this fiscal year.

Smutgrass and shrubby false buttonweed have also continued to increase in cover primarily in areas where it has been known to be present (Tables 11 and 12). Although following a few consecutive dry years, the cover by these species may be beginning to actually expand along Patterson south of 88th and especially south of Stewart. Shrubby false buttonweed cover was previous recorded in the 1-5% category over most road footprints, but cover dramatically increased this year to the 5-25% category. Neither of these species are currently being treated. There remains a need to discuss a long-term strategy for this species, as it is possible much of the cleared footprint acreage may remain dominated by this exotic. However, when the Merritt canal is filled these upland species may be eliminated from many areas.

Other species, such as tanglehead (*Heteropogon contortus*), pitted bluestem (*Bothriochloa pertusa)*, and a handful of other species seem to have remained largely unchanged or slightly increasing. All of these species were prevalent in the roads prior to clearing, much like smutgrass.

Thalialove grass (*Eragrostis atrovirens*) has been showing up at an increasing number of locations, including wet areas, such as the Prairie Canal footprint. Also, it has increased in cover since 2012. Although this species does not appear to be invading adjacent natural areas, the increase of this species was enough to warrant action and EB crews treated this species this year.

<u>Prairie Canal Demolition Sites and Their Buffers</u>

Total infested acreage, when combining exotic species from the demolition sites and their buffers in the Prairie Canal phase (largely refers to the Broken Wing Ranch area) was 1,761 in 2012 and 2013, out of the total 1,786 acres mapped and analyzed (Table 13) (Figure 12). Actual coverage has changed little from 87 acres (4.9%) in 2012 to 91 acres (5.1%) in 2013 (Table 14). This suggests that the trend of declining observations since treatments first begin in 2009 (ERM 2011, 2012) may have leveled off.

FLEPPC I species also appear to be leveling off at the Prairie Canal demolition sites, with the total infested acreage remaining high at 1,758 acres out of 1,786 acres analyzed (Table 13) (Figure 13). Actual coverage was 51 acres (2.8%) in 2012 and 49.8 acres (2.8%) in 2013 (Table 14). The decreasing trend has continued from 2009 to 2012 (ERM 2012).

Cogongrass has continued to be the most important target at the demolition sites and their buffers in the Prairie Canal phase, with 373 infested acres in 2012 and 374 acres in 2013, out of the total 1,786 acres covered (Table 13). Actual coverage dropped slightly from 4.4 acres (0.2%) in 2012 to 2.3 acres (0.1%) in 2012 (Table 14). Other species not previously targeted, such as natalgrass, were sprayed this year, which if successful should show a decrease in overall cover of FLEPPC I species. Brazilian pepper was not re-treated this fiscal year.

Total infested acres of FLEPPC II species at the demolition sites and the buffers changed little, being 407 acres for 2012 and 2013 (Table 13) (Figure 14). Actual coverage remained at 13 acres (0.7%) in 2012 and 2013 (Table 14). Coverage by caesar weed has changed little this past year, as most of the effects of the Cobalt wildfire have lessened.

Total acres infested by non-listed invasive exotics had increased from 115 acres in 2012 to 215 acres in 2013 (Table 13) (Figure 15). This increasing trend was also observed and discussed last year (ERM 2012). The increase is probably due to increased light availability at the actual demolition sites where we have treated Brazilian pepper (ERM 2011), as well as increased space available where other more aggressive grasses have been treated. Actual cover was 15 acres (0.9%) in 2012 and 21 acres (1.2%) in 2013 (Table 14). The majority of this cover, as mentioned in previous reports (ERM 2012), is smutgrass. Cover by this exotic was largely restricted to the old home sites, although it is also scattered around trails throughout the demolition site buffers.

Merritt Demolition Sites and Their Buffers

This year, similar to last year, we are lumping the 441 acres of initial treatments (which began in 2010) into the total 5,260 acres of the entire unblocked area in Merritt phase. This includes some areas treated initially in 2012 and 2013, as well as large areas we have not treated and/or ground-truthed. The Merritt phase has demolition sites scattered throughout with abandoned trails, borrow pits, camps, trash piles, corrals, and disturbed areas connecting the actual home sites. We have continued mapping these sites this fiscal year and will continue to treat them, as funds are available. Therefore, following discussion reflects a work in progress.

We currently estimate the total infested acres to be 3,952 out of the 5,258 total acres (Table 15). Actual cover of combined exotic and nuisance species mapped thus far totaled 623 acres (11.9%) in 2012 and 610 (11.6%) in 2013 (Table 16) (Figures 16). Much of the infested acreage mapped to date consists of FLEPPC I species that covered 368 acres (7%) of the area in both 2012 and 2013 (Table 16) (Figure 17).

Thus far, cogongrass treatments are the only treatments from last fiscal year that will be reflected in cover values. Cogongrass was estimated to cover 65 acres (1.2%) in 2012 and 46 acres (0.9%) in 2013 (Table 16). Many large patches of cogongrass have been mapped, the largest of which covered 8 acres. Additional patches were located this year and more indicated by sketch mapping and aerial photograph signatures remain to be ground-truthed and digitized. Therefore, the statistics noted remain preliminary. Nearly all of the large patches are obviously associated with trails or disturbed areas around or linking old home sites.

Total infested cover by FLEPPC II species was 366 acres in 2012 and 377 acres in 2013 (Table 15) with 44 acres (0.8%) and 41 acres (0.8%) of actual coverage in 2012 and 2013, respectively (Table 16) (Figure 18). Non-listed species cover included 661 and 668 acres, respectively. In 2012, actual cover was estimated to be 197 acres (3.7%) and 200 acres (3.8%) (Tables 11 and 12) (Figure 19). Smutgrass is the primary non-listed species mapped. It is important to note that the home sites and their surrounding disturbed areas represent the largest expanses of smutgrass in areas not previously cleared in PSRP, which is likely due to past cattle grazing in this area. Cattle grazing is known to promote smutgrass colonization. These unblocked areas were the most recent areas where active cattle grazing occurred and at least one cow has occasionally been seen this year.

Merritt Cleared Footprints

In 2012 and 2013, respectively, a total of 1,697and 1,701 infested acres out of 1,709 total acres of all exotic and nuisance species combined were mapped in the recently cleared road, logging tram, and some canal edge footprints in the Merritt phase (Table 17) (Figure 16). Actual coverage by exotics was relatively low at 330 acres (19.3%) in 2012, which has increased to 537 acres at present (31.4%) (Table 18).

FLEPPC I species included 1,507 infested acres in 2012, which has increased to 1,647 acres in 2013 (Table 17) (Figures 17). Actual cover was estimated at 71 acres (4.1%) in 2012, which increased to 111 acres in 2013 (6.5%) (Table 18). Despite this measured increase, the primary targets of last fiscal year's treatments showed a decrease. Cogongrass consisted of 153 infested acres in 2012 and 241 in 2013; however actual cover was

estimated at 2.6 acres (0.1%) and 1.8 acres in 2013 (0.1%), respectively. Torpedograss included 37 infested acres in 2012 and 38 acres in 2013, with actual cover estimated at 0.3 acres (<1%) for both years, illustrating that crews have been able to maintain the cover of this exotic to a small area. Burma reed coverage was also successfully reduced, with 275 infested acres in 2012 and 438 acres in 2013. Actual cover went from 6.9 acres (0.4%) in 2012 to 6.0 acres (0.35%) in 2013. The increase in cover by FLEPPC I species is largely due to other species such as Brazilian pepper, lantana, and especially natalgrass. Natalgrass was estimated at 499 infested acres in 2012 and 602 infested acres in 2013, with actual cover increasing from 6 acres (0.36%) in 2012 to 27 acres (1.6%) in 2013. Natalgrass and lantana were systematically targeted this fiscal year.

FLEPPC II species included 1,172 infested acres in 2012 and 1,190 acres in 2013 (Table 17) (Figure 18). Actual cover was 119 acres (7%) in 2012 and 104 acres (6%) in 2013 (Table 18). Caesar weed in some of the logging trams actually decreased in cover without treatment; however, after surveying the areas seedlings began popping up in some areas. As a result, AAM crews begin treating this species in some areas, especially north of the unblocked section.

Non-listed species included roughly 1,596 infested acres in 2012, which increased to 1,628 acres in 2013 (Table 17) (Figure 19), out of a total 1,709 acres, illustrating the widespread distribution of these species. This widespread presence is understandable, since the species were present on nearly all the roads prior to clearing. Actual cover increased from 173 acres (10%) in 2012 to 360 acres (21%) in 2013 (Table 18). As discussed in last year's report (ERM 2012), smutgrass was the most significant species mapped in this group, with smutgrass cover scattered throughout much of the project area. Smutgrass has begun to dominate many areas of the footprints north of the unblocked sections. Tanglehead also now dominates many footprint areas in nearly solid expanses, including the T-canal areas and the northern-most road footprints. These species have not been treated systematically due to budget constraints and owing to the potential they eventually will be controlled in low-lying areas by a longer hydroperiod.

3.9 RECOMMENDATIONS

Typically treatment priorities are discussed in preparation for the next fiscal year. However, because of the earlier date of this report, work continues based on priorities discussed in the last report (ERM 2012). Furthermore, as of yet, some areas have not been re-surveyed this fiscal year. Therefore, priorities will be established at a later date and

documented in the report generated at in September 2013. Nevertheless, at this juncture, a certain priority for the next fiscal year will be treatments of Brazilian pepper in certain areas of logging trams and Prairie Canal footprints where cover has exceeded 5%.

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Tables

Table 1: Acres Covered by Treatment of Brazilian pepper* at PSRP, end of FY 2012											
Treatment	Dates	Location	0	0-<1%	1-5%	5-25%	25-50%	50-75%	75-95%	>95%	Total Acres
Prairie Canal	9/7/2012	Inside Footprint		15.7							15.7
Merritt Canal (SFWMD)	9/7/2012 to 11/29/2012	Demolition Site	9.5	1.3	14.4	0.5	2.6				28.3
		Demolition Site Buffer	347.9	35.0	83.9	23.4	0.1				490.4
		Adjacent to Footprint	0.8	0.4	6.0						7.3
		Inside Footprint	0.3	7.2							7.5
		TOTAL:	358.6	59.7	104.2	23.9	2.7	0.0	0.0		549.1

**** Species Targeted included Brazilian pepper and Lantana, but only Brazilian pepper cover is shown (primary target)***

Table 2: Acres Covered by Foliar Treatment of Cogongrass at Merritt Canal Homesites, PSRP, end of FY 2012											
Treatment	Dates	Location	0	0-<1%	1-5%	5-25%	25-50%	50-75%	75-95%	>95%	Total Acres
Merritt Canal (SFWMD)	11/1/2012 to 11/29/2012	Demolition Site	3.5	7.4	2.2						13.1
		Demolition Site Buffer	45.1	217.0	8.3			0.1	1.2		271.6
		Inside Footprint	6.5	1.5							8.0
		TOTAL:	55.1	225.9	10.4	0.0	0.0	0.1	1.2		292.7
**** Species Targeted included primarily Cogongrass, but other invasives were sporadically treated***											

Table 3: Acres Covered by Foliar Re-Treatment of Jaraguá at PSRP, FY 2012											
Treatment	Dates	Location	0	0-<1%	1-5%	5-25%	25-50%	50-75%	75-95%	>95%	Total Acres
Prairie Canal Footprints and Demolition Sites Re-Treatment	Week of 11/8/2012	Inside Footprint	170.0	109.5	70.2						349.6
		50' outside footprint	12.1	0.1							12.1
		Demolition Site	13.1	2.3							15.4
		Demolition Site Buffer	33.4	0.2	0.5						34.1
Merritt Canal Footprints and Demolition Sites Re-Treatment	Week of 11/8/2012	Inside Footprint	262.5	54.7	3.5						320.7
		Inside Logging Tram Footprint	1.4								1.4
		Demolition Site	16.1	1.5				0.5			18.2
		Demolition Site Buffer	6.3	3.1	0.2						9.6
		TOTAL:	514.8	171.4	74.4	0.0	0.0	0.5	0.0	0.0	761.1

Table 4: Acres Covered by First Foliar Treatment of Priority Species* (ACOE) at PSRP, FY 2013											
Treatment	Dates	Location	0	0-<1%	1-5%	5-25%	25-50%	50-75%	75-95%	>95%	Total Acres
Merritt Canal Footprints Initial Treatment (ACOE)	11/29/2012 to 4/8/2013	Inside Footprint	21.4	39.6	126.1	45.6	6.3				239.0
		Adjacent to Footprint	230.5	165.2	12.2	9.5		1.6	2.7		421.6
		Inside Logging Tram Footprint	4.2	1.2		0.6					6.0
		Merritt Demolition Site	3.0	0.3	8.2	1.2					12.7
		Merritt Demolition Site Buffer	134.0	133.9	120.2	8.8	1.4	2.3	2.5		403.1
		TOTAL:	393.1	340.3	266.7	65.7	7.7	3.8	5.2		1082.4

**** Species Targeted in FY 2013 incuded in these cover estimates are: Cynodact, Eragatro, Impecyli, Lantcama, Panirepe, Neyrreyn, Panimaxi, Paspurvi, Penepurp, Pennpoly, Phraaust, Melirepe, Typhdomi, and Urocmuti***

Table 5: Acres Covered by First Foliar Re-Treatment (SFWMD) of Prairie Canal Footprints and Demolition Sites and Merritt Canal Demolition Sites at PSRP, FY 2013											
Treatment	Dates	Location	0	0-<1%	1-5%	5-25%	25-50%	50-75%	75-95%	>95%	Total Acres
Prairie Canal Footprints and Demolition Sites Re-Treatment	**1/28/2013 to 4/26/2013**	**Inside Footprint**	129.2	268.7	985.8	276.7	21.1	5.8			1687.3
		Adjacent to Footprint	605.6	85.0	35.6	8.7	0.2	0.0			735.1
		Inside Logging Tram Footprint	2.5	0.3	0.4						3.3
		Demolition Site	12.8	12.6	2.6	14.6	9.4				52.0
		Demolition Site Buffer	122.6	146.2	11.8	0.7		0.1	0.2		281.6
Merritt Canal Demolition Sites Re-Treatment with some Initial Treatment	**4/22/2013 to 5/17/2013**	**Demolition Site**	10.0	35.4	67.6	2.2					115.1
		Demolition Site Buffer	24.0	33.4	24.6	7.9	2.0	1.3	4.1		97.2
Miller Canal Phase Demolition Site and Soil Remediation Sites Re-Treatment	**5/1/2013 to 5/8/2013**	**Demolition Site**	0.0		0.4	8.4	0.1	0.1			9.0
		Soil Remediation	0.2	1.4	14.3	30.6	8.7	2.4			57.5
		TOTAL:	906.9	583.0	1143.1	349.7	41.4	9.8	4.3	0.0	3038.2

Table 6: Acres Covered by Treatment of Brazilian Pepper (SFWMD) at PSRP, FY 2013											
Treatment	Location	Dates	0%	0-<1%	1-5%	5-25%	25-50%	50-75%	75-95%	>95%	Total Acres
Cut Stump and Basal Bark	Prairie Canal Demolition Sites	4/8/2013 to 4/9/2013	0.0	2.7	1.8	0.2	1.2	0.0	0.0	0.0	5.9
		TOTALS	0.0	2.7	1.8	0.2	1.2	0.0	0.0	0.0	5.9

Table 7: Acres Covered by Cut-Stump Treatment of Melaleuca at PSRP, FY 2013											
Treatment	Location	Dates	0%	0-<1%	1-5%	5-25%	25-50%	50-75%	75-95%	>95%	Total Acres
Cut Stump	Bad Luck Prairie, Miller Extension up to 66th, West of Miller	2/6/2013 to 3/26/2013	712.1	2,935.6	155.9	37.4	8.1	15.1	15.5	0.0	3,879.9
		TOTALS	712.1	2,935.6	155.9	37.4	8.1	15.1	15.5	0.0	3,879.9

Table 8: Acres Covered by Second Foliar Re-Treatment (ACOE) of Priority Species* at PSRP, FY 2013

Treatment	Dates	Location	0	0-<1%	1-5%	5-25%	25-50%	50-75%	75-95%	>95%	Total Acres
Merritt Canal Footprints Initial Treatment (ACOE)	4/9/2013 to 5/27/2013	Inside Footprint	234.9	379.8	644.6	223.9	25.7				1508.8
		Adjacent to Footprint	18.3	7.6	1.5	0.3		0.5			28.2
		Inside Logging Tram Footprint	45.8	26.7	5.9	4.1					82.5
		Merritt Demolition Site	5.0	3.7	13.6	0.5					22.8
		Merritt Demolition Site Buffer	108.8	16.0	9.7	1.0		0.3			135.9
		TOTAL:	412.9	433.9	675.3	229.7	25.7	0.8	0.0		1778.2

Species Targeted in FY 2013 incuded in these cover estimates are: Cynodact, Eragatro, Impecyli, Lantcama, Panirepe, Neyrreyn, Panimaxi, Paspurvi, Penepurp, Pennpoly, Phraaust, Melirepe, Typhdomi, and Urocmuti

Table 9: Total Distance Surveyed Using GPS with ArcPAD, FY2013		
Method	Meters	Kilometers
ATV	3543.9	3.5
Bicycle	160,571.9	160.6
On Foot	56,558.8	56.6
Standard Vehicle	80,071.6	80.1
	Totals	300.7

Table 10: List of Invasive Exotic Species Logged as Waypoints by GPS into Geodatabase				
EPPC	Full Taxonomic Name	Common Names	2013	Total
I	*Abrus precatorius*	Rosary-pea, Crab-eyes	1	5
I	*Acacia auriculiformis*	Earleaf acacia		57
I	*Albizia lebbeck*	Woman's tongue, Rattlepod		12
	Allamanda cathartica	Yellow allamanda, Golden trumpet		1
	Alpinia zerumbet	Shellflower, Shell ginger		1
	Arundo donax	Giant reed		1
	Bambusa vulgaris	Common bamboo		11
I	*Bauhinia variegata*	Mountain ebony, orchidtree		5
I	*Bischofia javanica*	Javanese bishopwood		3
	Bothriochloa pertusa	Pitted bluestem, Pitted beardgrass		9
II	*Casuarina cunninghamiana*	Beefwood, River sheoak		3
I	*Casuarina equisetifolia*	Australian-pine, Horsetail casuarina		15
	Catharanthus roseus	Madagascar-periwinkle	1	1
	Cortaderia selloana	Pampas grass		1
	Crotalaria pallida var. *obovata*	Smooth rattlebox		1
	Crotalaria spectabilis	Showy rattlebox		1
I	*Cupaniopsis anacardioides*	Carrotwood		1
	Cynodon dactylon	Bermuda grass	29	63
	Dactyloctenium aegyptium	Crow's-foot grass, Durban crowfootgrass		3
II	*Dalbergia sissoo*	Indian rosewood	1	5
I	*Dioscorea alata*	White yam		2
I	*Dioscorea bulbifera*	Common air-potato	3	28
I	*Eichhornia crassipes*	Common Water hyacinth		18
	Epiphyllum phyllanthus var. *hookeri*	Orchid cactus		1
	Eragrostis atrovirens	Thalia love grass	7	25
	Eucalyptus degulpta	Eucalyptus		2
	Eulophia graminea	Orchid	1	37
I	*Ficus microcarpa*	Laurel fig, Indian laurel		2
	Furcraea selloa			1
II	*Hemarthria altissima*	Limpograss		4
	Heteropogon contortus	Tanglehead	20	49
	Hibiscus sabdariffa	Roselle		1
I	*Hydrilla verticillata*	Water-thyme		2
I	*Hymenachne amplexicaulis*	Trompetilla		69
	Hyparrhenia rufa	Jaraguá	14	142
	Hyptis pectinata	Comb bushmint		2
I	*Imperata cylindrica*	Cogongrass	397	1693
	Ipomoea quamoclit	Cypressvine		2
	Kalanchoe daigremontiana	Devil's-backbone		2
II	*Koelreuteria elegans* subsp. *formosana*	Flamegold		1
	Lagerstroemia indica	Crapemyrtle		2
I	*Lantana camara*	Shrubverbena	8	123
II	*Leucaena leucocephala*	White leadtree	4	32
	Litchi chinensis	Litchee		1
	Ludwigia peruviana	Peruvian primrosewillow	4	6
I	*Lygodium japonicum*	Japanese climbing fern	3	9
I	*Lygodium microphyllum*	Small-leaf climbing fern	2	136
	Mangifera indica	Mango		1
I	*Manilkara zapota*	Sapodilla		1
I	*Melaleuca quinquenervia*	Punktree	126	1335
I	*Nephrolepis cordifolia*	Tuberous sword fern		13
I	*Nephrolepis multiflora*	Asian sword fern		25

Table 10: List of Invasive Exotic Species Logged as Waypoints by GPS into Geodatabase				
EPPC	Full Taxonomic Name	Common Names	2013	Total
I	*Neyraudia reynaudiana*	Burmareed, Silkreed	64	350
	Oeceoclades maculata	African ground orchid, Monk orchid		2
II	*Panicum maximum*	Guineagrass	6	29
I	*Panicum repens*	Torpedo grass	30	194
	Paspalum notatum	Bahia grass	8	24
	Paspalum urvillei	Vasey grass	96	155
	Pennisetum polystachion	West Indian pennisetum, Missiongrass	8	30
I	*Pennisetum purpureum*	Napier grass, Elephantgrass	4	40
	Philodendron sp.			2
II	*Phoenix reclinata*	Senegal date palm		1
	Phragmites australis	Common reed	5	51
	Phyllanthus acidus	Tahitian gooseberry tree		1
	Phyllostachys aurea	Golden Bamboo		2
I	*Pistia stratiotes*	Water-lettuce		1
	Pongamia pinnata	Karum tree, Poonga-oil tree		1
I	*Psidium cattleianum*	Strawberry guava		1
I	*Psidium guajava*	Guava		1
II	*Pteris vittata*	China brake		17
I	*Rhodomyrtus tomentosa*	Downy myrtle, Rose myrtle		242
I	*Melinis repens*	Rose Natalgrass	15	106
II	*Ricinus communis*	Castor-bean		1
	Rottboellia cochinchinensis	Itch grass		2
I	*Schinus terebinthifolius*	Brazilian-pepper	1	1445
	Selenicereus pteranthus	Snake cactus, Princess-of-the-night		1
	Senna alata	Candlestick plant		2
I	*Senna pendula* var. *glabrata*	Valamuerto		9
	Sesbania herbacea	Danglepod		2
II	*Sesbania punicea*	False-rattlebox		1
	Sorghum arundinaceum	Broomcorn	1	2
	Sorghum halepense	Johnson grass	2	3
	Sporobolus indicus var. *pyramidalis*	West Indian dropseed	2	35
	Stenotaphrum secundatum	St. Augustine grass		10
II	*Syagrus romanzoffiana*	Queen palm		1
I	*Syngonium podophyllum*	Nephthytis, American evergreen	1	2
I	*Syzygium cumini*	Jambolan-plum, Java-plum		30
II	*Syzygium jambos*	Rose-apple, Malabar-plum		13
	Tabebuia aurea	Caribbean trumpettree		2
II	*Terminalia catappa*	Tropical-almond, West Indian-almond		1
I	*Thespesia populnea*	Portiatree		1
I	*Tradescantia spathacea*	Oysterplant, Moses-in-the-cradle, Boatlily	1	4
	Tradescantia zebrina	Wandering-jew, Inchplant		1
	Triplaris melaenodendron	Long John		1
	Typha domingensis	Southern cat-tail	16	125
II	*Urena lobata*	Caesarweed	1	1468
I	*Urochloa mutica*	Paragrass	1	14
II	*Vitex trifolia*	Simpleleaf chastetree		1
II	*Wedelia trilobata*	Creeping wedelia, Creeping oxeye	1	6
II	*Xanthosoma sagittifolium*	Arrowleaf elephantear		2
	Zamia furfuracea	Cardboard-palm		1
	Ziziphus mauritiana	Indian jujube		8
	Unknown ARALIACEAE			1
	Unknown BRASSICACEAE			1

Table 10: List of Invasive Exotic Species Logged as Waypoints by GPS into Geodatabase				
EPPC	Full Taxonomic Name	Common Names	2013	Total
	Unknown FABACEAE			5
	Unknown *Ficus* sp.	3 veined Ficus sp., un-identified;		2
	Nephrolepis sp.			5
	Unknown POACEAE			2
	UNKNOWN		5	76
	UNKNOWNS	Miscellaneous landscape plants listed in comments of database, no FLEPPC listed species		1
		TOTAL:	889	8503

Table 11: Total Infested Acres by Cover Class and Actual Area Covered by Invasive Exotics in Prairie Canal Cleared Footprints

Category	Period	0% (No Infestation)	Total Infested Acres	Actual Coverage*	<1%	1-5%	5-25%	25-50%	50-75%	75-95%	95-100%	Total Acres**
Total Exotics	Spring 2012	5.4	1762.3	239.0	14.9	660.5	922.3	101.8	51.4	4.6	6.7	1767.7
	Spring 2013	3.6	1764.1	396.8	5.4	163.5	1148.4	312.6	71.3	28.0	34.9	1767.7
Total FLEPPC I	Spring 2012	5.5	1762.2	47.1	728.0	939.7	92.5	0.6	0.3	1.1		1767.7
	Spring 2013	10.8	1756.9	71.8	385.6	1172.2	180.2	17.5	0.3	1.1		1767.7
Total FLEPPC II	Spring 2012	156.0	1611.7	66.6	652.5	752.5	182.7	6.7	17.3			1767.7
	Spring 2013	147.8	1619.9	65.1	616.4	826.9	148.2	11.1	17.3			1767.7
Non-Listed	Spring 2012	31.6	1736.1	136.2	15.5	1119.0	553.4	42.3	5.8			1767.7
	Spring 2013	19.9	1747.8	260.5	4.9	675.9	782.0	236.8	30.7	17.6		1767.7
Foliar Targets	Spring 2012	333.5	1434.2	51.6	383.7	923.3	120.8	0.6	5.8			1767.7
	Spring 2013	141.2	1626.5	86.2	283.0	1035.5	281.2	21.1	5.8			1767.7
Imperata cylindrica	Spring 2012	1583.1	184.6	1.0	181.0	3.6						1767.7
	Spring 2013	1507.5	260.2	1.5	253.2	6.8		0.2				1767.7
Panicum repens	Spring 2012	1555.7	212.0	4.0	120.3	86.5	5.1					1767.7
	Spring 2013	1604.8	162.9	1.1	151.1	11.7	0.1					1767.7
Neyraudia reynaudiana	Spring 2012	1536.5	231.2	1.2	229.7	1.5						1767.7
	Spring 2013	1338.9	428.8	4.6	375.0	44.7	9.1					1767.7
Melinis repens	Spring 2012	1372.7	395.0	10.4	239.7	118.7	36.0	0.6				1767.7
	Spring 2013	1330.2	437.6	11.6	245.2	153.8	38.6	0.0				1767.7
Schinus terebinthifolius	Spring 2012	17.6	1750.1	10.8	1713.0	32.4	3.3	0.3	1.1			1767.7
	Spring 2013	15.7	1752.0	20.9	1423.9	300.6	26.1	0.3	1.1			1767.7
Lantana camara	Spring 2012	1200.3	567.4	6.4	450.8	111.4	5.2					1767.7
	Spring 2013	902.7	865.0	12.8	743.2	76.8	45.0					1767.7
Cynodon dactylon	Spring 2012	1441.0	326.7	6.8	257.6	40.6	28.6					1767.7
	Spring 2013	1326.4	441.3	15.9	283.8	76.0	81.4					1767.7
Spermacoce verticillata	Spring 2012	61.8	1705.9	46.4	735.8	857.0	113.1					1767.7
	Spring 2013	35.8	1731.9	110.8	224.9	970.2	536.9					1767.7
Sporobolus indicus var. pyramidale	Spring 2012	137.4	1630.3	44.9	942.2	550.5	124.2	13.4				1767.7
	Spring 2013	32.1	1735.6	71.6	882.3	548.9	281.8	22.6				1767.7

***Sum of infested acres for each cover class multiplied by the midpoint of the percent cover category**

****Total Acreage considered inside footprint is less than 2011 because some areas re-disturbed prior to re-survey were not included in calculations this year**

Table 12: Summary of Actual Area Covered by Invasive Exotics in Prairie Canal Phase Cleared Footprints					
Category	Spring 2012		Spring 2013		Total Acres
	Actual Coverage*	Percent of Site	Actual Coverage*	Percent of Site	
Total Exotics	239.0	13.5%	396.8	22.4%	1767.7
Total FLEPPC I	47.08	2.7%	71.82	4.1%	1767.7
Total FLEPPC II	66.58	3.8%	65.09	3.7%	1767.7
Non-Listed	136.16	7.7%	260.52	14.7%	1767.7
FY 2013 Foliar Targets	51.58	2.9%	86.19	4.9%	1767.7
Imperata cylindrica	1.01	0.1%	1.53	0.1%	1767.7
Panicum repens	3.96	0.2%	1.12	0.1%	1767.7
Neyraudia reynaudiana	1.19	0.1%	4.58	0.3%	1767.7
Melinis repens	10.38	0.6%	11.63	0.7%	1767.7
Schinus terebinthifolius	10.85	0.6%	20.88	1.2%	1767.7
Lantana camara	6.37	0.4%	12.77	0.7%	1767.7
Cynodon dactylon	6.79	0.4%	15.91	0.9%	1767.7
Spermacoce verticillata	46.35	2.6%	110.76	6.3%	1767.7
Sporobolus indicus var. pyramidale	44.87	2.5%	71.62	4.1%	1767.7
sum of infested acres for each cover class multiplied by the midpoint of the percent cover category					

Table 13: Total Infested Acres by Cover Class and Actual Area Covered by Invasive Exotics in Prairie Canal Phase at Demolition Sites and Buffers												
Category	Period	0% (No Infestation)	Total Infested Acres	Actual Coverage*	<1%	1-5%	5-25%	25-50%	50-75%	75-95%	95-100%	Total Acres
Total Exotics	Spring 2012	24.7	1760.9	87.3	712.8	746.9	260.3	15.5	22.7	2.7		1785.6
	Spring 2013	24.6	1760.9	90.8	679.0	771.0	267.1	15.8	24.9	3.2		1785.6
Total FLEPPC I	Spring 2012	27.3	1758.3	50.7	858.0	779.0	105.1	13.6	0.2	2.4		1785.6
	Spring 2013	27.3	1758.3	49.8	853.7	794.5	93.7	12.8	1.3	2.4		1785.6
Total FLEPPC II	Spring 2012	1379.1	406.5	12.7	94.0	291.6	19.7	0.8	0.4			1785.6
	Spring 2013	1379.1	406.5	12.5	94.0	292.5	18.8	1.2				1785.6
Non-Listed	Spring 2012	1670.4	115.2	15.2	33.3	19.3	40.9	21.1	0.2	0.3		1785.6
	Spring 2013	1570.3	215.3	20.9	41.1	95.4	54.2	22.9	1.4	0.3		1785.6
FY 2012 Foliar Targets	Spring 2012	1396.7	388.9	11.1	297.0	56.7	24.8	9.7	0.2	0.5		1785.6
	Spring 2013	1393.0	392.6	9.1	331.3	35.4	15.8	9.4	0.1	0.5		1785.6
Imperata cylindrica	Spring 2012	1412.8	372.7	4.4	331.7	31.1	9.3	0.3	0.2	0.2		1785.6
	Spring 2013	1411.3	374.2	2.3	365.2	8.7	0.0		0.1	0.2		1785.6
Sum of infested acres for each cover class multiplied by the midpoint of the percent cover category												

Table 14: Summary of Actual Area Covered by Invasive Exotics in Prairie Canal Phase at Demolition Sites and Buffers

Category	Spring 2012		Spring 2013		Total Acres
	Actual Coverage*	Percent of Site	Actual Coverage*	Percent of Site	
Total Exotics	87.3	4.9%	90.8	5.1%	1785.6
Total FLEPPC I	50.7	2.8%	49.8	2.8%	1785.6
Total FLEPPC II	12.7	0.7%	12.5	0.7%	1785.6
Non-Listed	15.2	0.9%	20.9	1.2%	1785.6
FY 2012 Foliar Target	11.1	0.6%	9.1	0.5%	1785.6
Impecyli	4.4	0.2%	2.3	0.1%	1785.6

sum of infested acres for each cover class multiplied by the midpoint of the percent cover category

Table 15: Total Infested Acres by Cover Class and Actual Area Covered by Invasive Exotics in Merritt Canal Phase at Demolition Sites and Buffers

Category	Period	0% (No Infestation)	Total Infested Acres	Actual Coverage*	<1%	1-5%	5-25%	25-50%	50-75%	75-95%	95-100%	Total Acres
Total Exotics	Spring 2012	1306.0	3951.7	623.2	1021.7	1352.6	716.0	433.5	264.1	137.1	26.6	5257.7
	Spring 2013	1305.5	3952.2	610.0	875.8	1506.8	721.7	456.1	244.4	122.5	24.8	5257.7
Total FLEPPC I	Spring 2012	1343.6	3914.2	368.6	1151.1	1619.2	845.3	72.8	142.4	80.5	2.9	5257.7
	Spring 2013	1343.6	3914.2	368.6	1151.1	1619.2	845.3	72.8	142.4	80.5	2.9	5257.7
Total FLEPPC II	Spring 2012	4891.4	366.3	43.6	21.6	71.3	272.8	0.2	0.5			5257.7
	Spring 2013	4880.3	377.4	40.8	47.9	75.7	253.2		0.5			5257.7
Non-Listed	Spring 2012	4597.3	660.5	196.9	17.5	139.0	210.3	138.8	100.4	54.2	0.3	5257.7
	Spring 2013	4589.5	668.2	199.9	17.5	139.3	213.1	140.4	103.5	54.2	0.3	5257.7
FY 2012 Foliar Targets	Spring 2012	3037.4	2220.3	78.4	1710.7	357.6	86.0	11.2	20.6	34.3		5257.7
	Spring 2013	2680.1	2577.6	66.9	1884.1	589.3	56.7	11.0	17.4	19.2		5257.7
Imperata cylindrica	Spring 2012	3271.9	1985.8	64.9	1786.4	85.5	47.9	11.2	20.7	34.2		5257.7
	Spring 2013	3261.1	1996.6	46.2	1825.5	100.7	25.9	7.9	17.4	19.2		5257.7

Sum of infested acres for each cover class multiplied by the midpoint of the percent cover category

Table 16: Summary of Actual Area Covered by Invasive Exotics in Merritt Canal Phase at Demolition Sites and Buffers					
Category	Spring 2012		Spring 2013		Total Acres**
	Actual Coverage*	Percent of Site	Actual Coverage*	Percent of Site	
Total Exotics	623.2	11.9%	610.0	11.6%	5257.7
Total FLEPPC I	368.6	7.0%	368.6	7.0%	5257.7
Total FLEPPC II	43.6	0.8%	40.8	0.8%	5257.7
Non-Listed	196.9	3.7%	199.9	3.8%	5257.7
FY 2012 Foliar Targets	78.4	1.5%	66.9	1.3%	5257.7
Impecyli	64.9	1.2%	46.2	0.9%	5257.7
sum of infested acres for each cover class multiplied by the midpoint of the percent cover category					
***** total acres includes all of the unblocked areas in Merritt Phase but mapping is still incomplete at this time***					

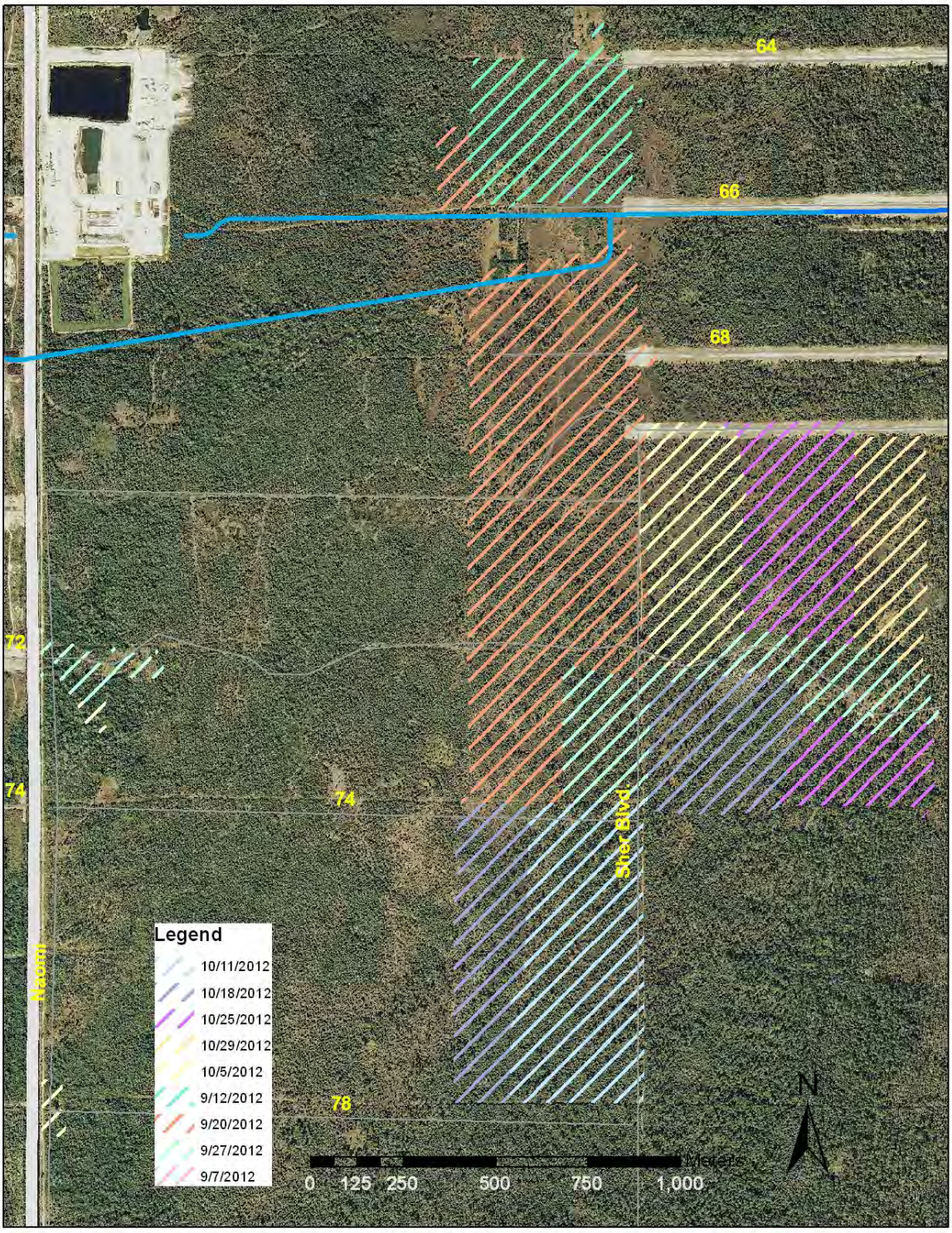
Table 17: Total Infested Acres by Cover Class and Actual Area Covered by Invasive Exotics in Merritt Phase Footprints (Road, Logging Tram, and Some Canal Edge Footprints Combined)

Category	Period	0% (No Infestation)	Total Infested Acres	Actual Coverage*	<1%	1-5%	5-25%	25-50%	50-75%	75-95%	95-100%	Total Acres
Total Exotics	Spring 2012	12.1	1697.0	330.2	99.9	699.3	540.7	122.3	113.4	59.5	61.8	1709.2
	Spring 2013	8.0	1701.2	536.8	42.8	177.6	778.2	317.9	201.5	74.5	108.8	1709.2
Total FLEPPC I	Spring 2012	202.3	1506.9	70.6	612.6	735.0	116.9	1.4	33.2	7.5	0.2	1709.2
	Spring 2013	61.9	1647.3	111.3	434.6	848.2	287.5	36.6	33.2	6.9	0.2	1709.2
Total FLEPPC II	Spring 2012	537.7	1171.5	119.3	441.6	350.9	252.6	56.8	54.0	12.3	3.3	1709.2
	Spring 2013	519.0	1190.2	104.4	418.8	419.4	260.0	47.6	23.4	17.7	3.3	1709.2
Non-Listed	Spring 2012	113.2	1595.9	172.6	215.7	964.3	270.1	42.9	25.0	44.8	33.1	1709.2
	Spring 2013	81.6	1627.6	360.0	66.4	308.2	825.7	261.0	80.4	41.9	43.9	1709.2
FY 2012 foliar targets	Spring 2012	488.3	1220.9	39.7	557.5	535.8	124.4	0.9	0.9	1.4		1709.2
	Spring 2013	328.8	1380.3	68.7	441.1	668.1	245.3	25.8				1709.2
Imperata cylindrica	Spring 2012	1555.9	153.3	2.5	112.9	38.7	0.5	0.6		0.6		1709.2
	Spring 2013	1468.0	241.2	1.8	217.6	23.5						1709.2
Panicum repens	Spring 2012	1672.0	37.1	0.3	36.3		0.8					1709.2
	Spring 2013	1671.4	37.8	0.3	36.9		0.8					1709.2
Neyraudia reynaudiana	Spring 2012	1434.4	274.8	6.9	193.1	53.1	28.2	0.3				1709.2
	Spring 2013	1270.8	438.3	6.0	390.3	26.1	21.9					1709.2
Melinis repens	Spring 2012	1210.4	498.8	6.2	428.5	53.9	16.4					1709.2
	Spring 2013	1107.4	601.7	27.3	295.1	209.1	75.5	22.0				1709.2
Schinus terebinthifolius	Spring 2012	433.2	1275.9	36.5	1100.3	134.6	0.7		33.2	6.9	0.2	1709.2
	Spring 2013	107.9	1601.3	47.7	1349.5	148.7	62.0	0.9	33.2	6.9	0.2	1709.2
Lantana camara	Spring 2012	1383.2	326.0	3.0	271.5	54.4						1709.2
	Spring 2013	1124.3	584.9	15.8	324.3	207.8	52.8					1709.2

sum of infested acres for each cover class multiplied by the midpoint of the percent cover category

Table 18: Summary of Actual Area Covered by Invasive Exotics in Merritt Canal Phase Cleared Footprints					
Category	Spring 2012		Spring 2013		Total Acres
	Actual Coverage*	Percent of Site	Actual Coverage*	Percent of Site	
Total Exotics	330.2	19.3%	536.8	31.4%	1709.2
Total FLEPPC I	70.6	4.1%	111.3	6.5%	1709.2
Total FLEPPC II	119.3	7.0%	104.4	6.1%	1709.2
Non-Listed	172.6	10.1%	360.0	21.1%	1709.2
FY 2013 Foliar Targets	39.7	2.3%	68.7	4.0%	1709.2
Imperata cylindrica	2.5	0.1%	1.8	0.1%	1709.2
Panicum repens	0.31	0.02%	0.31	0.02%	1709.2
Neyraudia reynaudiana	6.9	0.4%	6.03	0.35%	1709.2
Melinis repens	6.2	0.4%	27.3	1.6%	1709.2
Schinus terebinthifolius	36.5	2.1%	47.7	2.8%	1709.2
Lantana camara	3.0	0.2%	15.8	0.9%	1709.2
sum of infested acres for each cover class multiplied by the midpoint of the percent cover category					

Figures



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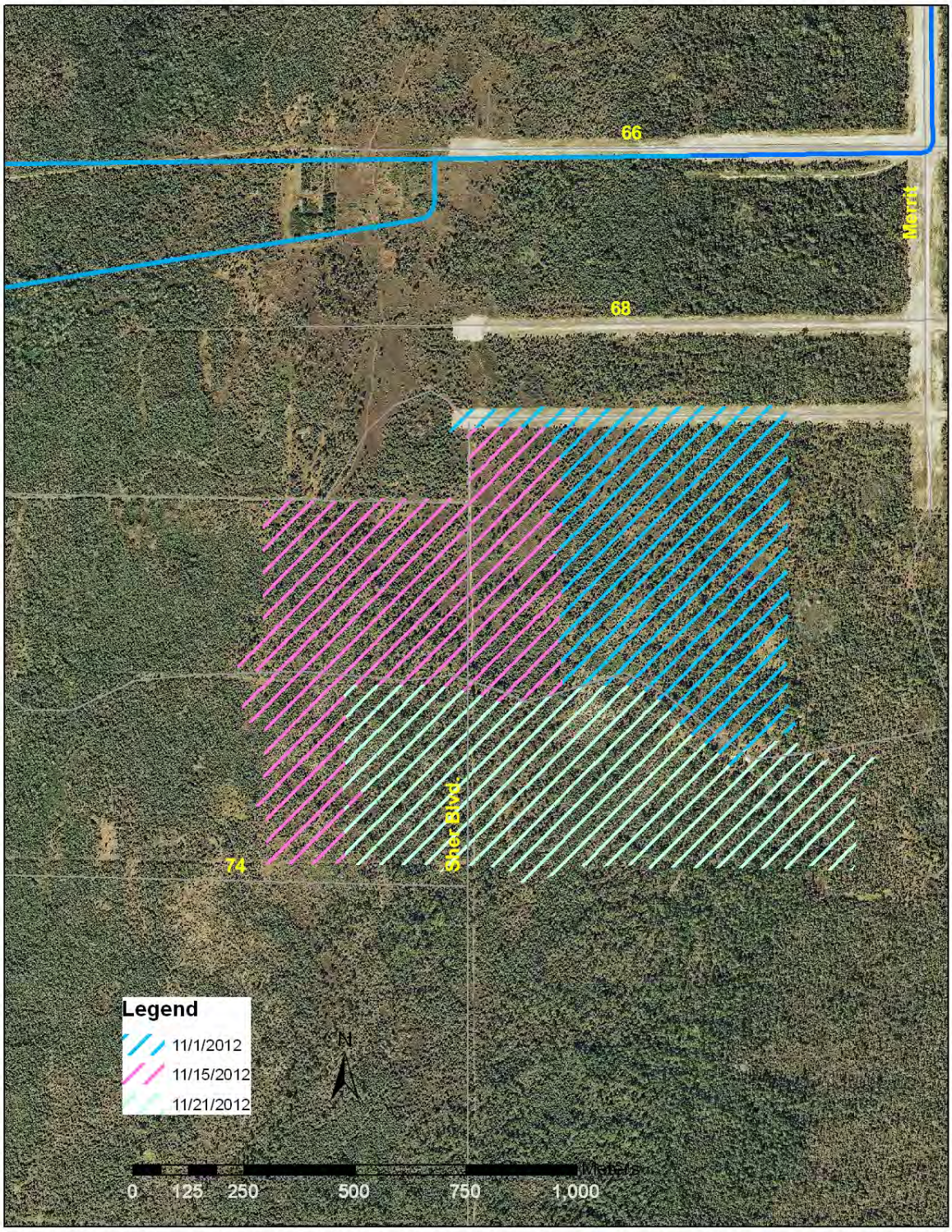

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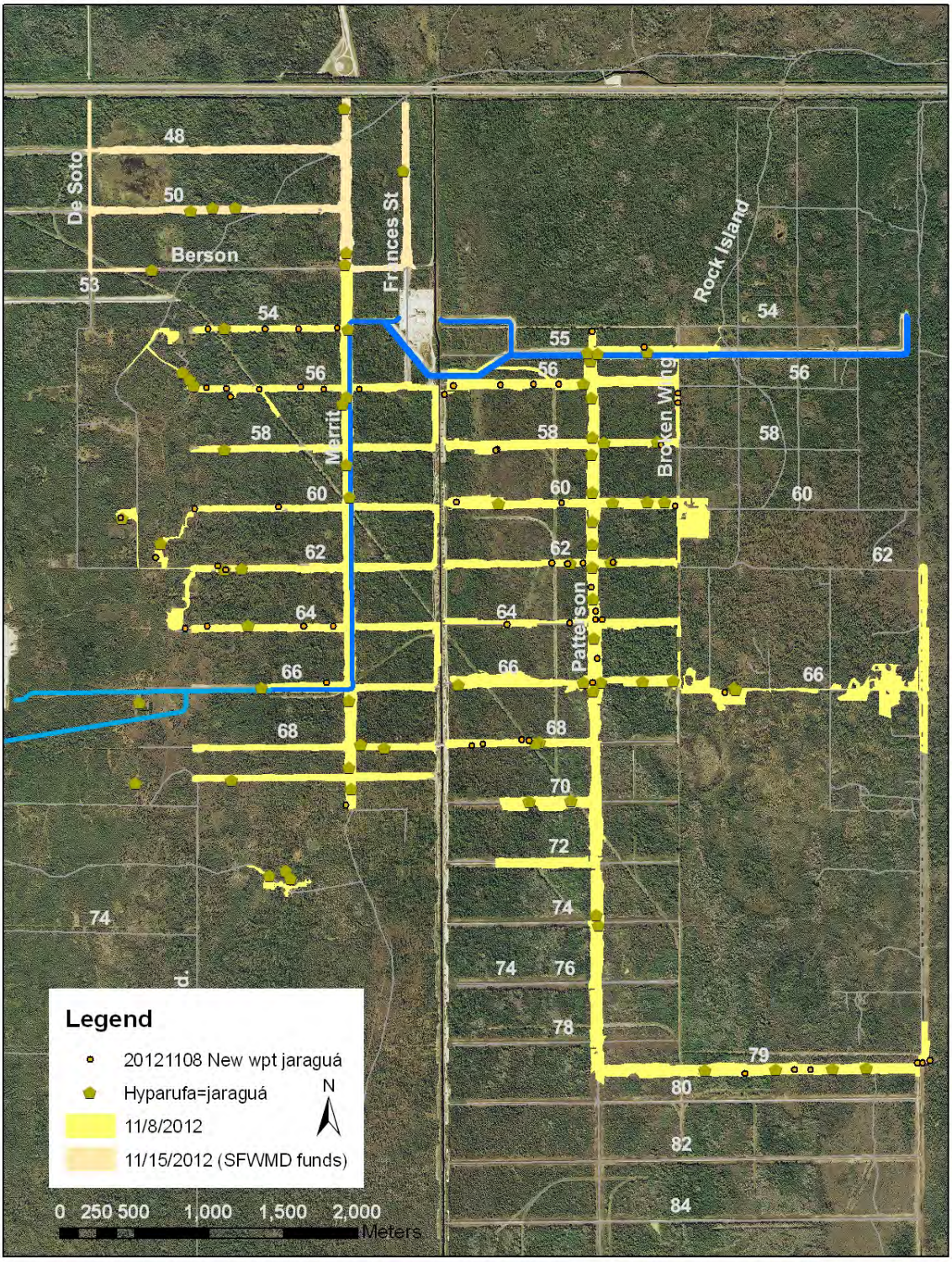
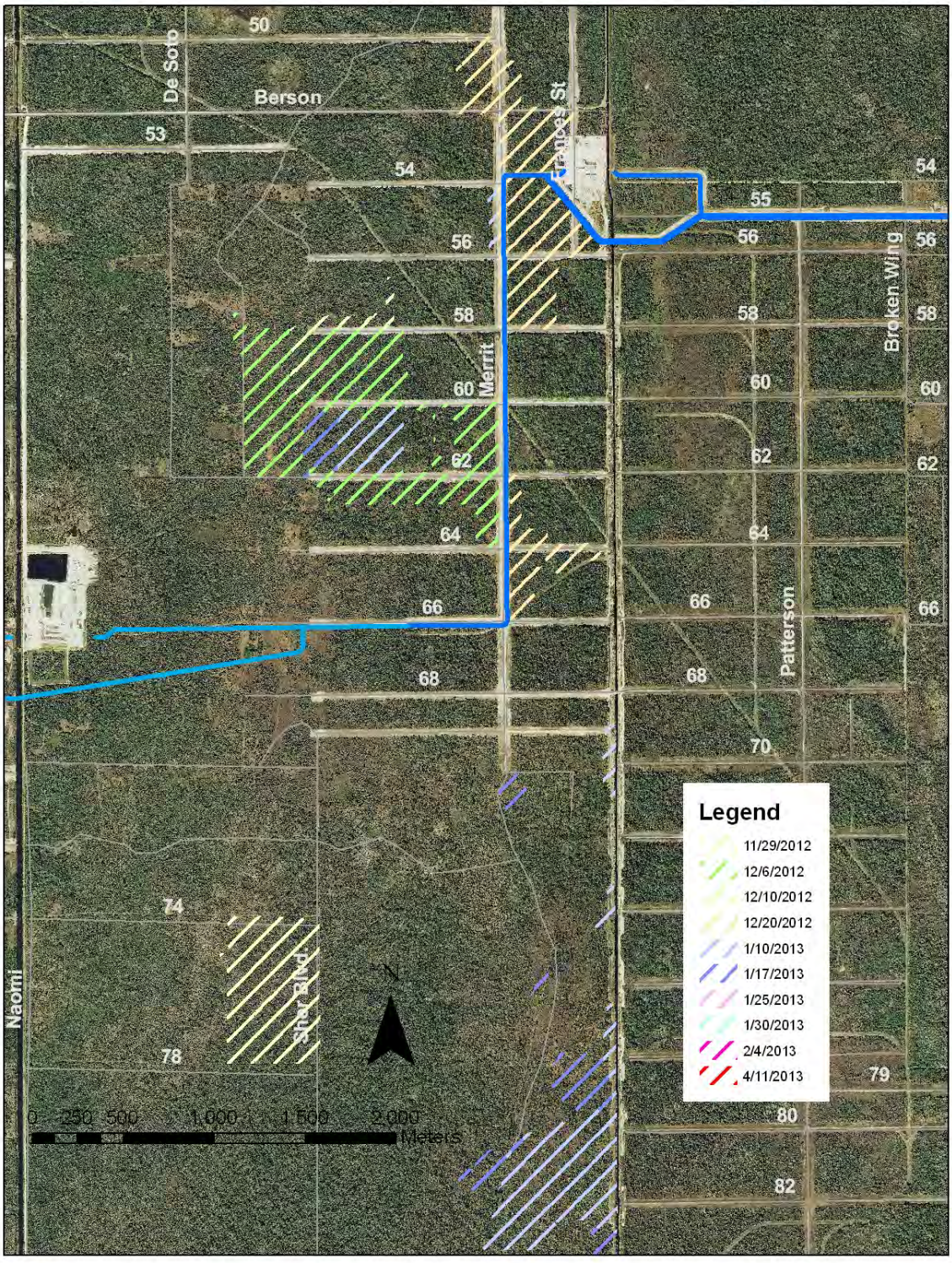


Figure 3: Area Covered by Foliar Re-Treatment of Jaraguá at PSRP (ACOE), FY 2012



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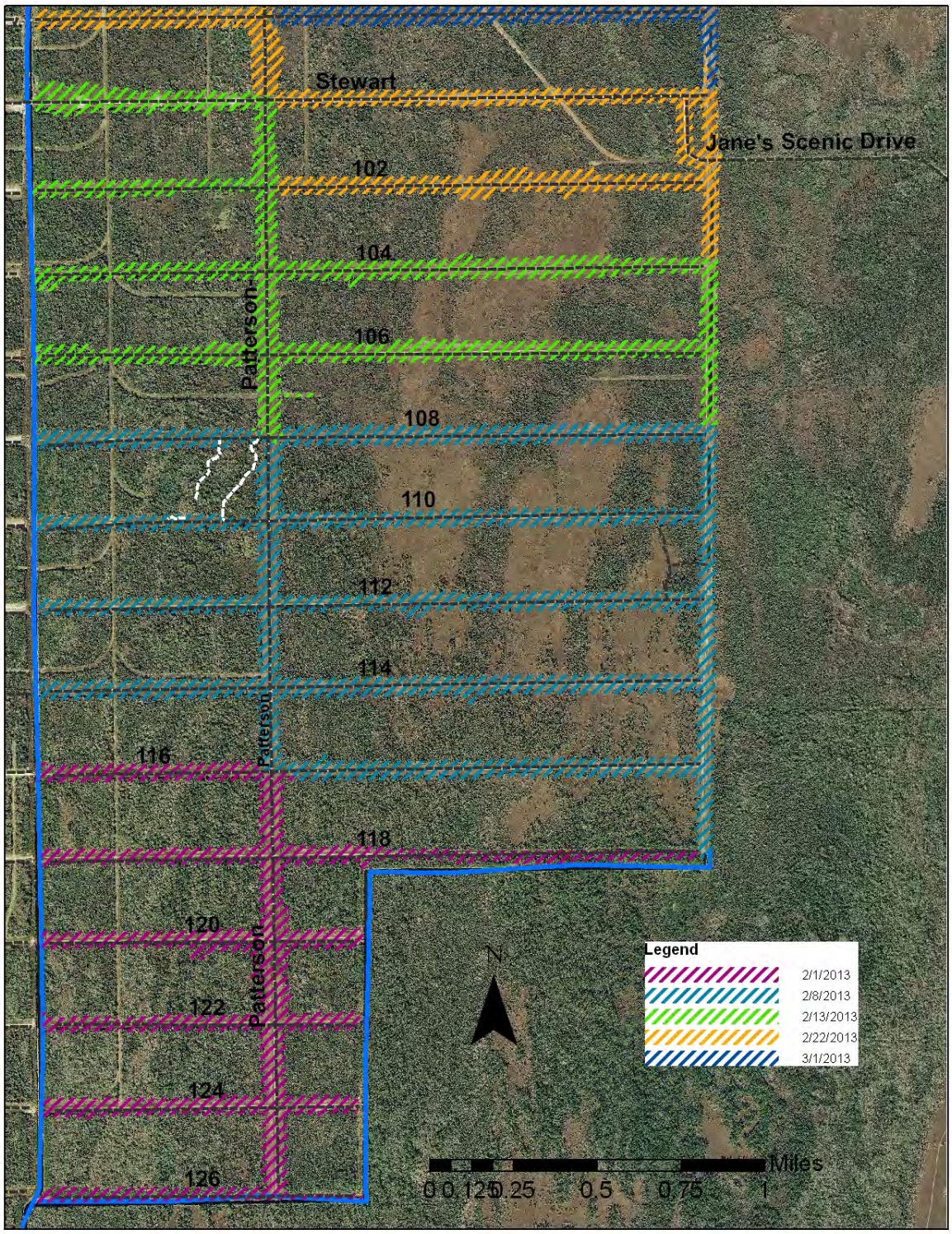

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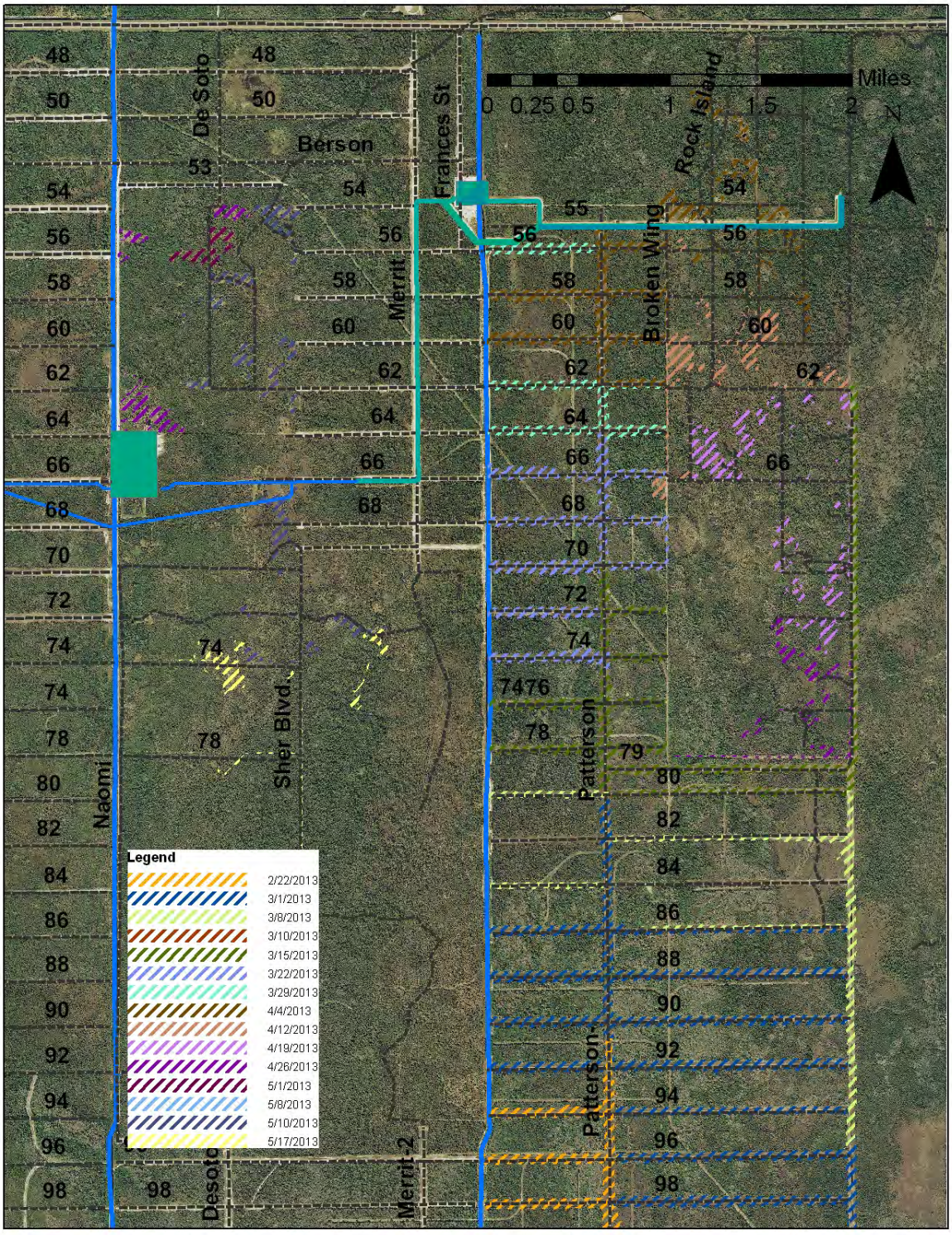

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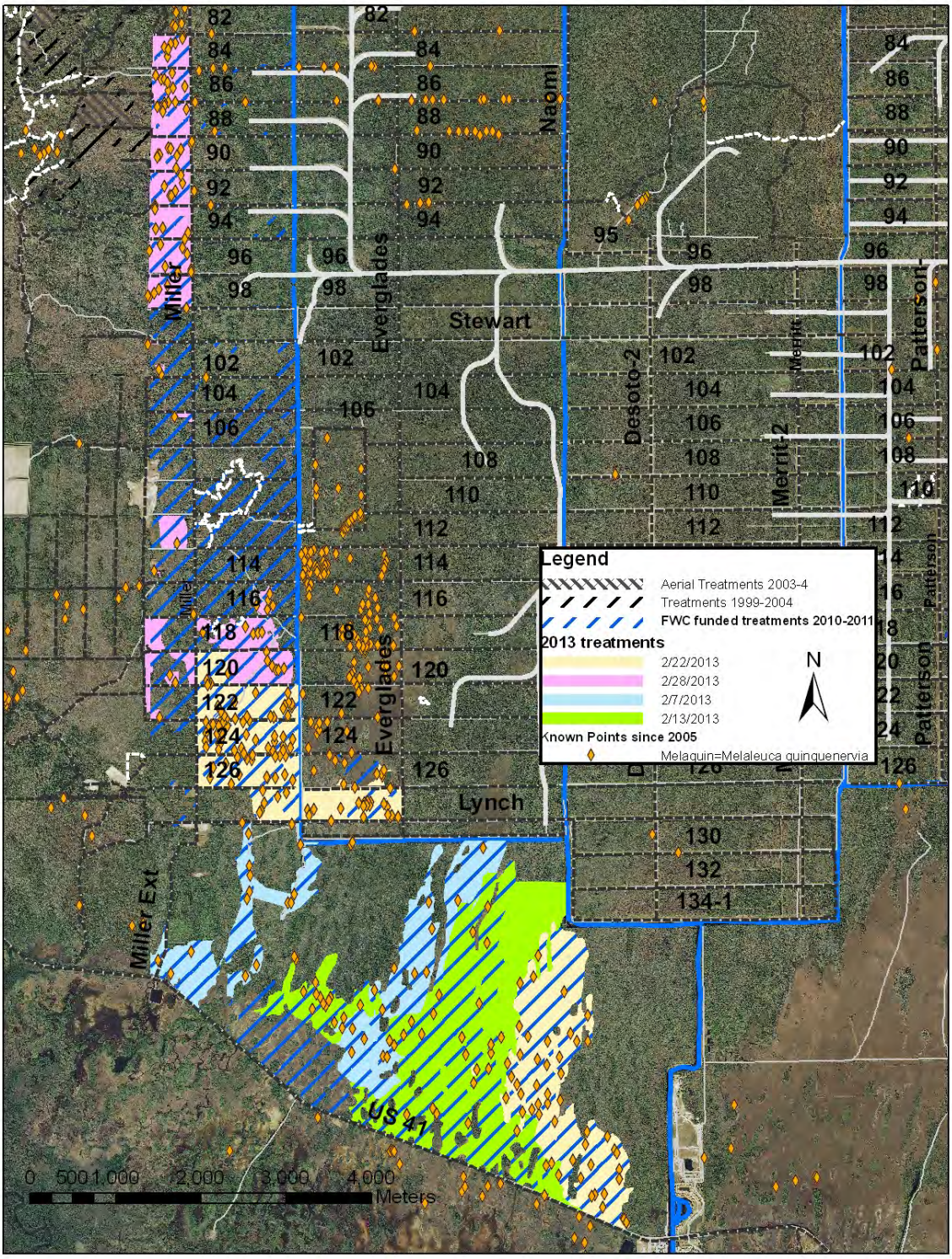

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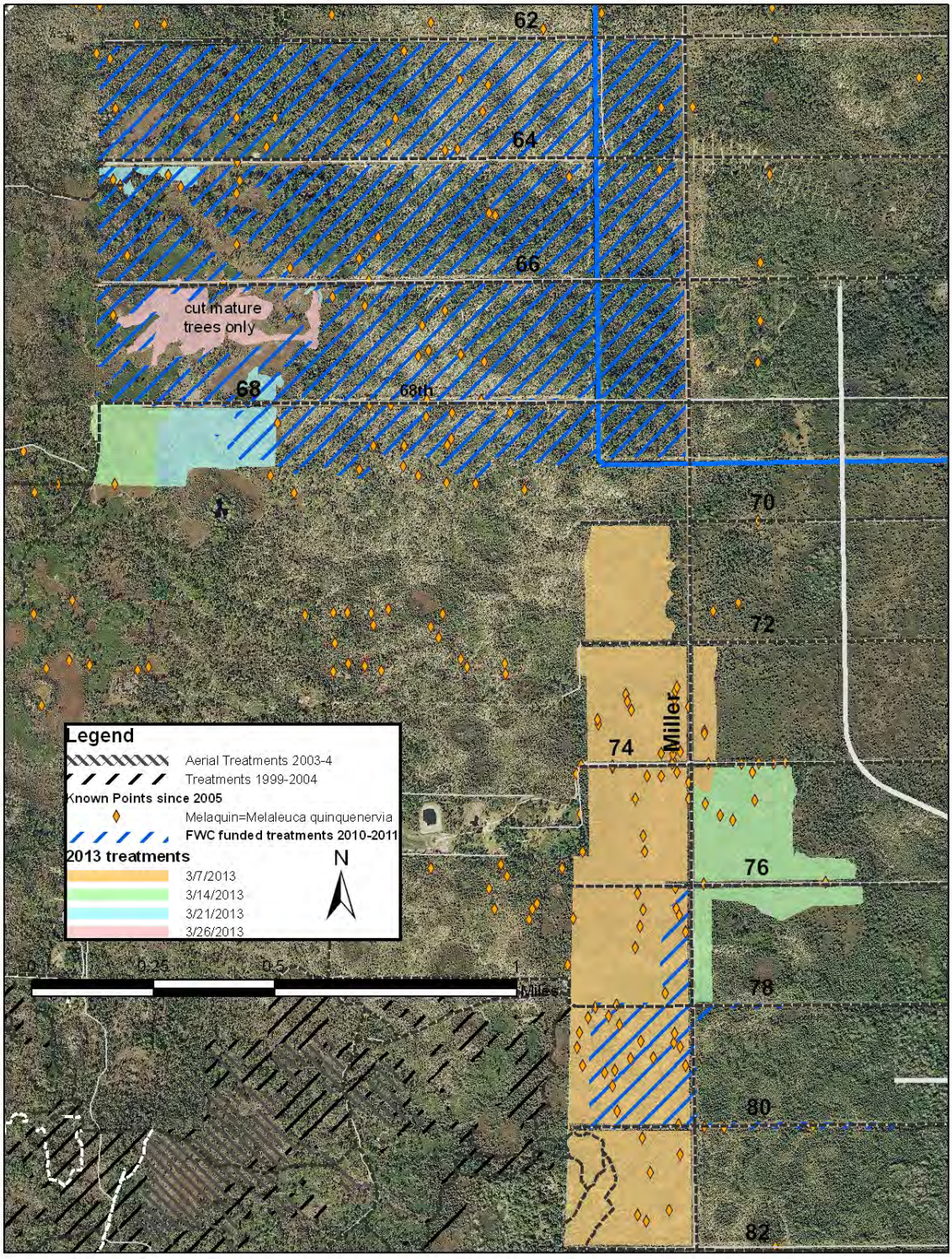

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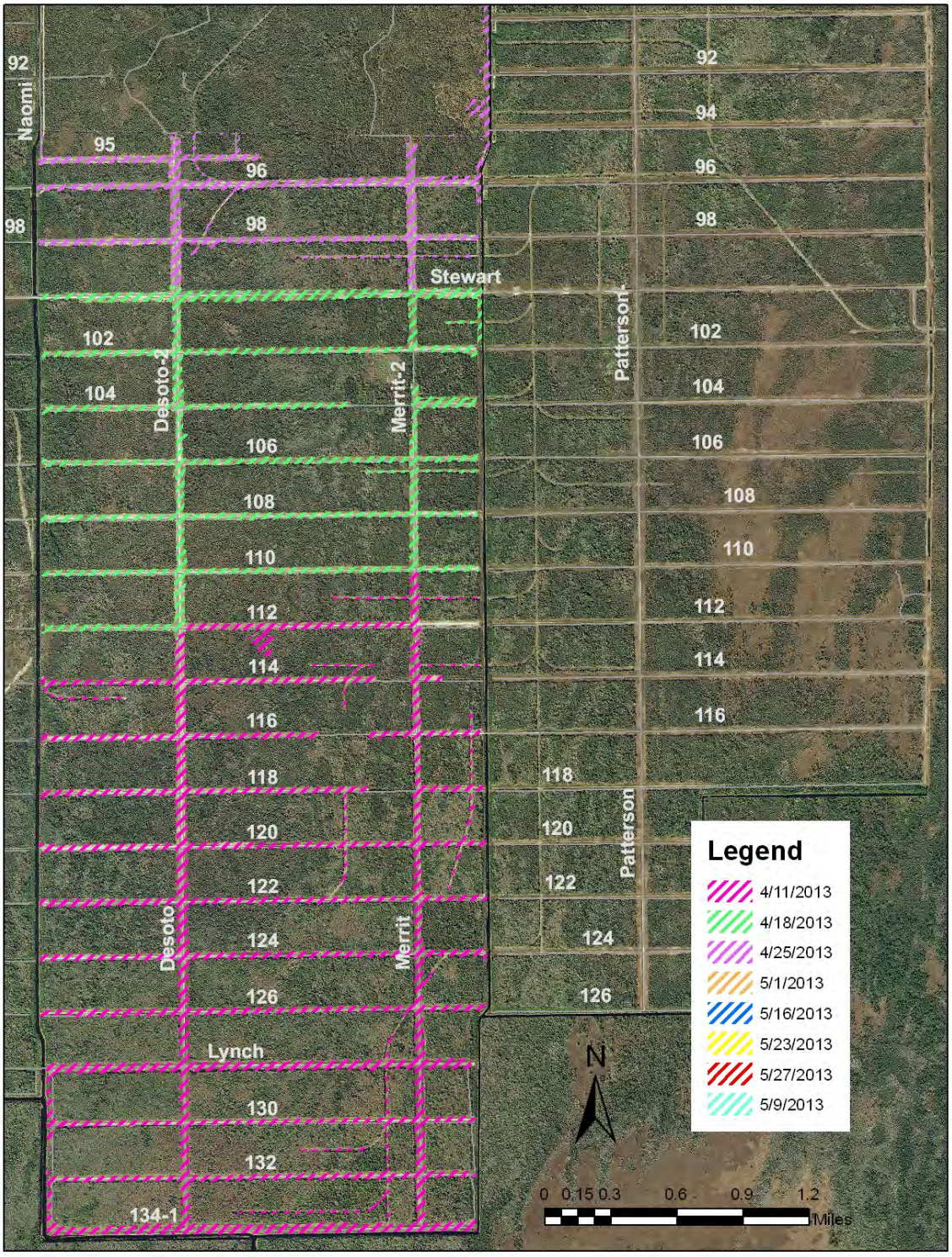

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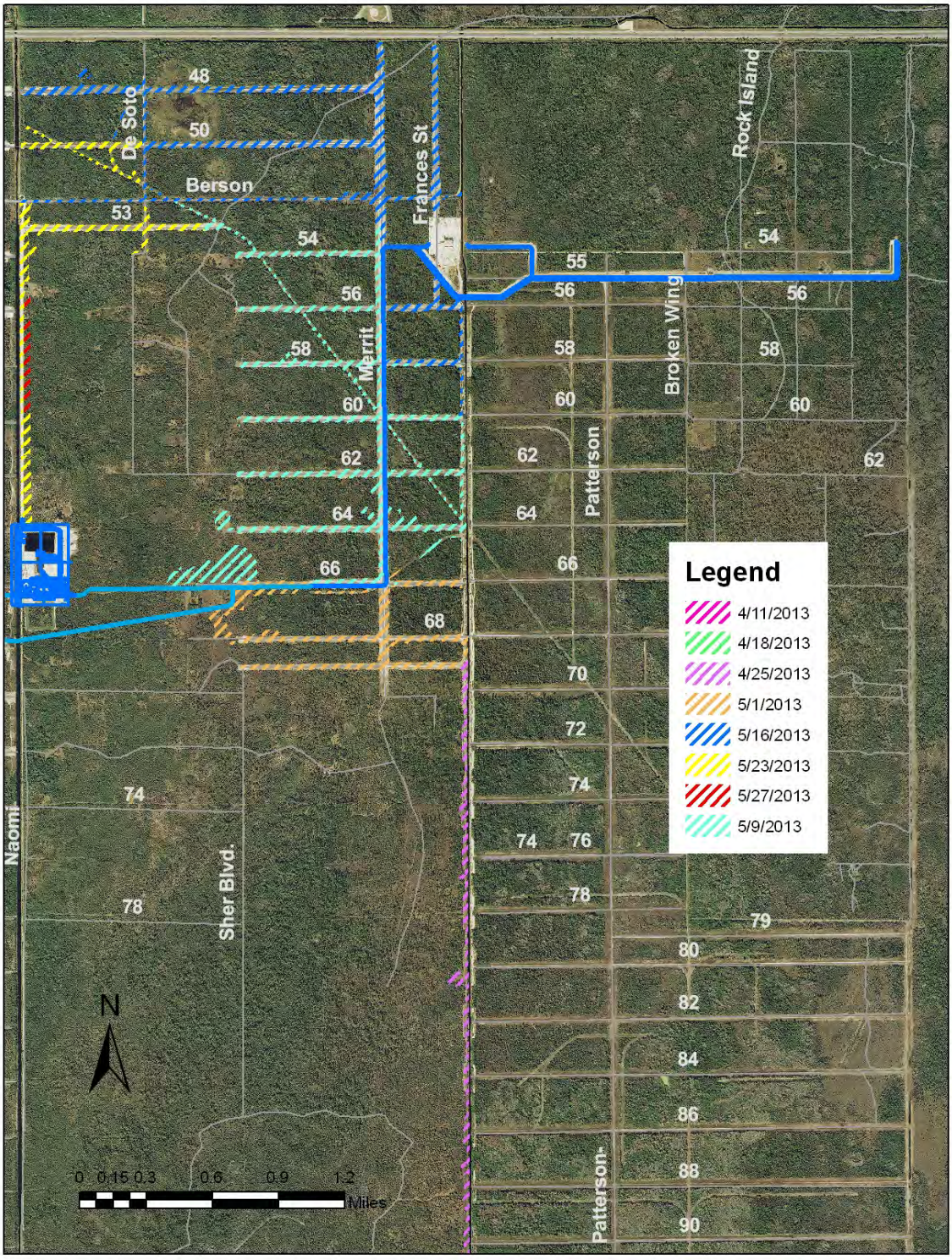

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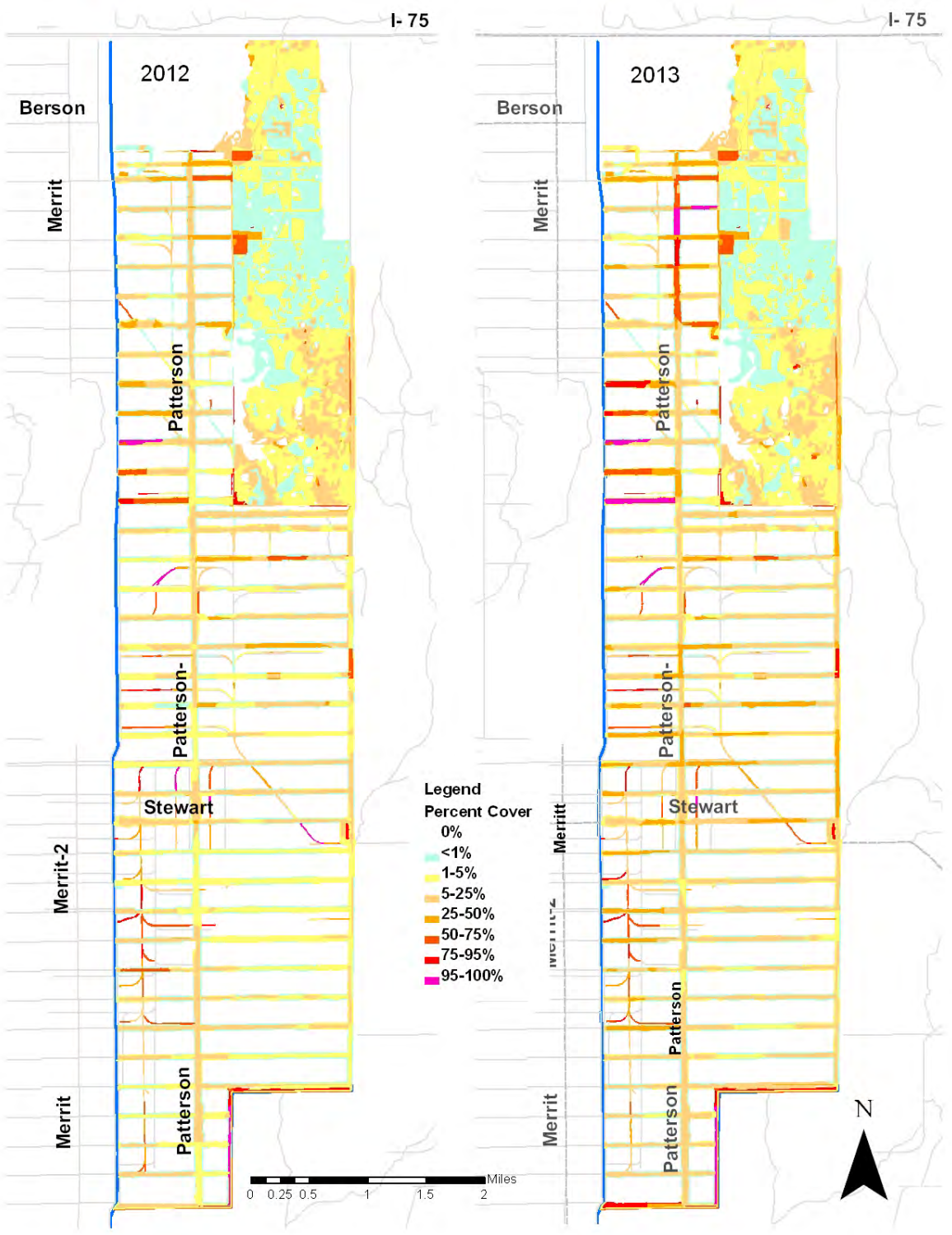

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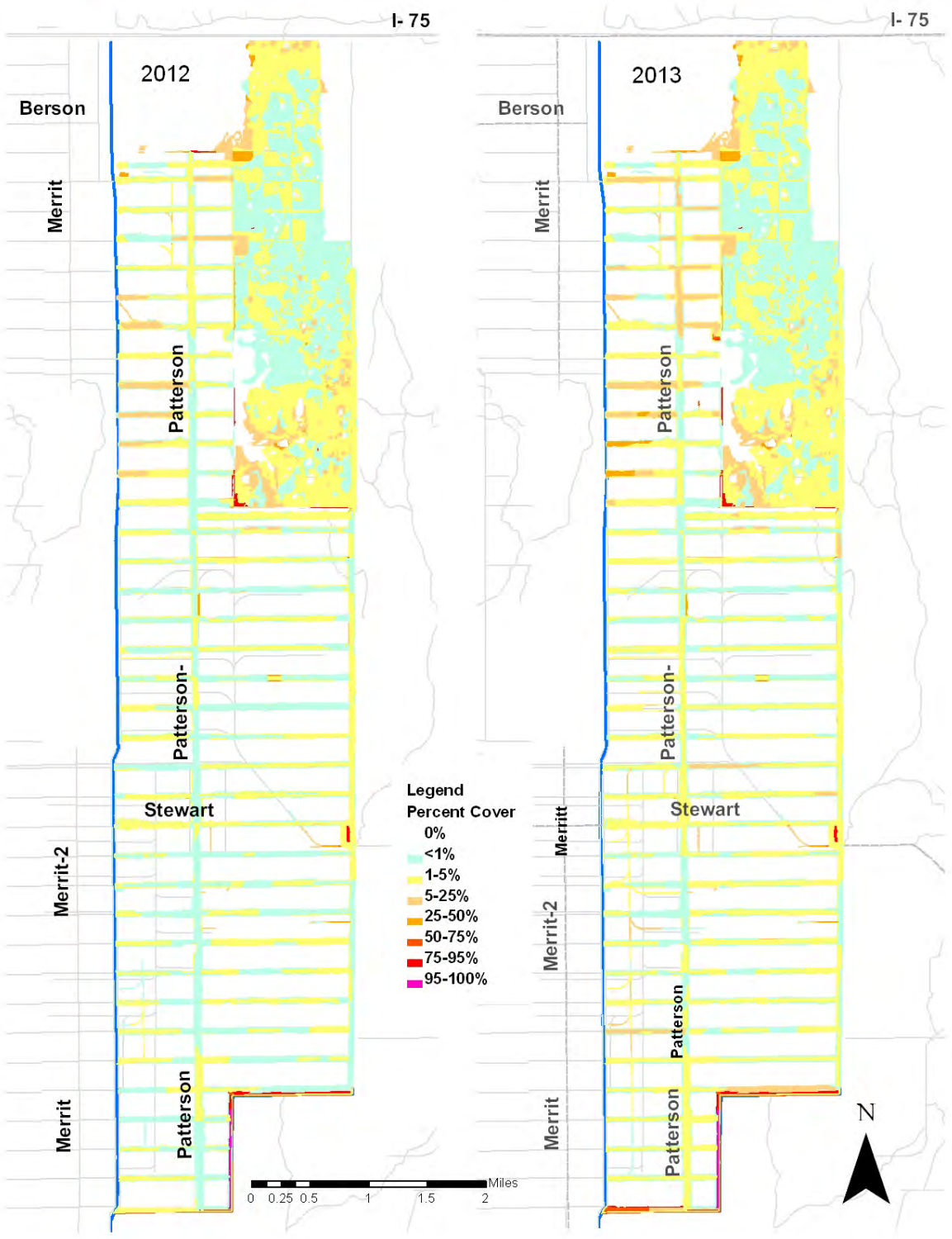

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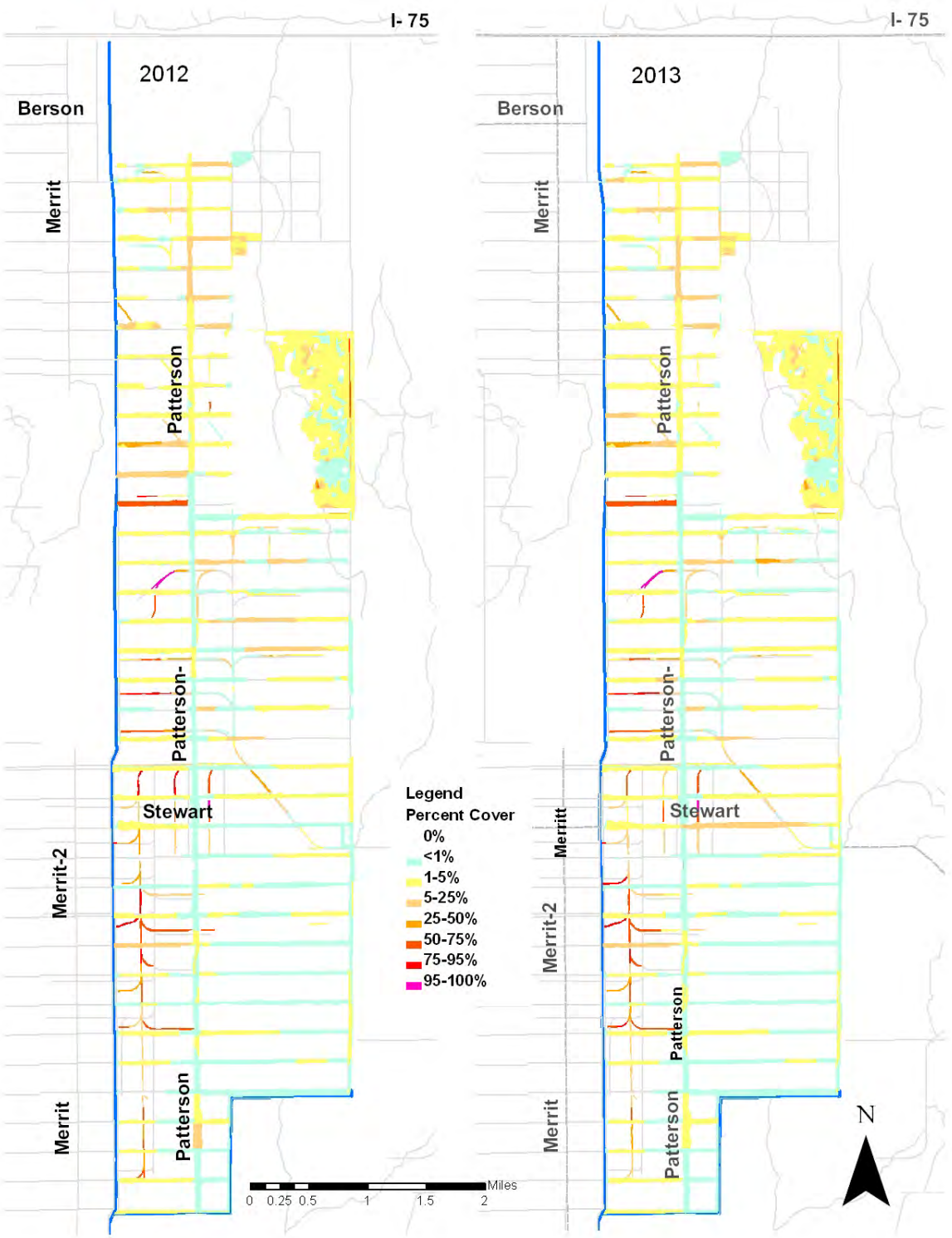

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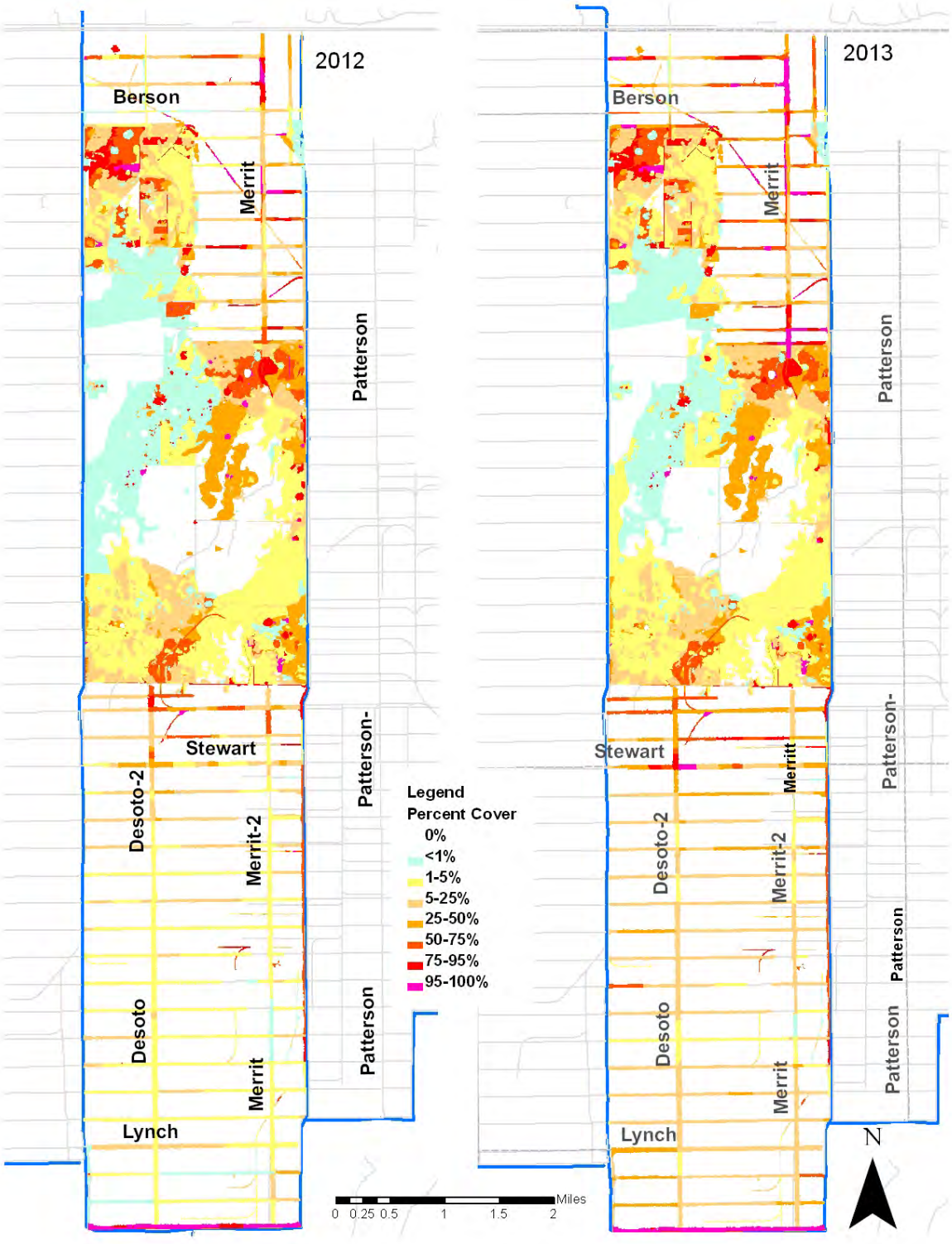

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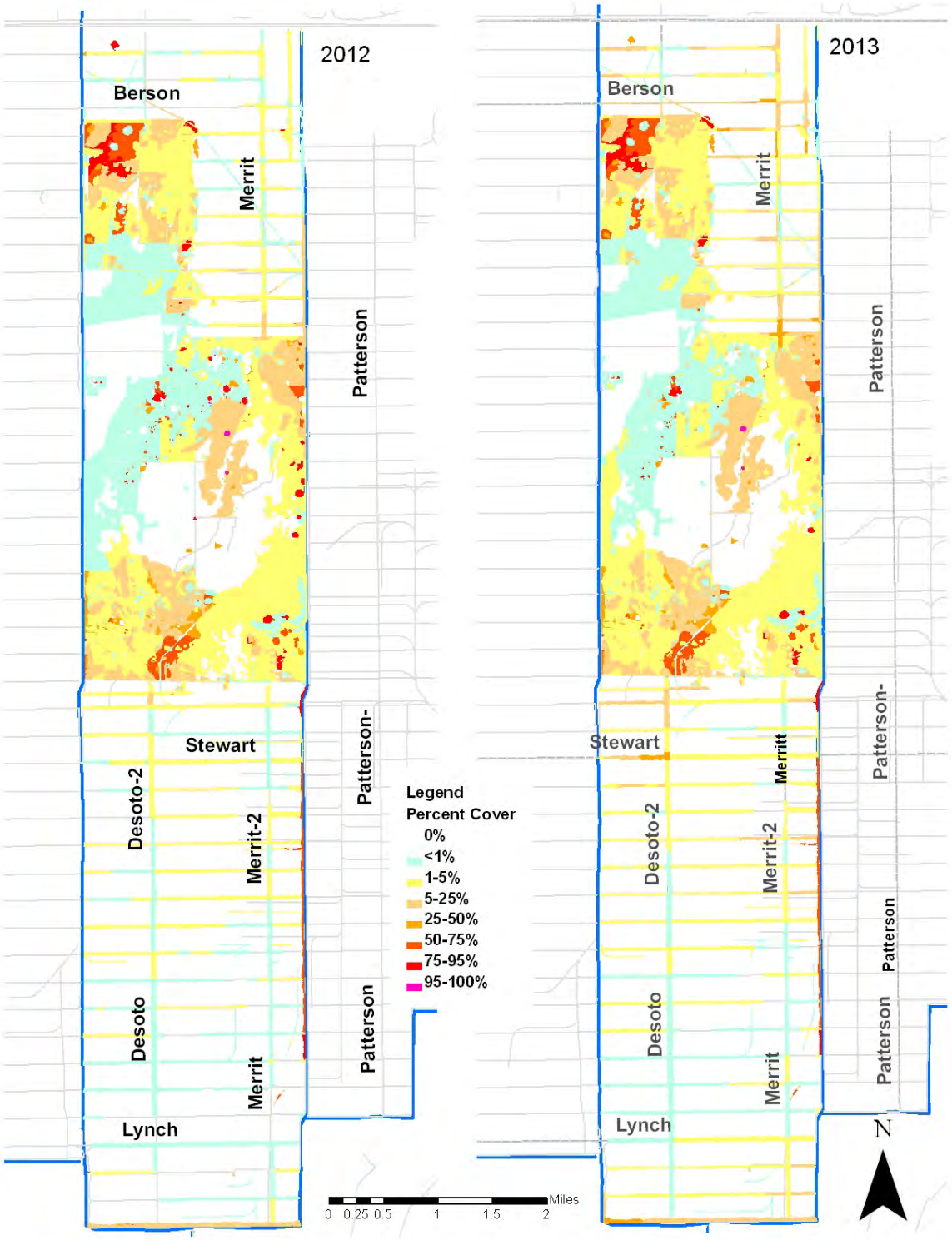

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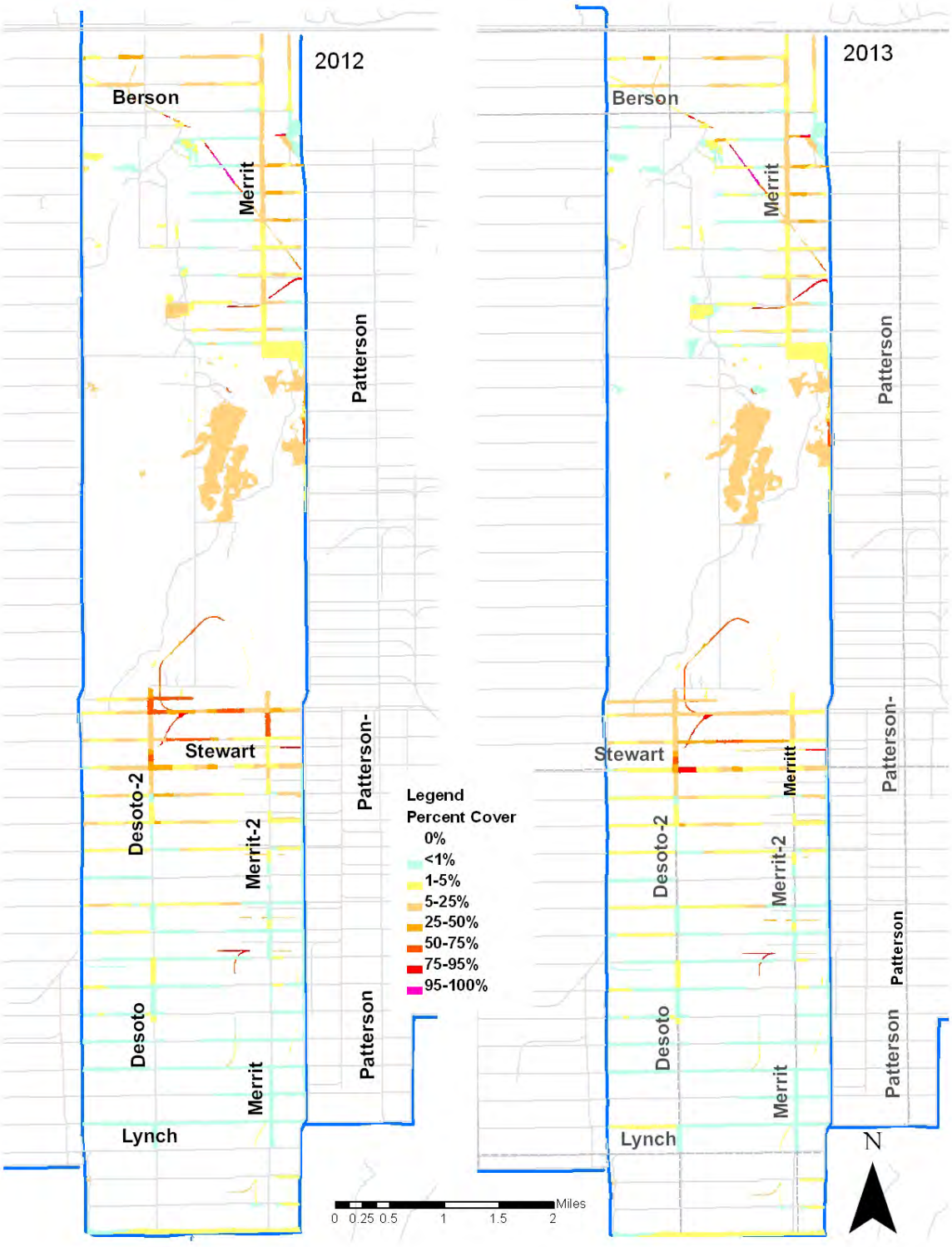

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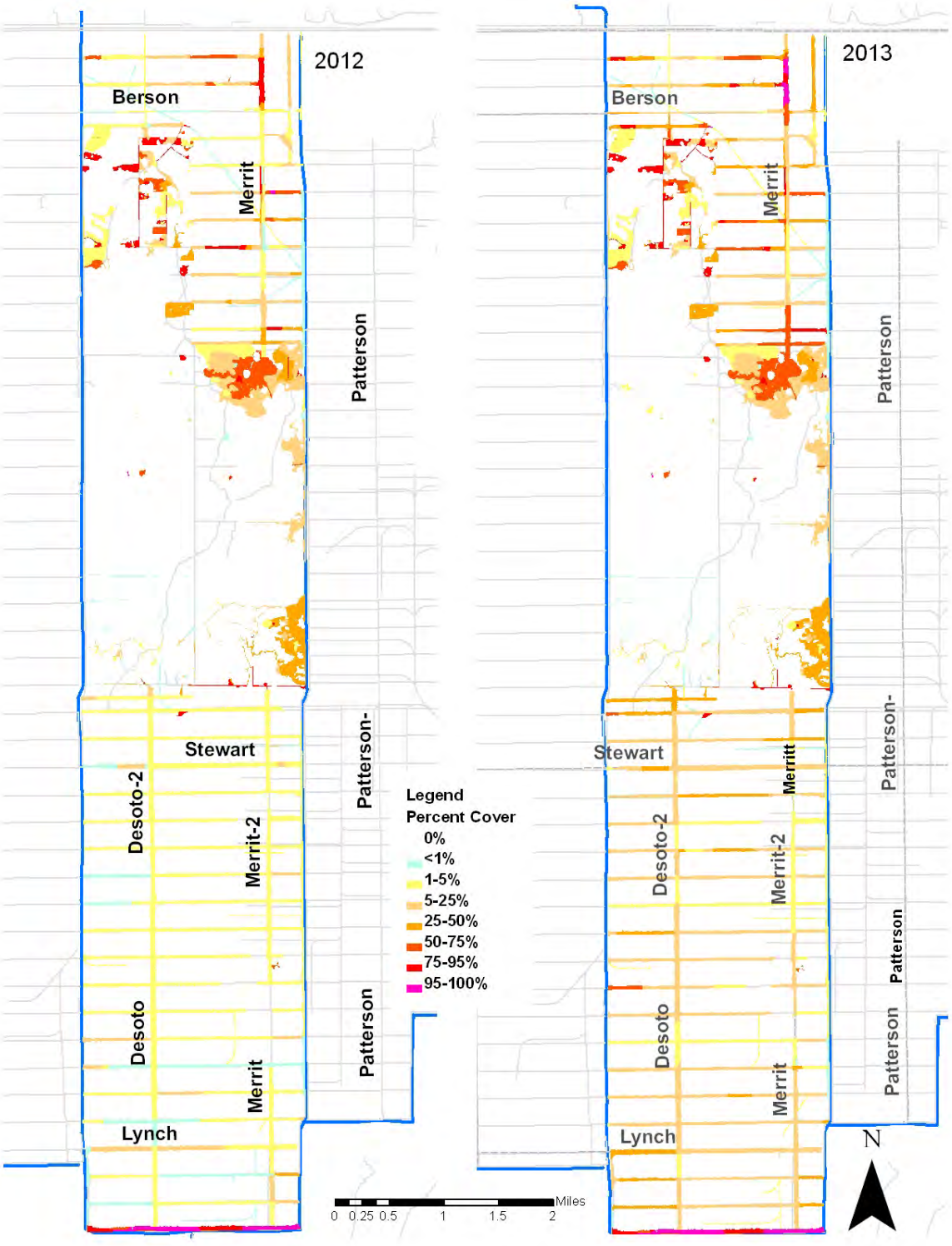

Figure 19: Total Cover by Non-FLEPPC Exotic and Nuisance Species in Merritt Canal Phase Footprints and Demolition Sites (2011-2012)

Attachment D: Picayune Strand Restoration Project – Addendum to Annual Effectiveness Assessment Summary

This report, dated November 30, 2013, was provided to the South Florida Water Management District by The Institute for Regional Conservation under Purchase Order #4500074695.

Picayune Strand Restoration Project – Addendum to Annual Effectiveness Assessment Summary

Purchase Order # 4500074695

Michael J. Barry

November 30, 2013

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1.0 INTRODUCTION

The Institute for Regional Conservation (IRC) was contracted (purchase order #4500074695) by South Florida Water Management District (SFWMD) to map exotic and nuisance vegetation within the Picayune Strand Restoration Project and to coordinate exotic control efforts conducted by SFWMD and Army Corps of Engineers (ACOE) contractors. The original contract start date was July 1, 2013 through September 30, 2013. However, due to a rainy summer with high water levels that hampered exotic control efforts, exotic control contractors were unable to work most of the summer. As a result, the contract completion date was extended to November 30, 2013 with no additional funds allocated to the purchase order (a budget surplus existed due to lack of contractor coordination needed).

Typically, an annual report is generated at the end of the fiscal year (September) to summarize treatments and to evaluate exotics cover estimated for that year as compared to previous years. However, due to the timing of the end of the previous contract with Environmental Resources Management (ERM) under Work Order No. 4600001953-WO3, the majority of the information for the fiscal year was presented in a report completed June 15, 2013 (ERM 2013). Because very little progress by exotic control contractors was made between June and September 2013, this report is presented as an addendum to the June 2013 report.

Additional results presented and discussed in this report include a summary of the work that was completed by exotic control contractors, as well as some additional detail on exotics cover data and trends. Discussion of portions of the Prairie Canal Phase considered to have successfully reached "maintenance" level for exotic control is included in this report. Survey methods and more detailed description of scope of work can also be found in the June report (ERM 2013).

2.0 METHODS

Survey methods and more detailed description of scope of work can also be found in the June report (ERM 2013). Included is description of the geodatabases and their feature classes used in analysis.

3.0 RESULTS AND RECCOMENDATIONS

This report summarizes work completed by IRC (purchase order #4500074695) and Applied Aquatic Management, Inc. (exotic control contractor to SFWMD) since the end of June, 2013 through September 30, 2013. Foliar treatments focused on exotic grasses especially cogongrass (*Imperata cylindrica*) and torpedograss (*Panicum repens*) at the northern portions of the Prairie canal phase footprints in more recently disturbed areas around the tie-back levee using ACOE funds. Additional work was initiated in footprints at the northern end of the Faka Union canal phase footprints, but will not be summarized

in detail because the work was cut short due to weather and only recently resumed and is ongoing.

3.1 WEATHER AND WATER LEVELS

Temperatures in general did not influence vegetation or herbicide treatments this year as they have in the past. A frost occurred on December 22, 2012, but the damage appeared to be light and only in the very open areas. The most significant impact of the freeze was making treatment of lantana more difficult with foliar spraying. Eventually, this species will be treated using Garlon IV when Brazilian pepper treatments are conducted again. High temperatures, although it did slow down work some days, was not much of an influence on treatments because very little crew activity occurred during the June to October time period.

Rainfall for the PSRP is presented in Figure 1, as presented at www.gohydrology.org. Last year's Annual Effectiveness Summary Report discussed how lack of rainfall and resulting water levels influenced vegetation the past couple of years, especially during the dry season and early summer months (specifically April and May of 2011, June and July 2012) (ERM 2012). Rainfall in 2013 was more typical with frequent heavy summer rains, actually resulting in above average totals. Weekly totals in Figure 1 show how less frequent heavy rains were in 2011 and 2012 compared to 2013. Although it appeared to have stressed some trees, it meant we were able to continue exotic control efforts during summer months. The amount of rain in 2013 is a welcome change from an overall ecological perspective (Figure 1). Foliar treatments from June through October 2013 were, however, seriously hampered by these rains, though this is typical for the rainy season.

Water levels in 2011 and 2012 remained low for the most part (October 2012 being an exception) and, thus, were not a factor in treatments or in limiting upland species cover in restored areas (ERM 2012). Water levels and hydroperiods were higher and longer in 2013 and may indeed influence vegetation in portions of PSRP. Data for water levels at 3 wells within the general area of herbicide treatments are presented in Figures 2-4. Data from SGT2W5 (Well 9) at 70th E of Patterson showed a substantial time of flooding this year, suggesting much of the cypress around Broken Wing Ranch and areas North of Stewart may have experienced a more typical wet season than the past few years (Figure 2). Data from SGT3W6 (Well 16) at 108th E of Patterson illustrates the southern portions of Prairie Canal phase also experienced summer flooding in the wet prairies and cypress habitats (Figure 3). Finally, to illustrate that Merritt phase footprints are still influenced by drainage, data for SGT4W5 (Well 22) near 116th Ave SE and DeSoto is included and shows no standing water above the ground surface. In general, vegetation in the footprints of the Merritt phase are much less likely to have been influenced by increased hydroperiod.

Because the work in the Prairie Canal phase had mostly been completed prior to the summer and no Brazilian pepper treatments (Garlon IV basal bark) were underway, water levels did not limit treatments as much as the rain itself affected foliar grass treatments.

However, water levels did indeed prevent the contractor for ACOE from completing treatments of the Prairie Canal phase logging trams south of 70th Ave SE, but most areas consisted of very few exotics anyway, except for some areas of dense caesarweed. With any luck, caesarweed (which is intolerant of long periods of flooding) in those areas of Prairie canal phase logging trams may indeed have been reduced by flooding. Survey work for fiscal year 2014 may eventually shed light on this question.

3.2 FOLIAR TREATMENTS WITHIN PRAIRIE CANAL PHASE

Foliar treatments were conducted from June 17 through July 11, 2013 using glyphosate with imazapyr targeting primarily Burma reed (*Neyraudia renaudiana*), natalgrass (*Melinis repens*), torpedograss (*Panicum repens*), cogongrass (*Imperata cylindrica*), lantana (*Lantana camara*), vaseygrass (*Paspalum urvillei*), caesarweed (*Urena lobata*). The areas covered were more recently disturbed areas, starting at the tie-back levee and the East to West ditch at the North end of Patterson and finishing with treatments along the recently installed fire break in the upper two miles of the Prairie Canal where SFWMD funded crews were unable to treat because it had just been plowed prior to their treatment (Figure 5). A total of 265 acres (Table 1) were covered as re-treatment though actual cover of exotics was generally low with only 38 acres over 5% cover of combined exotics.

Although primary targets such as cogongrass and torpedograss were low, others such as natalgrass and lantana were locally abundant. Others were widespread such as vaseygrass. Lantana, which was most abundant on the west end of the East to West roads off the north end of Patterson, required more time than the other species because care must be taken when foliar spraying to cover all the plants with herbicide. Torpedograss and Bermudagrass (*Cynodon dactylon*) were targeted more on the disturbed fire break along the Prairie canal footprint. Natalgrass was abundant in the northern roads near the tieback levee. Unfortunately, natalgrass grows fast and when in a small, sterile vegetative state it is difficult to recognize. Because it produces seed much of the year, it may require more frequent treatments to really reduce the cover.

3.3 OVERALL EXOTIC AND NUISANCE SPECIES COVER

Additional Tables (2-15) and Charts (Figures 6-19) for areas inside the footprints and at demolition sites (including their buffer areas) for both the Prairie Canal and Merritt Canal phases were provided to show cover by individual species and groupings since 2008 for Prairie Canal and since 2011 for Merritt Phase footprints. This includes areas in Prairie canal considered to be at "maintenance level" as described below in section 3.4. The trends and conclusions discussed in the June report (ERM 2013) have not changed, however, these tables and charts give more detail supporting them. These charts especially add to the discussion of individual species changes which were most important in both phases.

These data illustrate that, in general, we have made headway on more aggressive, targeted, invasive exotic species, such as cogongrass, and torpedograss while the lower

priority species such as those not listed by Florida Exotic Pest Plant Council (FLEPPC), continue to spread, since we have not been treating them. This is illustrated in both Merritt and Prairie Canal Phases and was discussed in the June 2013 report (ERM 2013).

Of the non-targeted species which have increased over the past years, smutgrass, broomweed (*Spermacoce verticilata*) and tanglehead (*Heteropogon contortus*) have overall increased the most. All of these species are upland species and the dry summers of 2011 and 2012 may have contributed to their increase at least in some low lying areas of the Prairie Canal phase while in the Merritt phase they may simply be expanding to fill the void left by recent road removal. As mentioned in previous reports, it is hoped that hydrological restoration will at least help to control these species in lower, longer hydroperiod areas (ERM 2013).

The exceptions to this trend are the higher priority species requiring more costly basal bark treatments using Garlon IV. For example, Brazilian pepper (FLEPPC category I) increased and has not been treated since 2009 in the Prairie Canal phase and not once in the Merritt phase road removal footprints. Brazilian pepper has only been partially treated in the Merritt phase demolition sites and their buffers including some treatments in the northernmost portions of the unblocked sections in 2010 down to just below 69th Ave SE more recently in 2012. Lantana also similarly increased over the past couple of years. Insufficient exotic control budgets in 2011-2013 have delayed these costly treatments.

Finally, natalgrass also contributed to the increase in FLEPPC I cover in both phases. This species is difficult to control with only one (or even with two) passes through the areas per year as has been done recently. Natalgrass flowers throughout much of the year and is difficult to see when in small, sterile vegetative condition. This usually results in many missed individuals when herbicide crews cover the area and those missed plants quickly mature, flower, and set more seed before subsequent treatments. These data suggest we may need to work harder on controlling this species.

3.4 PRAIRIE CANAL FOOTPRINTS AT "MAINTENANCE LEVEL"

Several nuisance native and exotic vegetation control plans have been developed for the Picayune Strand Restoration Project (PSRP). The original plan was to have six years of exotic and nuisance native vegetation control with the achievement of "maintenance level" being defined as three consecutive years when a site has no nuisance native or exotic vegetation within a block. The original blocks were individual sections of road, canal, or logging tram bounded by a mix of roads and/or a canal.

In August of 2013, SFWMD contractors/employee Mike Duever, Ellen Allen, and Mike Barry with communication with Jon Morton (ACOE) met to update the original nuisance native and exotic vegetation control plan (NN&EVCP) based on lessons learned since vegetation control work began in FY2008. The current proposed plan is to identify blocks of the PSRP where there are no nuisance natives or exotic species that exceed their individual maximum percent cover value defined as a maintenance level for two

consecutive years (Appendix I). All species of concern must be below their individual maximum percent cover values within a block before turning maintenance responsibility over to Florida Forest Service (FFS). Aggressive species will be required to be<1% cover for two consecutive years, while less aggressive species will be required to be <5% cover for two consecutive years.

When all nuisance native and invasive exotic species are maintained for two years below their individual maximum cover values, treatments will still be necessary to keep levels low. After all, the low levels will have been achieved by continued treatments. There is no illusion that areas will remain at low levels of nuisance natives and invasive exotics without continued treatments. If maintenance treatments are not performed by FFS regularly (IRC recommends one to two times a year for foliar treatments and every 2-3 years for Brazilian pepper and other hardwoods), mechanisms to keep areas from exceeding their individual maximum cover values were discussed at the meeting in August 2013.

At the August 2013 meeting, it was agreed that monitoring should be continued in these areas both to assist FFS in control but also to ensure maintenance is conducted in a timely manner. In the absence of treatments some species may quickly exceed maximum values, as was seen with Brazilian pepper in the Prairie Canal footprints (see 3.3 above). For an additional example, some areas of Panther Island Mitigation Bank, after 5 years since the bank was released at maintenance level to another entity, exotic control efforts have fallen behind and there was an increase in exotics. The Banker has initiated, at its own cost, a significant exotic and nuisance treatment plan. A lesson learned from this example should be to make sure areas are not left without sufficient maintenance for more than a couple seasons in order to prevent losing too much ground, which ultimately costs more to control.

Several areas within the Prairie canal phase were examined for the criteria presented in Appendix I. Boundaries were restricted to obvious features such as entire roads or sections which could easily be recognized by exotic control crews. After several queries of the geodatabase were examined, two areas were proposed for release by SFWMD to FFS for continued long-term management. The upper 2 miles of the Prairie canal and the east to west roads from 104th through 116th and east of Patterson SE met the less than individual maximum cover requirements (Figure 20).

The first area proposed is the upper two miles of the Prairie Canal footprint, totaling 46 acres. This was the first area cleared in 2004 with exotic control treatments conducted since 2007, but tracked by IRC since 2008. The rocky mix in the soil did promote many weeds but much of the area flooded in 2008 which likely helped shape the dominant plants (Barry 2009). Also scattered areas with marl substrates, which appear to be less susceptible to invasion by nuisance species, were included especially along the eastern edge of the footprint adjacent to wet prairies. The problem areas are generally south of 66th ave SE on the west side of the footprint near many disturbed areas associated with the demolition sites.

High priority FLEPPC I and II exotics cover has been maintained at low levels through annual treatments and in some years multiple treatments (Tables 4 and 5, Figure 7). Specifically, cogongrass and torpedograss were targeted regularly in these areas scattered throughout. Torpedograss was primarily along the edges of the ponds left in the canal due to lack of sufficient fill. Cover has fluctuated from year to year (Table 9, Figure 10). Thus far despite up to 4 treatments during 2011, some torpedograss has always remained in at least a few of these ponds as treatments are ineffective when the plant is growing in the water. Cogongrass was found scattered in the footprints near the badly infested home sites mostly from 66th south to 79th. Cogongrass will likely continue to recruit in the footprint especially if adjacent home sites and buffers are ever left untreated. Given the area was recently disturbed (Spring 2013) by FFS for use as a firebreak, at a minimum annual treatments will be necessary to keep cover of these two grasses low.

Non listed exotic and nuisance species coverage's were higher in 2008, but later some species cover began to drop keeping total exotics cover combined below 15%. Some of the decline was timed with and perhaps caused by flooding during summer months (Barry 2009). However, budgets for treatments were severely cut and/or delayed until the rainy season in 2011 and 2012. Even partial treatments of non listed species were discontinued, and the wet seasons have been drier than average resulting in much less flooding. Most notably in 2012 we were not able to treat Bermudagrass, generally along the trail/fire break, which at the time seemed as though previous treatments had been ineffective since cover stayed pretty much the same. As a result Bermudagrass did increase in 2013 suggesting that our previous treatments had at least helped control the species. Bermudagrass was treated aggressively this year after missing treatment the year before. Thalia lovegrass (*Eragrostis atrovirens*) had also increased but was not targeted in the past so likely reflects a steady increase rather than the result of a missed treatment. It was systematically treated this fiscal year. Broomweed continues to persist in this area but is not being treated.

The second area proposed for maintenance by FFS will involve annual foliar treatments and less frequent Brazilian pepper retreatments are the east-west roads from 104th through 116th and E of Patterson SE totaling 210 acres (Figure 20). This includes a lot of marl soils which seem to have far less exotics cover in general. The surrounding areas have been maintained by a fairly regular prescribed burning schedule since the late 1990's. This has likely helped maintain surrounding areas with more native cover and less Brazilian pepper. Only a few camps were removed in the area, so in general demolition sites are not a problematic source of re-infestation from other exotic species.

Total exotics cover was maintained below 10% until this past year when it rose to 13% (Tables 6 and 7, Figure 8). Most of these roads in the footprints, near treatment buffers, have been maintained free of torpedograss, and cogongrass is found only in the footprints in the buffer along the edge of the footprint (Table 10, Figure 11). A few widely scattered melaleuca seedlings (now treated) did pop up in a few areas resulting in an increase in acreage mapped as less than 1%. Brazilian pepper and lantana are however, the only FLEPPC I species to increase substantially over the past year and clearly show an increasing trend (Table 10, Figure 11). Although individual species cover still

remains less than 1%, it is important to note that cover has rebounded to similar levels as 2009 when the last basal bark treatment using Garlon IV was completed. These areas will require treatments within a year or two to maintain this low level. Lantana was treated by foliar application while treating exotic grasses but should be more systematically treated when re-treatment with Garlon IV occurs. FLEPPC II species have changed little and combined cover has been maintained just above 1% and individual species cover below 1%.

Non listed species have fluctuated since 2008, but continued to increase over the past couple of years to levels higher than 2008 (Tables 6 and 7, Figure 8). The greatest increase observed was broomweed with an estimated cover in 2013 of 2.3%. Smutgrass was also higher than in 2008 but had been higher in 2012 and 2010 (Table 10, Figure 11). Smutgrass was sporadically treated in these areas and broomweed has not been treated. Both species have been affected by high water events, so it is hoped that with the wet season we just experienced in 2013 there will be a reduction in cover for both of these species.

Vaseygrass, on the other hand, which is not expected to decrease much in wet years, has been regularly targeted over the years until budget cuts in 2011 and 2012. It should be noted that it rapidly responded to two years without systematic treatments with 2013 levels rising to the highest cover observed since 2008. It was targeted systematically in 2013 following the collection of cover data presented in these charts, however this species will most likely increase again if FFS does not treat it this year. Thalia lovegrass has also increased, and will not be reduced by flooding; however this species has not been targeted in the past. It was treated systematically in 2013 and should be re-treated and monitored more closely in the future.

3.5 SUMMARY OF TREATMENT COSTS

A summary table of treatments completed with fiscal year 2013 funds by both SFWMD and ACOE is presented in Table 16. A total of $ 425,000 was spent on exotic control primarily in the footprints and demolition sites of the Prairie canal and Merritt phases. Approximately $264,585 was spent by SFWMD while $110,011 was spent by ACOE. Of this total, an additional $50,000 was also spent by Florida Fish and Wildlife Conservation Commission (FWC) to retreat *Melaleuca* over a wider area of PSRP. Although SFWMD spent more than ACOE this fiscal year, this was more a result of lack of availability of crews by their contractor until later in the year when rains prevented the scheduled initial treatments in the Faka Union phase. This has now pushed us behind schedule in these recently cleared areas. SFWMD funds were insufficient to retreat Brazilian pepper in the Prairie Canal phase or to continue initial treatments at the demolition sites within Merritt phase putting us behind schedule in these areas.

3.6 RECCOMENDATIONS

SFWMD budgets during fiscal years 2011 and 2012 left re-treatments in the Prairie canal Phase behind schedule, especially for Brazilian pepper in the cleared footprints. The data

presented above shows the resulting increase in exotics cover. Additionally, very little headway has been made in completing initial treatments at demolition sites within the Merritt phase.

ACOE budgets have been more stable. Treatments were successful in the Merritt Canal phase footprints in fiscal years 2012 and 2013. However, due to indirect effects of a tragic accident (not at PSRP) with the exotic control contractor, which resulted in some downsizing to insure higher safety standards, fewer crews were available during the dry season of 2013 when we hoped to begin treating some of the cleared footprints in the Faka Union canal phase. When a crew was finally available, it was ultimately the rainy weather which prevented the work from being completed. As a result, we will need to catch up in Faka Union phase.

Melaleuca treatments are not put into the priorities listed below because it is a priority for the entire PSRP area, not just the footprints and demolition sites discussed below. IRC anticipates assisting with the allocation of funds from FWC to treat *Melaleuca* along the western edge of the project area along the portion of the Belle Meade tract which is home to the majority of the remaining red-cockaded woodpeckers (*Picoides borealis*) in Picayune Strand State Forest.

Given that some treatments are behind schedule, and that fiscal year 2014 budgets from both agencies will most likely not be sufficient to complete all tasks, it is understood that some items listed below may not be completed. The below treatments are prioritized in the order that we believe would accomplish the most this fiscal year. But creativity and flexibility are key when dealing with changing weather, crew availability, and budgets.

1. Complete re-treatments this fall (*just completed*) of jaraguá (*Hyparrhenia rufa*) in cleared footprints of Prairie and Merritt Canal phases (ACOE).

2. Conduct some foliar treatments using swamp buggy of the Faka Union canal phase cleared footprints, targeting only higher priority species such as cogongrass (ACOE). Due to budget and crew availability prior to March 2014, at which time changes will be made by ACOE, crews may only be able to target footprints (not adjacent buffers). Crews should work from the north end of Everglades (where crews already began for a short time this summer before being shut down by rain) working southward. IRC recommends working until just enough budget remains for the current contractor to move to Merritt phase for re-treatment (see below #3).

3. Conduct foliar re-treatment using swamp buggy of the Merritt Phase footprints (ACOE). IRC recommends completing this task with current budgets to insure that the same contractor which conducted the initial treatments last year can be utilized. This task is of equal importance to item 2 listed above.

4. Conduct foliar re-treatment of all Prairie canal phase cleared footprints (except areas turned over to FFS for maintenance) using swamp buggy or similar vehicle

(SFWMD). These treatments can be conducted any time this fiscal year, except if a freeze or fire occurs, prior to rainy season.

5. Re-treat (foliar) at least high priority species using a swamp buggy (or similar vehicle) the Soil remediation sites and associated demolition sites in the Miller phase (SFWMD).

6. Re-treat Brazilian pepper, lantana and miscellaneous hardwoods using Garlon IV within Prairie canal phase footprints (SFWMD). If there are not enough funds to complete this task, IRC recommends considering re treatment of only the road footprints where cover exceeds 5% in at least some of the area. This is a high priority item as discussed above in section 3.3. This can be completed during the dry season.

7. Foliar Re-treatment of Prairie and Merritt Canal phase demolition sites and their buffers (SFWMD). The best option is to utilize backpack sprayers and conduct a thorough re-treatment. The other option is to utilize a swamp buggy and selectively treat sites as was completed in FY 2013.

8. Foliar treatment of Prairie Canal logging trams (ACOE). These were incomplete last fiscal year but levels of infestation were low, except for caesarweed. Budgets and cover (heavy rains may have reduced cover) will dictate whether caesarweed is targeted this fiscal year.

9. Foliar treatment of L-6 footprint (ACOE). This recently cleared footprint for a new levee to be constructed in the Belle Meade tract should be treated, at a minimum, once, for high priority grasses such as torpedograss and cogongrass. This is somewhat elevated in priority partly because it should not cost too much.

10. Initial treatments of Brazilian pepper in Prairie Canal phase logging trams (ACOE). Ideally, because the footprints are narrow, it would be good to treat a buffer distance around all the tram footprints surrounded by upland or transitional areas not likely to be flooded for long periods of time. At a minimum, treatments should include the cleared footprints where cover already exceeds 5%.

11. Re-treat Brazilian pepper, lantana and miscellaneous hardwoods using Garlon IV within Prairie and Merritt canal phase demolition sites and their buffers (SFWMD). This is a costly venture and perhaps with current budget only a portion will be possible, if any. In that case, IRC recommends only re-treating the original roughly 500 acres of the Merritt phase demolition sites that were treated in 2010 due to re-emergence of lead tree in those areas observed in 2013.

12. Continue initial foliar treatments at demolition sites and their buffers in the Merritt Phase. This could include the use of a swamp buggy for larger (1-5 acre) patches of cogongrass but will require backpack crews for most of the over 4,000 acres remaining. Budgets are unlikely to be sufficient to treat the whole area this

fiscal year, and areas have already been prioritized within the unblocked areas of the Merritt phase for immediate treatments.

13. Following foliar treatments at demolition sites and their buffers in the Merritt Phase, Brazilian pepper and hardwoods will require treatment. Again this includes over 4,000 acres of hand treatments and would be prioritized according to completed foliar treatments. This should not be done prior to foliar treatments because the increased light may promote expansion of exotic grasses if left untreated.

4.0 ACKNOWLEDGEMENTS

We wish to thank Mike Duever for new chart and table formats and motivation to analyze and present the data in new ways, especially knowing he will look at it and use it. Thanks to Jon Morton and Ellen Allen for all their help and feedback in prioritizing treatments with limited budgets and crew schedules. Thanks to Craig van der Heiden for edits. Thanks to Beth McCartney for additional supervised classifications of aerial photography to identify cogongrass in unblocked areas of Merritt phase.

5.0 REFERENCES

Barry, M.J. 2009. Picayune Strand Restoration Project – Restored Footprint Exotics Mapping and Control Coordination, Monthly Report – October 2009.Submitted to South Florida Water Management District, Fort Myers Service Center, 2301 McGregor Blvd., Fort Myers, Florida, 33901 on November 11, 2009.

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Environmental Resources Management. 2013. Picayune Strand Restoration Project, Restored Footprint Exotics Mapping and Control Coordination – Annual Summary Effectiveness Assessment Report (June 2013). Submitted to South Florida Water Management District, Fort Myers Service Center, 2301 McGregor Blvd., Fort Myers, Florida, 33901

Figures

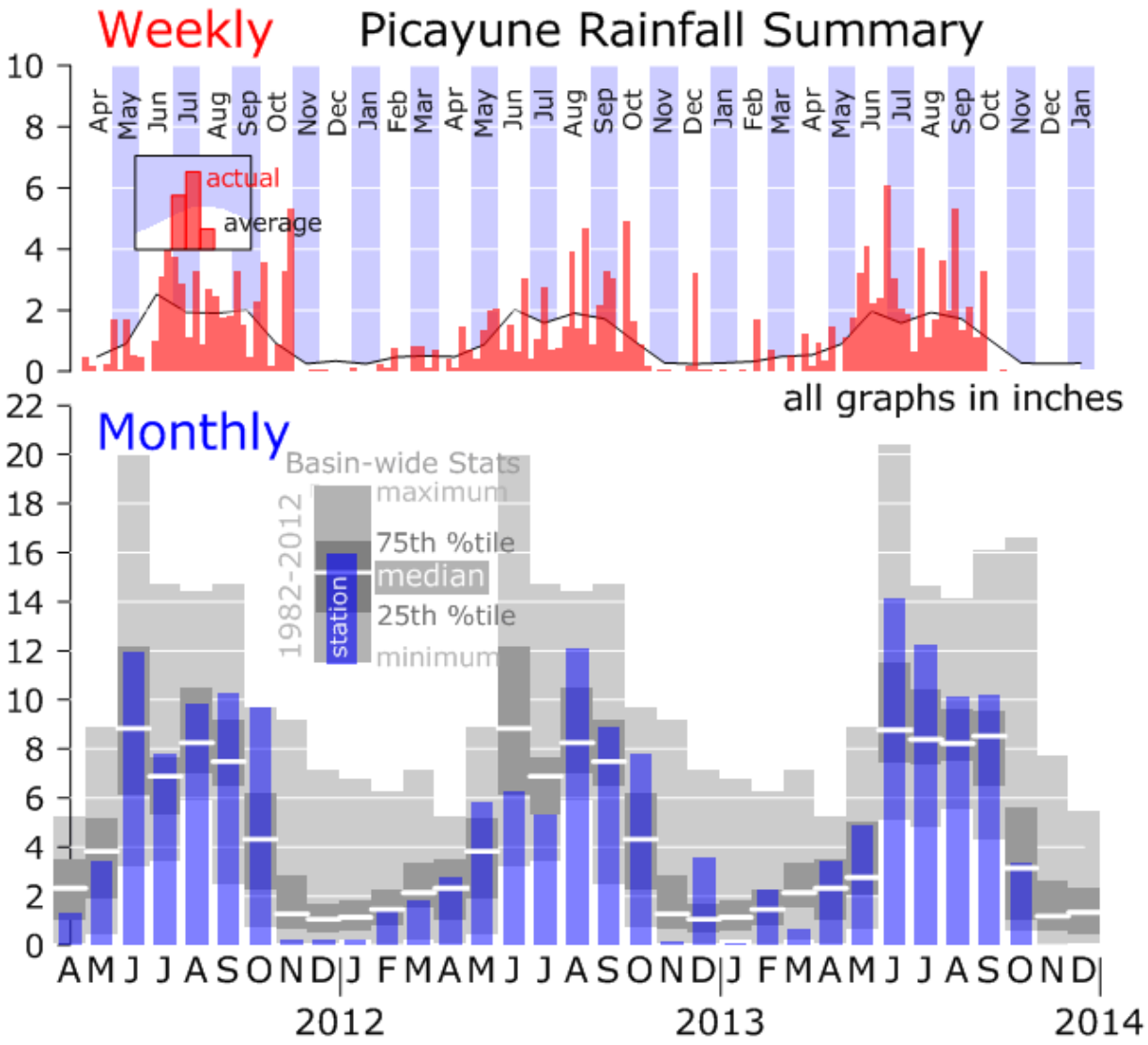

Figure 1: Picayune Rainfall Summary (gohydrology.org)

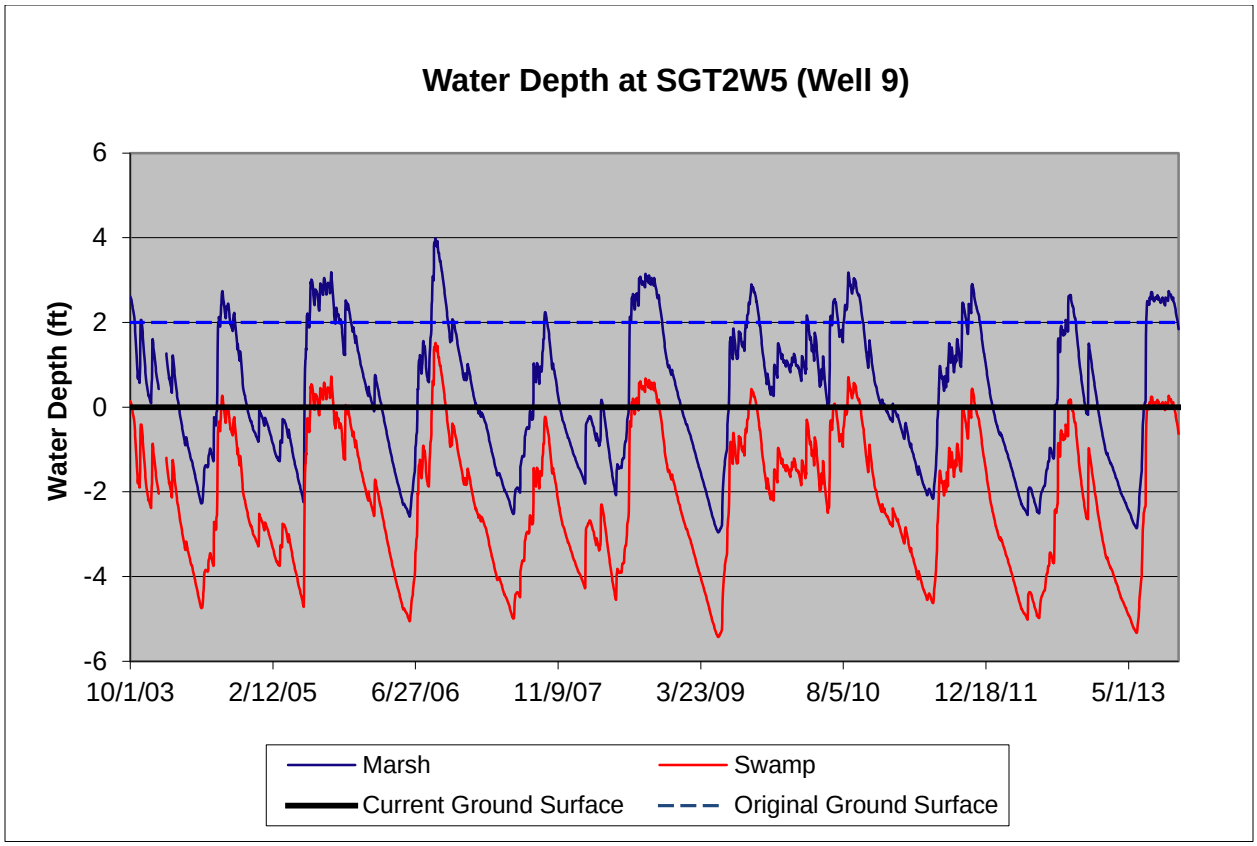

Figure 2: Water Depth at SGT2W5 (Well 9)

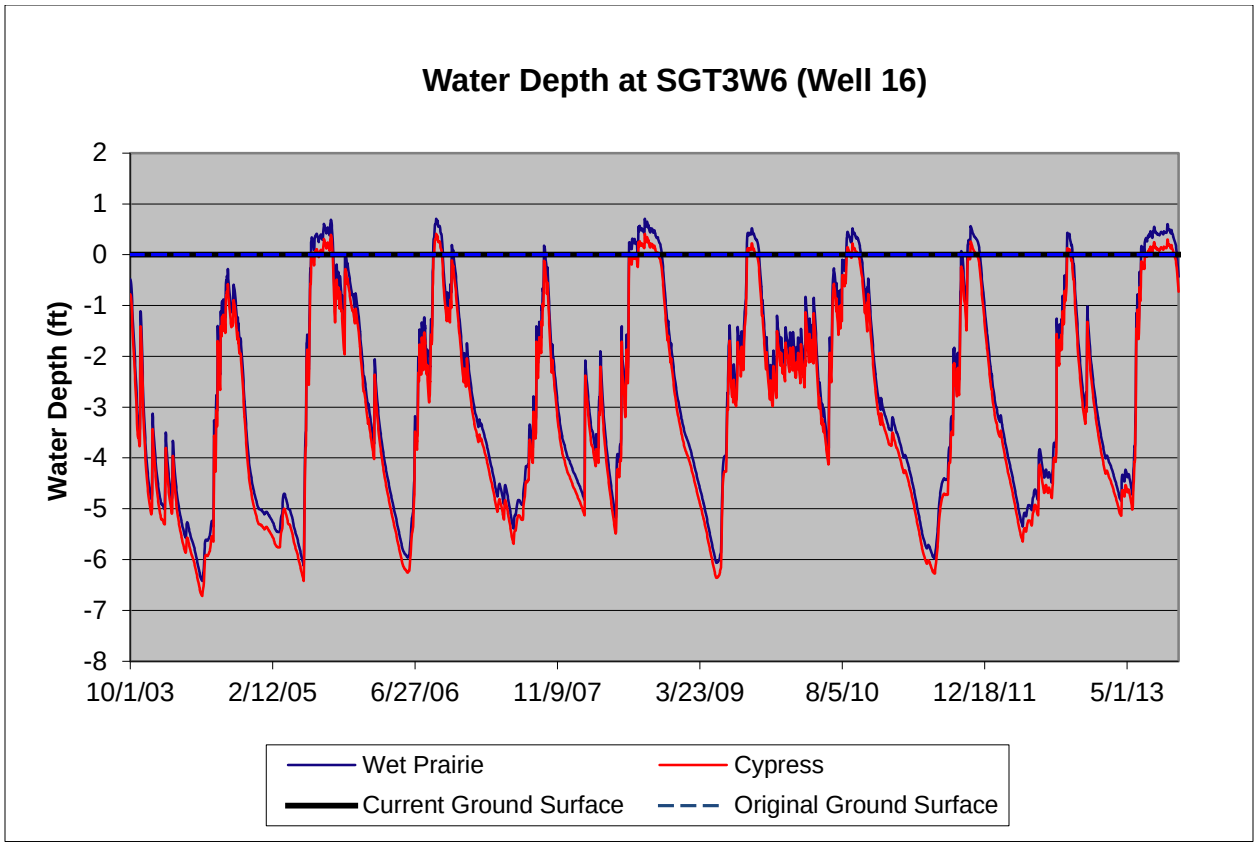

Figure 3: Water Depth at SGT3W6 (Well 16)

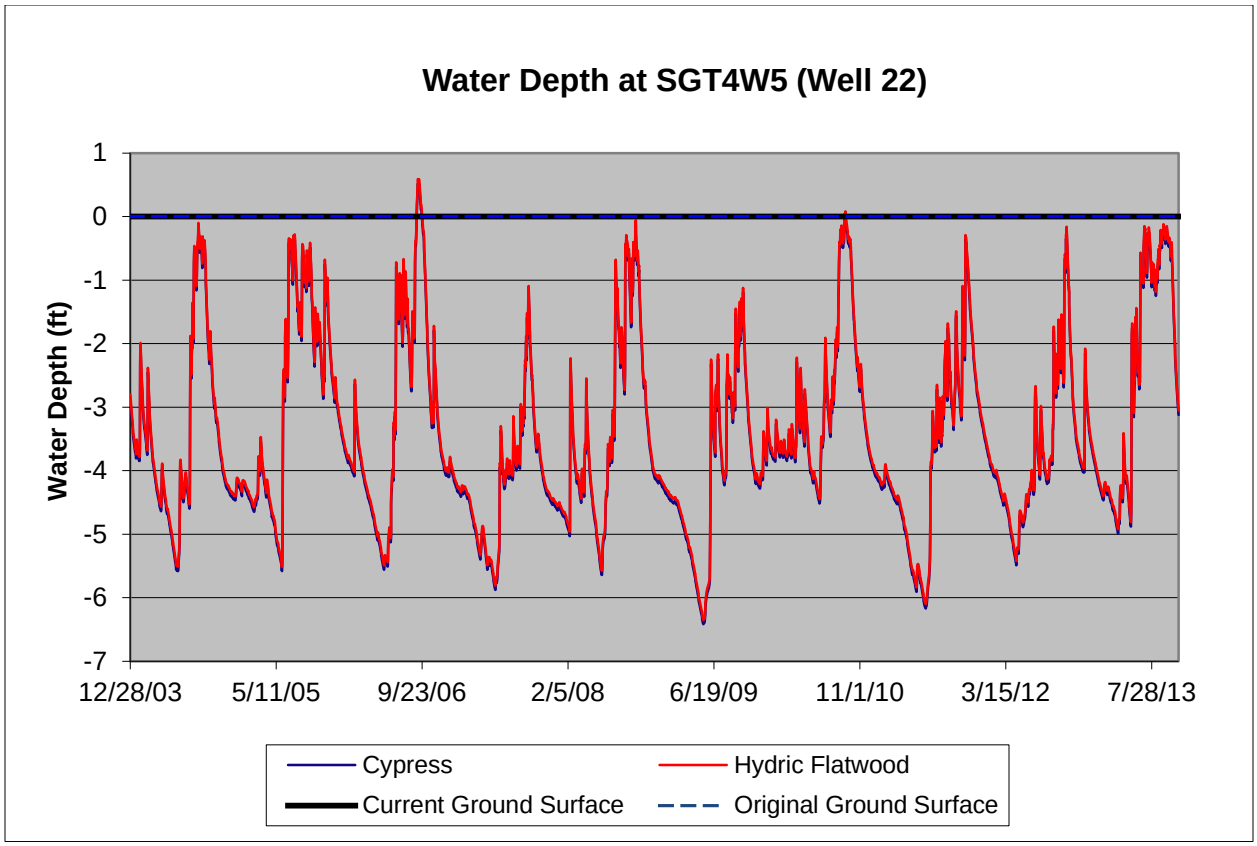

Figure 4: Water Depth at SGT4W5 (Well 22)

Figure 5: Area Covered by Foliar Re-Treatment (ACOE) of Priority Species in Prairie Canal Phase at PSRP, FY 2013

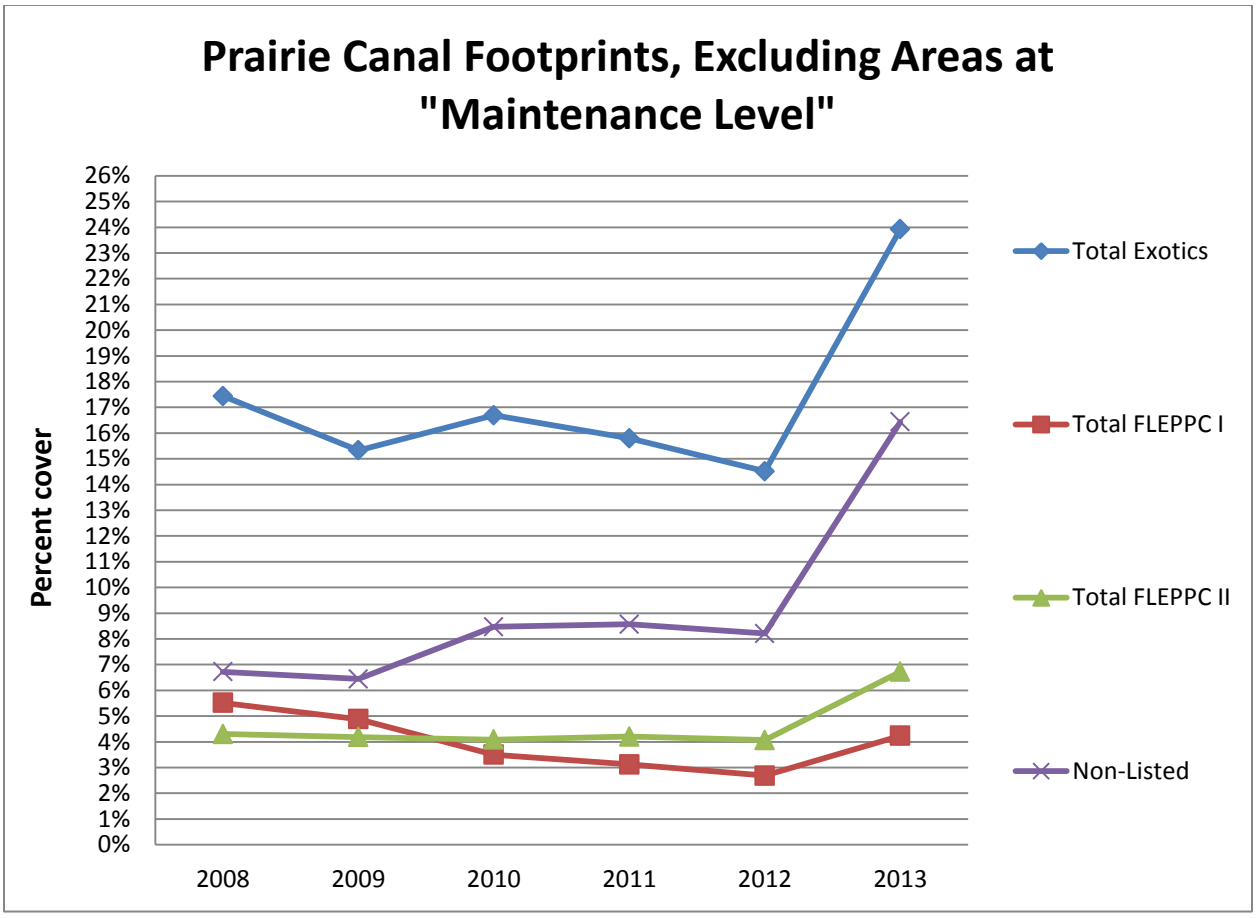

Figure 6: Area Covered by Invasive Exotics in Prairie Canal Phase Cleared Footprints (Excluding Areas at "Maintenance Level")

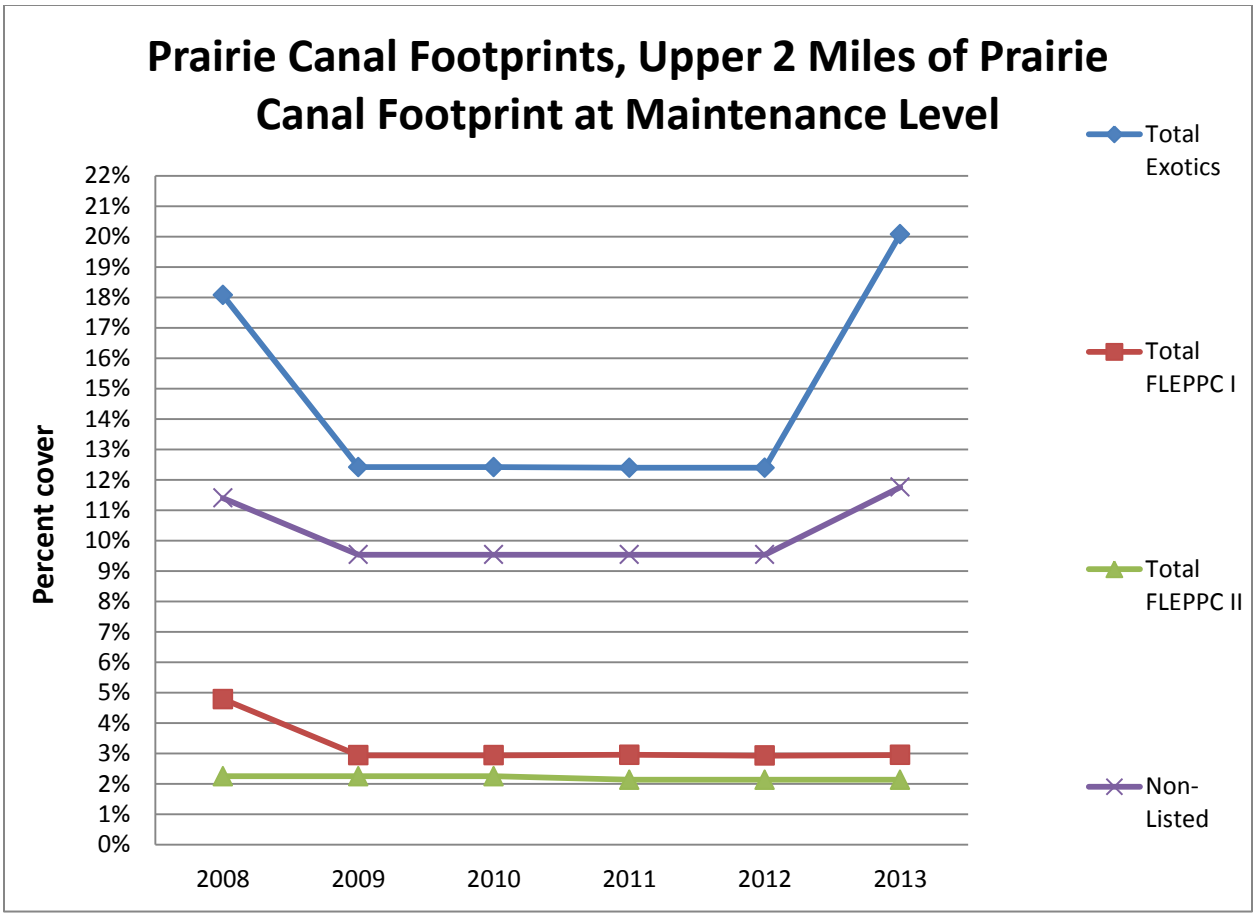

Figure 7: Area Covered by Invasive Exotics in Prairie Canal Phase Cleared Footprints (Upper 2 Miles of Prairie Canal)

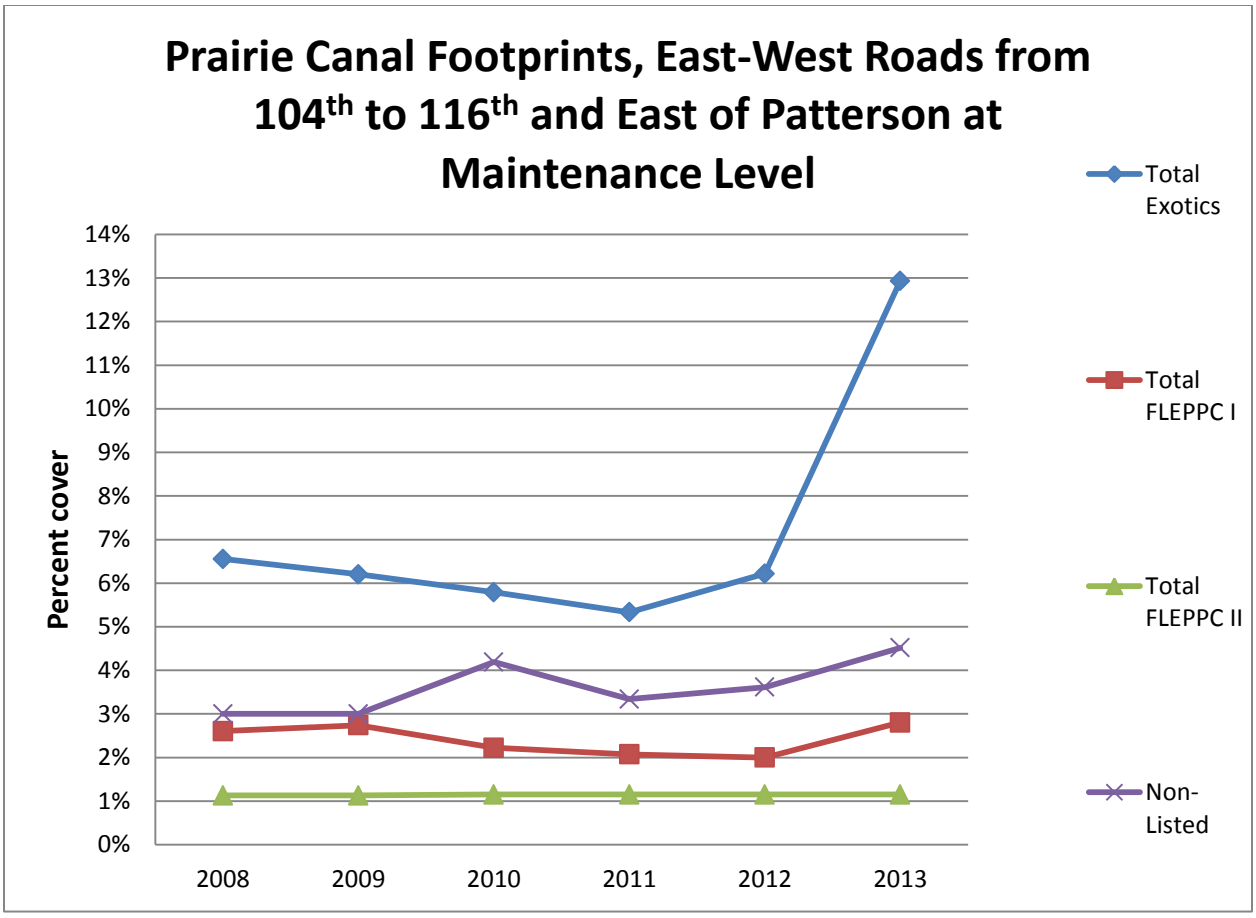

Figure 8: Area Covered by Invasive Exotics in Prairie Canal Phase Cleared Footprints (E-W roads from 104th through 116th and E of Patterson)

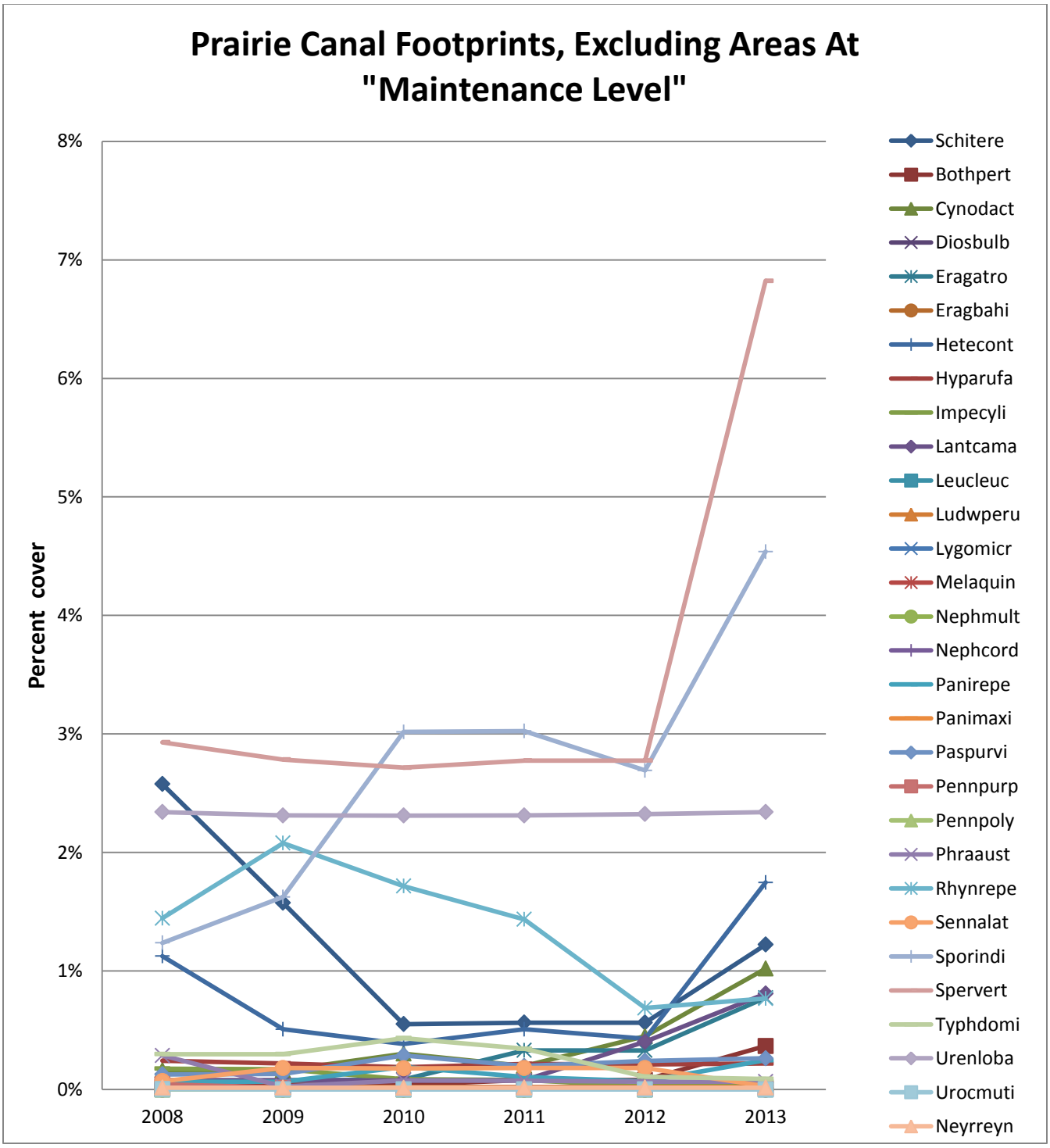

Figure 9: Individual Species Cover, Prairie Canal Footprints, Excluding Areas at "Maintenance Level"

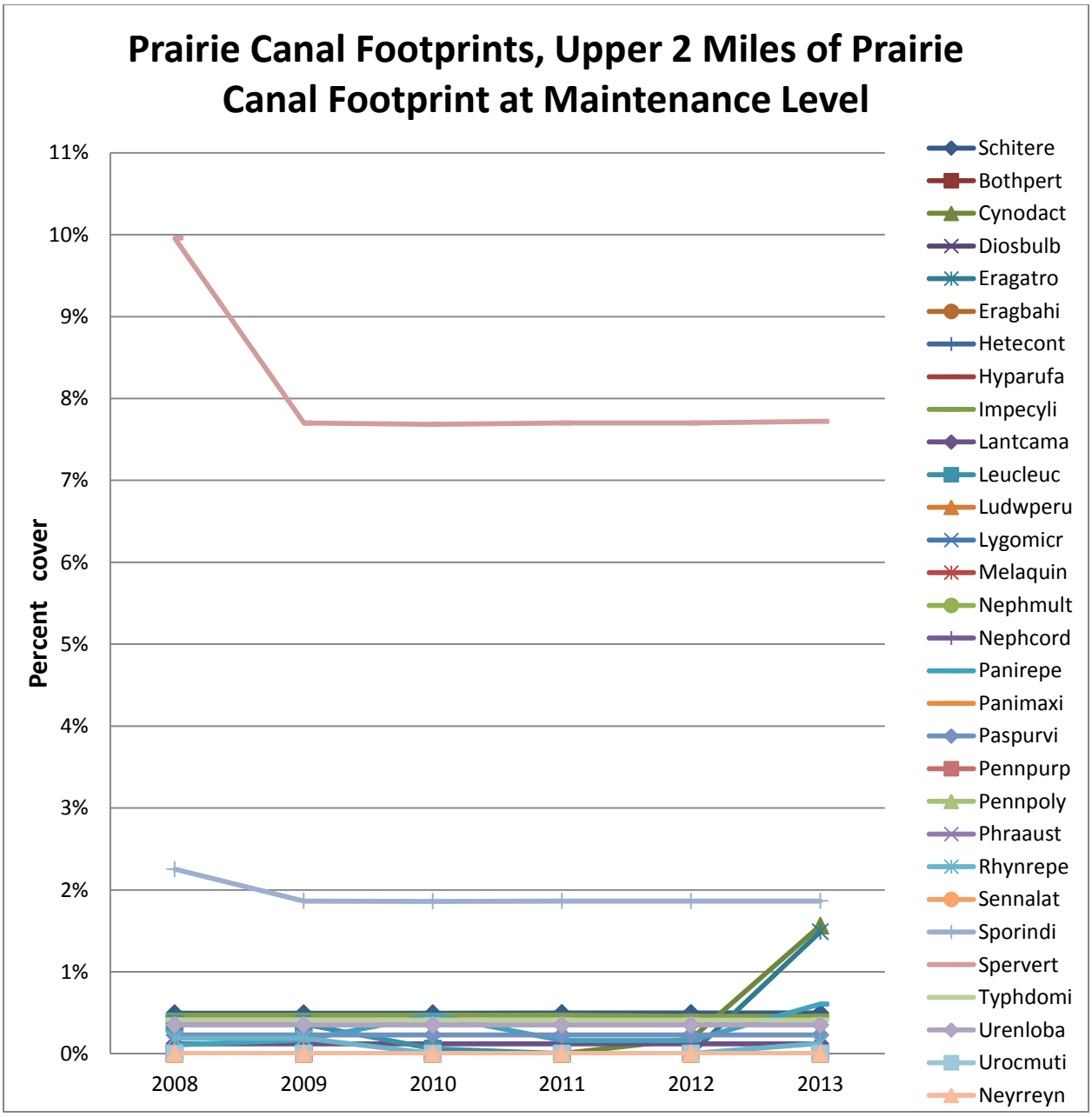

Figure 10: Individual Species Cover, Prairie Canal Phase Cleared Footprints (Upper 2 Miles of Prairie Canal)

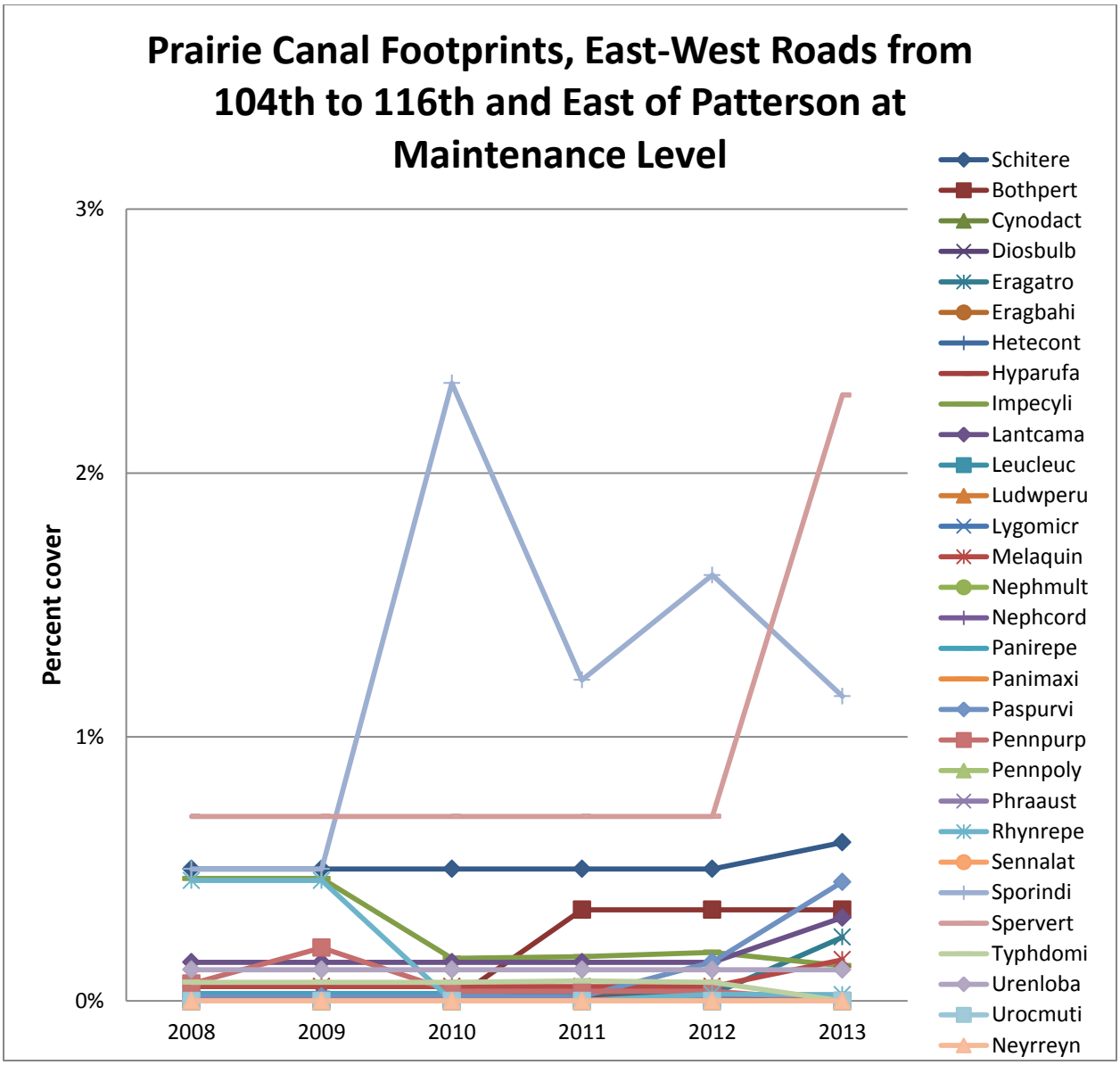

Figure 11: Individual Species Cover, Prairie Canal Phase Cleared Footprints (E-W roads from 104th through 116th and E of Patterson)

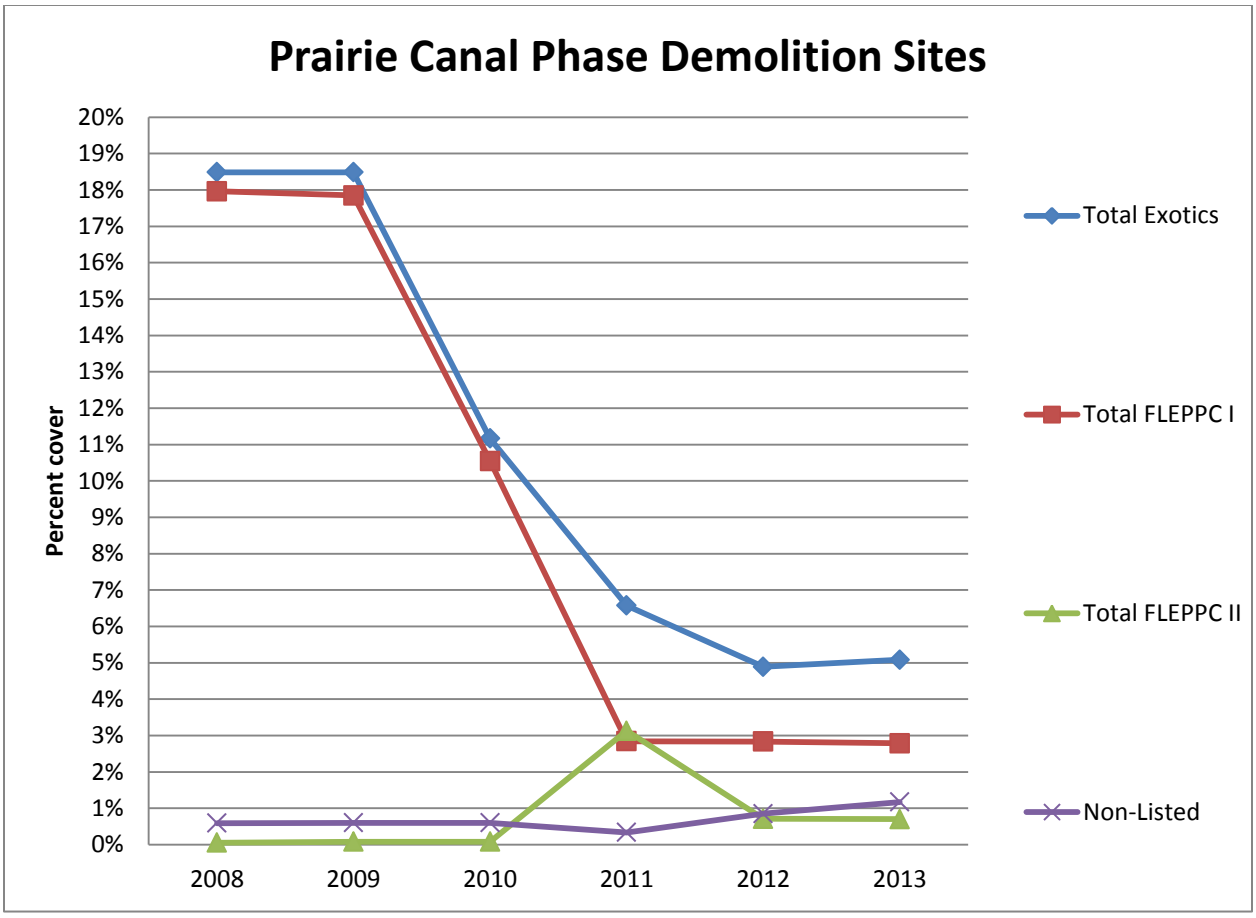

Figure 12: Area Covered by Invasive Exotics in Prairie Canal Phase Demolition Sites

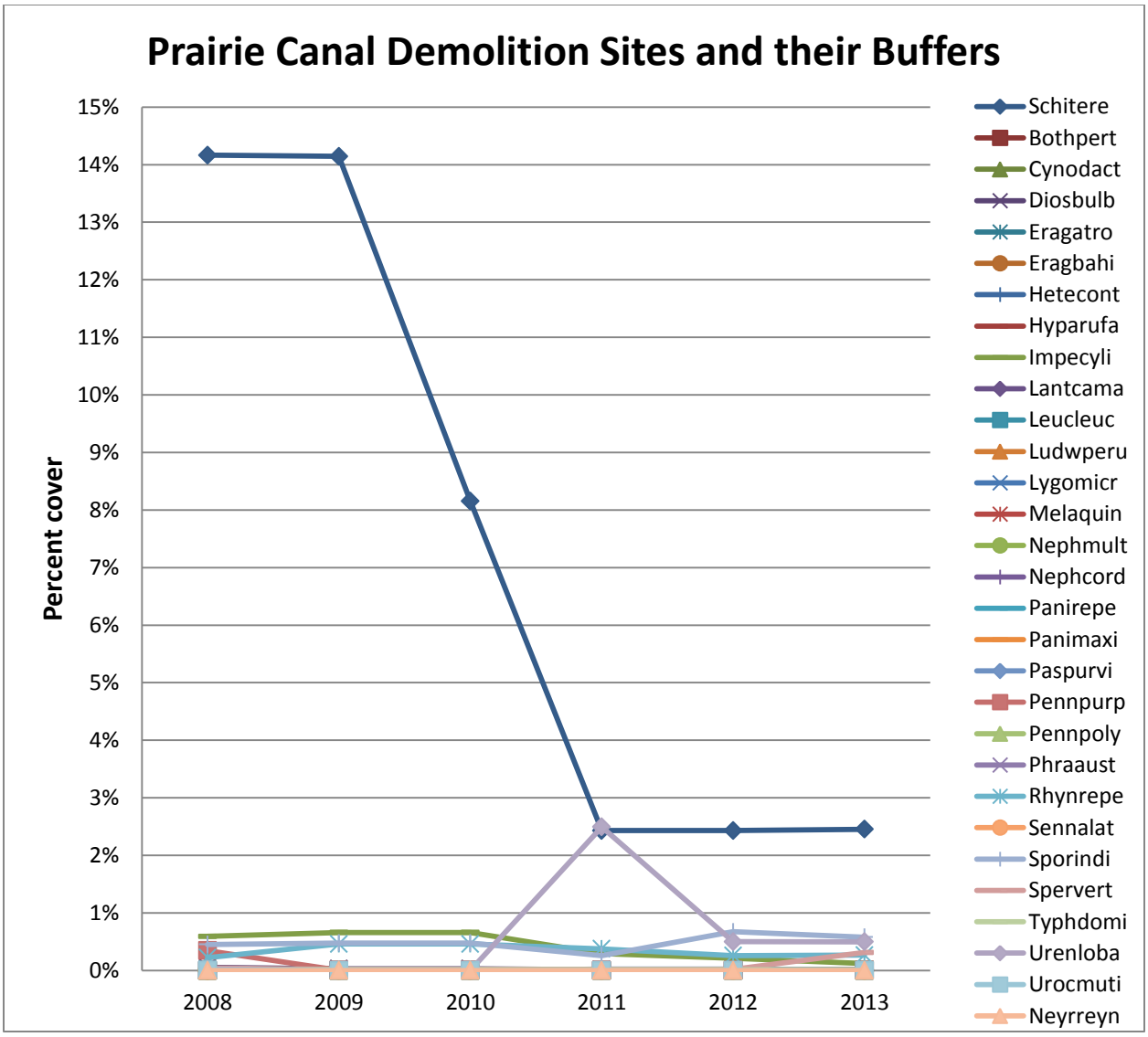

Figure 13: Individual Species Cover, Prairie Canal Phase Demolition Sites

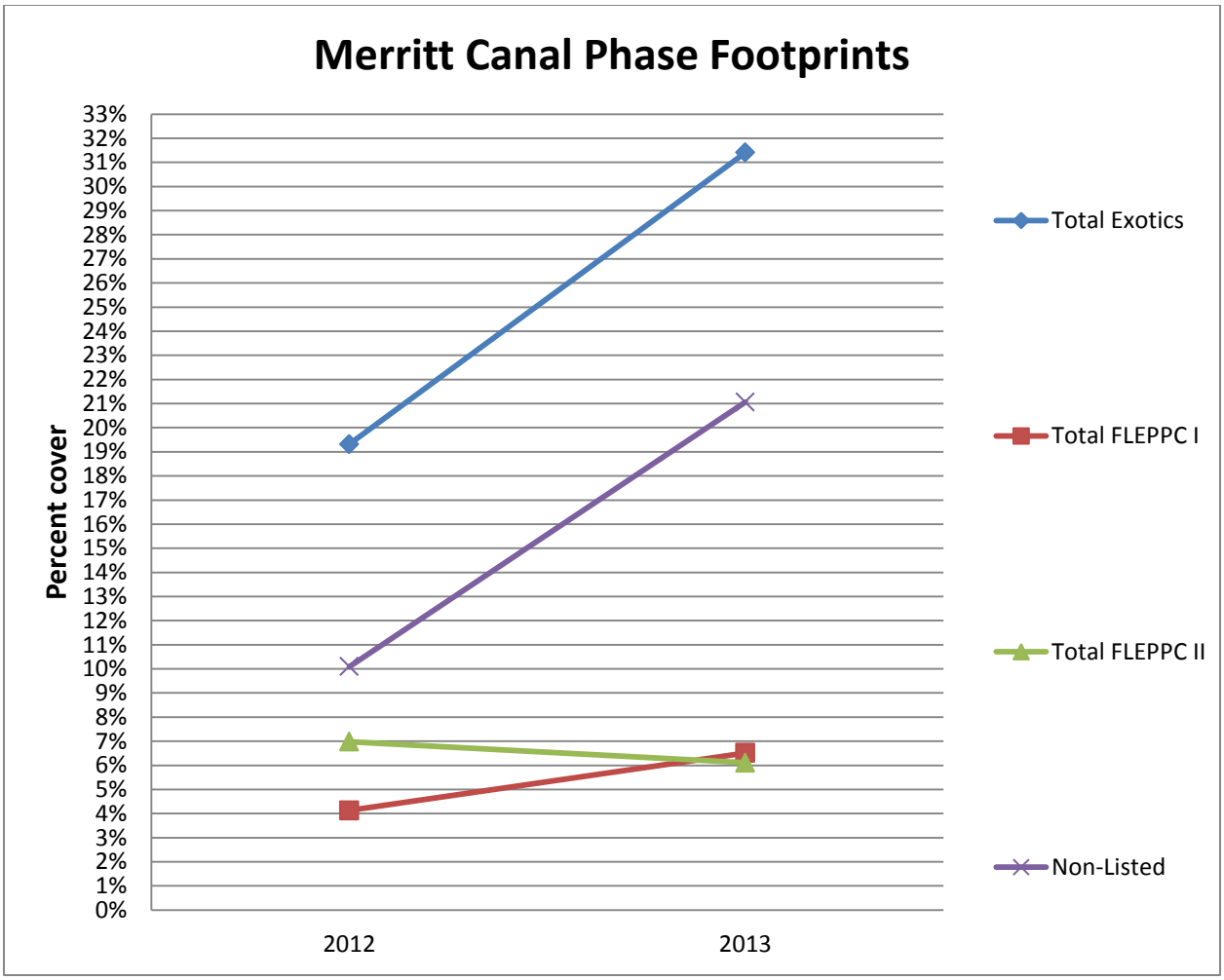

Figure 14: Area Covered by Invasive Exotics in Merritt Canal Phase Cleared Footprints

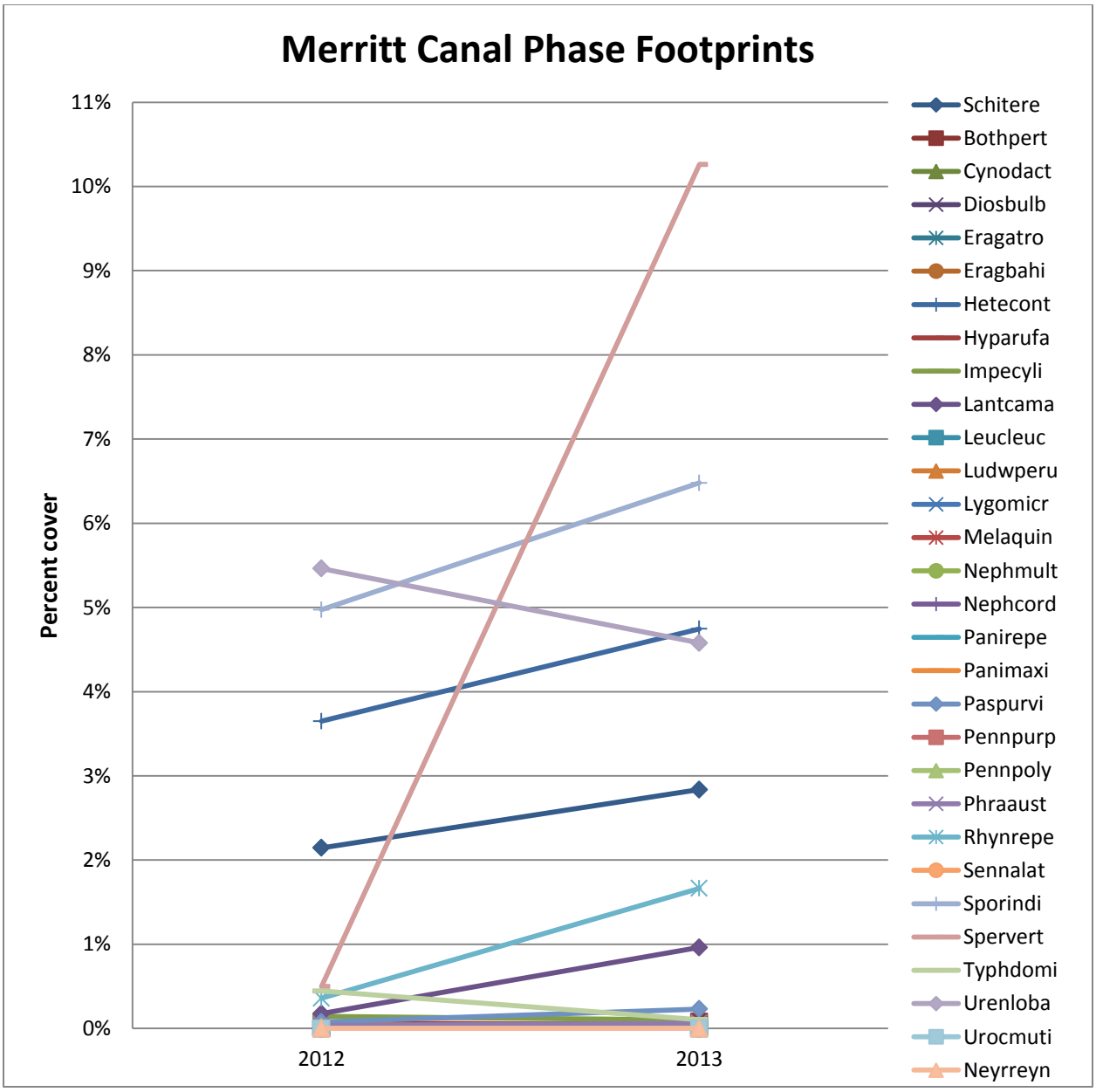

Figure 15: Individual Species Cover, Merritt Canal PhaseFootprints

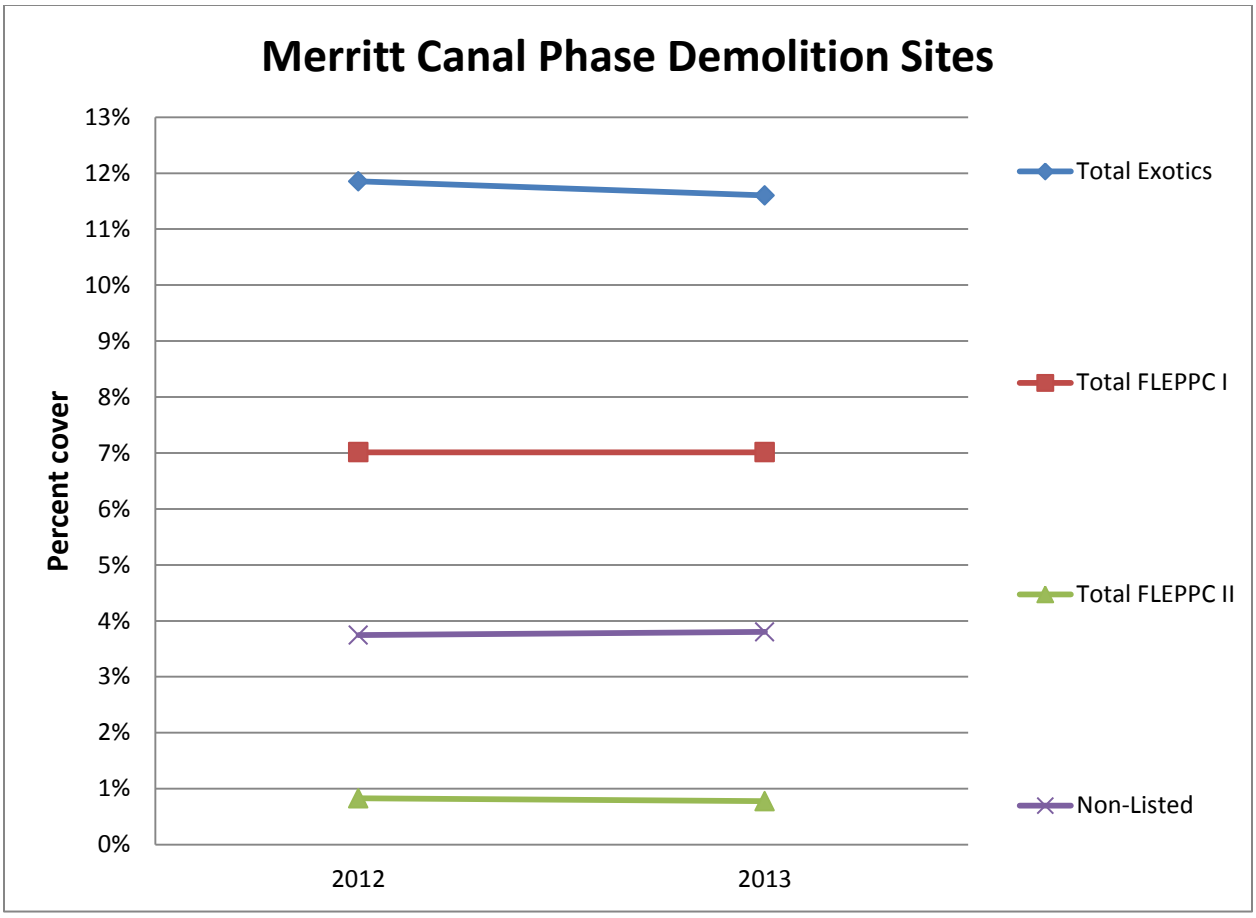

Figure 16: Area Covered by Invasive Exotics in Merritt Canal Phase Demolition Sites

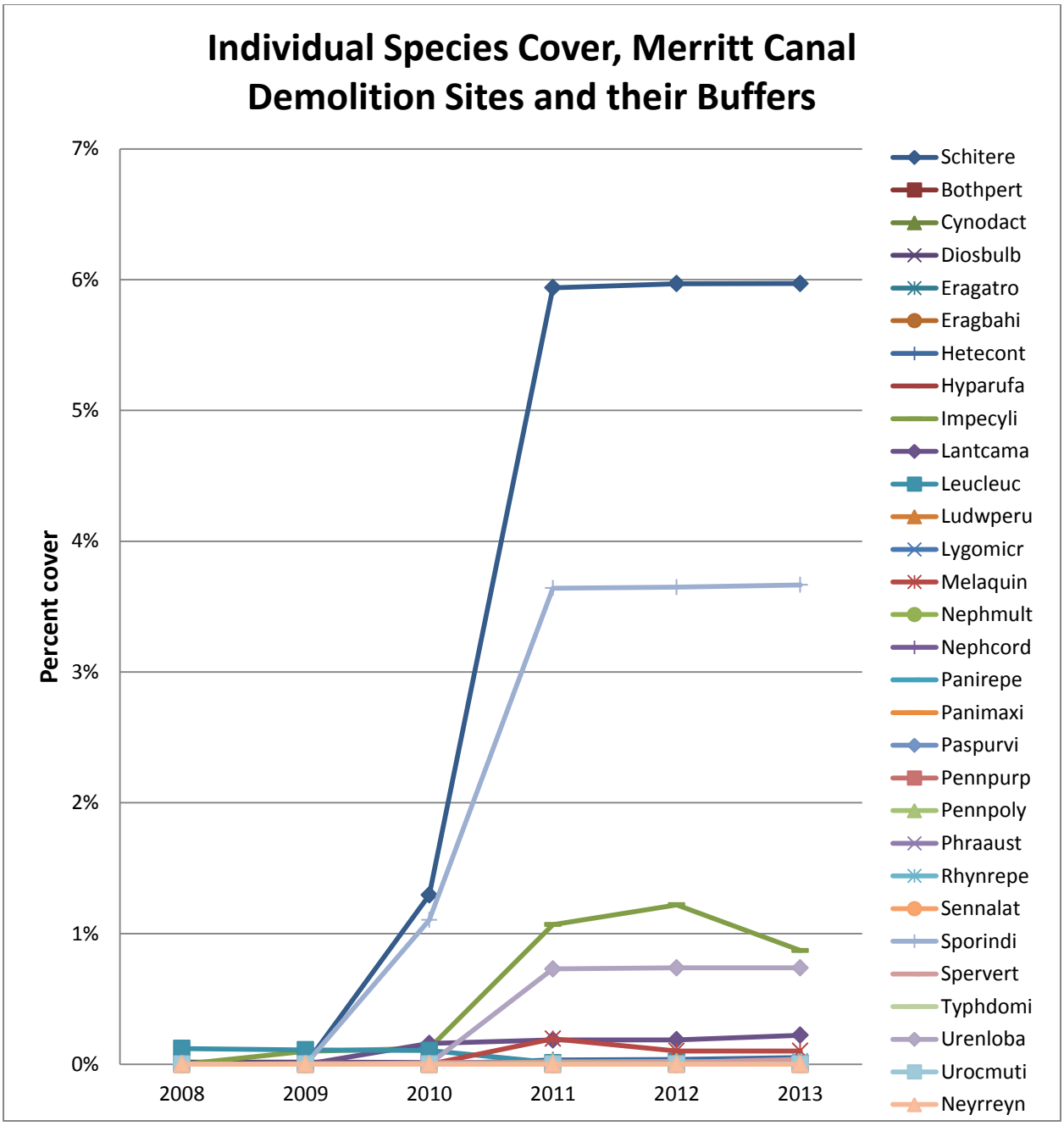

Figure 17: Individual Species Cover, Merritt Canal Phase Demolition Sites

(*mapping still incomplete, but very little complete prior to 2011, thus the low values, except for leucleuc at the first home sites treated in Merritt Canal Phase, 2010*)

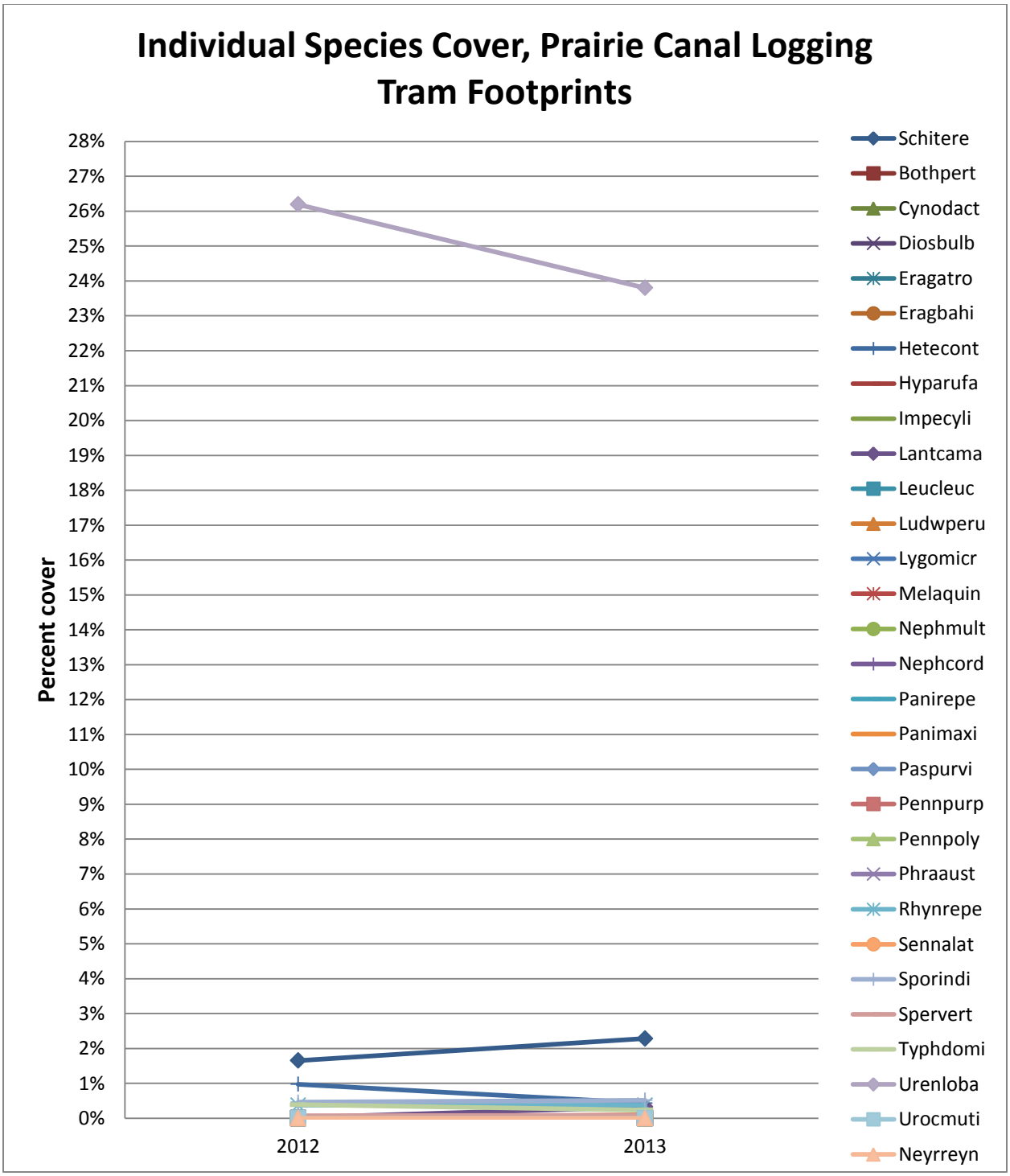

Figure 18: Individual Species Cover, Prairie Canal Phase Logging Tram Footprints

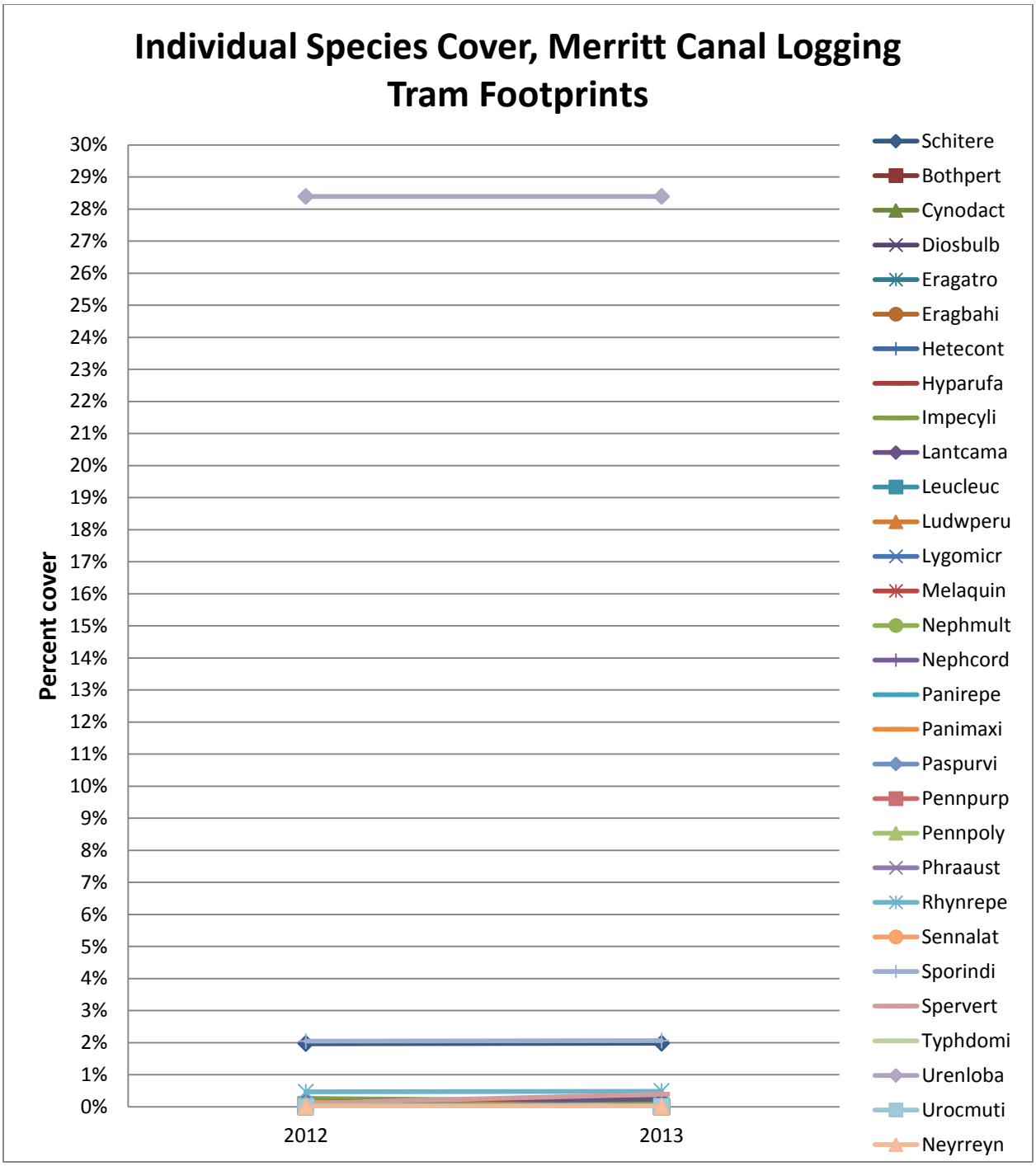

Figure 19: Individual Species Cover, Merritt Canal Phase Logging Tram Footprints

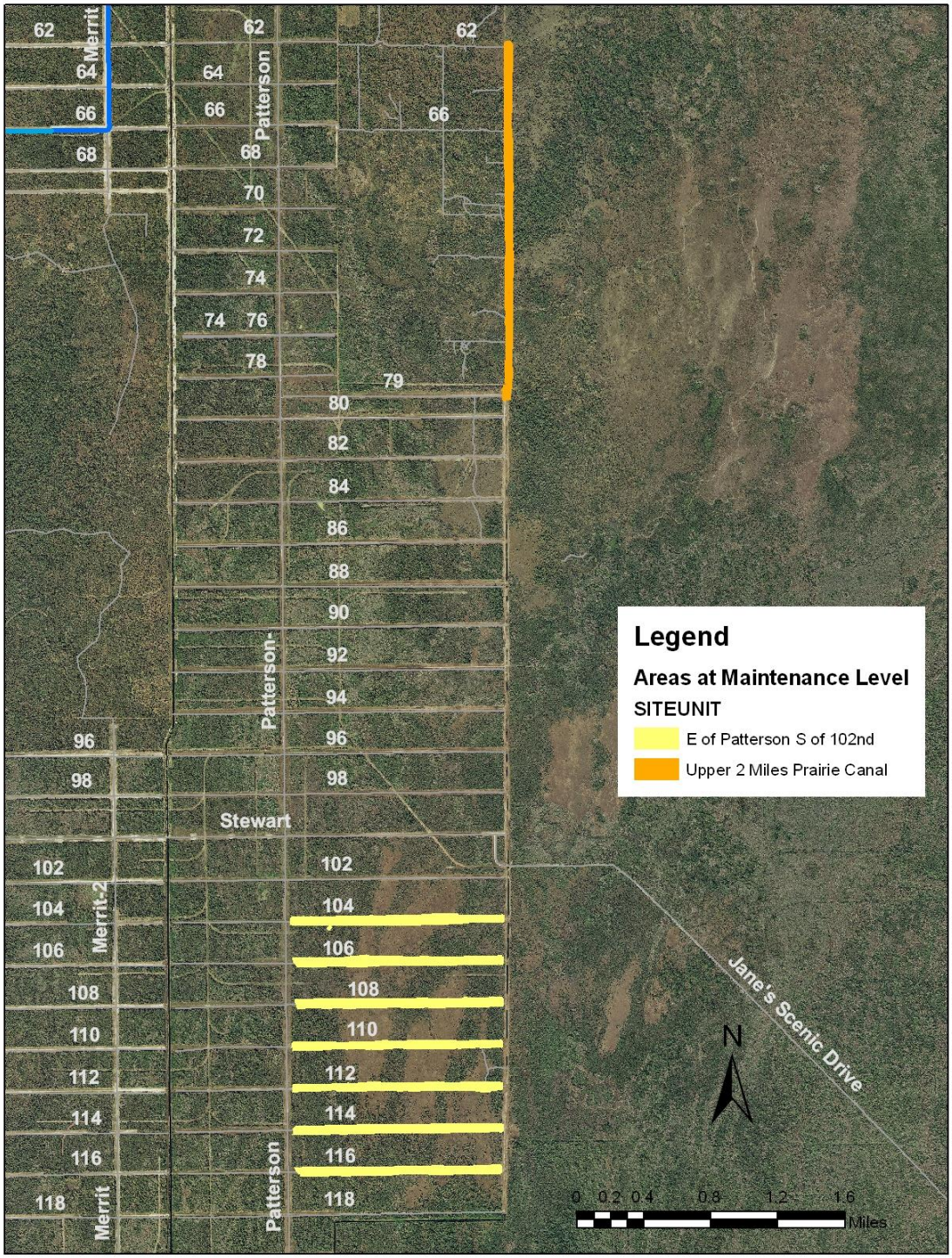

Figure 20: Areas at "Maintenance Level", Prairie Canal Phase Footprints

Tables

Table 1: Acres Covered by Foliar Re-Treatment (ACOE) of Priority Species* in Prairie Canal Phase at PSRP, FY 2013											
Treatment	Dates	Location	0	0-<1%	1-5%	5-25%	25-50%	50-75%	75-95%	>95%	Total Acres
Prairie Canal Footprints Re-Treatment (ACOE)	6/17/2013 to 7/11/2013	Inside Footprint	0.7	8.3	43.6	34.9					87.4
		Adjacent to Footprint	4.4	1.1	3.7						9.1
		Inside Logging Tram Footprint	8.7	6.3	6.8	3.4					25.2
		Demolition Site			2.0						
		Demolition Site Buffer	17.2	3.5	1.3						22.0
		New Footprint	113.8	5.4							119.2
		TOTAL:	144.7	24.6	57.4	38.3	0.0	0.0	0.0	0.0	264.9

**** Species Targeted in FY 2013 included in these cover estimates are: Cynodact, Eragatro, Impecyli, Lantcama, Panirepe, Neyrreyn, Panimaxi, Paspurvi, Penepurp, Pennpoly, Phraaust, Melirepe, Typhdomi, and Urocmuti***

Table 2: Total Infested Acres by Cover Class and Actual Area Covered by Invasive Exotics in Prairie Canal Cleared Footprints (Excluding Areas At "Maintenance Level")												
Category	Period	0% (No Infestation)	Total Infested Acres	Actual Coverage*	<1%	1-5%	5-25%	25-50%	50-75%	75-95%	95-100%	Total Acres**
Total Exotics	Spring 2008	0.5	1465.0	255.5	9.6	371.7	821.3	187.4	61.0	7.9	6.1	1465.5
	Spring 2009	0.5	1465.0	224.6	13.3	594.3	616.3	167.2	53.7	14.1	6.1	1465.5
	Spring 2010	0.5	1465.0	244.6	11.6	429.4	779.0	170.7	58.6	9.2	6.5	1465.5
	Spring 2011	0.5	1465.0	231.4	5.9	487.0	753.3	146.1	56.9	15.8		1465.5
	Spring 2012	0.5	1465.0	212.7	12.1	487.6	811.1	92.9	51.1	3.5	6.7	1465.5
	Spring 2013	0.5	1465.0	350.4	4.4	113.1	931.4	283.9	70.3	26.9	34.9	1465.5
Total FLEPPC I	Spring 2008	0.5	1465.0	80.8	387.2	866.6	141.7	56.3	3.0	10.2		1465.5
	Spring 2009	0.5	1465.0	71.5	452.2	827.5	135.4	37.4	2.5	9.9		1465.5
	Spring 2010	0.5	1465.0	51.3	532.4	814.9	88.7	29.0				1465.5
	Spring 2011	0.5	1465.0	45.7	602.0	779.3	53.6	30.1				1465.5
	Spring 2012	0.5	1465.0	39.4	631.0	740.7	93.2	0.0				1465.5
	Spring 2013	7.6	1457.8	62.0	355.0	909.0	176.3	17.5				1465.5
Total FLEPPC II	Spring 2008	124.5	1341.0	63.0	524.4	598.7	193.8	6.7	17.3			1465.5
	Spring 2009	124.5	1341.0	61.3	500.8	641.4	174.7	6.7	17.3			1465.5
	Spring 2010	134.7	1330.8	59.9	505.4	633.6	168.2	6.5	17.1			1465.5
	Spring 2011	124.5	1341.0	61.6	488.4	653.8	174.7	6.7	17.3			1465.5
	Spring 2012	124.5	1341.0	59.5	489.6	652.6	174.8	6.7	17.3			1465.5
	Spring 2013	116.3	1349.2	98.4	453.5	731.6	135.7	11.1	17.3			1465.5
Non-Listed	Spring 2008	29.3	1436.2	98.4	4.9	1035.6	360.1	35.6				1465.5
	Spring 2009	29.3	1436.2	94.4	30.6	1080.6	266.9	58.1				1465.5
	Spring 2010	20.2	1445.3	124.1	25.9	847.5	515.2	56.7				1465.5
	Spring 2011	13.3	1452.2	125.5	21.6	870.0	499.3	55.4	5.8			1465.5
	Spring 2012	17.3	1448.1	120.2	13.2	889.5	500.1	39.5	5.8			1465.5
	Spring 2013	10.2	1455.3	240.8	4.2	458.9	715.9	228.0	30.7	17.6		1465.5
Sum of infested acres for each cover class multiplied by the midpoint of the percent cover category												
****Total Acreage considered inside footprint is less than 2011 because some areas re-disturbed prior to re-survey were not included in calculations this year***												

Table 3: Summary of Actual Area Covered by Invasive Exotics in Prairie Canal Phase Cleared Footprints (Excluding Areas At "Maintenance Level")

Category	Spring 2008		Spring 2009		Spring 2010		Spring 2011		Spring 2012		Spring 2013		Total Acres
	Actual Coverage*	% of Site	Actual Coverage*	% of Site	Actual Coverage*	% of Site	Actual Coverage*	% of Site	Actual Coverage*	% of Site	Actual Coverage*	% of Site	
Total Exotics	255.5	17.4%	224.6	15.3%	244.6	16.7%	231.4	15.8%	212.7	14.5%	350.4	23.9%	1465.0
Total FLEPPC I	80.8	5.5%	71.5	4.9%	51.3	3.5%	45.7	3.1%	39.4	2.7%	62.0	4.2%	1465.0
Total FLEPPC II	62.99	4.3%	61.29	4.2%	59.9	4.1%	61.6	4.2%	59.5	4.1%	98.4	6.7%	1465.0
Non-Listed	98.4	6.7%	94.4	6.4%	124.1	8.5%	125.5	8.6%	120.2	8.2%	240.8	16.4%	1465.0

sum of infested acres for each cover class multiplied by the midpoint of the percent cover category

Table 4: Total Infested Acres by Cover Class and Actual Area Covered by Invasive Exotics in Prairie Canal Cleared Footprints (Upper 2 Miles of Prairie Canal Footprint)

Category	Period	0% (No Infestation)	Total Infested Acres	Actual Coverage*	<1%	1-5%	5-25%	25-50%	50-75%	75-95%	95-100%	Total Acres**
Total Exotics	Spring 2008	0.0	45.7	8.3	0.4	1.2	37.1	7.1				45.7
	Spring 2009	0.0	45.7	5.7	0.4	9.4	36.0					45.7
	Spring 2010	0.0	45.7	5.7	0.6	9.2	36.0					45.7
	Spring 2011	0.0	45.7	5.7	0.4	9.5	35.9					45.7
	Spring 2012	0.0	45.7	5.7	0.4	9.5	35.9					45.7
	Spring 2013	0.0	45.7	9.2	0.0	3.5	30.0	12.2				45.7
Total FLEPPC I	Spring 2008	0.0	45.7	2.2	1.5	37.1	7.1					45.7
	Spring 2009	0.0	45.7	1.3	1.1	44.6	0.0					45.7
	Spring 2010	0.0	45.7	1.3	1.1	44.6	0.0					45.7
	Spring 2011	0.0	45.7	1.4	0.9	44.8	0.0					45.7
	Spring 2012	0.0	45.7	1.3	1.3	44.4	0.0					45.7
	Spring 2013	0.0	45.7	1.3	1.0	44.7	0.0					45.7
Total FLEPPC II	Spring 2008	0.6	45.1	1.0	13.0	32.1	0.0					45.7
	Spring 2009	0.6	45.1	1.0	13.0	32.1	0.0					45.7
	Spring 2010	0.6	45.1	1.0	13.0	32.1	0.0					45.7
	Spring 2011	11.2	34.5	1.0	2.4	32.1	0.0					45.7
	Spring 2012	11.2	34.5	1.0	2.4	32.1	0.0					45.7

Category	Period	0% (No Infestation)	Total Infested Acres	Actual Coverage*	<1%	1-5%	5-25%	25-50%	50-75%	75-95%	95-100%	Total Acres**
	Spring 2013	11.2	34.5	1.0	2.4	32.1	0.0					45.7
Non-Listed	Spring 2008	0.4	45.4	5.2	0.0	13.2	32.1					45.7
	Spring 2009	0.4	45.4	4.4	0.0	20.4	25.0					45.7
	Spring 2010	0.6	45.1	4.4	0.0	20.1	25.0					45.7
	Spring 2011	0.4	45.4	4.4	0.0	20.4	25.0					45.7
	Spring 2012	0.4	45.4	4.4	0.0	20.4	25.0					45.7
	Spring 2013	0.0	45.7	5.4	0.0	20.0	21.6	4.1				45.7
Sum of infested acres for each cover class multiplied by the midpoint of the percent cover category												
****Total Acreage considered inside footprint is less than 2011 because some areas re-disturbed prior to re-survey were not included in calculations this year***												

Table 5: Summary of Actual Area Covered by Invasive Exotics in Prairie Canal Phase Cleared Footprints (Upper 2 Miles of Prairie Canal)

Category	Spring 2008		Spring 2009		Spring 2010		Spring 2011		Spring 2012		Spring 2013		Total Acres
	Actual Coverage *	% of Site	Actual Coverage *	% of Site	Actual Coverage*	% of Site	Actual Coverage*	% of Site	Actual Coverage*	% of Site	Actual Coverage*	% of Site	
Total Exotics	8.3	18.1	5.7	12.4	5.7	12.4	5.7	12.4	5.7	12.4	9.2	20.1	45.7
Total FLEPPC I	2.2	4.8	1.3	2.9	1.3	2.9	1.4	3.0	1.3	2.9	1.3	3.0	45.7
Total FLEPPC II	1.03	2.2	1.03	2.2	1.03	2.2	1.0	2.1	1.0	2.1	1.0	2.1	45.7
Non-Listed	5.2	11.4	4.4	9.5	4.4	9.5	4.4	9.5	4.4	9.5	5.4	11.8	45.7

sum of infested acres for each cover class multiplied by the midpoint of the percent cover category

Table 6: Total Infested Acres by Cover Class and Actual Area Covered by Invasive Exotics in Prairie Canal Cleared Footprints (E-W roads from 104th through 116th and E of Patterson)												
Category	Period	0% (No Infestation)	Total Infested Acres	Actual Coverage*	<1%	1-5%	5-25%	25-50%	50-75%	75-95%	95-100%	Total Acres**
Total Exotics	Spring 2008	0.0	210.0	13.8		147.8	62.2					210.0
	Spring 2009	0.0	210.0	13.0		154.0	56.1					210.0
	Spring 2010	0.0	210.0	12.2		161.2	48.8					210.0
	Spring 2011	0.0	210.0	11.2		169.2	40.8					210.0
	Spring 2012	0.0	210.0	13.1		153.7	56.3					210.0
	Spring 2013	0.0	210.0	27.2		36.2	173.8					210.0
Total FLEPPC I	Spring 2008	0.0	210.0	5.5	33.1	176.9						210.0
	Spring 2009	0.0	210.0	5.8	33.1	174.5	2.4					210.0
	Spring 2010	0.0	210.0	4.7	65.2	144.9						210.0
	Spring 2011	0.0	210.0	4.4	77.7	132.3						210.0
	Spring 2012	0.0	210.0	4.2	84.0	126.0						210.0
	Spring 2013	0.0	210.0	5.9	16.5	193.5						210.0
Total FLEPPC II	Spring 2008	0.0	210.0	2.4	157.2	52.9						210.0
	Spring 2009	0.0	210.0	2.4	157.2	52.9						210.0
	Spring 2010	0.0	210.0	2.4	157.2	52.9						210.0
	Spring 2011	0.0	210.0	2.4	155.3	54.7						210.0
	Spring 2012	0.0	210.0	2.4	155.3	54.7						210.0
	Spring 2013	0.0	210.0	2.4	155.3	54.7						210.0
Non-Listed	Spring 2008	0.0	210.0	6.3		210.0						210.0
	Spring 2009	0.0	210.0	6.3		210.0						210.0
	Spring 2010	0.0	210.0	8.8		189.2	20.9					210.0
	Spring 2011	0.0	210.0	7.0		204.1	5.9					210.0
	Spring 2012	0.0	210.0	7.6		199.3	10.8					210.0
	Spring 2013	0.0	210.0	9.5		183.5	26.6					210.0
Sum of infested acres for each cover class multiplied by the midpoint of the percent cover category												
****Total Acreage considered inside footprint is less than 2011 because some areas re-disturbed prior to re-survey were not included in calculations this year***												

Table 7: Summary of Actual Area Covered by Invasive Exotics in Prairie Canal Phase Cleared Footprints (E-W roads from 104th through 116th and E of Patterson)

Category	Spring 2008		Spring 2009		Spring 2010		Spring 2011		Spring 2012		Spring 2013		Total Acres
	Actual Coverage*	Percent of Site	Actual Coverage*	Percent of Site	Actual Coverage*	Percent of Site	Actual Coverage*	Percent of Site	Actual Coverage*	Percent of Site	Actual Coverage*	Percent of Site	
Total Exotics	13.8	6.6%	13.0	6.2%	12.2	5.8%	11.2	5.3%	13.1	6.2%	27.2	12.9%	210.0
Total FLEPPC I	5.5	2.6%	5.8	2.7%	4.7	2.2%	4.4	2.1%	4.2	2.0%	5.9	2.8%	210.0
Total FLEPPC II	2.37	1.1%	2.37	1.1%	2.4	1.2%	2.4	1.2%	2.4	1.2%	2.4	1.2%	210.0
Non-Listed	6.3	3.0%	6.3	3.0%	8.8	4.2%	7.0	3.3%	7.6	3.6%	9.5	4.5%	210.0

sum of infested acres for each cover class multiplied by the midpoint of the percent cover category

Table 8: Individual Species Cover, Prairie Canal Footprints, Excluding Areas at "Maintenance Level".

Year	Target Percent Cover (<)										
	1	?	5	1	5	?	?	1	1	5	1
	Schitere	Bothpert	Cynodact	Diosbulb	Eragatro	Eragbahi	Hetecont	Hyparufa	Impecyli	Lantcama	Leucleuc
2013	1.22%	0.37%	1.02%	0.00%	0.77%	0.00%	1.75%	0.22%	0.07%	0.81%	0.00%
2012	0.56%	0.08%	0.45%	0.00%	0.33%	0.00%	0.43%	0.21%	0.03%	0.40%	0.00%
2011	0.56%	0.08%	0.20%	0.00%	0.33%	0.00%	0.51%	0.22%	0.08%	0.08%	0.00%
2010	0.55%	0.04%	0.30%	0.00%	0.08%	0.00%	0.38%	0.19%	0.09%	0.08%	0.00%
2009	1.58%	0.04%	0.16%	0.00%	0.08%	0.00%	0.51%	0.22%	0.17%	0.08%	0.00%
2008	2.58%	0.01%	0.16%	0.01%	0.08%	0.00%	1.13%	0.24%	0.18%	0.08%	0.00%

Year	Target Percent Cover (<)										
	5	1	1	?	?	1	1	1	5	1	1
	Ludwperu	Lygomicr	Melaquin	Nephmult	Nephcord	Neyrreyn	Panirepe	Panimaxi	Paspurvi	Pennpurp	Pennpoly
2013	0.02%	0.00%	0.02%	0.00%	0.02%	0.29%	0.25%	0.00%	0.26%	0.01%	0.00%
2012	0.02%	0.00%	0.00%	0.00%	0.02%	0.06%	0.07%	0.00%	0.24%	0.02%	0.00%
2011	0.02%	0.00%	0.00%	0.00%	0.02%	0.17%	0.11%	0.00%	0.20%	0.02%	0.00%
2010	0.02%	0.00%	0.00%	0.00%	0.02%	0.26%	0.19%	0.00%	0.29%	0.02%	0.00%
2009	0.02%	0.00%	0.00%	0.00%	0.02%	0.30%	0.07%	0.00%	0.13%	0.02%	0.00%
2008	0.02%	0.00%	0.00%	0.00%	0.02%	0.82%	0.07%	0.00%	0.13%	0.04%	0.00%

Year	Target Percent Cover (<)							
	5	5	1	?	?	5	5	1
	Phraaust	Rhynrepe	Sennalat	Sporindi	Spervert	Typhdomi	Urenloba	Urocmuti
2013	0.07%	0.77%	0.03%	4.54%	6.82%	0.09%	2.34%	0.00%
2012	0.07%	0.69%	0.18%	2.69%	2.78%	0.11%	2.32%	0.00%
2011	0.08%	1.44%	0.18%	3.02%	2.78%	0.34%	2.31%	0.00%
2010	0.08%	1.72%	0.18%	3.02%	2.72%	0.43%	2.31%	0.00%
2009	0.03%	2.08%	0.18%	1.62%	2.78%	0.30%	2.31%	0.00%
2008	0.29%	1.45%	0.07%	1.24%	2.93%	0.30%	2.34%	0.00%

*Prairie Canal Phase footprints, except Upper Two Miles of Canal and east to west roads south of 102nd and east of Patterson Blvd.

FLEPPC Category I Species	FLEPPC Category II Species	Non-FLEPPC Species

Table 9: Individual Species Cover, Prairie Canal Phase footprints, Upper Two Miles of Canal.

Year	Target Percent Cover (<)										
	1	?	5	1	5	?	?	1	1	5	1
	Schitere	Bothpert	Cynodact	Diosbulb	Eragatro	Eragbahi	Hetecont	Hyparufa	Impecyli	Lantcama	Leucleuc
2013	0.50%	0.00%	1.56%	0.00%	1.49%	0.00%	0.00%	0.00%	0.46%	0.12%	0.00%
2012	0.50%	0.00%	0.18%	0.00%	0.00%	0.00%	0.00%	0.00%	0.46%	0.12%	0.00%
2011	0.50%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.47%	0.12%	0.00%
2010	0.49%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.47%	0.12%	0.06%
2009	0.49%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.47%	0.12%	0.36%
2008	0.49%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.47%	0.12%	0.36%

Year	Target Percent Cover (<)										
	5	1	1	?	?	1	1	1	5	1	1
	Ludwperu	Lygomicr	Melaquin	Nephmult	Nephcord	Neyrreyn	Panirepe	Panimaxi	Paspurvi	Pennpurp	Pennpoly
2013	0.00%	0.00%	0.00%	0.00%	0.00%	0.46%	0.61%	0.00%	0.23%	0.00%	0.00%
2012	0.00%	0.00%	0.00%	0.00%	0.00%	0.46%	0.16%	0.00%	0.23%	0.00%	0.00%
2011	0.00%	0.00%	0.00%	0.00%	0.00%	0.47%	0.16%	0.00%	0.23%	0.00%	0.00%
2010	0.00%	0.00%	0.00%	0.00%	0.00%	0.47%	0.47%	0.00%	0.23%	0.00%	0.00%
2009	0.00%	0.00%	0.00%	0.00%	0.00%	0.47%	0.17%	0.00%	0.23%	0.00%	0.00%
2008	0.00%	0.00%	0.00%	0.00%	0.00%	3.03%	0.11%	0.00%	0.23%	0.00%	0.00%

Year	Target Percent Cover (<)							
	5	5	1	?	?	5	5	1
	Phraaust	Rhynrepe	Sennalat	Sporindi	Spervert	Typhdomi	Urenloba	Urocmuti
2013	0.00%	0.13%	0.00%	1.86%	7.72%	0.41%	0.35%	0.00%
2012	0.00%	0.00%	0.00%	1.86%	7.70%	0.41%	0.35%	0.00%
2011	0.00%	0.00%	0.00%	1.86%	7.70%	0.41%	0.35%	0.00%
2010	0.00%	0.00%	0.00%	1.86%	7.69%	0.41%	0.35%	0.00%
2009	0.00%	0.19%	0.00%	1.86%	7.70%	0.41%	0.35%	0.00%
2008	0.00%	0.19%	0.00%	2.25%	9.96%	0.41%	0.35%	0.00%

FLEPPC Category I Species	FLEPPC Category II Species	Non-FLEPPC Species

Table 10: Individual Species Cover, Prairie Canal Phase footprints, East of Patterson South of 102nd.

Year	Target Percent Cover (<)										
	1	?	5	1	5	?	?	1	1	5	1
	Schitere	Bothpert	Cynodact	Diosbulb	Eragatro	Eragbahi	Hetecont	Hyparufa	Impecyli	Lantcama	Leucleuc
2013	0.60%	0.35%	0.00%	0.00%	0.24%	0.00%	0.00%	0.01%	0.13%	0.32%	0.00%
2012	0.50%	0.35%	0.00%	0.00%	0.02%	0.00%	0.00%	0.01%	0.18%	0.15%	0.00%
2011	0.50%	0.35%	0.00%	0.00%	0.02%	0.00%	0.00%	0.01%	0.17%	0.15%	0.00%
2010	0.50%	0.00%	0.00%	0.00%	0.02%	0.00%	0.00%	0.01%	0.16%	0.15%	0.00%
2009	0.50%	0.00%	0.00%	0.00%	0.02%	0.00%	0.00%	0.01%	0.46%	0.15%	0.00%
2008	0.50%	0.00%	0.00%	0.00%	0.02%	0.00%	0.00%	0.01%	0.46%	0.15%	0.00%

Year	Target Percent Cover (<)										
	5	1	1	?	?	1	1	1	5	1	1
	Ludwperu	Lygomicr	Melaquin	Nephmult	Nephcord	Neyrreyn	Panirepe	Panimaxi	Paspurvi	Pennpurp	Pennpoly
2013	0.00%	0.00%	0.16%	0.00%	0.00%	0.04%	0.00%	0.00%	0.45%	0.00%	0.00%
2012	0.00%	0.00%	0.05%	0.00%	0.00%	0.05%	0.00%	0.00%	0.15%	0.04%	0.00%
2011	0.00%	0.00%	0.05%	0.00%	0.00%	0.08%	0.00%	0.00%	0.02%	0.04%	0.00%
2010	0.00%	0.00%	0.05%	0.00%	0.00%	0.22%	0.03%	0.00%	0.02%	0.04%	0.00%
2009	0.00%	0.00%	0.05%	0.00%	0.00%	0.22%	0.03%	0.00%	0.02%	0.20%	0.00%
2008	0.00%	0.00%	0.05%	0.00%	0.00%	0.22%	0.03%	0.00%	0.02%	0.07%	0.00%

Year	Target Percent Cover (<)							
	5	5	1	?	?	5	5	1
	Phraaust	Rhynrepe	Sennalat	Sporindi	Spervert	Typhdomi	Urenloba	Urocmuti
2013	0.00%	0.02%	0.00%	1.15%	2.30%	0.00%	0.12%	0.00%
2012	0.00%	0.03%	0.00%	1.61%	0.70%	0.07%	0.12%	0.00%
2011	0.00%	0.00%	0.00%	1.22%	0.70%	0.08%	0.12%	0.00%
2010	0.00%	0.00%	0.00%	2.34%	0.70%	0.07%	0.12%	0.00%
2009	0.00%	0.46%	0.00%	0.50%	0.70%	0.07%	0.12%	0.00%
2008	0.00%	0.46%	0.00%	0.50%	0.70%	0.07%	0.12%	0.00%

FLEPPC Category I Species	FLEPPC Category II Species	Non-FLEPPC Species

Table 11: Individual Species Cover, Prairie Canal Phase Demolition Sites and their Buffers.

Year	Target Percent Cover (<)										
	1	?	5	1	5	?	?	1	1	5	1
	Schitere	Bothpert	Cynodact	Diosbulb	Eragatro	Eragbahi	Hetecont	Hyparufa	Impecyli	Lantcama	Leucleuc
2013	2.45%	0.00%	0.00%	0.01%	0.00%	0.00%	0.00%	0.00%	0.12%	0.00%	0.00%
2012	2.43%	0.00%	0.00%	0.01%	0.00%	0.00%	0.00%	0.00%	0.21%	0.00%	0.00%
2011	2.43%	0.00%	0.00%	0.01%	0.00%	0.00%	0.00%	0.00%	0.29%	0.00%	0.00%
2010	8.15%	0.00%	0.00%	0.03%	0.00%	0.00%	0.00%	0.00%	0.66%	0.00%	0.00%
2009	14.14%	0.00%	0.00%	0.03%	0.00%	0.00%	0.00%	0.00%	0.66%	0.00%	0.00%
2008	14.16%	0.00%	0.00%	0.06%	0.02%	0.00%	0.00%	0.00%	0.59%	0.00%	0.00%

Year	Target Percent Cover (<)										
	5	1	1	?	?	1	1	1	5	1	1
	Ludwperu	Lygomicr	Melaquin	Nephmult	Nephcord	Neyrreyn	Panirepe	Panimaxi	Paspurvi	Pennpurp	Pennpoly
2013	0.00%	0.00%	0.01%	0.00%	0.00%	0.02%	0.00%	0.00%	0.01%	0.00%	0.00%
2012	0.00%	0.00%	0.01%	0.00%	0.00%	0.01%	0.00%	0.01%	0.02%	0.00%	0.00%
2011	0.00%	0.00%	0.01%	0.00%	0.00%	0.02%	0.00%	0.00%	0.02%	0.00%	0.00%
2010	0.00%	0.00%	0.00%	0.00%	0.00%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%
2009	0.00%	0.00%	0.00%	0.00%	0.00%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%
2008	0.00%	0.00%	0.00%	0.00%	0.00%	0.02%	0.00%	0.00%	0.00%	0.35%	0.00%

Year	Target Percent Cover (<)							
	5	5	1	?	?	5	5	1
	Phraaust	Rhynrepe	Sennalat	Sporindi	Spervert	Typhdomi	Urenloba	Urocmuti
2013	0.00%	0.27%	0.00%	0.58%	0.31%	0.01%	0.50%	0.00%
2012	0.00%	0.26%	0.00%	0.67%	0.02%	0.01%	0.50%	0.00%
2011	0.00%	0.38%	0.00%	0.26%	0.02%	0.01%	2.49%	0.00%
2010	0.00%	0.46%	0.00%	0.48%	0.02%	0.01%	0.00%	0.00%
2009	0.00%	0.46%	0.00%	0.48%	0.02%	0.01%	0.00%	0.00%
2008	0.00%	0.22%	0.00%	0.45%	0.05%	0.01%	0.02%	0.01%

FLEPPC Category I Species	FLEPPC Category II Species	Non-FLEPPC Species

Table 12: Individual Species Cover, Merritt Canal Phase Footprints.

Year	Target Percent Cover (<)										
	1	?	5	1	5	?	?	1	1	5	1
	Schitere	Bothpert	Cynodact	Diosbulb	Eragatro	Eragbahi	Hetecont	Hyparufa	Impecyli	Lantcama	Leucleuc
2013	2.84%	0.08%	0.06%	0.00%	0.01%	0.00%	4.75%	0.05%	0.10%	0.96%	0.03%
2012	2.14%	0.00%	0.03%	0.00%	0.00%	0.00%	3.65%	0.06%	0.14%	0.18%	0.01%

Year	Target Percent Cover (<)										
	5	1	1	?	?	1	1	1	5	1	1
	Ludwperu	Lygomicr	Melaquin	Nephmult	Nephcord	Neyrreyn	Panirepe	Panimaxi	Paspurvi	Pennpurp	Pennpoly
2013	0.02%	0.00%	0.00%	0.00%	0.00%	0.36%	0.02%	0.01%	0.23%	0.00%	0.01%
2012	0.00%	0.00%	0.00%	0.00%	0.00%	0.42%	0.02%	0.05%	0.08%	0.00%	0.02%

Year	Target Percent Cover (<)							
	5	5	1	?	?	5	5	1
	Phraaust	Rhynrepe	Sennalat	Sporindi	Spervert	Typhdomi	Urenloba	Urocmuti
2013	0.07%	1.66%	0.00%	6.48%	10.26%	0.10%	4.58%	0.00%
2012	0.03%	0.36%	0.00%	4.97%	0.50%	0.44%	5.46%	0.00%

FLEPPC Category I Species	FLEPPC Category II Species	Non-FLEPPC Species

Table 13: Individual Species Cover, Merritt Canal Phase Demolition Sites and their Buffers.

Year	Target Percent Cover (<)										
	1	?	5	1	5	?	?	1	1	5	1
	Schitere	Bothpert	Cynodact	Diosbulb	Eragatro	Eragbahi	Hetecont	Hyparufa	Impecyli	Lantcama	Leucleuc
2013	5.97%	0.00%	0.00%	0.01%	0.00%	0.00%	0.05%	0.01%	0.87%	0.22%	0.01%
2012	5.97%	0.00%	0.00%	0.01%	0.00%	0.00%	0.04%	0.02%	1.22%	0.19%	0.02%
2011	5.94%	0.00%	0.00%	0.01%	0.00%	0.00%	0.03%	0.02%	1.07%	0.19%	0.01%
2010	1.29%	0.00%	0.00%	0.02%	0.00%	0.00%	0.00%	0.00%	0.12%	0.16%	0.11%
2009	0.00%	0.00%	0.00%	0.02%	0.00%	0.00%	0.00%	0.00%	0.10%	0.00%	0.11%
2008	0.00%	0.00%	0.00%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.12%

Year	Target Percent Cover (<)										
	5	1	1	?	?	1	1	1	5	1	1
	Ludwperu	Lygomicr	Melaquin	Nephmult	Nephcord	Neyrreyn	Panirepe	Panimaxi	Paspurvi	Pennpurp	Pennpoly
2013	0.00%	0.00%	0.10%	0.00%	0.00%	0.02%	0.00%	0.00%	0.00%	0.00%	0.01%
2012	0.00%	0.00%	0.10%	0.00%	0.00%	0.01%	0.00%	0.01%	0.00%	0.00%	0.02%
2011	0.00%	0.00%	0.20%	0.00%	0.00%	0.01%	0.00%	0.01%	0.00%	0.00%	0.02%
2010	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2009	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	0.00%	0.00%	0.00%
2008	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Year	Target Percent Cover (<)							
	5	5	1	?	?	5	5	1
	Phraaust	Rhynrepe	Sennalat	Sporindi	Spervert	Typhdomi	Urenloba	Urocmuti
2013	0.00%	0.02%	0.00%	3.67%	0.04%	0.00%	0.74%	0.00%
2012	0.00%	0.00%	0.00%	3.65%	0.01%	0.00%	0.74%	0.00%
2011	0.00%	0.00%	0.00%	3.64%	0.01%	0.00%	0.73%	0.00%
2010	0.00%	0.00%	0.00%	1.10%	0.01%	0.00%	0.00%	0.00%
2009	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2008	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

FLEPPC Category I Species	FLEPPC Category II Species	Non-FLEPPC Species

Table 14: Individual Species Cover, Prairie Canal Logging Tram Footprints.

Year	Target Percent Cover (<)										
	1	?	5	1	5	?	?	1	1	5	1
	Schitere	Bothpert	Cynodact	Diosbulb	Eragatro	Eragbahi	Hetecont	Hyparufa	Impecyli	Lantcama	Leucleuc
2013	2.28%	0.00%	0.00%	0.00%	0.01%	0.00%	0.43%	0.00%	0.05%	0.32%	0.00%
2012	1.65%	0.00%	0.00%	0.00%	0.01%	0.00%	0.98%	0.00%	0.01%	0.02%	0.00%

Year	Target Percent Cover (<)										
	5	1	1	?	?	1	1	1	5	1	1
	Ludwperu	Lygomicr	Melaquin	Nephmult	Nephcord	Neyrreyn	Panirepe	Panimaxi	Paspurvi	Pennpurp	Pennpoly
2013	0.10%	0.00%	0.00%	0.00%	0.00%	0.00%	0.02%	0.00%	0.07%	0.00%	0.00%
2012	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.02%	0.00%	0.03%	0.00%	0.00%

Year	Target Percent Cover (<)							
	5	5	1	?	?	5	5	1
	Phraaust	Rhynrepe	Sennalat	Sporindi	Spervert	Typhdomi	Urenloba	Urocmuti
2013	0.01%	0.37%	0.00%	0.52%	0.09%	0.23%	23.80%	0.00%
2012	0.01%	0.37%	0.00%	0.46%	0.07%	0.39%	26.19%	0.00%

FLEPPC Category I Species	FLEPPC Category II Species	Non-FLEPPC Species

Table 15: Individual Species Cover, Merritt Canal Logging Tram Footprints.

Year	Target Percent Cover (<)										
	1	?	5	1	5	?	?	1	1	5	1
	Schitere	Bothpert	Cynodact	Diosbulb	Eragatro	Eragbahi	Hetecont	Hyparufa	Impecyli	Lantcama	Leucleuc
2013	1.98%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.17%	0.23%	0.00%
2012	1.97%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.26%	0.15%	0.00%

Year	Target Percent Cover (<)										
	5	1	1	?	?	1	1	1	5	1	1
	Ludwperu	Lygomicr	Melaquin	Nephmult	Nephcord	Neyrreyn	Panirepe	Panimaxi	Paspurvi	Pennpurp	Pennpoly
2013	0.00%	0.00%	0.01%	0.00%	0.00%	0.13%	0.00%	0.02%	0.02%	0.00%	0.00%
2012	0.00%	0.00%	0.01%	0.00%	0.00%	0.13%	0.00%	0.15%	0.11%	0.00%	0.00%

Year	Target Percent Cover (<)							
	5	5	1	?	?	5	5	1
	Phraaust	Rhynrepe	Sennalat	Sporindi	Spervert	Typhdomi	Urenloba	Urocmuti
2013	0.00%	0.49%	0.00%	2.06%	0.39%	0.03%	28.39%	0.00%
2012	0.00%	0.46%	0.00%	2.05%	0.11%	0.03%	28.39%	0.00%

FLEPPC Category I Species	FLEPPC Category II Species	Non-FLEPPC Species

Table 16. Approximate Costs by Treatment in FY 2013

COST	Treatment	Dates	Location	0	0-<1%	1-5%	5-25%	25-50%	50-75%	75-95%	>95%	Total Acres
N/A (lumped with next item)	Schitere Prairie Canal	9/7/2012	Inside Footprint		15.7							15.7
$120,981.00	Schitere Merritt Canal (SFWMD)	9/7/2012 to 11/29/2012	Demolition Site	9.5	1.3	14.4	0.5	2.6				28.3
			Demolition Site Buffer	347.9	35.0	83.9	23.4	0.1				490.4
			Adjacent to Footprint	0.8	0.4	6.0						7.3
			Inside Footprint	0.3	7.2							7.5
			TOTAL:	358.6	59.7	104.2	23.9	2.7	0.0	0.0		549.1
$22,750.00	Cogongrass/foliar Merritt Canal (SFWMD)	11/1/2012 to 11/29/2012	Demolition Site	3.5	7.4	2.2						13.1
			Demolition Site Buffer	45.1	217.0	8.3			0.1	1.2		271.6
			Inside Footprint	6.5	1.5							8.0
			TOTAL:	55.1	225.9	10.4	0.0	0.0	0.1	1.2		292.7
$718.00	Jaraguá Prairie Canal Footprints and Demolition Sites Re-Treatment (ACOE)	week of 11/8/2012	Inside Footprint	170.0	109.5	70.2						349.6
			50' outside footprint	12.1	0.1							12.1
			Demolition Site	13.1	2.3							15.4
			Demolition Site Buffer	33.4	0.2	0.5						34.1
$718.00	Jaraguá Merritt Canal Footprints and Demolition Sites Re-Treatment (SFWMD)	week of 11/8/2012	Inside Footprint	262.5	54.7	3.5						320.7
			Inside Logging Tram Footprint	1.4								1.4
			Demolition Site	16.1	1.5				0.5			18.2
			Demolition Site Buffer	6.3	3.1	0.2						9.6
			TOTAL:	514.8	171.4	74.4	0.0	0.0	0.5	0.0	0.0	761.1
$82,363.00	Foliar (backpack) Merritt Canal Footprints Initial Treatment (ACOE)	11/29/2012 to 4/8/2013	Inside Footprint	21.4	39.6	126.1	45.6	6.3				239.0
			Adjacent to Footprint	230.5	165.2	12.2	9.5		1.6	2.7		421.6
			Inside Logging Tram Footprint	4.2	1.2		0.6					6.0
			Merritt Demolition Site	3.0	0.3	8.2	1.2					12.7
			Merritt Demolition	134.0	133.9	120.2	8.8	1.4	2.3	2.5		403.1

COST	Treatment	Dates	Location	0	0-<1%	1-5%	5-25%	25-50%	50-75%	75-95%	>95%	Total Acres
			Site Buffer									
			TOTAL:	393.1	340.3	266.7	65.7	7.7	3.8	5.2		1082.4
$96,500.00	Foliar Prairie Canal Footprints and Demolition Sites Re-Treatment (SFWMD)	1/28/2013 to 4/26/2013	Inside Footprint	129.2	268.7	985.8	276.7	21.1	5.8			1687.3
			Adjacent to Footprint	605.6	85.0	35.6	8.7	0.2	0.0			735.1
			Inside Logging Tram Footprint	2.5	0.3	0.4						3.3
			Demolition Site	12.8	12.6	2.6	14.6	9.4				52.0
			Demolition Site Buffer	122.6	146.2	11.8	0.7		0.1	0.2		281.6
$20,275.00	Foliar Merritt Canal Demolition Sites Re-Treatment with some Initial Treatment (SFWMD)	4/22/2013 to 5/17/2013	Demolition Site	10.0	35.4	67.6	2.2					115.1
			Demolition Site Buffer	24.0	33.4	24.6	7.9	2.0	1.3	4.1		97.2
$3,361.00	Miller Canal Phase Demolition Site and Soil Remediation Sites Foliar Re-Treatment (Partial)	5/1/2013 to 5/8/2013	Demolition Site	0.0		0.4	8.4	0.1	0.1			9.0
			Soil Remediation	0.2	1.4	14.3	30.6	8.7	2.4			57.5
N/A	Cut Stump and Basal Bark at home site 66th (SFWMD)	Prairie Canal Demolition Sites	4/8/2013 to 4/9/2013	0.0	2.7	1.8	0.2	1.2	0.0	0.0	0.0	5.9
$50,000.00	Cut Stump melaleuca (FWC funds)	Bad Luck Prairie, Miller Extension, up to 66th West of Miller	2/6/2013 to 3/26/2013	712.1	2935.6	155.9	37.4	8.1	15.1	15.5	0.0	3879.9
			Totals	712.1	2935.6	155.9	37.4	8.1	15.1	15.5	0.0	3879.9
$26,930.00	Merritt Canal Footprints Initial Treatment (ACOE) Foliar	4/9/2013 to 5/27/2013	Inside Footprint	234.9	379.8	644.6	223.9	25.7				1508.8
			Adjacent to Footprint	18.3	7.6	1.5	0.3		0.5			28.2
			Inside Logging Tram Footprint	45.8	26.7	5.889 11	4.1					82.5
			Merritt Demolition Site	5.0	3.7	13.6	0.5					22.8
			Merritt	108.8	16.0	9.7	1.0		0.3			135.9

COST	Treatment	Dates	Location	0	0-<1%	1-5%	5-25%	25-50%	50-75%	75-95%	>95%	Total Acres
			Demolition Site Buffer									
			TOTAL:	412.9	433.9	675.3	229.7	25.7	0.8	0.0		1778.2

Appendix 1: Acceptable Maintenance Levels of Picayune Nuisance Exotic and Native Plant Species

Scientific Name	Common Names	Target Ground Cover (%)	Wetland (W) Upland (U)	FLEPPC Category I or II	Ability to Control Based on Our Treatment Control since 2008	Maintenance Treatment Schedule	Monitoring Schedule
Dioscorea bulbifera	Air potato	<1	U	I	Multiple retreatments every ** For years	1X/Yr	1X/Yr
Hymenachne	West Indian Marsh Grass	<1	W	I	But where downstream and untreated Hymenachne - No	1X/Yr	1X/Yr
Imperata cylindrica	Congongrass, Cogongrass	<1	U	I	Requires multiple treatments - some areas to 0 now took >10 treatments	1-2X/Yr	1X/Yr
Lygodium sp.	Climbing fern	<1	W	I		Opportunistic	Opportunistic
Melaleuca quinquenervia	Punktree	<1	W	I	After get control of large trees, establish a 3-year cycle of retreatment for new seedlings; if miss a cycle, have to plan on a more frequent cycle to catch up	3 Yr	3 Yr
Neyraudia reynaudiana	Burmareed, Silkreed	<1	U	I		3 Yr	3 Yr
Panicum repens	Torpedo grass	<1	W	I		1-2X/Yr	1-2X/Yr
Pennisetum purpureum	Napier grass, Elephantgrass	<1	U	I		3 Yr	3 Yr
Schinus terebinthifolius	Brazilian-pepper	<1	U	I		3-5 Yr	3-5 Yr
Senna pedula		<1	U	I		Opportunistic	Opportunistic
Urochloa mutica	Paragrass	<1	W	I	Treated one patch and it's gone; more exists along Faka Union Canal	?	?
Lantana camara	Shrubverbena	<5	U	I	Should be timed with the pepper treatments, but can be foliar treated if do all leaves	3-5 Yr	3-5 Yr
Ludwigia peruviana	Peruvian primrosewillow	<5	W	I		?	?

Scientific Name	Common Names	Target Ground Cover (%)	Wetland (W) Upland (U)	FLEPPC Category I or II	Ability to Control Based on Our Treatment Control since 2008	Maintenance Treatment Schedule	Monitoring Schedule
Melinis repens	Rose Natalgrass	<5	U	I	Grows fast; flowers fast; need to find contractors who recognize it without flowers	1-2X/Yr	1-2X/Yr
Urena lobata	Caesarweed	<5	U	I	timing with fire or clearing (i.e. 1st year) **	Opportunistic	Opportunistic
Nephrolepis cordifolia	Tuberous sword fern	?	U	I	May hybridize with Nephrolepis exal/lois (natives); may be lost cause? Non-target damage?	?	?
Nephrolepis multiflora	Asian sword fern	?	U	I	May hybridize with Nephrolepis exal/lois (natives); may be lost cause? Non-target damage?	?	?
Hemarthria altissima		<1	W	II	According to ove ** & Ellen's colleagues	?	?
Hyparrhenia rufa	Jaraguá	<1	U	II	Seed bank? Yes- so far all patches treated since 2009 still have little bit left	1X/Yr	1X/Yr
Panicum maximum	Guineagrass	<1	U	II	But can re-emerge after years of 0; seedbank	1X/Yr	1X/Yr
	Leadtree & other hard-to-kill	<1	U	II	Treatable; save vague: higher concentration of chemical	3-5 Yr	3-5 Yr
Dactyloctenium aegyptium	Crow's-foot grass, Durban crowfootgrass	<5	U	II	Not applicable - ** - hope it goes away. Has been reduced along Prairie Canal	NA	NA
Pennisetum polystachion	West Indian Pennisetum	<1	U			1X/Yr	1X/Yr
Rottbiler cochsicus	Itchgrass	<1	U		Retreatments - multiple	Opportunistic	Opportunistic
Senna alata	Candlestick plant	<1	U		Takes retreatments	1X/Yr	1X/Yr
Cynodon dactylon	Bermuda grass	<5	U		Hard to kill - word from LA that it is controllable, but we have lost ground so far	1X/Yr	1X/Yr

Scientific Name	Common Names	Target Ground Cover (%)	Wetland (W) Upland (U)	FLEPPC Category I or II	Ability to Control Based on Our Treatment Control since 2008	Maintenance Treatment Schedule	Monitoring Schedule
Eragrostis atrovirens	Thalia love grass	<5	W		Too much trouble to train crews so far		
Paspalum urvillei	Vasey grass	<5	Both		Expanded extent, not cover despite treatment	1X/Yr	1X/Yr
Phragmites australis	Common reed	<5	W		Hard to kill; requires heavy dose of herbicide	1-3 Yr	1X/Yr
Typha domingensis	Southern cattail	<5	W		Maybe okay if greater **/** 1-5? ; Mfs-maybe not controllable		1X/Yr
Bothriochloa pertusa	Pitted bluestem, Pitted beardgrass X	?	U		Only in ** Along actual **	?	?
Eragrostis bahiensis	lovegrass X	?	U		Had some preliminary success at soil remediation sites, then budget cut		
Heteropogon contortus	Tanglehead X	?	U		Had some success, then stopped this year		
Spermacocea verticillata	Buttonweed	?	U		Hard to kill	?	?
Sporobolus indicus var. pyramidalis	West Indian dropseed, smutgrass X	?	U			?	?
	X - Problem in footprints, but not in woods Hl						
Anticipated Species (BOLO)							
Mikania micrantha	Mile-a-Minute Vine		U	**II**		Opportunistic	Opportunistic

Scientific Name	Common Names	Target Ground Cover (%)	Wetland (W) Upland (U)	FLEPPC Category I or II	Ability to Control Based on Our Treatment Control since 2008	Maintenance Treatment Schedule	Monitoring Schedule
Scirpus cubensis	Cuban bulrush		W			Opportunistic	Opportunistic
Scleria lacutris	Wright's nutsedge		W			Opportunistic	Opportunistic
Urochloa sp.	Sig Walker Grass		W			Opportunistic	Opportunistic

**Denotes uncertainty or items that were not discussed during meeting.