SR 29 ENGINEERING REPORT

SR 29 FROM SR 78 TO US 27

GLADES COUNTY
ROADWAY ID: 05090000
MILEPOINT: 1.850 – 12.393

April 6, 2022

District 1

FDOT

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1.0 INTRODUCTION

On September 22, 2021, FDOT Heartland Operations Center was notified of water overtopping SR 29 in Glades County. Upon further field investigation the roadway had to be closed to traffic due to safety concerns with the standing water on the roadway. FDOT District One Drainage conducted a field review on this date to determine the extent of the flooding and the potential cause of the issue.

The flooding limits were observed to take place between mile points 4.850 and 6.380. For the purposes of this report, SR 29-mile points 1.85 (south end of SR 29, defined by a bridge #050941) to 12.393 (north end of SR 29, defined by railroad tracks) were taken into account.

Google Maps: Google Maps

Figure 1: Location Map

2.0 EXISTING CONDITIONS

SR 29 is a 2-lane undivided rural roadway with 12-foot travel lanes and 5-foot outside paved shoulders. This corridor is listed as Rural Principle Arterial Other with a roadway ID of 05090000. Currently the posted speed is 60 mph. This section of SR 29 is listed as a regional freight corridor, part of the state of Florida's Strategic Intermodal System (SIS), and a hurricane evacuation route. A straight-line diagram for the corridor is included in **Appendix A** and an evacuation route map is included in **Appendix B.**

The Annual Average Daily Traffic (AADT) along SR 29 is presented in **Table 1** below along with the portable traffic monitoring stations (PTMS) within the vicinity of the study segment. The most recent traffic count year for monitoring data is from 2020. The percentage of daily truck traffic (T-Factor) is approximately 30 percent.

Table 1: Segment AADT

Street	PTMS	Count Year	AADT	T-Factor
SR 29 (CR 74 to US 27)	051001	2020	4,600	29.00
SR 29 (SR 78 to CR 74)	050008	2020	3,600	30.10
SR 29 (CR 720 to SR 78)	051000	2020	6,100	30.10

2.1 Intersections

There are two main Stop Sign controlled intersections within the study area. These are at SR 78 (MP 2.505) and CR 74 (MP 11.676). Intersection photos are located in **Appendix C** for all approaches.

The intersection of SR 78 and SR 29 is a T-intersection with a Stop Sign controlling traffic coming from SR 78 entering onto SR 29. The main road at this intersection is SR 29 which has continuous through lanes supported by a separate northbound right turn lane and southbound left turn lane. SR 78 connects to SR 29 from the east.

The intersection of CR 74 and SR 29 is a T-intersection with a Stop Sign controlling traffic coming from CR 74 entering onto SR 29. The main road at this intersection is SR 29 which has continuous through lanes supported by a separate northbound left turn lane. CR 74 connects to SR 29 from the west.

2.2 Bridges

There are four bridges located within the corridor. See **Table 2** for details. All these bridges have exceeded their 50-year design service life as they were originally constructed in 1948 (74 years old) and were widened late into their service life. The NBI Ratings of the existing bridges is showing signs of deterioration and the need for increased maintenance to maintain their integrity. Additionally, the existing bridges are essentially at grade with the existing roadway making them susceptible to inundation and not meeting today's standard 2-foot drift clearance for debris. Additionally, the low vertical clearance is not conducive to wildlife movement, forcing wildlife onto the roadway in order to cross SR 29.

Table 2: Bridge Data

Bridge #	Name	Year Built	Mile Points	Year Reconstruction	Sufficiency Rating	NBI Ratings
050035	SR 29 over Lone Pine Creek	1948	4.709 to 4.723	1999-Bridge was widened (FPID 193991-1)	80.7	Deck: 7 Superstructure: 7 Substructure: 7
050033	SR 29 over Cypress Branch (aka Chapparal Slough)	1948	6.851 to 6.880	1978 – Bridge was widened	79.3	Deck: 6 Superstructure: 6 Substructure: 6
050032	SR 29 over York Branch	1948	9.353 to 9.362	1999- Bridge was widened (FPID 193991-1)	70.98	Deck: 7 Superstructure: 7 Substructure: 6
050031	SR 29 over Turkey Branch	1948	10.931 to 10.937	1999- Bridge was widened (FPID 193991-1)	79	Deck: 7 Superstructure: 7 Substructure: 7

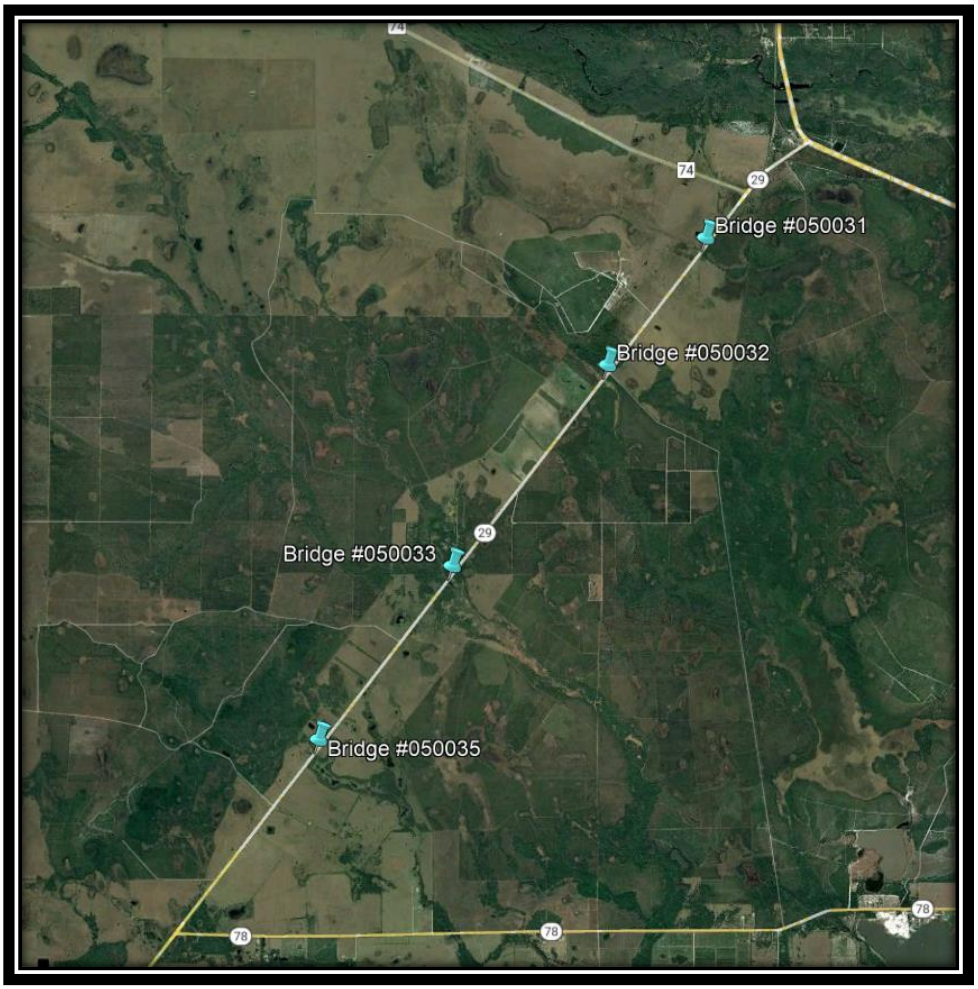


Figure 2: Existing Bridge Locations

2.3 Pavement Condition

This section of SR 29 last had a pavement condition survey on 3/3/2021. The results of this survey are shown below in **Table 3**. A rating of 6 or below is considered deficient. The crack rating on this segment is deficient and is listed as having transverse cracking. This indicates that this road needs resurfacing in the near future. The survey also showed that there is rippling, depressions, and delamination of the existing pavement. The road surface is currently paved with FC-12.5 Dense graded friction course.

Table 3: Pavement Condition Survey Results 2021

Section	BMP	EMP	Lane	Crack	Rut	Ride
05090000	0.000	2.621	R1	6	8	7.9
05090000	2.621	12.437	R1	5.5	8	7.8

A roadway retro reflectivity survey for this segment was last conducted on 6/4/2021. Values of 250 mcd/m2 /lux or above are rated as good and easily visible, while a rating between 150 and 250 mcd/m2 /lux is seen as adequate but on the verge of needing replacement, and values of 150 mcd/m2 /lux and below are in poor condition and in need of restriping. The average results of the study segment from the most recent survey are shown below in **Table 4**. As seen in the data, the existing striping needs replacement to increase the retro reflectivity in the corridor. See **Appendix D** for a more detailed breakdown of reflectivity ratings throughout the corridor.

Table 4: Pavement Markings Retro Reflectivity Survey 2021

Date	BMP	EMP	RCL
6/4/2021	0.0	12.4	145

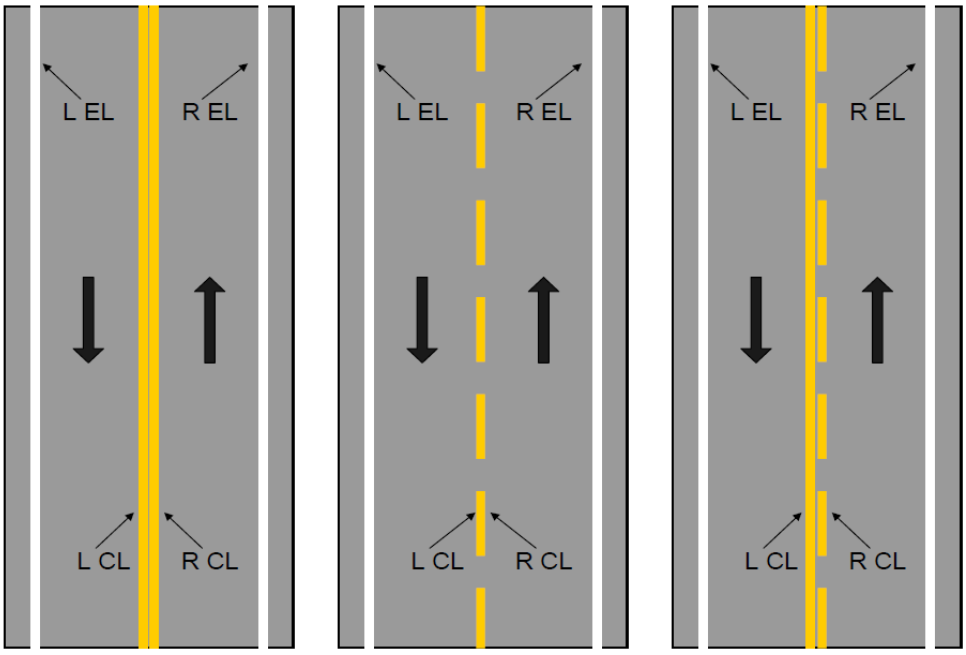


Figure 3: Reflectivity Labels

Roadway skid tests are completed once every 4 years on state roadways. The skid number (friction number) is a measure of how good the pavement will perform when it is wet. A skid number less than 31 is seen as deficient in the amount of friction a tire can have with the roadway. The most recent skid test for this segment was conducted on 1/6/2020 as shown in **Table 5** below. Based on the results of this test the roadway friction is still in the satisfactory range. For a more detailed breakdown of the skid ratings report see **Appendix E**.

Table 5: Roadway Skid Test Results 2020

Date	Direction	Milepost	Average Friction Number	Mean Profile Depth Average (in.)
1/6/2020	Left (south)	0.000 – 2.637	46	0.046
1/6/2020	Left (south)	2.637 – 12.437	44	0.029

2.4 Past Projects

1. Bridge #050033 was widened in 1978 as art of project 05090-3504. The existing bridge structure remained in place and was not reconstructed as part of this project.

2. Bridges #050031, #050032, and #050035 were widened as part of FPID 193991-1 in 1999. The existing bridge structures remained in place and were not reconstructed as part of this project.

3. The majority of the study segment was last resurfaced in 2004 as part of FPID 193957-2-52-01. The limits of this project were from MP 2.621 to MP 12.437.

4. The most recent drainage work for the study segment was completed in 2013 as part of FPID 431394-1-52-01. See section 4.3 of this report for more details.

3.0 CRASH ANALYSIS

Crash data from March 29th, 2015 to March 29th, 2022 was extracted from the Signal 4 Analytics and SSOGis database. A total of 108 crashes were reported along the study corridor during the study period but after review only 99 were seen to have taken place in the study area. 16 of these occurred during wet weather. There were 5 crashes involving a fatality (see **Table 6**) and 22 crashes which resulted in injuries. An overview of the crash history for this period is presented in **Table 7.** See **Appendix F** for fatal crash reports.

3.1 Crash Details

Crash number 85192700 resulted in a fatality. This crash occurred on 11/7/2015 around 4:35 pm in the northbound travel lane of SR 29 just south of SR 78. The crash was listed as “unknown” for the type of crash and took place during wet weather. Vehicle 1 was southbound on SR 29 when the driver lost control of the vehicle and rotated across the centerline into the northbound lane. Vehicle 1 struck vehicle 2 in the northbound lane. The driver of vehicle 2 was pronounced deceased. Vehicle one was found to have deficient tire tread.

Crash number 85605345 resulted in a fatality. This crash occurred on 11/22/2017 around 5:35 am in the northbound travel lane of SR 29. The crash was listed as "head on" for the type of crash. Vehicle 1 was southbound on SR 29 north of Chaparral Avenue and vehicle 2 was northbound on SR-29. Vehicle 1 crossed into the northbound lane striking the front of vehicle 2. The driver of vehicle 1, driver of vehicle 2, and a passenger of vehicle 2 were pronounced deceased.

Crash number 85455740 resulted in a fatality. This crash occurred on 12/28/2017 around 1:53 pm in the southbound travel lane of SR 29. The crash was listed as "other" for the type of crash. Vehicle 1 was traveling northbound on SR 29 north of Chapparal Avenue and made an improper U-turn in front of vehicle 2 in the southbound lane. Vehicle 2 struck vehicle 1. Driver of vehicle 1 was pronounced deceased.

Crash number 87177808 resulted in a fatality. This crash occurred on 7/3/2018 around 3:11 pm in the northbound travel lane of SR 29. The crash was listed as "head on" for the type of crash and took place during wet weather. Vehicle 1 was southbound on SR 29 and vehicle 2 was northbound on SR 29 near Chapparal Avenue. Vehicle 1 crossed over the centerline and struck the front of vehicle 2. The driver of vehicle 1, two passengers in vehicle 2 were pronounced deceased.

Crash number 88371042 resulted in a fatality. This crash occurred on 7/15/2021 around 2:13 am in the northbound travel lane of SR 29. The crash was listed as "head on" for the type of crash. Vehicle 1 was travelling southbound on SR 29 south of Chapparal Avenue and vehicle 2 was traveling northbound on SR 29. Vehicle 1 crossed the centerline and collided with the front of vehicle 2. Driver of vehicle 1 was pronounced deceased.

Crash number 85463418was listed as "other" for the type of crash. This crash occurred during wet weather. Vehicle 2 was a tractor trailer which tried to make a wide right turn onto SR 78 while traveling northbound on SR 29. Vehicle 1 failed to stop and ran into the side of vehicle 2.

Crash number 89452684 was listed as "other" for the type of crash. Vehicle 1 was towing a trailer heading southbound on SR 29. One of the tires on the left side of the trailer fell off and went into the northbound lane. Vehicle 2 collided with the tire causing the vehicle to be disabled.

Crash number 87104488 was listed as "other" for the type of crash. Vehicle 1 was traveling southbound on SR 29 and towing a trailer when the wheels fell off and traveled into the northbound lane. One of the wheels collided with vehicle 2 in the northbound lane and the other wheel collided with vehicle 3 in the northbound lane.

Crash number 82771435 was listed as "other" for the type of crash. Vehicle was traveling south on US 27 when it turned onto SR 29 and struck the railroad crossing arm causing significant damage. Vehicle 1 fled the scene prior to arrival of law enforcement.

Crash number 82771243 was coded incorrectly and is not located within the study segment. This crash was not used for statistical purposes.

Crash number 87168190 was coded incorrectly and is not located within the study segment. This crash was not used for statistical purposes.

Crash number 87920439 was coded incorrectly and is not located within the study segment. This crash was not used for statistical purposes.

Crash number 89452679 was coded incorrectly and is not located within the study segment. This crash was not used for statistical purposes.

Crash number 89452680 was coded incorrectly and is not located within the study segment. This crash was not used for statistical purposes.

Crash number 85561725 was coded incorrectly and is not located within the study segment. This crash was not used for statistical purposes.

Crash number 24400882 was coded incorrectly and is not located within the study segment. This crash was not used for statistical purposes.

Crash number 88428603 was coded incorrectly and is not located within the study segment. This crash was not used for statistical purposes.

Crash number 82771016 was coded incorrectly and is not located within the study segment. This crash was not used for statistical purposes.

Table 6: Fatal Crash Summary

Crash Number	Crash Date	Crash Time	Direction	Road Surface	Crash Type	Number of Fatalities
85192700	11/7/2015	4:35 PM	South	Wet	Unknown	1
85605345	11/22/2017	5:35 AM	North	Dry	Head On	3
85455740	12/28/2017	1:53 PM	North	Dry	Other	1
87177808	7/3/2018	3:11 PM	South	Wet	Head On	2
88371042	7/15/2021	2:13 AM	South	Dry	Head On	1

3.2 Crash Data

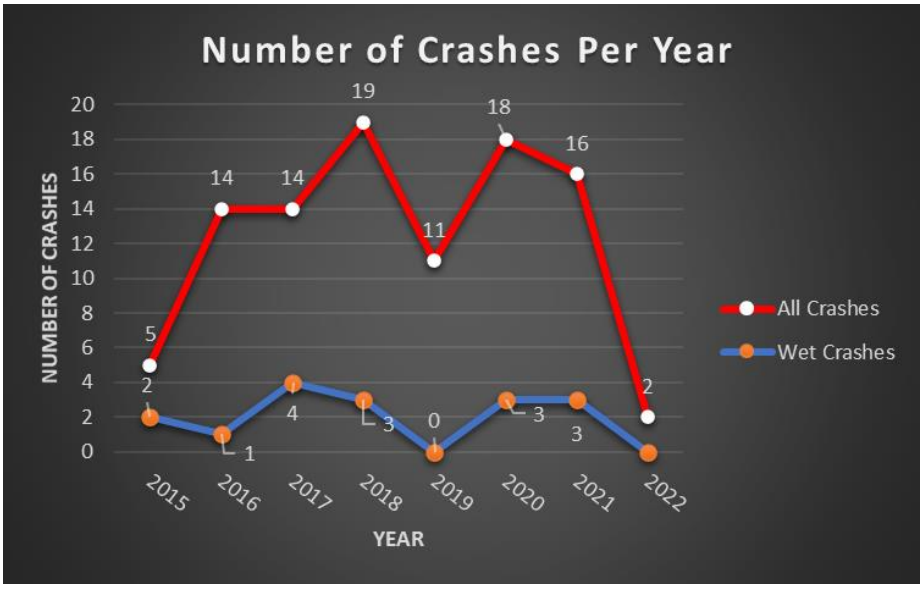


Figure 4: Number of Crashes Per Year

*2015 and 2022 data is only a partial year

Table 7: Crash Summary

Crash Information		Crash Year								%	Total
		2015	2016	2017	2018	2019	2020	2021	2022		
Crash Type	Angle	0	1	0	0	0	0	1	1	3.0%	3
	Rear End	0	2	0	1	0	1	0	0	4.0%	4
	Left Turn	0	1	0	1	2	1	1	0	6.1%	6
	Backed-into	0	0	0	0	0	0	0	0	0.0%	0
	Right Turn	0	0	1	0	0	0	0	0	1.0%	1
	Sideswipe	1	1	1	0	0	0	1	0	4.0%	4
	Head On	0	0	1	1	0	0	2	1	5.1%	5
	Run-off-Road	1	0	4	5	1	3	5	0	19.2%	19
	Rollover	0	2	0	2	0	1	1	0	6.1%	6
	Animal	2	2	3	4	4	7	5	0	27.3%	27
	Pedestrian	0	0	0	0	0	0	0	0	0.0%	0
	Bicycle	0	0	0	0	0	0	0	0	0.0%	0
	Other/unknown	1	5	4	5	4	5	0	0	24.2%	24
	Total	5	14	14	19	11	18	16	2	100%	99
Injury Severity	Fatal	1	0	2	1	0	0	1	0	5.1%	5
	Injury	2	6	2	6	1	2	1	2	22.2%	22
	Property Damage Only	2	8	10	12	10	16	14	0	72.7%	72
Lighting Condition	Daylight	1	9	4	7	4	8	3	1	37.4%	37
	Night	4	5	10	12	7	10	13	1	62.6%	62
Surface Conditions	Dry	3	13	10	16	11	15	13	2	83.8%	83
	Wet	2	1	4	3	0	3	3	0	16.2%	16

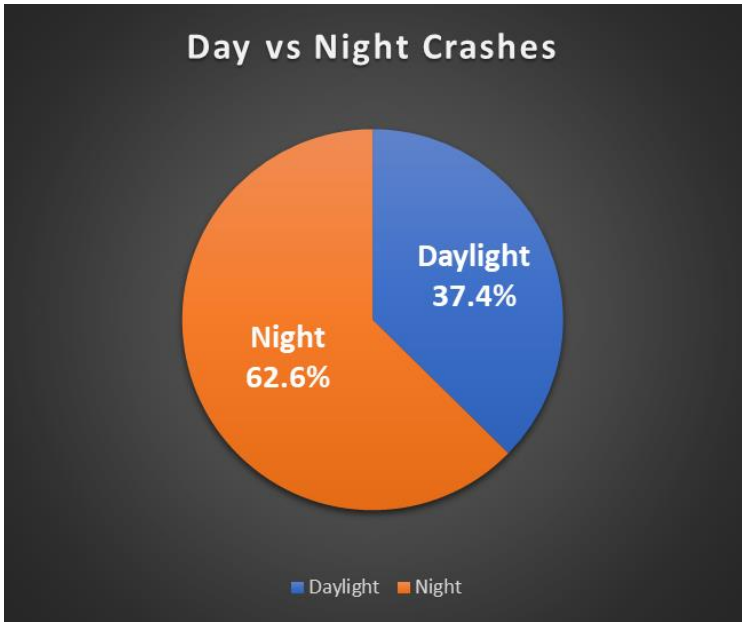


Figure 5: Crashes By Time of Day

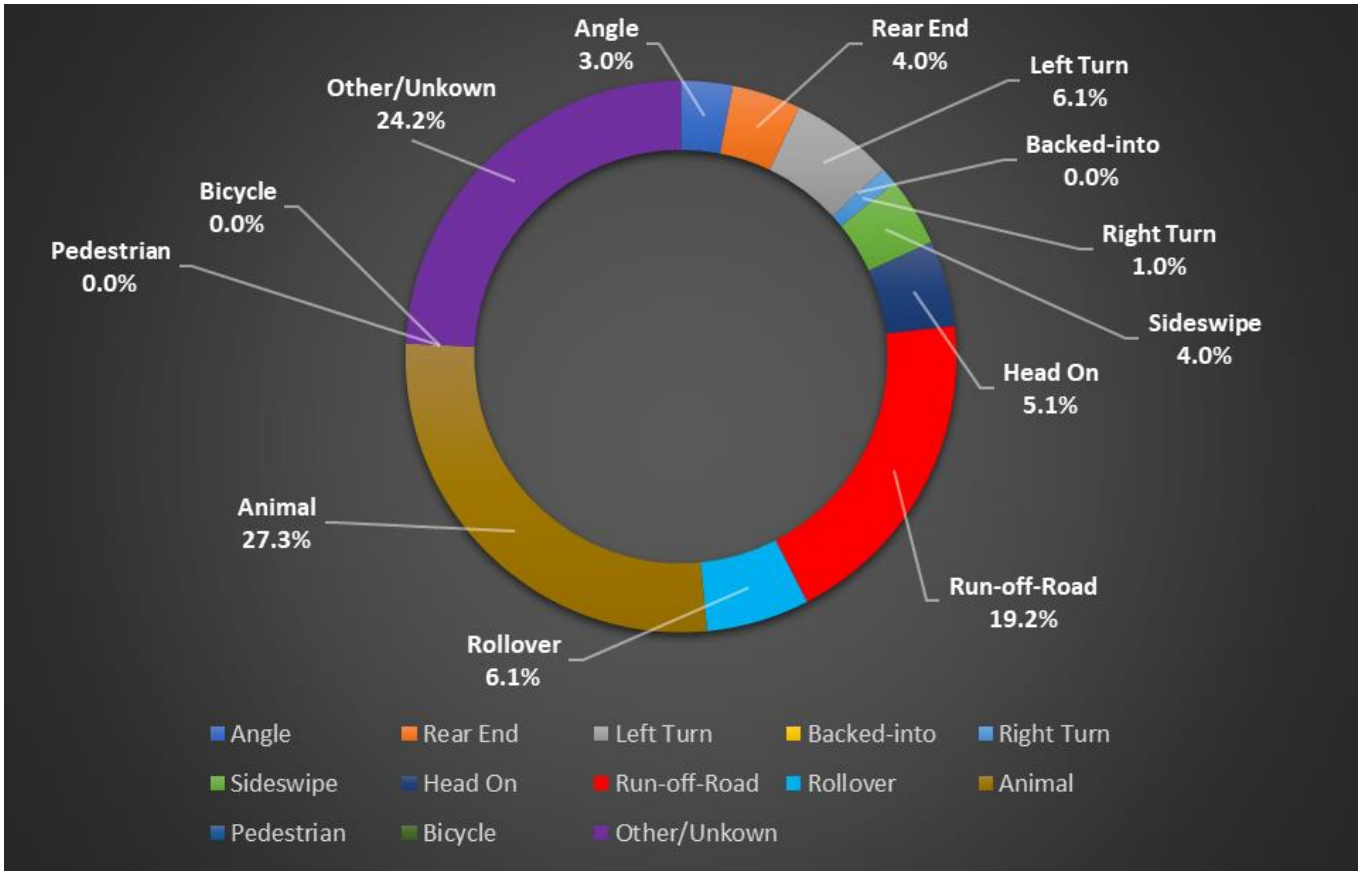


Figure 6: Distribution of All Crash Types from March 2015 to March 2022

3.3 Crash Analysis

Analysis of the crashes along the corridor shows that the majority of crashes happen at night and are animal collisions. There is currently no street lighting along the corridor due to this being a rural road. SR 29 does not currently contain any wildlife fencing to help prevent animals from entering the roadway and the existing bridges along the corridor don't have sufficient vertical clearance conducive for wildlife passage. Upon reading the crash reports it appears that wild hogs are the most commonly hit animal. There were 5 fatality crashes in the corridor, and all of these were from cross centerline head on crashes. This section of road does not currently have centerline rumble strips or shoulder rumble strips.

4.0 FLOODING ASSESSMENT

4.1 Existing Drainage Conditions

The drainage in this corridor is an open system of grass ditches and swales which cross SR 29 via 2 cross drains and at the existing bridges. There is no formal water quality treatment or attenuation for the SR 29 stormwater runoff. The roadway is a normal crown with the southbound lanes flowing toward the west ditch and the northbound lanes flowing toward the east ditch. The general sheet flow pattern in this area is from northwest to southeast toward SR 78 and the Caloosahatchee River. There are 2 main outfalls for SR 29 and 1 smaller culvert all located to the south along SR 78. These are located at Deadmans Branch and Cypress Branch see **Figure 7**. The ultimate outfall is at the Caloosahatchee River. This project is located in the 100-year floodplain. See **Appendix G** for floodplain map.

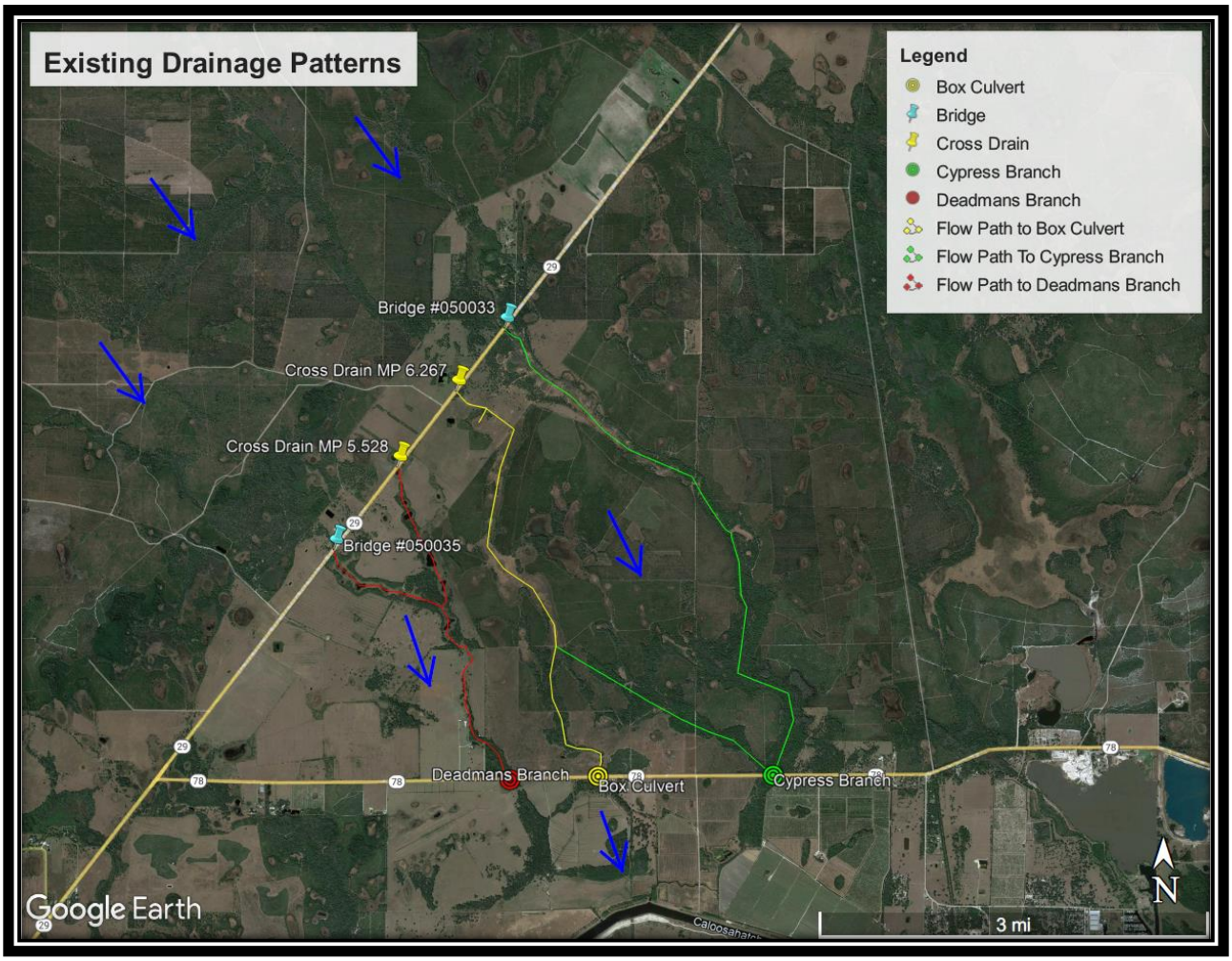


Figure 7: Existing Drainage Patterns

4.2 Historical Flooding Events

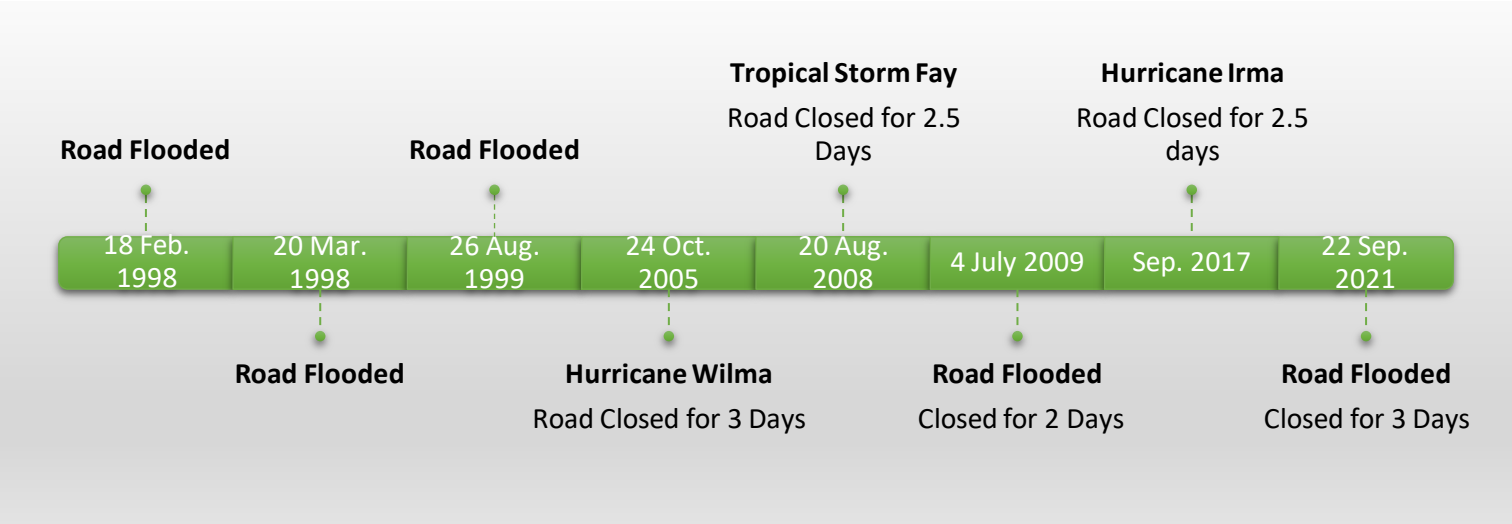


Figure 8: SR 29 Flooding Events Timeline

Figure 9: Flooding August 26, 1999

Figure 10: Hurricane Irma (2017) SR 29 Flooding Photo 1

Figure 11: Hurricane Irma (2017) SR 29 Flooding Photo 2

Figure 12: SR 29 Flooding September 22, 2021 Photo 1

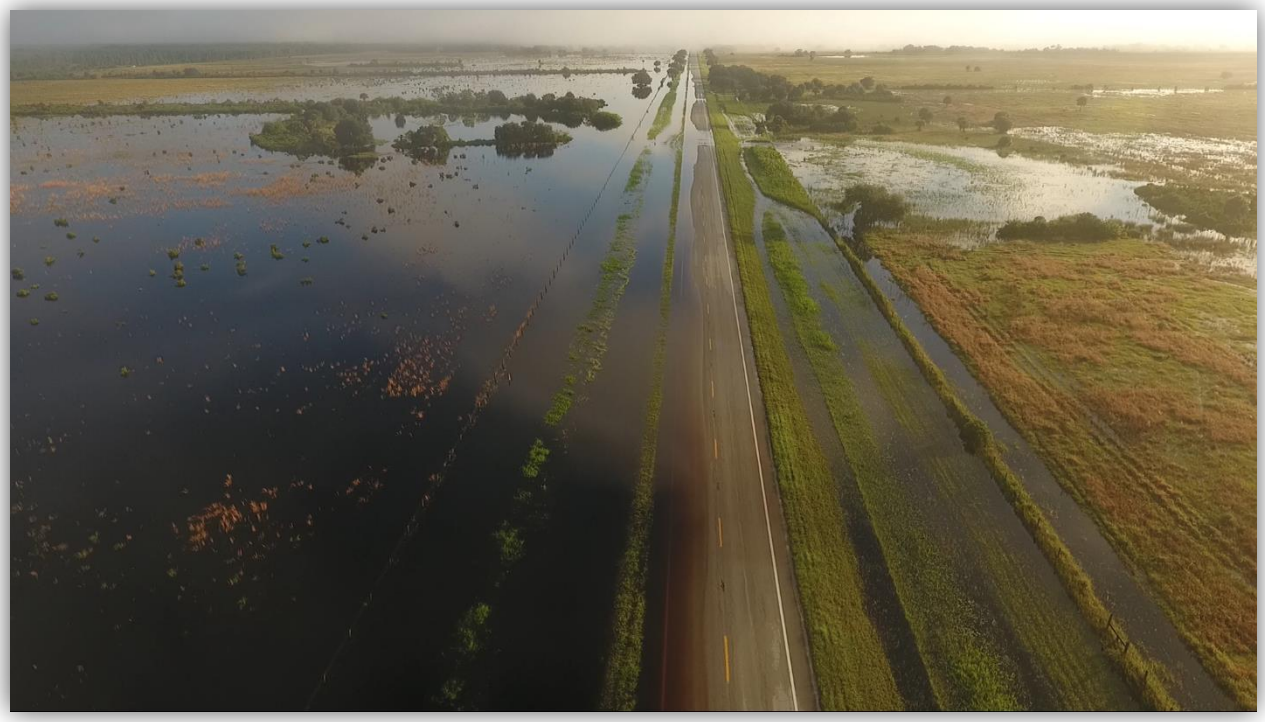


Figure 13: SR 29 Flooding September 22, 2021 Photo 2

4.3 Past Drainage Reports and Projects

- **1999 Drainage Complaint**

  Findings: Water was not overtopping the roadway, but the bridges were flowing full right up to the low member of the structure.

  Recommendation: To correct the potential issue of roadway flooding the existing roadway profile will need to be raised. See **Appendix H** for the full report.

- **January 2010 Drainage Complaint Report completed by AIM Engineering & Surveying, Inc.**

  Findings: The Triple 30" Cross Drain (MP) appeared to be undersized and both cross drains had severe silting blocking the flow

  Recommendation: Permanent solution is to raise the roadway profile. Short term solution was to desilt the existing pipes and dig out the existing roadside ditches. Recommended to also remove and replace the existing triple 30" cross drain with quadruple 48" pipes. See **Appendix H** for the full report.

- **Pond Siting Report for SR 29 From CR 80A to US 27 FPID 417878-1-22-01 April 2011**

  Purpose: The PD&E for this section of SR 29 was originally scheduled to look at potential 4 lane widening through the corridor. The study area for this PD&E was reduced to not being able to show a purpose and need for the 4-lane widening on the northern rural section of SR 29. Therefore, no improvements to the study area for this engineering report were made based on the PD&E findings.

- **Drainage Improvement Project FPID 431394-1-52-01**

  Purpose: Re-grade and excavate the existing roadside ditches on SR 29 from MP 2.736 (SR 78) to 8.846. The two cross drains had pipe liners installed. See **Appendix I** for project typical section

4.4 Rainfall

This location falls within zone 8 of the state of Florida IDF curves. The average monthly rainfall from NOAA is shown in **Table 8**. The wet season takes place between the beginning of May to the end of September. The yearly rainfall from NOAA is shown in **Table 9**. See **Appendix J** for Historical rainfall data.

Table 8: Normal Average Monthly Rainfall (NOAA)

Month	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
Rainfall (inches)	1.5 - 2	2 - 3	3 - 4	2 - 3	3 - 4	8 - 10	6 - 8	8 - 10	6 - 8	3 - 4	2 - 3	1.5 – 2

Table 9: Yearly Total Rainfall (NOAA)

Year	2015	2016	2017	2018	2019	2020	2021	Normal
Rainfall (inches)	60 - 70	70 - 80	60 - 70	50-60	50 - 60	50 - 60	50-60	50 - 60

4.5 Flooding Analysis

Based on historical accounts and flood records provided by the Operations staff, SR 29 floods every few years, requiring the road to be closed. FDOT completed a project (FPID 431394-1-52-01) in 2013 to help minimize the flooding by widening the ditches on both sides of SR 29 to provide more capacity. While this helped to reduce the frequency of SR 29 flooding and road closures, there have been several closures since the project was completed. From witness accounts, it was noted that the triple 30" cross drain located at MP 5.528 tends to be the first drainage structure to overflow. On September 22, 2021 during a field review the limits of the roadway overtopping were observed to take place between MP 4.850 and MP 6.380. Water was seen to be backing up at both cross drains (MP 5.528 and MP 6.267) and neither structure was visible. As can be seen in **Figure 13**, there was a large amount of sheet flow coming from the west side of SR 29 and much of the adjacent land was inundated by water.

Figure 14: West side of Cross Drain at MP 5.528

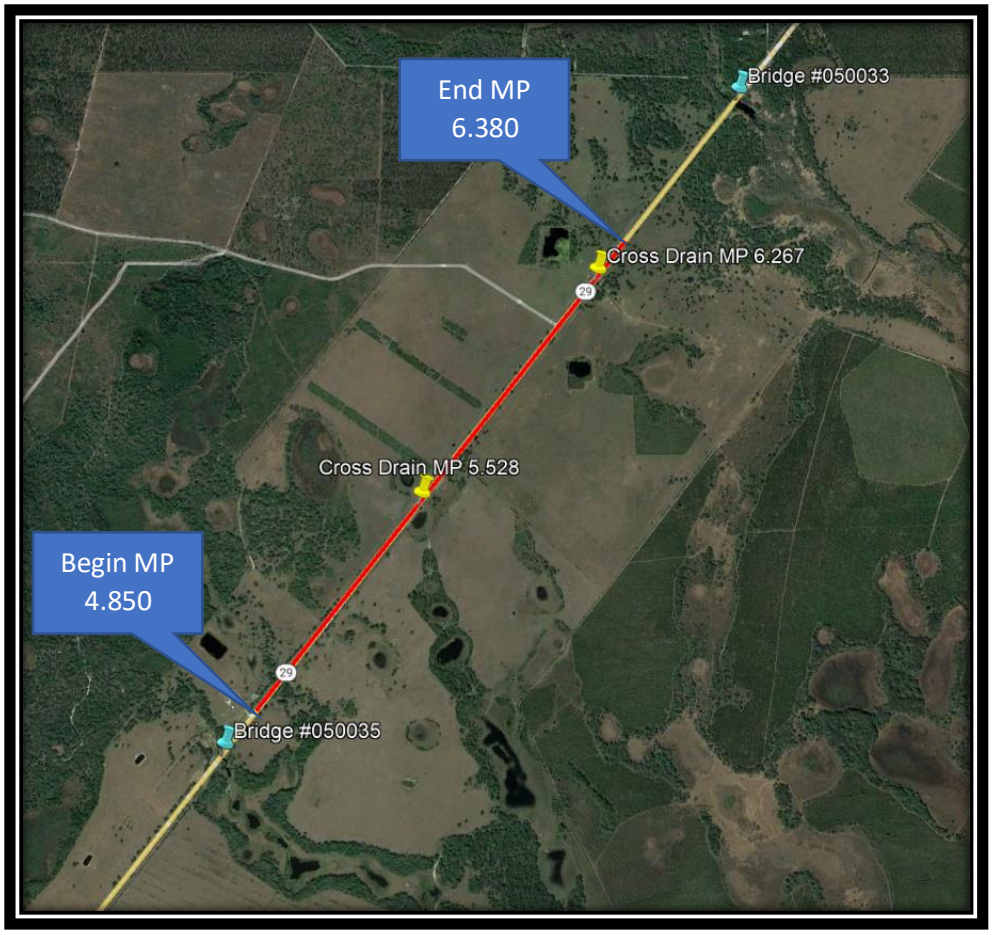


Figure 15: Flooding Limits September 22, 2021

In attempts to address the recurring flooding issues, in 2013 FDOT completed the drainage improvement project (FPID 431394-1-52-01) described above, providing more capacity within the roadside ditches. While this helped to reduce the frequency of SR 29 flooding and road closures, there have been several closures since the project was completed.

For this report, an analysis of the capacity of the existing triple 30" cross drain was performed using the FHWA HY-8 Culvert Hydraulic Analysis program. According to Section 4.3.1 of the FDOT Drainage Manual, the design frequency of the cross drain is 50 years. The Pond Siting Report, dated 4/2011, established a contributing drainage area of 302.1 acres upstream of the cross drain. This area was used in conjunction with hydraulic data provided in the Drainage Complaint Report, dated 1/2010, to calculate an expected 50-year discharge of 145.0 cfs through the cross drain.

After the expected discharge was determined, site data pulled from the As-Builts for the Drainage Improvement Project completed in 2013 was used to model the triple 30" cross drain in HY-8. As can be seen in **Figure 16**, the hydraulic model anticipates significant overtopping for the 50-year design frequency. See **Appendix K** for the hydraulic modeling information and results.

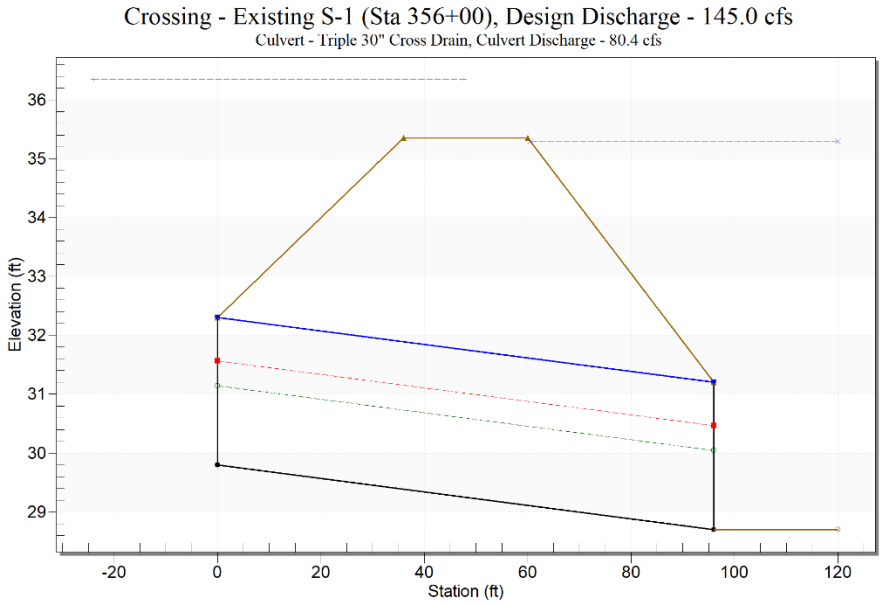


Figure 16: Existing Cross Drain Model

Verifying that the current capacity of the triple 30" cross drain was insufficient to accommodate the 50-year discharge, a proposed model with three 42" pipes was generated to evaluate the impact increasing the diameter of the pipes would have on the cross-drain capacity. Although upsizing of the pipes did prove to reduce the headwater elevation by about 0.5-ft, the expected water surface elevation was still about 0.5-ft above the crown of the road. See **Figure 17** for a graphical representation of the proposed triple 42" cross drain.

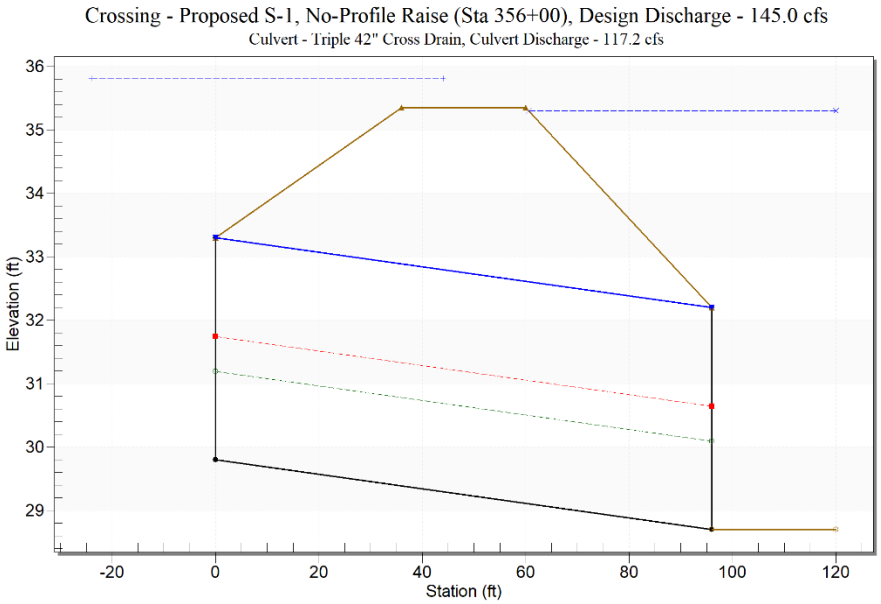


Figure 17: 42” Pipe Cross Drain Model

With this information, a second proposed model was then generated in which the roadway profile was raised 2-ft. Raising the profile in conjunction with keeping the pipes at a 42” diameter resulted in a less significant reduction in the headwater elevation; however, it also put the water surface elevation roughly 0.75-ft below the edge of shoulder, demonstrating no anticipated overtopping for the 50-year event. See **Figure 18** for a graphical representation of the proposed triple 42” cross drain with 2-ft profile raise.

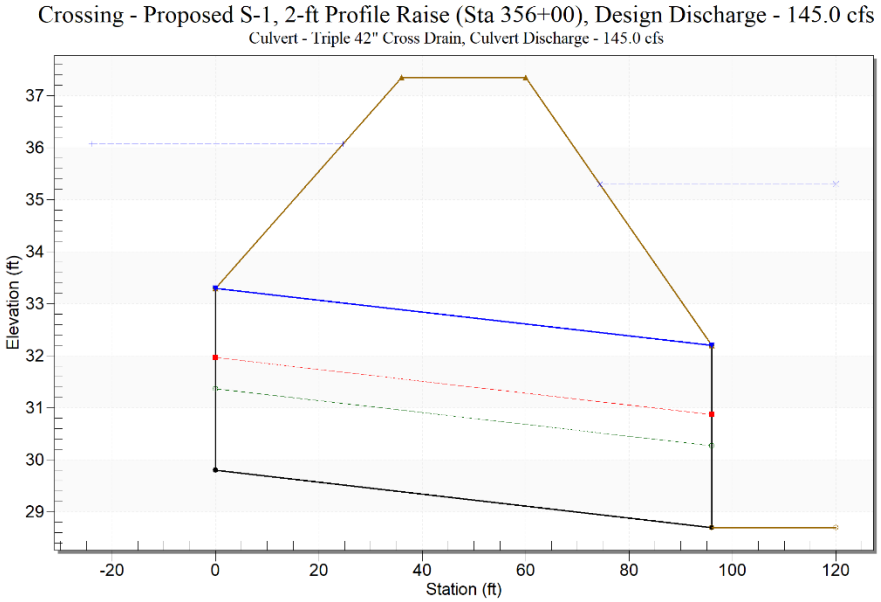


Figure 18: Proposed 42” Pipe and Roadway Profile Raise Cross Drain Model

5.0 RECOMMENDED COUNTERMEASURES

Drainage:

- Raise the profile of SR 29 by fully reconstructing between MP 4.8 to MP 6.5 to provide a permanent solution to the roadway overtopping issues.
- Increase the size of the cross drain at MP 5.528 to a minimum of quadruple 42" culverts to be able to handle the flow of a 50-year storm event.
- Raise existing bridge profiles to expand the hydraulic capabilities and provide 2' drift clearance.
- Provide a treatment and attenuation swale to formally treat the roadway runoff prior to discharge off-site.

Wildlife Crossings and Fencing:

- Provide wildlife crossing opportunities along the corridor by reconstructing the bridges to include wildlife crossing features (shelves). This will help minimize the risk of animal-vehicle collisions which are the highest crash type by percentage.
- Provide wildlife fencing along the corridor to help funnel wildlife to the reconstructed bridges and culverts which will be improved to provide wildlife crossing features. This will help create a barrier to keep wildlife off the roadway and away from oncoming vehicle traffic.

Safety

- Provide nighttime lighting at the intersections with SR 78 and CR 74. This can help to eliminate nighttime crashes at these intersections and help prevent drivers from not seeing the upcoming STOP Signs and oncoming traffic.
- Provide ground in rumble strips on the centerline throughout the entire corridor. This will help to alert drivers of when they are veering into oncoming traffic. All 5 fatal crashes in the corridor were head on collisions.
- Provide ground in rumble strips on the outside shoulders. This can help to prevent drivers from running off the road. Run off road crashes were the third highest crash type in this corridor.

Structures

- Replace all four bridges in the study segment since they have exceeded their design life by over 24 years. The new bridges will be longer and have more vertical clearance to improve hydraulics and wildlife connectivity.

Roadway

- Resurface from MP 1.85 to MP 12.393 (except full reconstruction between MP 4.8 to MP 6.5) to eliminate the deficient crack rating.
- Provide new signing and pavement markings from MP 1.85 to MP 12.393. This will help to improve the reflectivity in the corridor which was seen to have the lowest rating for visibility from the most recent survey in 2021. This can also help to reduce the nighttime crashes by increasing driver visibility.

6.0 CONCLUSION AND RECOMMENDATIONS

Overall, this corridor has multiple safety issues related to existing crash types and drainage conditions. It is recommended that a reconstruction project be programmed to raise the profile of the roadway to eliminate the flooding issues between MP 4.8 and MP 6.5. Additionally, this project includes resurfacing the remaining portion beginning at MP 1.85 and ending at MP 12.393 to improve safety and fulfill maintenance needs. New signing and pavement markings should also be part of this project. The project should include the replacement of the aging bridges and incorporate wildlife crossing features including wildlife fencing. Preventing roadway closures on SR 29 in the future is critical for freight travel in the region as the nearest detour to get from Labelle to US 27 is over 25 miles in length. See **Appendix L** for detour map.

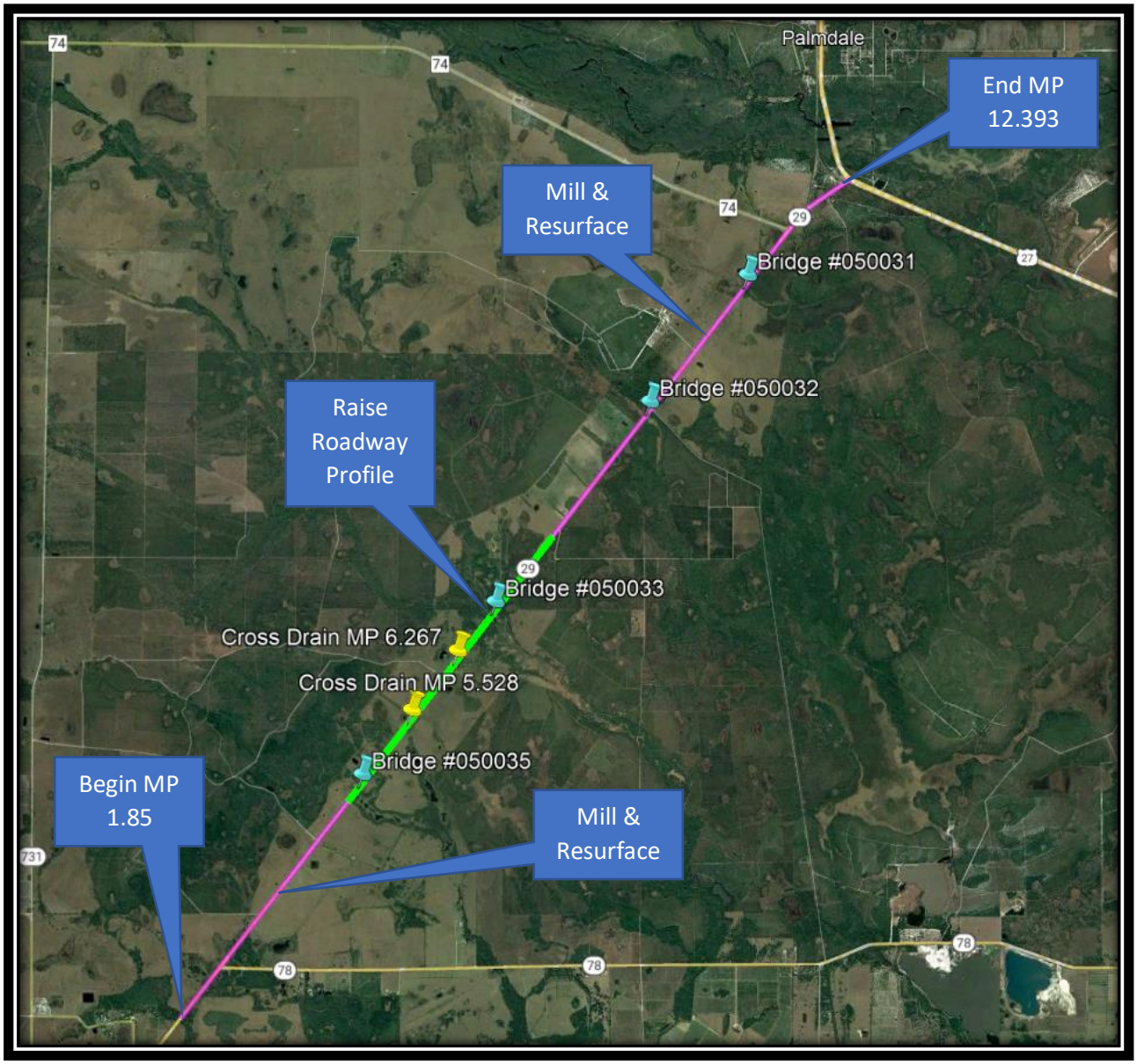


Figure 19: Recommended Project Limits, Bridge Replacements and Cross Drain Replacements

APPENDIX A

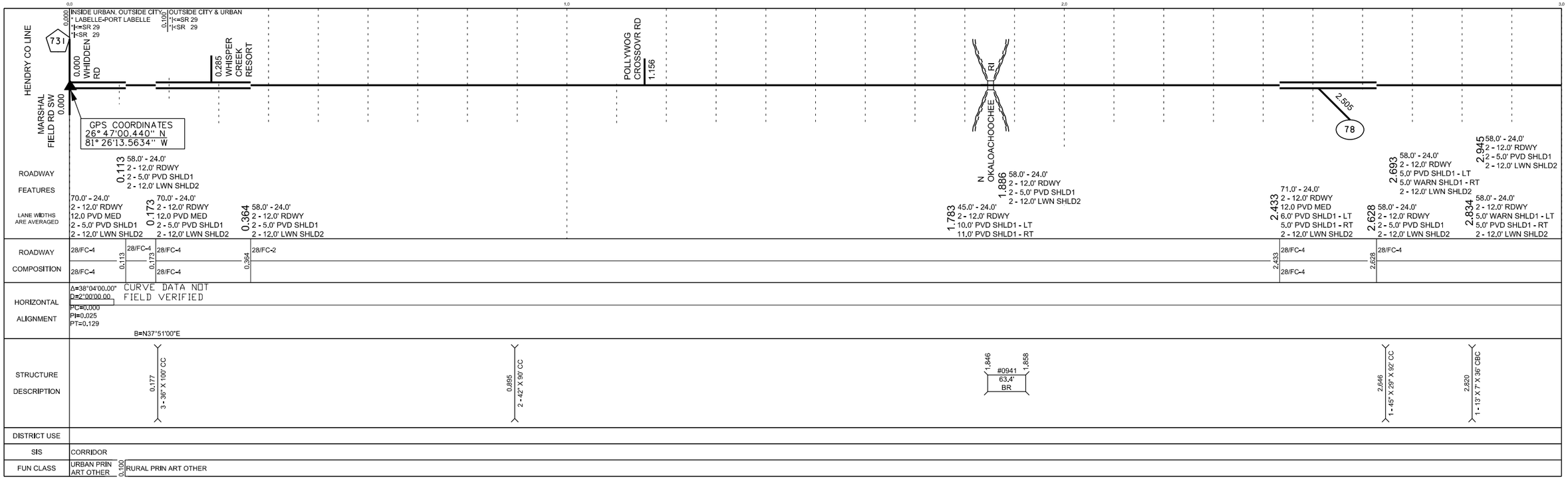
Straight-Line Diagram

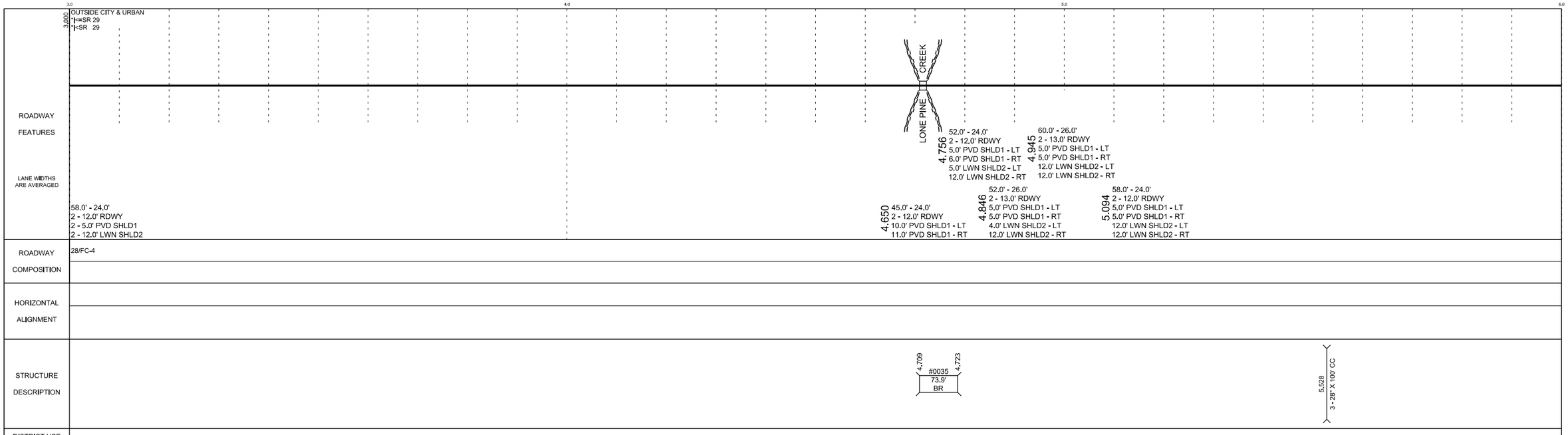
	5 YR INV	SLD REV	BMP	EMP	INV	SLD REV
DATE	10/31/2019	11/21/2019				
BY	FTE	FTE				

FLORIDA DEPARTMENT OF TRANSPORTATION

STRAIGHT LINE DIAGRAM OF ROAD INVENTORY

SECTION STATUS	INT. or US ROUTE NO.	STATE ROAD NO.	COUNTY	DISTRICT	ROADWAY ID	SHEET NO.
02		SR 29	GLADES	01	05090000	1 OF 2





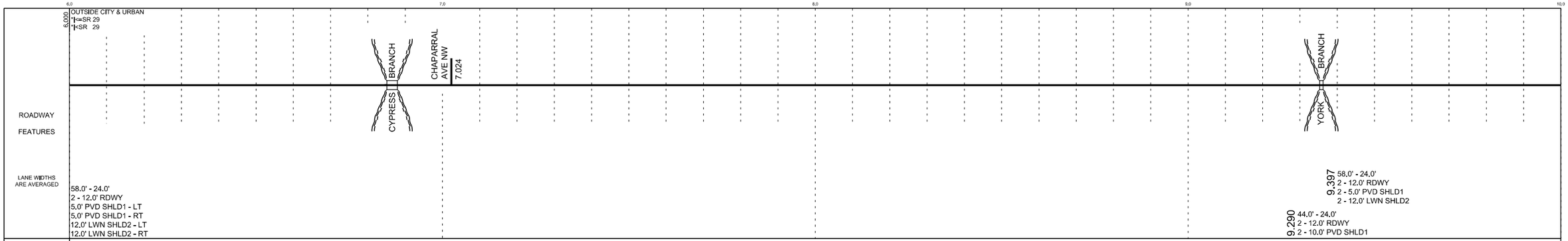
Version: 1.4.2.27 11/21/2019

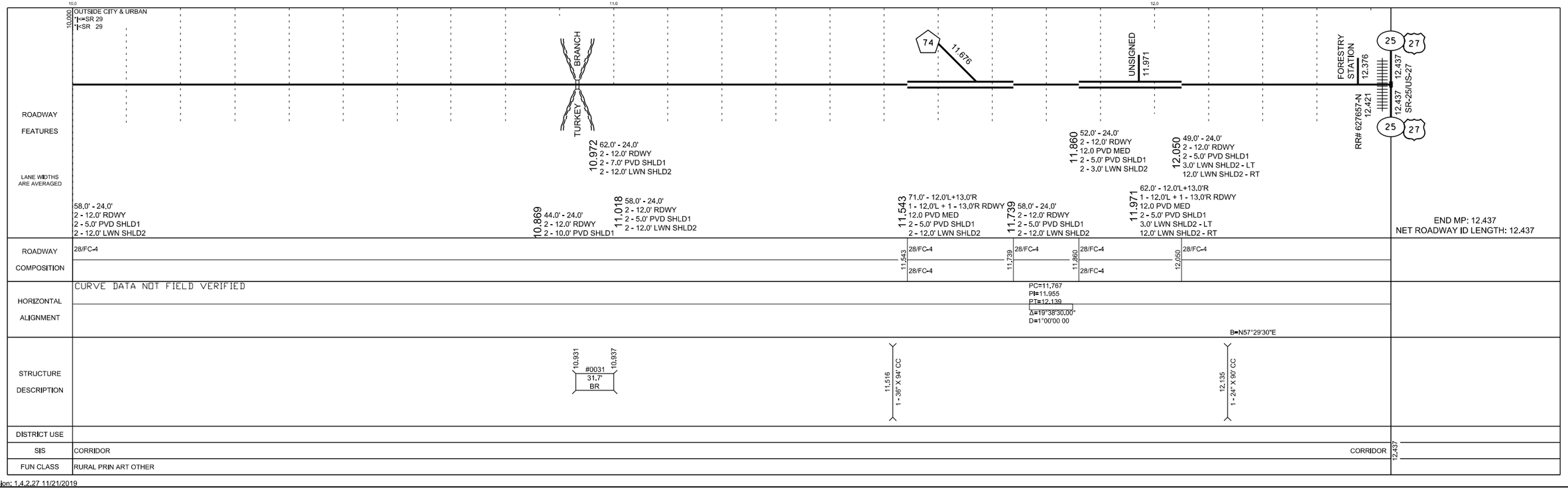
	5 YR INV	SLD REV	BMP	EMP	INV	SLD REV
DATE	10/31/2019	11/21/2019				
BY	FTE	FTE				

FLORIDA DEPARTMENT OF TRANSPORTATION

STRAIGHT LINE DIAGRAM OF ROAD INVENTORY

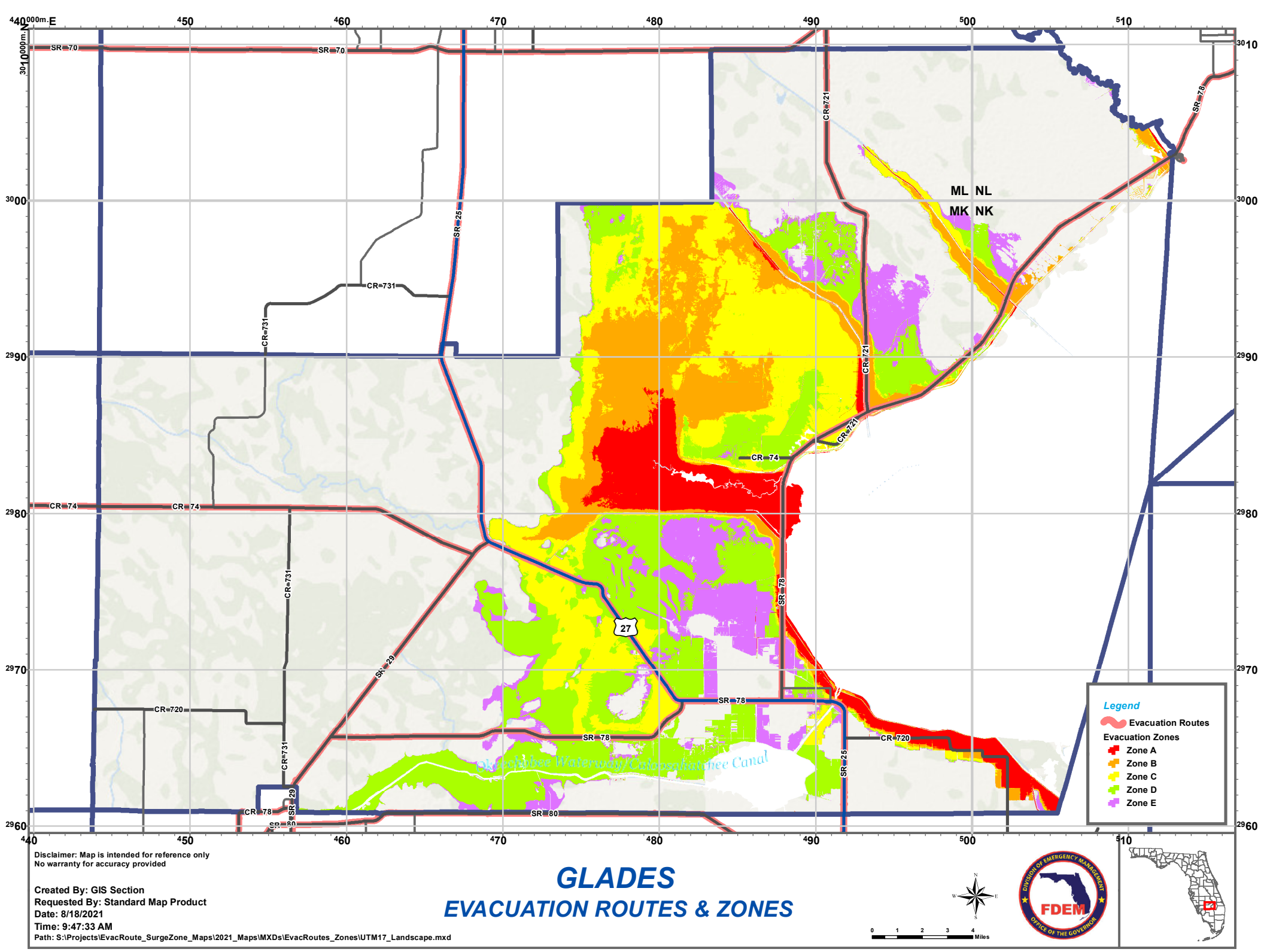
SECTION STATUS	INT. or US ROUTE NO.	STATE ROAD NO.	COUNTY	DISTRICT	ROADWAY ID	SHEET NO:
02		SR 29	GLADES	01	05090000	2 OF 2





APPENDIX B

Evacuation Route Map



Disclaimer: Map is intended for reference only
No warranty for accuracy provided

Created By: GIS Section
Requested By: Standard Map Product
Date: 8/18/2021
Time: 9:47:33 AM
Path: S:\Projects\EvacRoute_SurgeZone_Maps\2021_Maps\MXDs\EvacRoutes_Zones\UTM17_Landscape.mxd

GLADES

EVACUATION ROUTES & ZONES

0 1 2 3 4 Miles

DIVISION OF EMERGENCY MANAGEMENT
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APPENDIX C
Intersection Photos

SR 29 & SR 78 Intersection

SR 29 Northbound View

SR 29 Southbound View

SR 78 Westbound View

SR 29 & CR 74 Intersection

SR 29 Northbound View

SR 29 Southbound View

CR 74 Eastbound View

APPENDIX D

Reflectivity Ratings 2021

RdyId	Report Group	BMP	EMP	Date	Type	LEL	L5SL	L4SL	L3SL	L2SL	L1SL	LCL	RCL	R1SL	R2SL	R3SL	R4SL	R5SL	REL	SpdLmt	AADT	Surface Type
05090000	2022 Survey	0.0	0.1	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	187	0	0	0	0	0	0	50	6100	FRICTION 12.5 MOD
05090000	2022 Survey	0.1	0.2	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	187	0	0	0	0	0	0	50	6100	FRICTION 12.5 MOD
05090000	2022 Survey	0.2	0.3	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	167	0	0	0	0	0	0	50	6100	FRICTION 12.5 MOD
05090000	2022 Survey	0.3	0.4	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	172	0	0	0	0	0	0	50	6100	FRICTION 12.5 MOD
05090000	2022 Survey	0.4	0.5	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	190	0	0	0	0	0	0	50	6100	FRICTION 12.5 MOD
05090000	2022 Survey	0.5	0.6	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	195	0	0	0	0	0	0	60	6100	FRICTION 12.5 MOD
05090000	2022 Survey	0.6	0.7	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	189	0	0	0	0	0	0	60	6100	FRICTION 12.5 MOD
05090000	2022 Survey	0.7	0.8	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	170	0	0	0	0	0	0	60	6100	FRICTION 12.5 MOD
05090000	2022 Survey	0.8	0.9	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	189	0	0	0	0	0	0	60	6100	FRICTION 12.5 MOD
05090000	2022 Survey	0.9	1.0	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	163	0	0	0	0	0	0	60	6100	FRICTION 12.5 MOD
05090000	2022 Survey	1.0	1.1	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	153	0	0	0	0	0	0	60	6100	FRICTION 12.5 MOD
05090000	2022 Survey	1.1	1.2	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	169	0	0	0	0	0	0	60	6100	FRICTION 12.5 MOD
05090000	2022 Survey	1.2	1.3	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	212	0	0	0	0	0	0	60	6100	FRICTION 12.5 MOD
05090000	2022 Survey	1.3	1.4	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	214	0	0	0	0	0	0	60	6100	FRICTION 12.5 MOD
05090000	2022 Survey	1.4	1.5	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	176	0	0	0	0	0	0	60	6100	FRICTION 12.5 MOD
05090000	2022 Survey	1.5	1.6	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	185	0	0	0	0	0	0	60	6100	FRICTION 12.5 MOD
05090000	2022 Survey	1.6	1.7	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	209	0	0	0	0	0	0	60	6100	FRICTION 12.5 MOD
05090000	2022 Survey	1.7	1.8	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	195	0	0	0	0	0	0	60	6100	FRICTION 12.5 MOD
05090000	2022 Survey	1.8	1.9	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	170	0	0	0	0	0	0	60	6100	FRICTION 12.5 MOD
05090000	2022 Survey	1.9	2.0	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	171	0	0	0	0	0	0	60	6100	FRICTION 12.5 MOD
05090000	2022 Survey	2.0	2.1	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	134	0	0	0	0	0	0	60	6100	FRICTION 12.5 MOD
05090000	2022 Survey	2.1	2.2	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	187	0	0	0	0	0	0	60	6100	FRICTION 12.5 MOD
05090000	2022 Survey	2.2	2.3	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	177	0	0	0	0	0	0	60	6100	FRICTION 12.5 MOD
05090000	2022 Survey	2.3	2.4	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	217	0	0	0	0	0	0	60	6100	FRICTION 12.5 MOD
05090000	2022 Survey	2.4	2.5	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	185	0	0	0	0	0	0	60	6100	FRICTION 12.5 MOD
05090000	2022 Survey	2.5	2.6	2021-06-04T00:	INVENTORY	0	0	0	0	0	0	0	183	0	0	0	0	0	0	60	6100	FRICTION 12.5

RdyId	Report Group	BMP	EMP	Date	Type	LEL	L5SL	L4SL	L3SL	L2SL	L1SL	LCL	RCL	R1SL	R2SL	R3SL	R4SL	R5SL	REL	SpdLmt	AADT	Surface Type
				00:00																		MOD
05090000	2022 Survey	2.6	2.7	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	205	0	0	0	0	0	0	60	3600	FRICTION 12.5 MOD
05090000	2022 Survey	2.7	2.8	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	130	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	2.8	2.9	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	156	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	2.9	3.0	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	128	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	3.0	3.1	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	122	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	3.1	3.2	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	114	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	3.2	3.3	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	118	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	3.3	3.4			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
05090000	2022 Survey	3.4	3.5	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	124	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	3.5	3.6			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
05090000	2022 Survey	3.6	3.7	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	109	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	3.7	3.8	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	100	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	3.8	3.9	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	132	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	3.9	4.0	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	145	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	4.0	4.1	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	99	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	4.1	4.2	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	110	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	4.2	4.3	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	85	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	4.3	4.4	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	115	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	4.4	4.5	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	101	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	4.5	4.6	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	100	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	4.6	4.7	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	137	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	4.7	4.8	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	128	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	4.8	4.9	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	94	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	4.9	5.0	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	104	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	5.0	5.1	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	145	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	5.1	5.2	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	111	0	0	0	0	0	0	60	3600	FRICTION 12.5

RdyId	Report Group	BMP	EMP	Date	Type	LEL	L5SL	L4SL	L3SL	L2SL	L1SL	LCL	RCL	R1SL	R2SL	R3SL	R4SL	R5SL	REL	SpdLmt	AADT	Surface Type
05090000	2022 Survey	5.2	5.3	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	132	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	5.3	5.4	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	134	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	5.4	5.5	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	129	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	5.5	5.6	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	136	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	5.6	5.7	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	118	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	5.7	5.8	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	126	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	5.8	5.9	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	140	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	5.9	6.0	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	122	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	6.0	6.1	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	131	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	6.1	6.2	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	120	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	6.2	6.3	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	101	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	6.3	6.4	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	107	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	6.4	6.5	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	126	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	6.5	6.6	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	60	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	6.6	6.7	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	111	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	6.7	6.8	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	131	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	6.8	6.9	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	146	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	6.9	7.0	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	135	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	7.0	7.1	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	159	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	7.1	7.2	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	153	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	7.2	7.3	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	147	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	7.3	7.4	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	141	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	7.4	7.5	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	139	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	7.5	7.6	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	138	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	7.6	7.7	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	124	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	7.7	7.8	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	111	0	0	0	0	0	0	60	3600	FRICTION 12.5

RdyId	Report Group	BMP	EMP	Date	Type	LEL	L5SL	L4SL	L3SL	L2SL	L1SL	LCL	RCL	R1SL	R2SL	R3SL	R4SL	R5SL	REL	SpdLmt	AADT	Surface Type
05090000	2022 Survey	7.8	7.9	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	136	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	7.9	8.0	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	134	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	8.0	8.1	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	142	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	8.1	8.2	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	136	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	8.2	8.3	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	131	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	8.3	8.4	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	160	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	8.4	8.5	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	146	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	8.5	8.6	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	123	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	8.6	8.7	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	143	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	8.7	8.8	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	141	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	8.8	8.9	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	144	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	8.9	9.0	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	126	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	9.0	9.1	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	138	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	9.1	9.2	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	140	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	9.2	9.3	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	111	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	9.3	9.4	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	136	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	9.4	9.5	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	120	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	9.5	9.6	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	146	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	9.6	9.7	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	132	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	9.7	9.8	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	113	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	9.8	9.9	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	135	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	9.9	10.0	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	120	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	10.0	10.1	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	136	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	10.1	10.2	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	126	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	10.2	10.3	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	135	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	10.3	10.4	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	149	0	0	0	0	0	0	60	3600	FRICTION 12.5

RdyId	Report Group	BMP	EMP	Date	Type	LEL	L5SL	L4SL	L3SL	L2SL	L1SL	LCL	RCL	R1SL	R2SL	R3SL	R4SL	R5SL	REL	SpdLmt	AADT	Surface Type
05090000	2022 Survey	10.4	10.5	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	131	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	10.5	10.6	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	141	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	10.6	10.7	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	136	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	10.7	10.8	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	144	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	10.8	10.9	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	135	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	10.9	11.0	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	112	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	11.0	11.1	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	142	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	11.1	11.2	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	157	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	11.2	11.3	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	157	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	11.3	11.4	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	110	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	11.4	11.5	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	202	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	11.5	11.6	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	170	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	11.6	11.7	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	184	0	0	0	0	0	0	60	3600	FRICTION 12.5
05090000	2022 Survey	11.7	11.8	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	180	0	0	0	0	0	0	60	4600	FRICTION 12.5
05090000	2022 Survey	11.8	11.9	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	201	0	0	0	0	0	0	60	4600	FRICTION 12.5
05090000	2022 Survey	11.9	12.0	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	185	0	0	0	0	0	0	60	4600	FRICTION 12.5
05090000	2022 Survey	12.0	12.1	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	189	0	0	0	0	0	0	60	4600	FRICTION 12.5
05090000	2022 Survey	12.1	12.2	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	163	0	0	0	0	0	0	60	4600	FRICTION 12.5
05090000	2022 Survey	12.2	12.3	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	148	0	0	0	0	0	0	60	4600	FRICTION 12.5
05090000	2022 Survey	12.3	12.4	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	190	0	0	0	0	0	0	60	4600	FRICTION 12.5
05090000	2022 Survey	12.4	12.5	2021-06-04T00:00:00	INVENTORY	0	0	0	0	0	0	0	188	0	0	0	0	0	0	60	4600	FRICTION 12.5

APPENDIX E

Skid Ratings Report 2020

Project Id	District Id	County Name	System	State Highway Name	Collected Date	Roadway Id	Direction	Lane Number	Milepost	Corrected Friction Number	Friction Number Average	Friction Number Standard Deviation	Speed Average	Mean Profile Depth	Percent Error	Latitude	Longitude
722	1	Glades	1	29	1/6/2020	5090000	L	1	0.366	46	46	1.025	40.6	0.05	2.38	26.788135	-81.43386
722	1	Glades	1	29	1/6/2020	5090000	L	1	0.668	47	47	1.811	40.6	0.057	4.78	26.791605	-81.430868
722	1	Glades	1	29	1/6/2020	5090000	L	1	0.979	47	47	0.568	40.4	0.043	2.09	26.795182	-81.427772
722	1	Glades	1	29	1/6/2020	5090000	L	1	1.424	44	44	0.72	40.5	0.046	1.87	26.800282	-81.423368
722	1	Glades	1	29	1/6/2020	5090000	L	1	1.674	48	48	0.971	40.4	0.044	1.98	26.803145	-81.420892
722	1	Glades	1	29	1/6/2020	5090000	L	1	1.967	45	45	0.761	40.4	0.046	2.8	26.806517	-81.417977
722	1	Glades	1	29	1/6/2020	5090000	L	1	2.349	45	45	0.772	40.4	0.047	2.13	26.810896	-81.414196
722	1	Glades	1	29	1/6/2020	5090000	L	1	2.555	47	47	1.094	40.4	0.038	2.13	26.813274	-81.412161
722	1	Glades	1	29	1/6/2020	5090000	L	1	2.955	45	45	0.776	40.2	0.028	1.33	26.817856	-81.408185
722	1	Glades	1	29	1/6/2020	5090000	L	1	3.329	44	44	0.952	40.4	0.027	1.34	26.822153	-81.40447
722	1	Glades	1	29	1/6/2020	5090000	L	1	3.673	43	43	1.097	40.4	0.028	1.77	26.826102	-81.401058
722	1	Glades	1	29	1/6/2020	5090000	L	1	3.973	43	43	0.75	40.4	0.029	1.3	26.829553	-81.39808
722	1	Glades	1	29	1/6/2020	5090000	L	1	4.376	43	43	1.357	40.5	0.028	1.46	26.834179	-81.394085
722	1	Glades	1	29	1/6/2020	5090000	L	1	4.656	45	45	0.791	41.1	0.028	1.96	26.83739	-81.391312
722	1	Glades	1	29	1/6/2020	5090000	L	1	5.125	45	45	0.822	40.2	0.027	1.43	26.842764	-81.386664
722	1	Glades	1	29	1/6/2020	5090000	L	1	5.367	44	44	0.595	40.5	0.029	1.69	26.845543	-81.384263
722	1	Glades	1	29	1/6/2020	5090000	L	1	5.671	42	42	0.551	40.3	0.026	1.51	26.849031	-81.381245
722	1	Glades	1	29	1/6/2020	5090000	L	1	6.044	42	42	0.853	40.7	0.028	1.4	26.85332	-81.37754
722	1	Glades	1	29	1/6/2020	5090000	L	1	6.372	43	43	1.22	40.4	0.028	1.58	26.857083	-81.374287
722	1	Glades	1	29	1/6/2020	5090000	L	1	6.653	42	42	0.872	40.4	0.027	1.64	26.860317	-81.371489
722	1	Glades	1	29	1/6/2020	5090000	L	1	6.976	42	42	0.433	40.4	0.029	1.43	26.864021	-81.36829
722	1	Glades	1	29	1/6/2020	5090000	L	1	7.38	44	44	0.715	40.3	0.028	1.83	26.868662	-81.364275
722	1	Glades	1	29	1/6/2020	5090000	L	1	7.653	48	48	0.607	40.2	0.035	1.77	26.871795	-81.361568
722	1	Glades	1	29	1/6/2020	5090000	L	1	7.989	45	45	0.925	40.3	0.03	1.46	26.875652	-81.358233
722	1	Glades	1	29	1/6/2020	5090000	L	1	8.438	43	43	0.61	40.4	0.027	1.27	26.880802	-81.353782
722	1	Glades	1	29	1/6/2020	5090000	L	1	8.668	45	45	0.551	40.4	0.028	1.71	26.883445	-81.351494
722	1	Glades	1	29	1/6/2020	5090000	L	1	8.893	45	45	1.318	40.7	0.027	1.41	26.886038	-81.349255
722	1	Glades	1	29	1/6/2020	5090000	L	1	9.386	44	44	0.833	40.4	0.029	2.04	26.891692	-81.344365
722	1	Glades	1	29	1/6/2020	5090000	L	1	9.678	44	44	0.931	40.6	0.027	1.57	26.895049	-81.341459
722	1	Glades	1	29	1/6/2020	5090000	L	1	9.978	45	45	0.583	40.3	0.029	1.9	26.898494	-81.338481
722	1	Glades	1	29	1/6/2020	5090000	L	1	10.421	43	43	0.931	40.4	0.03	2.13	26.903582	-81.334083
722	1	Glades	1	29	1/6/2020	5090000	L	1	10.678	42	42	0.762	40.3	0.026	1.37	26.906527	-81.331529
722	1	Glades	1	29	1/6/2020	5090000	L	1	10.977	43	43	0.824	40.5	0.03	2.67	26.909972	-81.328549
722	1	Glades	1	29	1/6/2020	5090000	L	1	11.275	46	46	0.963	41.2	0.029	1.09	26.913397	-81.325591
722	1	Glades	1	29	1/6/2020	5090000	L	1	11.612	42	42	0.578	40.4	0.037	2.11	26.917272	-81.322255
722	1	Glades	1	29	1/6/2020	5090000	L	1	11.929	39	39	0.63	40.5	0.035	1.22	26.920776	-81.318923
722	1	Glades	1	29	1/6/2020	5090000	L	1	12.216	40	40	0.862	40.1	0.031	1.31	26.923209	-81.315154

APPENDIX F

Crash Reports

CRASH NUMBER	CRASH DATE	CRASH TIME	LATITUDE	LONGITUDE	WEATHER	ROAD SURFACE	CRASH TYPE	INJURY DETAIL	DAY OR NIGHT
24400691	3/16/2021	12:00 AM	26.91215313	-81.32661596	Clear	Dry	Animal	No Injury	NIGHT
24400699	3/28/2021	6:00 AM	26.91800828	-81.32141837	Fog, Smog, Smoke	Unknown	Off Road	No Injury	NIGHT
24400703	5/6/2021	5:45 AM	26.90056999	-81.33665009	Fog, Smog, Smoke	Dry	Head On	No Injury	NIGHT
24400804	10/3/2021	11:25 PM	26.91787374	-81.32153927	Clear	Dry	Off Road	No Injury	NIGHT
24400847	11/21/2021	6:00 AM	26.91791673	-81.32151984	Cloudy	Wet	Off Road	No Injury	NIGHT
24400858	12/7/2021	2:55 AM	26.83670189	-81.39174594	Fog, Smog, Smoke	Dry	Animal	No Injury	NIGHT
24400869	1/5/2022	7:20 AM	26.81263309	-81.41259202	Clear	Dry	Head On	Possible Injury	DAY
24400877	12/17/2021	3:00 PM	26.81250225	-81.4128853	Clear	Dry	Angle	No Injury	DAY
24400882	1/20/2022	7:31 AM	26.83512537	-81.39329272	Clear	Dry	Animal	No Injury	DAY
82063892	2/2/2016	10:10 AM	26.92353948	-81.3145142	Cloudy	Dry	Sideswipe	No Injury	DAY
82770968	11/22/2016	7:19 PM	26.81251571	-81.41272931	Clear	Dry	Other	No Injury	NIGHT
82771016	6/13/2017	5:00 AM	26.91788999	-81.32165	Clear	Dry	Other	No Injury	NIGHT
82771094	8/30/2017	9:00 PM	26.86207555	-81.36983426	Rain	Wet	Off Road	No Injury	NIGHT
82771096	9/7/2017	9:25 PM	26.81247999	-81.41276	Rain	Wet	Sideswipe	No Injury	NIGHT
82771126	1/3/2018	3:27 PM	26.92122057	-81.31857599	Clear	Dry	Other	No Injury	DAY
82771243	1/14/2017	4:38 AM	26.81247999	-81.41276	Clear	Dry	Animal	No Injury	NIGHT
82771435	4/7/2018	3:00 PM	26.9247908	-81.31230536	OTHER	Unknown	Other	UNKNOWN/NOT CODED	UNKNOWN
82771535	2/11/2020	6:14 AM	26.86947851	-81.3634045	Fog, Smog, Smoke	Dry	Animal	No Injury	NIGHT
82771592	9/18/2016	4:50 AM	26.86414653	-81.36828946	Rain	Wet	Other	Possible Injury	NIGHT
82771623	12/15/2015	6:20 AM	26.82000616	-81.40621345	Fog, Smog, Smoke	Dry	Sideswipe	No Injury	NIGHT
82771659	1/10/2017	7:55 PM	26.82396006	-81.40286181	Clear	Dry	Off Road	Incapacitating Injury	NIGHT
82771673	2/11/2021	6:05 AM	26.81224945	-81.41302654	Fog, Smog, Smoke	Dry	Rollover	No Injury	NIGHT
82771691	12/28/2020	3:03 AM	26.83335262	-81.39484848	Clear	Dry	Animal	No Injury	NIGHT
83786691	10/3/2015	10:40 PM	26.91215313	-81.32661596	Clear	Dry	Animal	Possible Injury	NIGHT
83797736	6/24/2015	10:11 PM	26.81247996	-81.41275998	Clear	Water (standing/moving)	Off Road	Possible Injury	NIGHT
84517286	1/3/2016	9:58 AM	26.81247999	-81.41276	Cloudy	Dry	Rear End	Possible Injury	DAY
84543075	1/21/2016	7:11 AM	26.86440999	-81.36793	Clear	Dry	Other	No Injury	DAY
85146043	9/9/2016	10:08 AM	26.92062276	-81.31900026	Clear	Dry	Rollover	Non-Incapacitating Injury	DAY
85185004	11/26/2015	9:30 PM	26.86440999	-81.36793	Clear	Dry	Animal	No Injury	NIGHT
85185028	2/27/2016	10:37 PM	26.81247999	-81.41276	Clear	Dry	Other	No Injury	NIGHT
85192700	11/7/2015	4:35 PM	26.81226801	-81.41294752	Rain	Wet	Unknown	Fatal (within 30 days)	DAY
85192768	8/19/2016	3:30 PM	26.91788999	-81.32165	Clear	Dry	Left Turn	No Injury	DAY
85208851	11/20/2016	2:15 PM	26.89216696	-81.34392473	Clear	Dry	Animal	Possible Injury	DAY
85258238	3/8/2016	10:25 AM	26.91793296	-81.3216133	Clear	Dry	Angle	No Injury	DAY
85258267	7/7/2016	11:52 AM	26.85429815	-81.37663093	Clear	Dry	Other	No Injury	DAY
85294447	12/28/2016	6:29 AM	26.8083607	-81.41633847	Clear	Dry	Rollover	Incapacitating Injury	NIGHT
85294448	1/9/2017	4:47 AM	26.81247999	-81.41276	Clear	Dry	Animal	No Injury	NIGHT
85326204	8/22/2016	5:10 PM	26.81247999	-81.41276	Clear	Dry	Rear End	Incapacitating Injury	DAY
85373095	6/7/2017	5:45 AM	26.91788999	-81.32165	Rain	Wet	Other	No Injury	NIGHT
85379114	6/18/2017	9:30 PM	26.91788999	-81.32165	Clear	Dry	Other	No Injury	NIGHT
85395230	11/6/2016	8:09 PM	26.91788999	-81.32165	Clear	Dry	Animal	No Injury	NIGHT
85455680	3/8/2017	6:58 PM	26.91788999	-81.32165	Clear	Dry	Animal	No Injury	DAY
85455694	4/22/2017	10:30 PM	26.82396006	-81.40286181	Clear	Dry	Animal	No Injury	NIGHT
85455740	12/28/2017	1:53 PM	26.87580488	-81.35807408	Clear	Dry	Other	Fatal (within 30 days)	DAY
85463418	8/4/2017	6:39 AM	26.80904744	-81.41575055	Cloudy	Wet	Other	Incapacitating Injury	NIGHT
85473996	11/4/2017	7:55 AM	26.91788999	-81.32165	Clear	Dry	Off Road	No Injury	DAY
85475015	12/3/2017	11:32 AM	26.91788999	-81.32165	Clear	Dry	Right Turn	No Injury	DAY
85499758	7/30/2017	4:05 AM	26.91788999	-81.32165	Clear	Dry	Off Road	No Injury	NIGHT
85511466	2/5/2018	7:25 AM	26.81243759	-81.4127975	Fog, Smog, Smoke	Dry	Rollover	Non-Incapacitating Injury	DAY
85519391	4/6/2018	7:50 PM	26.91788999	-81.32165	Clear	Dry	Off Road	Incapacitating Injury	NIGHT
85560414	3/31/2018	10:26 PM	26.8122576	-81.41294522	Clear	Dry	Off Road	Incapacitating Injury	NIGHT
85561725	6/15/2018	9:32 AM	26.91788999	-81.32165	Clear	Dry	Rollover	No Injury	DAY
85573513	7/31/2018	5:25 AM	26.80683926	-81.41764257	Clear	Dry	Animal	POSSIBLE INJURY	NIGHT
85586995	8/27/2018	8:13 AM	26.86440999	-81.36793	Clear	Dry	Rollover	No Injury	DAY
85605345	11/22/2017	5:35 AM	26.87580763	-81.35803572	Fog, Smog, Smoke	Dry	Head On	Fatal (within 30 days)	NIGHT
87104488	11/28/2019	10:30 AM	26.91788999	-81.32165	Clear	Dry	Other	No Injury	DAY
87137650	1/3/2018	8:10 PM	26.91788999	-81.32165	Clear	Dry	Off Road	No Injury	NIGHT
87140425	5/27/2018	11:44 PM	26.86440999	-81.36793	Clear	Dry	Animal	No Injury	NIGHT
87140893	3/30/2019	10:59 PM	26.81247999	-81.41276	Clear	Dry	Left Turn	Possible Injury	NIGHT
87168190	5/12/2019	1:40 PM	26.81247999	-81.41276	Rain	Wet	Animal	No Injury	DAY
87177808	7/3/2018	3:11 PM	26.85868231	-81.37284778	Rain	Wet	Head On	Fatal (within 30 days)	DAY
87204132	10/12/2018	10:00 PM	26.81247999	-81.41276	Clear	Dry	Left Turn	Incapacitating Injury	NIGHT
87206611	9/24/2019	6:04 AM	26.81247999	-81.41276	Clear	Dry	Off Road	No Injury	NIGHT
87209220	7/28/2018	4:41 PM	26.81247596	-81.41266941	Rain	Wet	Rear End	No Injury	DAY
87281359	9/4/2018	5:10 AM	26.81247999	-81.41276	Clear	Dry	Animal	No Injury	NIGHT
87920367	4/27/2018	12:25 AM	26.91788999	-81.32165	Clear	Dry	Animal	No Injury	NIGHT
87920374	6/8/2018	12:56 AM	26.83571758	-81.39278983	Rain	Wet	Other	No Injury	NIGHT
87920393	7/21/2018	5:16 AM	26.91788999	-81.32165	Clear	Dry	Off Road	No Injury	NIGHT
87920408	8/24/2018	12:10 PM	26.83387669	-81.39439494	Clear	Dry	Other	No Injury	DAY
87920428	10/31/2018	1:30 AM	26.9180853	-81.32140398	Clear	Dry	Off Road	No Injury	NIGHT
87920439	9/29/2018	11:15 PM	26.91788999	-81.32165	Clear	Dry	Other	Possible Injury	NIGHT
87920440	11/11/2018	2:30 AM	26.86830854	-81.36461402	Clear	Dry	Other	Possible Injury	NIGHT
87920468	3/9/2019	8:13 AM	26.91789715	-81.32164388	Clear	Dry	Left Turn	No Injury	DAY
87920478	2/27/2019	9:43 PM	26.81011284	-81.41491917	Clear	Dry	Animal	No Injury	NIGHT
87920498	2/21/2019	8:10 AM	26.81247999	-81.41276	Clear	Dry	Other	No Injury	DAY
87920546	4/9/2021	9:27 AM	26.91826763	-81.32142975	Clear	Dry	Left Turn	No Injury	DAY
87920564	8/18/2019	4:00 AM	26.91801968	-81.3214295	Clear	Dry	Other	No Injury	NIGHT
87920587	8/12/2019	12:54 AM	26.88279701	-81.3519045	Clear	Dry	Animal	No Injury	NIGHT
87920589	9/8/2019	3:20 AM	26.81161796	-81.41352257	Clear	Dry	Other	No Injury	NIGHT
88197474	4/29/2021	10:30 PM	26.81248001	-81.41276	Cloudy	Wet	Off Road	Non-Incapacitating Injury	NIGHT
88215220	9/4/2020	7:20 AM	26.91789	-81.32165005	Clear	Dry	Other	No Injury	DAY
88215227	10/21/2020	5:30 AM	26.81248001	-81.41276	Clear	Dry	Rear End	No Injury	NIGHT
88337366	4/20/2020	10:25 PM	26.84968689	-81.38045172	Cloudy	Wet	Other	No Injury	NIGHT
88337373	6/25/2020	1:55 AM	26.81249149	-81.41277034	Clear	Dry	Off Road	No Injury	NIGHT
88337395	11/2/2020	8:45 PM	26.81248359	-81.41276679	Clear	Dry	Off Road	No Injury	NIGHT
88337409	1/6/2021	7:45 PM	26.81247998	-81.41273892	Clear	Dry	Off Road	No Injury	NIGHT
88338261	6/25/2020	3:40 PM	26.90863859	-81.32964354	CLOUDY	Dry	Rollover	NO-INCAPACITATING INJURY	DAY
88371042	7/15/2021	2:13 AM	26.86222882	-81.36979968	Clear	Dry	Head On	Fatal (within 30 days)	NIGHT
88428603	1/27/2021	4:30 PM	26.91789	-81.32165005	Clear	Dry	Sideswipe	Incapacitating Injury	DAY
88436409	2/5/2022	12:05 AM	26.81248001	-81.41276	Clear	Dry	Angle	Incapacitating Injury	NIGHT
89452577	10/29/2019	6:40 AM	26.89373601	-81.34238917	Fog, Smog, Smoke	Dry	Animal	No Injury	NIGHT
89452586	11/26/2019	6:10 PM	26.82396006	-81.40286181	Clear	Dry	Animal	No Injury	DAY
89452613	1/16/2020	7:08 PM	26.86767651	-81.36523167	Clear	Dry	Animal	No Injury	NIGHT
89452657	8/24/2020	6:45 AM	26.81180639	-81.41322067	Clear	Dry	Animal	No Injury	NIGHT
89452664	5/10/2020	1:15 PM	26.90235411	-81.33516522	Rain	Wet	Off Road	Possible Injury	DAY
89452679	4/30/2020	4:53 AM	26.91789	-81.32165005	Clear	Dry	Off Road	Non-Incapacitating Injury	NIGHT
89452680	7/17/2020	7:17 PM	26.91789	-81.32165005	Rain	Wet	Off Road	No Injury	NIGHT
89452684	5/12/2020	3:33 PM	26.91789	-81.32165005	Clear	Dry	Other	No Injury	DAY
89452711	8/27/2020	5:00 PM	26.85032578	-81.38003243	Clear	Dry	Other	No Injury	DAY
89452720	11/26/2020	11:10 PM	26.81258407	-81.41280536	Clear	Dry	Other	No Injury	NIGHT
89452724	11/5/2020	5:45 AM	26.85749985	-81.37399179	Clear	Dry	Animal	No Injury	NIGHT
89452738	1/20/2021	10:25 PM	26.86419495	-81.36811318	Clear	Dry	Animal	No Injury	NIGHT
89452768	9/26/2020	8:20 AM	26.86435696	-81.36788291	Clear	Dry	Animal	No Injury	DAY
89452770	11/3/2020	7:55 AM	26.91789	-81.32165005	Clear	Dry	Animal	No Injury	DAY
89452781	11/30/2020	11:50 AM	26.91805293	-81.32164728	Rain	Wet	Left Turn	No Injury	DAY
89452787	3/1/2021	4:30 PM	26.82742996	-81.39979673	Clear	Dry	Sideswipe	No Injury	DAY
89452791	2/27/2021	11:15 PM	26.81234698	-81.41298877	Fog, Smog, Smoke	Dry	Animal	No Injury	NIGHT
89452809	1/13/2021	8:13 PM	26.91789	-81.32165005	Rain	Wet	Animal	No Injury	NIGHT

Crash not in study area

FLORIDA TRAFFIC CRASH REPORT

LONG FORM [X] SHORT FORM [ ] UPDATE [ ]

(Electronic Version)

**HIGHWAY SAFETY & MOTOR VEHICLES,
TRAFFIC CRASH RECORDS
NEIL KIRKMAN BUILDING, TALLAHASSEE, FL 32399-0537**

Date of Crash	Time of Crash	Date of Report	Invest. Agency Report Number	HSMV Crash Report Number
07/Nov/2015 04:35 PM	07/Nov/2015 04:35 PM	07/Nov/2015 05:29 PM	FHPF15OFF069783	85192700

CRASH IDENTIFIERS

County Code	City Code	County of Crash	Place or City of Crash	Within City Limits	Time Reported	Time Dispatched
60	0	GLADES	UNINCORPORATED	No	07/Nov/2015 04:35 PM	07/Nov/2015 04:39 PM

Time on Scene	Time Cleared Scene	Completed	Reason (if Investigation NOT Completed)	Notified By
07/Nov/2015 04:47 PM	07/Nov/2015 08:30 PM	Yes		Law Enforcement

ROADWAY INFORMATION

Crash Occured On Street, Road, Highway	At Street Address#	At Lattitude	and Longitude
SR-29		26.811211794713898	-81.413776695766899

At Feet	Or Miles	Direction	From Intersection With Street, Road, Highway	Or From Milepost #
100		South	SR-78	

Road System Identifier	Type Of Shoulder	Type Of Intersection
3 State	1 Paved	1 Not at Intersection

CRASH INFORMATION (Check if Pictures Taken) [ ]

light Condition	Weather Condition	Roadway Surface Condition	School Bus Related	Manner Of Collision
1 Daylight	3 Rain	2 Wet	1 No	3 Angle

First Harmful Event Type	First Harmful Event	First Harmful Event Location	Within Interchange	First Harmful Event Relation to Junction
	14	1 On Roadway	No	1 Non.Junction

Contributing Circumstances: Road	Contributing Circumstances: Road	Contributing Circumstances: Road
1 None		

Contributing Circumstances: Environment	Contributing Circumstances: Environment	Contributing Circumstances: Environment
2 Weather Conditions		

Work Zone Related	Crash In Work Zone	Type Of Work Zone	Workers In Work Zone	Law Enforcement In Work Zone
1 No				

VEHICLE (Check if Commercial) [ ]

Vehicle	Motor Vehicle Type	Hit and Run	Veh License Number	State	Reg. Expires	Permanent Reg.	VIN
2	1 Vehicle in Transport	1 No	[redacted]	[redacted]	14/Jun/2016	No	[redacted]

Year	Make	Model	Style	Color	Extent of Damage	Est. Damage	Towed Due To Damage	Vehicle Removed By	Rotation
2004	DODG	DAKOTA	PK	GRY	Disabling	1000	Yes	TIMS TOWING (863)675	Rotation

Insurance Company	Insurance Policy Number
[redacted]	[redacted]

Name of Vehicle Owner (Check Box If Business) [ ]	Current Address (Number and Street)	City and State	Zip Code
[redacted]	[redacted]	[redacted]	[redacted]

	License Number	State	Reg. Expires	Permanent Reg.	VIN	Year	Make	Length	Axles
Trailer One:									
Trailer Two:									

Vehicle Traveling:	Direction	On Street, Road, Highway	At Est. Speed	Posted Speed	Total Lanes
	North	SR-29	55	60	2

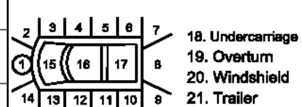
CMV Configuration	Cargo Body Type

Comm GVWR/GCWR	Trailer Type (trailer one)	Trailer Type (trailer two)

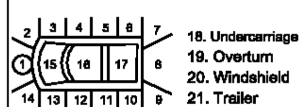
Haz. Mat. Release	Haz Mat. Placard	Number	Class

Motor Carrier Name	US DOT Number

Area of Initial Impact



Most Damaged Area



Motor Carrier Address	City and State	Zip Code	Phone Number

Comm/Non-Commercial	Vehicle Body Type	Vehicle Defects (one)	Vehicle Defects (two)	Emergency Vehicle Use	Speciual Function of MV
	3 Pickup	1 None		1 No	1 No Special Function

Vehicle Maneuver Action	Trafficway	Roadway Grade	Roadway Alignment	Most Harmful Event	Most Harmful Event Detail
1 Straight Ahead	1 Two-Way, Not Divided	1 Level	1 Straight	2 Collision with Non-Fixed Object	14 Motor Vehicle in Transport

Traffic Control Device For This Vehicle	First (1) Sequence of Events	Second (2) Sequence of Events	Third (3) Sequence of Events	Fourth (4) Sequence of Events
1 No Controls	2 Collision with Non-Fixed Object 14 Motor Vehicle in Transport			

VEHICLE (Check if Commercial) [ ]

Vehicle	Motor Vehicle Type	Hit and Run	Veh License Number	State	Reg. Expires	Permanent Reg.	VIN
1	1 Vehicle in Transport	1 No	[redacted]	[redacted]	23/Mar/2016	No	[redacted]

Year	Make	Model	Style	Color	Extent of Damage	Est. Damage	Towed Due To Damage	Vehicle Removed By	Rotation
2006	NISS	ALTIMA	4D	MAR	Disabling	8000	Yes	TIMS TOWING (863)675	Rotation

Insurance Company	Insurance Policy Number
[redacted]	[redacted]

Date of Crash	Date of Report	Invest. Agency Report Number	HSMV Crash Report Number
07/Nov/2015 04:35 PM	07/Nov/2015 04:35 PM	FHPF15OFF069783	85192700

Name of Vehicle Owner (Check Box If Business)	Current Address (Number and Street)	City and State	Zip Code
[redacted] ☐	[redacted]	[redacted]	[redacted]

	License Number	State	Reg. Expires	Permanent Reg.	VIN	Year	Make	Length	Axles
Trailer One:									
Trailer Two:									

Vehicle Traveling:	Direction	On Street, Road, Highway	At Est. Speed	Posted Speed	Total Lanes
	South	SR-29	60	60	2

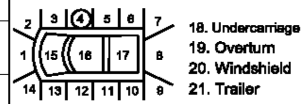
CMV Configuration	Cargo Body Type

Comm GVWR/GCWR	Trailer Type (trailer one)	Trailer Type (trailer two)

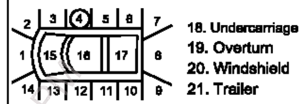
Haz. Mat. Release	Haz Mat. Placard	Number	Class

Motor Carrier Name	US DOT Number

Area of Initial Impact



Most Damaged Area



Motor Carrier Address	City and State	Zip Code	Phone Number

Comm/Non-Commercial	Vehicle Body Type	Vehicle Defects (one)	Vehicle Defects (two)	Emergency Vehicle Use	Speciual Function of MV
	1 Passenger Car	3 Tires		1 No	1 No Special Function

Vehicle Maneuver Action	Trafficway	Roadway Grade	Roadway Alignment	Most Harmful Event	Most Harmful Event Detail
1 Straight Ahead	1 Two-Way, Not Divided	1 Level	1 Straight	2 Collision with Non-Fixed Object	14 Motor Vehicle in Transport

Traffic Control Device For This Vehicle	First (1) Sequence of Events	Second (2) Sequence of Events	Third (3) Sequence of Events	Fourth (4) Sequence of Events
1 No Controls	2 Collision with Non-Fixed Object 14 Motor Vehicle in Transport			

PERSON RECORD

Person#	Description	Vehicle #	Name	Date of Birth	Sex	Phone Number	Re-Exam
1	1 Driver	1	[redacted]	23/Mar/1989	2 Female		No

Address	City	State	Zip Code
[redacted]	[redacted]	[redacted]	[redacted]

Driver License Number	State	Expires	DL Type	Req. End.	Injury Severity	Ejection
[redacted]	[redacted]	23/Mar/2019	5 E/Operator	3 No Req Endorsement	4 Incapacitating	1 Not Ejected

Restraint System	Air Bag Deployed	Helmet Use	Eye Protection	Seating Location Seat	Seating Location Row	Seating Location Other
2 None Used -Motor Vehicle Occupant	2 Not Deployed		3 Not Applicable	1 Left	1 Front	1 Not Applicable

Drivers Actions at Time of Crash (first)	Drivers Actions at Time of Crash (second)	Driver Distracted By	Vision Obstruction
12 Drove too Fast for Conditions		1 Not Distracted	1 Vision Not Obscured

Drivers Actions at Time of Crash (third)	Drivers Actions at Time of Crash (fourth)	Drivers Condition at Time of Crash
		1 Apparently Normal

Suspected Alcohol Use	Alcohol Tested	Alcohol Test Type	Alcohol Test Result	BAC	Suspected Drug Use	Drug Tested	Drug Test Type	Drug Test Result
1 No	1 Test Not Given				1 No	1 Test Not Given		

Source of Transport to Medical Facility	EMS Agency Name or ID	EMS Run Number	Medical Facility Transported To
2 EMS	HENDRY COUNTY EMS	023022	LEE MEMORIAL HOSPITAL

PERSON RECORD

Person#	Description	Vehicle #	Name	Date of Birth	Sex	Injury Severity	Ejection
2	3 Passenger	1	[redacted]	31/Jan/1990	2 Female	5 Fatal (within 30 days)	1 Not Ejected

Address	City	State	Zip Code
[redacted]	[redacted]	[redacted]	[redacted]

Restraint System	Air Bag Deployed	Helmet Use	Eye Protection	Seating Location Seat	Seating Location Row	Seating Location Other
3 Shoulder and Lap Belt Used	3 Deployed-Front		3 Not Applicable	3	1	1

Source of Transport to Medical Facility	EMS Agency Name or ID	EMS Run Number	Medical Facility Transported To
1 Not Transported			

PERSON RECORD

Person#	Description	Vehicle #	Name	Date of Birth	Sex	Phone Number	Re-Exam
3	1 Driver	2	[redacted]	14/Jun/1957	1 Male		No

Address	City	State	Zip Code
[redacted]	[redacted]	[redacted]	[redacted]

Driver License Number	State	Expires	DL Type	Req. End.	Injury Severity	Ejection
[redacted]	[redacted]	14/Jun/2021	1 A	3 No Req Endorsement	3 Non-incapacitating	1 Not Ejected

Restraint System	Air Bag Deployed	Helmet Use	Eye Protection	Seating Location Seat	Seating Location Row	Seating Location Other
3 Shoulder and Lap Belt Used	3 Deployed-Front		3 Not Applicable	1 Left	1 Front	1 Not Applicable

Drivers Actions at Time of Crash (first)	Drivers Actions at Time of Crash (second)	Driver Distracted By	Vision Obstruction
1 No Contributing Action		1 Not Distracted	1 Vision Not Obscured

Drivers Actions at Time of Crash (third)	Drivers Actions at Time of Crash (fourth)	Drivers Condition at Time of Crash
		1 Apparently Normal

Date of Crash	Date of Report	Invest. Agency Report Number	HSMV Crash Report Number
07/Nov/2015 04:35 PM	07/Nov/2015 04:35 PM	FHPF15OFF069783	85192700

Suspected Alcohol Use	Alcohol Tested	Alcohol Test Type	Alcohol Test Result	BAC	Suspected Drug Use	Drug Tested	Drug Test Type	Drug Test Result
1 No	1 Test Not Given				1 No	1 Test Not Given		

Source of Transport to Medical Facility	EMS Agency Name or ID	EMS Run Number	Medical Facility Transported To
2 EMS	HENDRY COUNTY EMS	023022	LEHIGH REGIONAL HOSPITAL

WITNESSES

Name	Address	City	State	Zip Code
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

VIOLATIONS

Person#	Name	Florida Statute Number	Charge	Citation
1	[redacted]	316.183(1)	TOO FAST FOR CONDITIONS	A4X1SRE

NARRATIVE

ID Number	Rank	Name	Troop / Post	Officer Agency	Phone Number	Date Created
3902	TPR	M.K. REED	F	FLORIDA HIGHWAY PATROL	239-344-1730	Nov 07, 2015

V01 was southbound on SR-29, just south of SR-78. V02 was northbound on SR-29, approaching SR-78. D01 lost control of V01, and V01 rotated across the center line, into the northbound lane. The front of V02 struck the right side of V01. V01 was redirected onto the east grass shoulder, where it came to final rest, facing west. V02 rotated clockwise and came to final rest blocking the northbound lane, facing east.

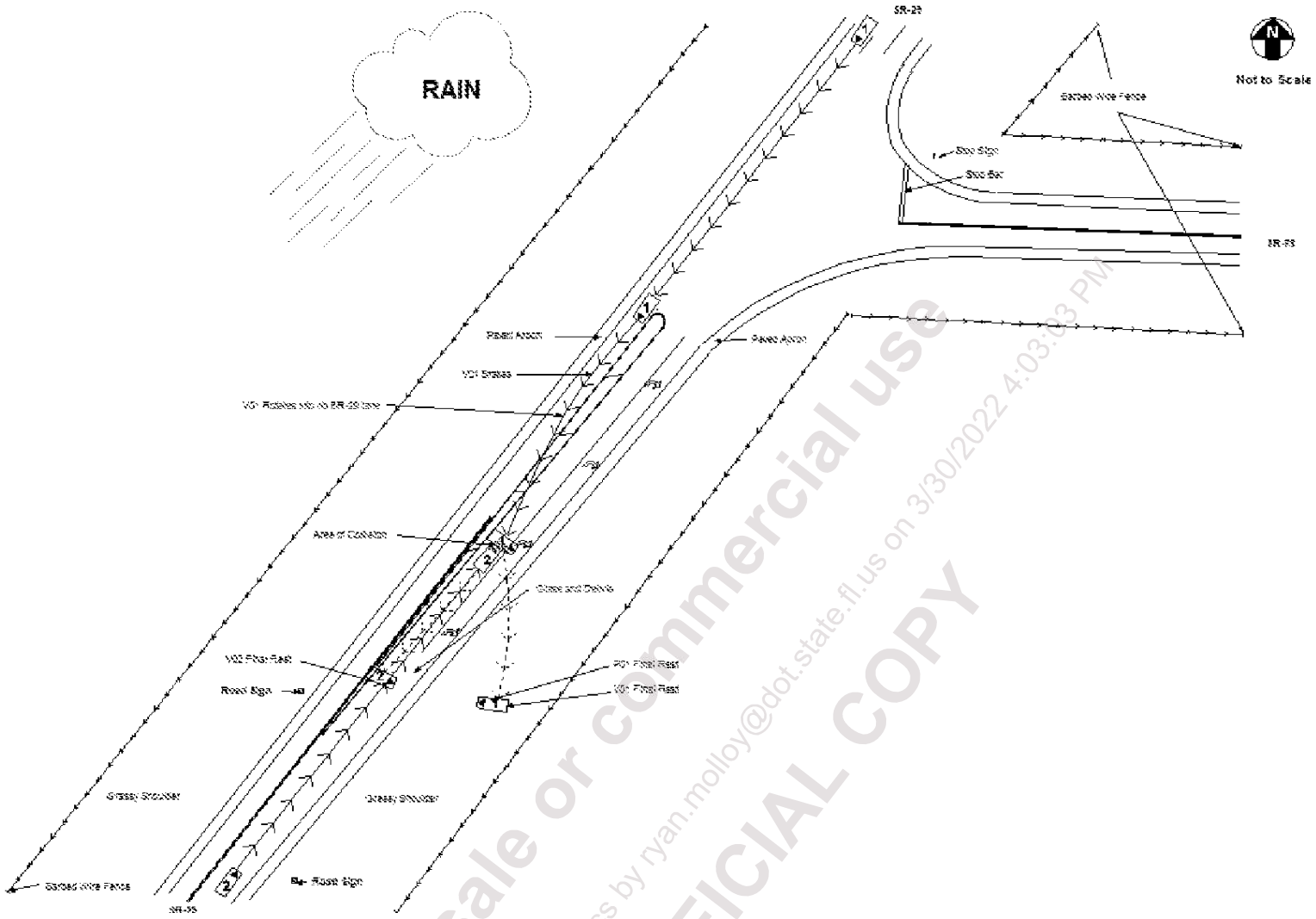
Vehicle Defects (V01) - Tires - Both rear Goodyear tires were heavily worn. Tread depth on the rear right tire was 2/32" or less.

Name of Decedent: [redacted]
Date of Birth: 01/31/1990
Date of Death: 11/7/2015
Time of Death: 4:45 p.m.
Death Pronounced By: Medic 3 - David Heflin Jr and Heidi Arnold
Traffic Homicide Investigator: Corporal J. Moore
Traffic Homicide Case Number: FHP715-60-005
Photographs taken by: Corporal J. Moore

REPORTING OFFICER

ID/Badge #	Rank and Name	Department	Type of Department
3902	TPR M.K. REED	FLORIDA HIGHWAY PATROL	FHP

Date of Crash	Date of Report	Invest. Agency Report Number	HSMV Crash Report Number
07/Nov/2015 04:35 PM	07/Nov/2015 04:35 PM	FHPF15OFF069783	85192700



FLORIDA TRAFFIC CRASH REPORT

LONG FORM ☐ SHORT FORM ☐ UPDATE ☒

(Electronic Version)

HIGHWAY SAFETY & MOTOR VEHICLES,
TRAFFIC CRASH RECORDS
NEIL KIRKMAN BUILDING, TALLAHASSEE, FL 32399-0537

Date of Crash	Time of Crash	Date of Report	Invest. Agency Report Number	HSMV Crash Report Number
28/Dec/2017 01:53 PM	28/Dec/2017 01:53 PM	08/Feb/2018 02:04 PM	FHPF17OFF087678	85455740

CRASH IDENTIFIERS

County Code	City Code	County of Crash	Place or City of Crash	Within City Limits	Time Reported	Time Dispatched
60	0	GLADES	UNINCORPORATED	No	28/Dec/2017 01:56 PM	28/Dec/2017 02:12 PM

Time on Scene	Time Cleared Scene	Completed	Reason (if Investigation NOT Completed)	Notified By
28/Dec/2017 02:28 PM	28/Dec/2017 06:58 PM	Yes		Law Enforcement

ROADWAY INFORMATION

Crash Occured On Street, Road, Highway	At Street Address#	At Lattitude and Longitude
SR-29		26.8665234558284 -81.366076469421401

At Feet	Or Miles	Direction	From Intersection With Street, Road, Highway	Or From Milepost #
	1.00	North	CHAPPARAL AVENUE	

Road System Identifier	Type Of Shoulder	Type Of Intersection
3 State	1 Paved	1 Not at Intersection

CRASH INFORMATION (Check if Pictures Taken) ☒

light Condition	Weather Condition	Roadway Surface Condition	School Bus Related	Manner Of Collision
1 Daylight	1 Clear	1 Dry	1 No	3 Angle

First Harmful Event Type	First Harmful Event	First Harmful Event Location	Within Interchange	First Harmful Event Relation to Junction
	14	1 On Roadway	No	1 Non.Junction

Contributing Circumstances: Road	Contributing Circumstances: Road	Contributing Circumstances: Road
1 None		

Contributing Circumstances: Environment	Contributing Circumstances: Environment	Contributing Circumstances: Environment
1 None		

Work Zone Related	Crash In Work Zone	Type Of Work Zone	Workers In Work Zone	Law Enforcement In Work Zone
1 No				

VEHICLE (Check if Commercial) ☒

Vehicle	Motor Vehicle Type	Hit and Run	Veh License Number	State	Reg. Expires	Permanent Reg.	VIN
2	1 Vehicle in Transport	1 No	[redacted]	[redacted]	31/May/2018	No	[redacted]

Year	Make	Model	Style	Color	Extent of Damage	Est. Damage	Towed Due To Damage	Vehicle Removed By	Rotation
1990	FRHT	CONVENTIONAL	TR	WHI	Disabling	5000	Yes	CLEWISTON TOWING	Rotation

Insurance Company	Insurance Policy Number
[redacted]	[redacted]

Name of Vehicle Owner (Check Box If Business) ☐	Current Address (Number and Street)	City and State	Zip Code
[redacted]	[redacted]	[redacted]	[redacted]

Trailer One:	License Number	State	Reg. Expires	Permanent Reg.	VIN	Year	Make	Length	Axles
	[redacted]	[redacted]		Yes	[redacted]	1968	FRUE	20	2
Trailer Two:	License Number	State	Reg. Expires	Permanent Reg.	VIN	Year	Make	Length	Axles

Vehicle Traveling:	Direction	On Street, Road, Highway	At Est. Speed	Posted Speed	Total Lanes
	South	SR-29	50	60	2

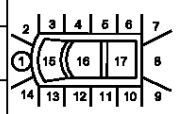
CMV Configuration	Cargo Body Type
6	8

Comm GVWR/GCWR	Trailer Type (trailer one)	Trailer Type (trailer two)
3 More than 26,000 lbs (11,793 kg)	Single Semi Trailer	

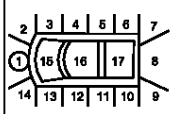
Haz. Mat. Release	Haz Mat. Placard	Number	Class
1	1		

Motor Carrier Name	US DOT Number
[redacted]	[redacted]

Area of Initial Impact



Most Damaged Area



Motor Carrier Address	City and State	Zip Code	Phone Number
[redacted]	[redacted]	[redacted]	

Comm/Non-Commercial	Vehicle Body Type	Vehicle Defects (one)	Vehicle Defects (two)	Emergency Vehicle Use	Speciual Function of MV
2	20 Medium/Heavy Trucks (more than 10,000 lbs (4,536 kg))	1 None		1 No	1 No Special Function

Vehicle Maneuver Action	Trafficway	Roadway Grade	Roadway Alignment	Most Harmful Event	Most Harmful Event Detail
1 Straight Ahead	1 Two-Way, Not Divided	1 Level	1 Straight	2 Collision with Non-Fixed Object	14 Motor Vehicle in Transport

Traffic Control Device For This Vehicle	First (1) Sequence of Events	Second (2) Sequence of Events	Third (3) Sequence of Events	Fourth (4) Sequence of Events
1 No Controls	2 Collision with Non-Fixed Object 14 Motor Vehicle in Transport			

VEHICLE (Check if Commercial) ☐

Vehicle	Motor Vehicle Type	Hit and Run	Veh License Number	State	Reg. Expires	Permanent Reg.	VIN
1	1 Vehicle in Transport	1 No	[redacted]	[redacted]	28/Feb/2018	No	[redacted]

Year	Make	Model	Style	Color	Extent of Damage	Est. Damage	Towed Due To Damage	Vehicle Removed By	Rotation
2006	CHRY	TOWN AND COU	VN	RED	Disabling	6000	Yes	TIMS TOWING	Rotation

Date of Crash	Date of Report	Invest. Agency Report Number	HSMV Crash Report Number
28/Dec/2017 01:53 PM	28/Dec/2017 01:53 PM	FHPF17OFF087678	85455740

Insurance Company	Insurance Policy Number
[redacted]	[redacted]

Name of Vehicle Owner (Check Box If Business) ☐	Current Address (Number and Street)	City and State	Zip Code
[redacted]	[redacted]	[redacted]	[redacted]

	License Number	State	Reg. Expires	Permanent Reg.	VIN	Year	Make	Length	Axles
Trailer One:									
Trailer Two:									

Vehicle Traveling:	Direction	On Street, Road, Highway	At Est. Speed	Posted Speed	Total Lanes
	North	SR-29	10	60	2

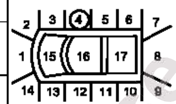
CMV Configuration	Cargo Body Type

Comm GVWR/GCWR	Trailer Type (trailer one)	Trailer Type (trailer two)

Haz. Mat. Release	Haz Mat. Placard	Number	Class

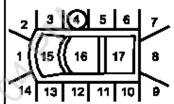
Motor Carrier Name	US DOT Number

Area of Initial Impact



18. Undercarriage
19. Overturn
20. Windshield
21. Trailer

Most Damaged Area



18. Undercarriage
19. Overturn
20. Windshield
21. Trailer

Motor Carrier Address	City and State	Zip Code	Phone Number

Comm/Non-Commercial	Vehicle Body Type	Vehicle Defects (one)	Vehicle Defects (two)	Emergency Vehicle Use	Specuial Function of MV
	2 Passenger Van	1 None		1 No	1 No Special Function

Vehicle Maneuver Action	Trafficway	Roadway Grade	Roadway Alignment	Most Harmful Event	Most Harmful Event Detail
10 Making U-Turn	1 Two-Way, Not Divided	1 Level	1 Straight	2 Collision with Non-Fixed Object	14 Motor Vehicle in Transport

Traffic Control Device For This Vehicle	First (1) Sequence of Events	Second (2) Sequence of Events	Third (3) Sequence of Events	Fourth (4) Sequence of Events
1 No Controls	2 Collision with Non-Fixed Object 14 Motor Vehicle in Transport			

PERSON RECORD

Person#	Description	Vehicle #	Name	Date of Birth	Sex	Phone Number	Re-Exam
1	1 Driver	1	[redacted]	28/Feb/1936	1 Male	[redacted]	Yes

Address	City	State	Zip Code
[redacted]	[redacted]	[redacted]	[redacted]

Driver License Number	State	Expires	DL Type	Req. End.	Injury Severity	Ejection
[redacted]	[redacted]	28/Feb/2019	6 E/Oper - Rest	3 No Req Endorsement	4 Incapacitating	1 Not Ejected

Restraint System	Air Bag Deployed	Helmet Use	Eye Protection	Seating Location Seat	Seating Location Row	Seating Location Other
3 Shoulder and Lap Belt Used	2 Not Deployed		3 Not Applicable	1 Left	1 Front	

Drivers Actions at Time of Crash (first)	Drivers Actions at Time of Crash (second)	Driver Distracted By	Vision Obstruction
3 Failed to Yield Right.of.Way		1 Not Distracted	1 Vision Not Obscured

Drivers Actions at Time of Crash (third)	Drivers Actions at Time of Crash (fourth)	Drivers Condition at Time of Crash
		6 Seizure, Epilepsy, Blackout

Suspected Alcohol Use	Alcohol Tested	Alcohol Test Type	Alcohol Test Result	BAC	Suspected Drug Use	Drug Tested	Drug Test Type	Drug Test Result
1 No	3 Test Given	1 Blood	2 Completed	0.000	1 No	3 Test Given	1 Blood	2 Negative

Source of Transport to Medical Facility	EMS Agency Name or ID	EMS Run Number	Medical Facility Transported To
2 EMS	GLADES COUNTY EMS		LEE MEMORIAL HOSPITAL

PERSON RECORD

Person#	Description	Vehicle #	Name	Date of Birth	Sex	Injury Severity	Ejection
2	3 Passenger	1	[redacted]	22/Jul/1945	2 Female	5 Fatal (within 30 days)	1 Not Ejected

Address	City	State	Zip Code
[redacted]	[redacted]	[redacted]	[redacted]

Restraint System	Air Bag Deployed	Helmet Use	Eye Protection	Seating Location Seat	Seating Location Row	Seating Location Other
3 Shoulder and Lap Belt Used	2 Not Deployed		3 Not Applicable	3	1	

Source of Transport to Medical Facility	EMS Agency Name or ID	EMS Run Number	Medical Facility Transported To
1 Not Transported			

PERSON RECORD

Person#	Description	Vehicle #	Name	Date of Birth	Sex	Phone Number	Re-Exam
3	1 Driver	2	[redacted]	07/Dec/1965	1 Male	[redacted]	No

Address	City	State	Zip Code
[redacted]	[redacted]	[redacted]	[redacted]

Driver License Number	State	Expires	DL Type	Req. End.	Injury Severity	Ejection
[redacted]	[redacted]	07/Dec/2019	1 A	1 Yes	1 None	1 Not Ejected

Restraint System	Air Bag Deployed	Helmet Use	Eye Protection	Seating Location Seat	Seating Location Row	Seating Location Other
3 Shoulder and Lap Belt Used	1 Not Applicable		3 Not Applicable	1 Left	1 Front	

Drivers Actions at Time of Crash (first)	Drivers Actions at Time of Crash (second)	Driver Distracted By	Vision Obstruction
1 No Contributing Action		1 Not Distracted	1 Vision Not Obscured

Date of Crash	Date of Report	Invest. Agency Report Number	HSMV Crash Report Number
28/Dec/2017 01:53 PM	28/Dec/2017 01:53 PM	FHPF17OFF087678	85455740

Drivers Actions at Time of Crash (third)	Drivers Actions at Time of Crash (fourth)	Drivers Condition at Time of Crash
		1 Apparently Normal

Suspected Alcohol Use	Alcohol Tested	Alcohol Test Type	Alcohol Test Result	BAC	Suspected Drug Use	Drug Tested	Drug Test Type	Drug Test Result
1 No	3 Test Given	1 Blood	2 Completed	0.000	1 No	3 Test Given	1 Blood	2 Negative

Source of Transport to Medical Facility	EMS Agency Name or ID	EMS Run Number	Medical Facility Transported To
1 Not Transported			

VIOLATIONS

Person#	Name	Florida Statute Number	Charge	Citation
1	[redacted]	316.1515	U-TURN - IMPROPER/UNSAFE/PROHIBITED	A8UAGCE

NARRATIVE

ID Number	Rank	Name	Troop / Post	Officer Agency	Phone Number	Date Created
4106	TROOPER	R. FLEURANT	F	FLORIDA HIGHWAY PATROL	239-344-1730	Jan 01, 2018

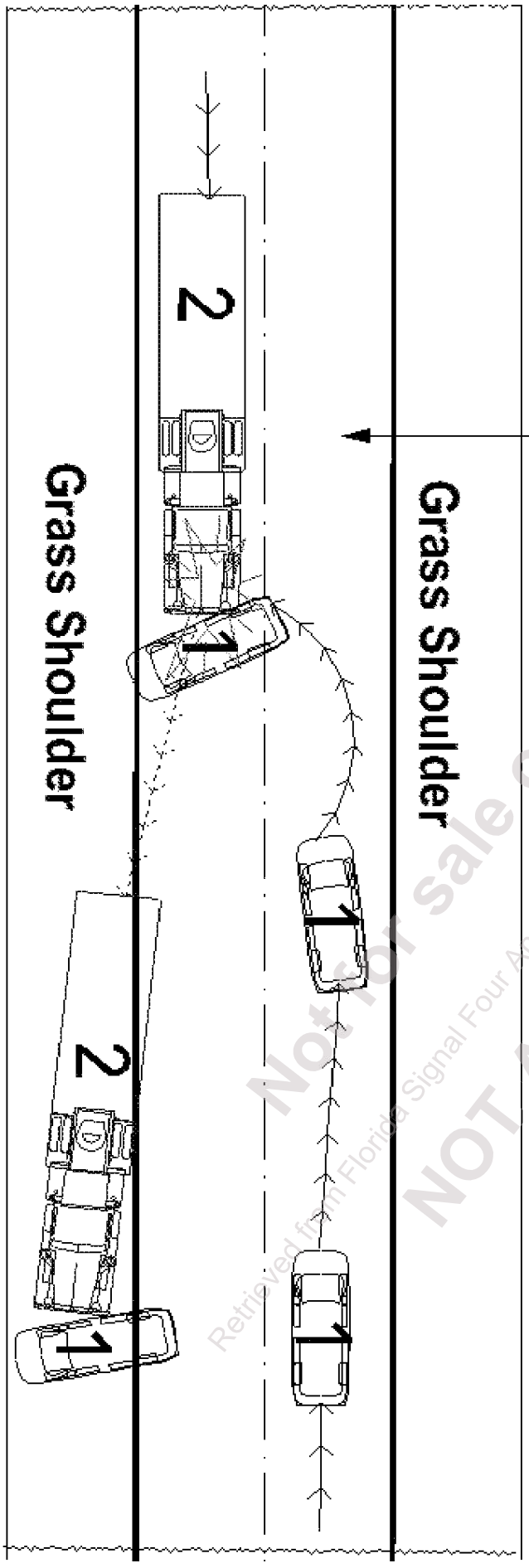
Vehicle 1 (V01) was traveling north on SR-29, north of Chapparal Avenue. Vehicle 2 (V02) was traveling south on SR-29, north of Chapparal Avenue. V01 made an improper "U-turn" in front of V02. As a result, the front portion of V02 struck the right side of V01. V01 came to final rest on the south grass shoulder, facing west. V02 came to final rest on south grass shoulder, facing south with its front against the right side of V01.

Name of Deceased: [redacted]
Date of Birth: 07/22/1945
Date of Death: 12/28/2017
Time of Death: 02:27 P.M.
Pronounced By: Paramedic Dillion McMahon of Hendry County EMS
THI Case: FHP717-60-010
THI Investigator: Corporal James A. Harris
Photographs Taken By: Corporal James A. Harris

REPORTING OFFICER

ID/Badge #	Rank and Name	Department	Type of Department
3389	CORPORAL J.A. HARRIS	FLORIDA HIGHWAY PATROL	FHP

Date of Crash	Date of Report	Invest. Agency Report Number	HSMV Crash Report Number
28/Dec/2017 01:53 PM	28/Dec/2017 01:53 PM	FHPF17OFF087678	85455740



N

Not to Scale

SR-29

Chapparal Avenue

FLORIDA TRAFFIC CRASH REPORT

LONG FORM [ ] SHORT FORM [ ] UPDATE [X]

(Electronic Version)

HIGHWAY SAFETY & MOTOR VEHICLES,
TRAFFIC CRASH RECORDS
NEIL KIRKMAN BUILDING, TALLAHASSEE, FL 32399-0537

Date of Crash	Time of Crash	Date of Report	Invest. Agency Report Number	HSMV Crash Report Number
22/Nov/2017 05:35 AM	22/Nov/2017 05:35 AM	08/Oct/2019 09:27 AM	FHPF17OFF078745	85605345

CRASH IDENTIFIERS

County Code	City Code	County of Crash	Place or City of Crash	Within City Limits	Time Reported	Time Dispatched
60	0	GLADES	UNINCORPORATED	No	22/Nov/2017 05:47 AM	22/Nov/2017 05:53 AM

Time on Scene	Time Cleared Scene	Completed	Reason (if Investigation NOT Completed)	Notified By
22/Nov/2017 06:26 AM	22/Nov/2017 12:20 PM	Yes		Law Enforcement

ROADWAY INFORMATION

Crash Occured On Street, Road, Highway	At Street Address#	At Lattitude	and Longitude
SR-29		26.892350111156698	-81.343810027465196

At Feet	Or Miles	Direction	From Intersection With Street, Road, Highway	Or From Milepost #
	1.00	North	CHAPARRAL AVE	

Road System Identifier	Type Of Shoulder	Type Of Intersection
3 State	1 Paved	1 Not at Intersection

CRASH INFORMATION (Check if Pictures Taken) [X]

light Condition	Weather Condition	Roadway Surface Condition	School Bus Related	Manner Of Collision
5 Dark-Not Lighted	4 Fog, Smog, Smoke	1 Dry	1 No	2 Front to Front

First Harmful Event Type	First Harmful Event	First Harmful Event Location	Within Interchange	First Harmful Event Relation to Junction
	14	1 On Roadway	No	1 Non.Junction

Contributing Circumstances: Road	Contributing Circumstances: Road	Contributing Circumstances: Road
1 None		

Contributing Circumstances: Environment	Contributing Circumstances: Environment	Contributing Circumstances: Environment
2 Weather Conditions		

Work Zone Related	Crash In Work Zone	Type Of Work Zone	Workers In Work Zone	Law Enforcement In Work Zone
1 No				

VEHICLE (Check if Commercial) [X]

Vehicle	Motor Vehicle Type	Hit and Run	Veh License Number	State	Reg. Expires	Permanent Reg.	VIN
2	1 Vehicle in Transport	1 No	[redacted]	FL	31/Dec/2017	No	[redacted]

Year	Make	Model	Style	Color	Extent of Damage	Est. Damage	Towed Due To Damage	Vehicle Removed By	Rotation
1999	INTL	4700	TK	WHI	Disabling	5000	Yes	CLEWISTON TOWING	Rotation

Insurance Company	Insurance Policy Number
[redacted]	[redacted]

Name of Vehicle Owner (Check Box If Business) [ ]	Current Address (Number and Street)	City and State	Zip Code
[redacted]	[redacted]	[redacted]	[redacted]

	License Number	State	Reg. Expires	Permanent Reg.	VIN	Year	Make	Length	Axles
Trailer One:									
Trailer Two:									

Vehicle Traveling:	Direction	On Street, Road, Highway	At Est. Speed	Posted Speed	Total Lanes
	North	SR-29	60	60	2

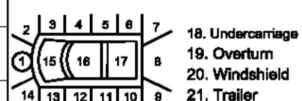
CMV Configuration	Cargo Body Type
2	3

Comm GVWR/GCWR	Trailer Type (trailer one)	Trailer Type (trailer two)
2 10,001-26,000 lbs (4,536-11,793 kg)		

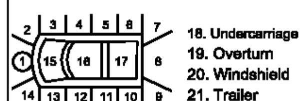
Haz. Mat. Release	Haz Mat. Placard	Number	Class
1	1		

Motor Carrier Name	US DOT Number
[redacted]	0

Area of Initial Impact



Most Damaged Area



Motor Carrier Address	City and State	Zip Code	Phone Number
[redacted]	[redacted]	[redacted]	

Comm/Non-Commercial	Vehicle Body Type	Vehicle Defects (one)	Vehicle Defects (two)	Emergency Vehicle Use	Speciual Function of MV
2	20 Medium/Heavy Trucks (more than 10,000 lbs (4,536 kg))	1 None		1 No	1 No Special Function

Vehicle Maneuver Action	Trafficway	Roadway Grade	Roadway Alignment	Most Harmful Event	Most Harmful Event Detail
1 Straight Ahead	1 Two-Way, Not Divided	1 Level	1 Straight	1 Non-Collision	2 Fire/Explosion

Traffic Control Device For This Vehicle	First (1) Sequence of Events	Second (2) Sequence of Events	Third (3) Sequence of Events	Fourth (4) Sequence of Events
1 No Controls	2 Collision with Non-Fixed Object 14 Motor Vehicle in Transport	2 Fire/Explosion		

VEHICLE (Check if Commercial) [ ]

Vehicle	Motor Vehicle Type	Hit and Run	Veh License Number	State	Reg. Expires	Permanent Reg.	VIN
1	1 Vehicle in Transport	1 No	[redacted]	[redacted]	07/Sep/2018	No	[redacted]

Year	Make	Model	Style	Color	Extent of Damage	Est. Damage	Towed Due To Damage	Vehicle Removed By	Rotation
2007	FORD	EXPEDITION	UT	BLK	Disabling	3000	Yes	TIMS TOWING	Rotation

Insurance Company	Insurance Policy Number
[redacted]	[redacted]

Date of Crash	Date of Report	Invest. Agency Report Number	HSMV Crash Report Number
22/Nov/2017 05:35 AM	22/Nov/2017 05:35 AM	FHPF17OFF078745	85605345

Name of Vehicle Owner (Check Box If Business) ☐	Current Address (Number and Street)	City and State	Zip Code
[redacted]	[redacted]	[redacted]	[redacted]

	License Number	State	Reg. Expires	Permanent Reg.	VIN	Year	Make	Length	Axles
Trailer One:									
Trailer Two:									

Vehicle Traveling:	Direction	On Street, Road, Highway	At Est. Speed	Posted Speed	Total Lanes
	South	SR-29	60	60	2

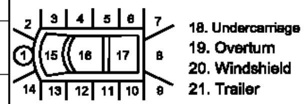
CMV Configuration	Cargo Body Type

Comm GVWR/GCWR	Trailer Type (trailer one)	Trailer Type (trailer two)

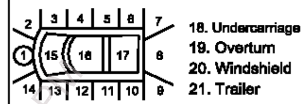
Haz. Mat. Release	Haz Mat. Placard	Number	Class

Motor Carrier Name	US DOT Number

Area of Initial Impact



Most Damaged Area



Motor Carrier Address	City and State	Zip Code	Phone Number

Comm/Non-Commercial	Vehicle Body Type	Vehicle Defects (one)	Vehicle Defects (two)	Emergency Vehicle Use	Speciual Function of MV
	16 (Sport) Utility Vehicle	1 None		1 No	1 No Special Function

Vehicle Maneuver Action	Trafficway	Roadway Grade	Roadway Alignment	Most Harmful Event	Most Harmful Event Detail
16 Leaving Traffic Lane	1 Two-Way, Not Divided	1 Level	1 Straight	1 Non-Collision	2 Fire/Explosion

Traffic Control Device For This Vehicle	First (1) Sequence of Events	Second (2) Sequence of Events	Third (3) Sequence of Events	Fourth (4) Sequence of Events
1 No Controls	2 Collision with Non-Fixed Object 14 Motor Vehicle in Transport	2 Fire/Explosion		

PERSON RECORD

Person#	Description	Vehicle #	Name	Date of Birth	Sex	Phone Number	Re-Exam
1	1 Driver	1	[redacted]	12/Dec/1994	1 Male		No

Address	City	State	Zip Code
[redacted]	[redacted]	[redacted]	[redacted]

Driver License Number	State	Expires	DL Type	Req. End.	Injury Severity	Ejection
[redacted]	[redacted]	12/Dec/2020	5 E/Operator	3 No Req Endorsement	5 Fatal (within 30 days)	1 Not Ejected

Restraint System	Air Bag Deployed	Helmet Use	Eye Protection	Seating Location Seat	Seating Location Row	Seating Location Other
3 Shoulder and Lap Belt Used	88 Deployment Unknown		3 Not Applicable	1 Left	1 Front	

Drivers Actions at Time of Crash (first)	Drivers Actions at Time of Crash (second)	Driver Distracted By	Vision Obstruction
25 Failed to Keep in Proper Lane		88 Unknown	8 Fog

Drivers Actions at Time of Crash (third)	Drivers Actions at Time of Crash (fourth)	Drivers Condition at Time of Crash
		88 Unknown

Suspected Alcohol Use	Alcohol Tested	Alcohol Test Type	Alcohol Test Result	BAC	Suspected Drug Use	Drug Tested	Drug Test Type	Drug Test Result
88 Unknown	3 Test Given	1 Blood	2 Completed	0.000	88 Unknown	3 Test Given	1 Blood	1 Positive

Source of Transport to Medical Facility	EMS Agency Name or ID	EMS Run Number	Medical Facility Transported To
1 Not Transported			

PERSON RECORD

Person#	Description	Vehicle #	Name	Date of Birth	Sex	Phone Number	Re-Exam
2	1 Driver	2	[redacted]	25/Jan/1986	1 Male		No

Address	City	State	Zip Code
[redacted]	[redacted]	[redacted]	[redacted]

Driver License Number	State	Expires	DL Type	Req. End.	Injury Severity	Ejection
[redacted]	[redacted]	25/Jan/2019	5 E/Operator	3 No Req Endorsement	5 Fatal (within 30 days)	1 Not Ejected

Restraint System	Air Bag Deployed	Helmet Use	Eye Protection	Seating Location Seat	Seating Location Row	Seating Location Other
2 None Used -Motor Vehicle Occupant	1 Not Applicable		3 Not Applicable	1 Left	1 Front	

Drivers Actions at Time of Crash (first)	Drivers Actions at Time of Crash (second)	Driver Distracted By	Vision Obstruction
1 No Contributing Action		1 Not Distracted	8 Fog

Drivers Actions at Time of Crash (third)	Drivers Actions at Time of Crash (fourth)	Drivers Condition at Time of Crash
		1 Apparently Normal

Suspected Alcohol Use	Alcohol Tested	Alcohol Test Type	Alcohol Test Result	BAC	Suspected Drug Use	Drug Tested	Drug Test Type	Drug Test Result
1 No	3 Test Given	1 Blood	2 Completed	0.000	1 No	3 Test Given	1 Blood	1 Positive

Source of Transport to Medical Facility	EMS Agency Name or ID	EMS Run Number	Medical Facility Transported To
1 Not Transported			

PERSON RECORD

Person#	Description	Vehicle #	Name	Date of Birth	Sex	Injury Severity	Ejection
3	3 Passenger	2	[redacted]	09/Jan/1988	2 Female	4 Incapacitating	1 Not Ejected

Address	City	State	Zip Code
[redacted]	[redacted]	[redacted]	[redacted]

Date of Crash	Date of Report	Invest. Agency Report Number	HSMV Crash Report Number
22/Nov/2017 05:35 AM	22/Nov/2017 05:35 AM	FHPF17OFF078745	85605345

Restraint System	Air Bag Deployed	Helmet Use	Eye Protection	Seating Location Seat	Seating Location Row	Seating Location Other
2 None Used -Motor Vehicle Occupant	1 Not Applicable		3 Not Applicable	3	1	

Source of Transport to Medical Facility	EMS Agency Name or ID	EMS Run Number	Medical Facility Transported To
2 EMS	GLADES COUNTY EMS	GCSO17CAD028238	FLORIDA HOSPITAL LAKE PLACID

PERSON RECORD

Person#	Description	Vehicle #	Name	Date of Birth	Sex	Injury Severity	Ejection
5	3 Passenger	2	[redacted]	23/May/1955	2 Female	4 Incapacitating	1 Not Ejected

Address	City	State	Zip Code
[redacted]	[redacted]	[redacted]	[redacted]

Restraint System	Air Bag Deployed	Helmet Use	Eye Protection	Seating Location Seat	Seating Location Row	Seating Location Other
2 None Used -Motor Vehicle Occupant	1 Not Applicable		3 Not Applicable	77	88	3

Source of Transport to Medical Facility	EMS Agency Name or ID	EMS Run Number	Medical Facility Transported To
2 EMS	HENDRY COUNTY EMS	EMS17CAD004715	HENDRY REGIONAL

PERSON RECORD

Person#	Description	Vehicle #	Name	Date of Birth	Sex	Injury Severity	Ejection
4	3 Passenger	2	[redacted]	30/Mar/1947	1 Male	5 Fatal (within 30 days)	1 Not Ejected

Address	City	State	Zip Code
[redacted]	[redacted]	[redacted]	[redacted]

Restraint System	Air Bag Deployed	Helmet Use	Eye Protection	Seating Location Seat	Seating Location Row	Seating Location Other
1 Not Applicable (non-motorist)	1 Not Applicable		3 Not Applicable	77	77	3

Source of Transport to Medical Facility	EMS Agency Name or ID	EMS Run Number	Medical Facility Transported To
1 Not Transported			

PERSON RECORD

Person#	Description	Vehicle #	Name	Date of Birth	Sex	Injury Severity	Ejection
6	3 Passenger	2	[redacted]	27/Jul/1976	1 Male	4 Incapacitating	1 Not Ejected

Address	City	State	Zip Code
[redacted]	[redacted]	[redacted]	[redacted]

Restraint System	Air Bag Deployed	Helmet Use	Eye Protection	Seating Location Seat	Seating Location Row	Seating Location Other
1 Not Applicable (non-motorist)	1 Not Applicable		3 Not Applicable	77	77	3

Source of Transport to Medical Facility	EMS Agency Name or ID	EMS Run Number	Medical Facility Transported To
2 EMS	HENDRY COUNTY EMS	EMS17CAD004715	LEE MEMORIAL HOSPITAL

NON VEHICLE PROPERTY DAMAGE

Vehicle#	Person#	Property Damage - Other Than Vehicle	Est. Amount	Business	Owner's Name	Address	City & State	Zip Code
		ROADWAY	3000	Yes	FDOT	2981 PINE ISLAND RD	CAPE CORAL FL	33903

NARRATIVE

Date of Crash	Date of Report	Invest. Agency Report Number	HSMV Crash Report Number
22/Nov/2017 05:35 AM	22/Nov/2017 05:35 AM	FHPF17OFF078745	85605345

ID Number	Rank	Name	Troop / Post	Officer Agency	Phone Number	Date Created
3597	TROOPER	A.R. SMITH	F	FLORIDA HIGHWAY PATROL	239-344-1730	Nov 22, 2017

Vehicle 01 was southbound on SR-29 north of Chaparral Avenue. Vehicle 02 was northbound on SR-29 north of Chaparral Avenue. Vehicle 01 crossed into the northbound travel lane, and the front of Vehicle 01 struck the front of Vehicle 02. After impact, both vehicles were redirected to the northwest. Vehicle 01 came to final rest facing northwest on the west shoulder of SR-29. Vehicle 02 came to final rest facing northwest on the west shoulder of SR-29 south of Vehicle 01.

Name of Deceased: [redacted]
Date of Birth : 01/25/1986
Date of death : 11/22/2017
Time of death : 5:59 am
Pronounced By: Matt Simmons Ems #9, Glades County EMS
Traffic Homicide Case Number : FHP717-60-007
Traffic Homicide Investigator: Corporal John Benton, ID #560, Florida Highway Patrol
Photographs taken by: Corporal John Benton, ID #560, Florida Highway Patrol

Name of Deceased: [redacted]
Date of Birth : 03/30/1947
Date of death : 11/22/2017
Time of death : 5:59 am
Pronounced By: Matt Simmons Ems #9, Glades County EMS
Traffic Homicide Case Number : FHP717-60-007
Traffic Homicide Investigator: Corporal John Benton, ID #560, Florida Highway Patrol
Photographs taken by: Corporal John Benton, ID #560, Florida Highway Patrol

Name of Deceased: [redacted]
Date of Birth : 12/12/1994
Date of death : 11/22/2017
Time of death : 5:59 am
Pronounced By: Matt Simmons Ems #9, Glades County EMS
Traffic Homicide Case Number : FHP717-60-007
Traffic Homicide Investigator: Corporal John Benton, ID #560, Florida Highway Patrol
Photographs taken by: Corporal John Benton, ID #560, Florida Highway Patrol

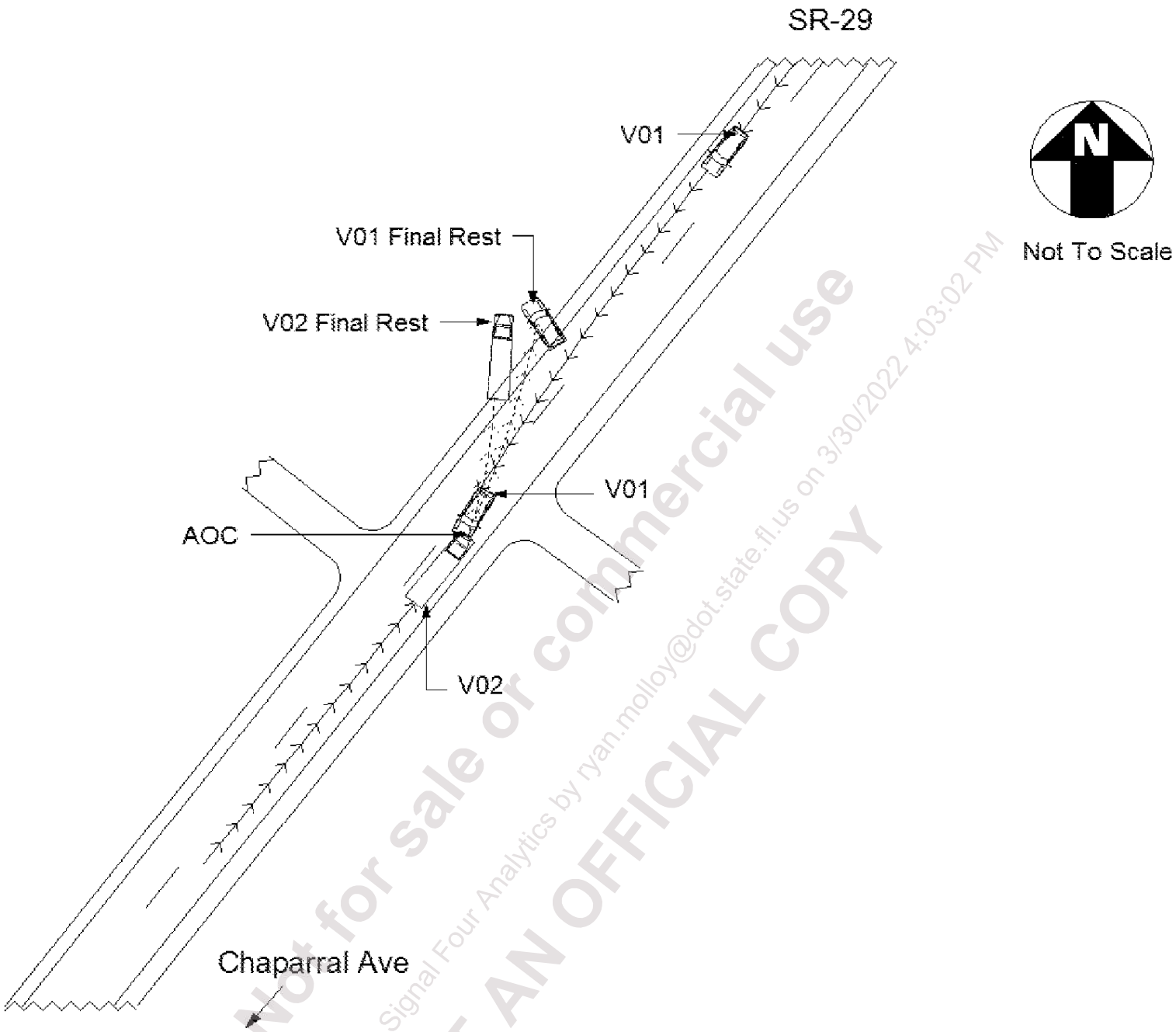
ID Number	Rank	Name	Troop / Post	Officer Agency	Phone Number	Date Created
1744	CORPORAL	J.R. BENTON	Q	FLORIDA HIGHWAY PATROL		Aug 16, 2019

This update was completed to include the results of the toxicology analysis conducted during D01 and D02's autopsies. The report was also corrected to include that the crash occurred during a period of heavy fog that reduced visibility for both drivers.

REPORTING OFFICER

ID/Badge #	Rank and Name	Department	Type of Department
1744	CORPORAL J.R. BENTON	FLORIDA HIGHWAY PATROL	FHP

Date of Crash	Date of Report	Invest. Agency Report Number	HSMV Crash Report Number
22/Nov/2017 05:35 AM	22/Nov/2017 05:35 AM	FHPF17OFF078745	85605345



FLORIDA TRAFFIC CRASH REPORT

LONG FORM [ ] SHORT FORM [ ] UPDATE [X]

(Electronic Version)

HIGHWAY SAFETY & MOTOR VEHICLES,
TRAFFIC CRASH RECORDS
NEIL KIRKMAN BUILDING, TALLAHASSEE, FL 32399-0537

Date of Crash	Time of Crash	Date of Report	Invest. Agency Report Number	HSMV Crash Report Number
03/Jul/2018 03:11 PM	03/Jul/2018 03:11 PM	28/Nov/2018 09:32 AM	FHPF18OFF044188	87177808

CRASH IDENTIFIERS

County Code	City Code	County of Crash	Place or City of Crash	Within City Limits	Time Reported	Time Dispatched
60	40	GLADES	MOORE HAVEN	No	03/Jul/2018 03:16 PM	03/Jul/2018 03:22 PM

Time on Scene	Time Cleared Scene	Completed	Reason (if Investigation NOT Completed)	Notified By
03/Jul/2018 04:17 PM	03/Jul/2018 07:46 PM	Yes		Law Enforcement

ROADWAY INFORMATION

Crash Occured On Street, Road, Highway	At Street Address#	At Lattitude	and Longitude
SR-29		26.864409999999999	-81.367930000000001

At Feet	Or Miles	Direction	From Intersection With Street, Road, Highway	Or From Milepost #
	.50	South	CHAPPARAL AVENUE NW	

Road System Identifier	Type Of Shoulder	Type Of Intersection
3 State	2 Unpaved	1 Not at Intersection

CRASH INFORMATION (Check if Pictures Taken) [ ]

light Condition	Weather Condition	Roadway Surface Condition	School Bus Related	Manner Of Collision
1 Daylight	3 Rain	2 Wet	1 No	2 Front to Front

First Harmful Event Type	First Harmful Event	First Harmful Event Location	Within Interchange	First Harmful Event Relation to Junction
	14	1 On Roadway	No	1 Non.Junction

Contributing Circumstances: Road	Contributing Circumstances: Road	Contributing Circumstances: Road
1 None		

Contributing Circumstances: Environment	Contributing Circumstances: Environment	Contributing Circumstances: Environment
2 Weather Conditions		

Work Zone Related	Crash In Work Zone	Type Of Work Zone	Workers In Work Zone	Law Enforcement In Work Zone
1 No				

VEHICLE (Check if Commercial) [ ]

Vehicle	Motor Vehicle Type	Hit and Run	Veh License Number	State	Reg. Expires	Permanent Reg.	VIN
2	1 Vehicle in Transport	1 No	9353IK	FL	31/Dec/2019	No	2FTJW35M1NCA55556

Year	Make	Model	Style	Color	Extent of Damage	Est. Damage	Towed Due To Damage	Vehicle Removed By	Rotation
1992	FORD	F350 PICKUP	TK	BLU	Disabling	10000	Yes	BILLS TOWING	Rotation

Insurance Company	Insurance Policy Number
[redacted]	[redacted]

Name of Vehicle Owner (Check Box If Business) [ ]	Current Address (Number and Street)	City and State	Zip Code
[redacted]	[redacted]	[redacted]	[redacted]

	License Number	State	Reg. Expires	Permanent Reg.	VIN	Year	Make	Length	Axles
Trailer One:									
Trailer Two:									

Vehicle Traveling: Direction	On Street, Road, Highway	At Est. Speed	Posted Speed	Total Lanes
North	SR-29	60	60	2

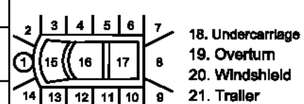
CMV Configuration	Cargo Body Type

Comm GVWR/GCWR	Trailer Type (trailer one)	Trailer Type (trailer two)

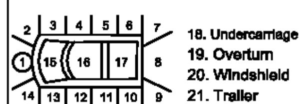
Haz. Mat. Release	Haz Mat. Placard	Number	Class

Motor Carrier Name	US DOT Number

Area of Initial Impact



Most Damaged Area



Motor Carrier Address	City and State	Zip Code	Phone Number

Comm/Non-Commercial	Vehicle Body Type	Vehicle Defects (one)	Vehicle Defects (two)	Emergency Vehicle Use	Speciual Function of MV
	3 Pickup	1 None		1 No	1 No Special Function

Vehicle Maneuver Action	Trafficway	Roadway Grade	Roadway Alignment	Most Harmful Event	Most Harmful Event Detail
1 Straight Ahead	1 Two-Way, Not Divided	1 Level	1 Straight	2 Collision with Non-Fixed Object	14 Motor Vehicle in Transport

Traffic Control Device For This Vehicle	First (1) Sequence of Events	Second (2) Sequence of Events	Third (3) Sequence of Events	Fourth (4) Sequence of Events
1 No Controls	2 Collision with Non-Fixed Object 14 Motor Vehicle in Transport			

VEHICLE (Check if Commercial) [ ]

Vehicle	Motor Vehicle Type	Hit and Run	Veh License Number	State	Reg. Expires	Permanent Reg.	VIN
1	1 Vehicle in Transport	1 No	[redacted]	[redacted]	21/Oct/2018	No	[redacted]

Year	Make	Model	Style	Color	Extent of Damage	Est. Damage	Towed Due To Damage	Vehicle Removed By	Rotation
2013	BMW	X5	UT	DBL	Disabling	15000	Yes	BILLS TOWING	Rotation

Insurance Company	Insurance Policy Number
[redacted]	[redacted]

Date of Crash	Date of Report	Invest. Agency Report Number	HSMV Crash Report Number
03/Jul/2018 03:11 PM	03/Jul/2018 03:11 PM	FHPF18OFF044188	87177808

Name of Vehicle Owner (Check Box If Business) ☐	Current Address (Number and Street)	City and State	Zip Code
[redacted]	[redacted]	[redacted]	[redacted]

	License Number	State	Reg. Expires	Permanent Reg.	VIN	Year	Make	Length	Axles
Trailer One:									
Trailer Two:									

Vehicle Traveling:	Direction	On Street, Road, Highway	At Est. Speed	Posted Speed	Total Lanes
	South	SR-29	60	60	2

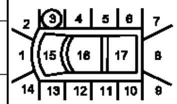
CMV Configuration	Cargo Body Type

Comm GVWR/GCWR	Trailer Type (trailer one)	Trailer Type (trailer two)

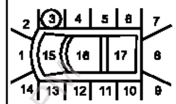
Haz. Mat. Release	Haz Mat. Placard	Number	Class

Motor Carrier Name	US DOT Number

Area of Initial Impact



Most Damaged Area



Motor Carrier Address	City and State	Zip Code	Phone Number

Comm/Non-Commercial	Vehicle Body Type	Vehicle Defects (one)	Vehicle Defects (two)	Emergency Vehicle Use	Speciual Function of MV
	16 (Sport) Utility Vehicle	1 None		1 No	1 No Special Function

Vehicle Maneuver Action	Trafficway	Roadway Grade	Roadway Alignment	Most Harmful Event	Most Harmful Event Detail
16 Leaving Traffic Lane	1 Two-Way, Not Divided	1 Level	1 Straight	2 Collision with Non-Fixed Object	14 Motor Vehicle in Transport

Traffic Control Device For This Vehicle	First (1) Sequence of Events	Second (2) Sequence of Events	Third (3) Sequence of Events	Fourth (4) Sequence of Events
1 No Controls	45 Cross Centerline	14 Motor Vehicle in Transport	8 Ran into Water/ Canal	

PERSON RECORD

Person#	Description	Vehicle #	Name	Date of Birth	Sex	Phone Number	Re-Exam
1	1 Driver	1	[redacted]	04/Mar/1978	2 Female		No

Address	City	State	Zip Code
[redacted]	[redacted]	[redacted]	[redacted]

Driver License Number	State	Expires	DL Type	Req. End.	Injury Severity	Ejection
[redacted]	FL	04/Mar/2026	5 E/Operator	3 No Req Endorsement	5 Fatal (within 30 days)	1 Not Ejected

Restraint System	Air Bag Deployed	Helmet Use	Eye Protection	Seating Location Seat	Seating Location Row	Seating Location Other
3 Shoulder and Lap Belt Used	3 Deployed-Front		3 Not Applicable	1 Left	1 Front	

Drivers Actions at Time of Crash (first)	Drivers Actions at Time of Crash (second)	Driver Distracted By	Vision Obstruction
25 Failed to Keep in Proper Lane		88 Unknown	2 Inclement Weather

Drivers Actions at Time of Crash (third)	Drivers Actions at Time of Crash (fourth)	Drivers Condition at Time of Crash
		88 Unknown

Suspected Alcohol Use	Alcohol Tested	Alcohol Test Type	Alcohol Test Result	BAC	Suspected Drug Use	Drug Tested	Drug Test Type	Drug Test Result
1 No	3 Test Given	1 Blood	2 Completed	0.000	1 No	3 Test Given	1 Blood	1 Positive

Source of Transport to Medical Facility	EMS Agency Name or ID	EMS Run Number	Medical Facility Transported To
1 Not Transported			

PERSON RECORD

Person#	Description	Vehicle #	Name	Date of Birth	Sex	Phone Number	Re-Exam
2	1 Driver	2	[redacted]	15/Aug/1985	1 Male		No

Address	City	State	Zip Code
[redacted]	[redacted]	[redacted]	[redacted]

Driver License Number	State	Expires	DL Type	Req. End.	Injury Severity	Ejection
[redacted]	FL	15/Aug/2022	1 A	3 No Req Endorsement	4 Incapacitating	1 Not Ejected

Restraint System	Air Bag Deployed	Helmet Use	Eye Protection	Seating Location Seat	Seating Location Row	Seating Location Other
2 None Used -Motor Vehicle Occupant	1 Not Applicable		3 Not Applicable	1 Left	1 Front	

Drivers Actions at Time of Crash (first)	Drivers Actions at Time of Crash (second)	Driver Distracted By	Vision Obstruction
1 No Contributing Action		1 Not Distracted	2 Inclement Weather

Drivers Actions at Time of Crash (third)	Drivers Actions at Time of Crash (fourth)	Drivers Condition at Time of Crash
		1 Apparently Normal

Suspected Alcohol Use	Alcohol Tested	Alcohol Test Type	Alcohol Test Result	BAC	Suspected Drug Use	Drug Tested	Drug Test Type	Drug Test Result
1 No	1 Test Not Given				1 No	1 Test Not Given		

Source of Transport to Medical Facility	EMS Agency Name or ID	EMS Run Number	Medical Facility Transported To
2 EMS	GLADES COUONTY EMS	GCSO18CAD018100	LEE MEMORIAL HOSPITAL

PERSON RECORD

Person#	Description	Vehicle #	Name	Date of Birth	Sex	Injury Severity	Ejection
4	3 Passenger	2	[redacted]	29/May/2007	1 Male	5 Fatal (within 30 days)	1 Not Ejected

Address	City	State	Zip Code
[redacted]	[redacted]	[redacted]	[redacted]

Date of Crash	Date of Report	Invest. Agency Report Number	HSMV Crash Report Number
03/Jul/2018 03:11 PM	03/Jul/2018 03:11 PM	FHPF18OFF044188	87177808

Restraint System	Air Bag Deployed	Helmet Use	Eye Protection	Seating Location Seat	Seating Location Row	Seating Location Other
3 Shoulder and Lap Belt Used	1 Not Applicable		3 Not Applicable	3	2	

Source of Transport to Medical Facility	EMS Agency Name or ID	EMS Run Number	Medical Facility Transported To
2 EMS	GLADES COUNTY EMS	GCSO18CAD018100	LEE MEMORIAL HOSPITAL

PERSON RECORD

Person#	Description	Vehicle #	Name	Date of Birth	Sex	Injury Severity	Ejection
3	3 Passenger	2	[redacted]	16/Jun/1986	2 Female	4 Incapacitating	1 Not Ejected

Address	City	State	Zip Code
[redacted]	[redacted]	[redacted]	[redacted]

Restraint System	Air Bag Deployed	Helmet Use	Eye Protection	Seating Location Seat	Seating Location Row	Seating Location Other
5 Lap Belt Only Used	1 Not Applicable		3 Not Applicable	2	1	

Source of Transport to Medical Facility	EMS Agency Name or ID	EMS Run Number	Medical Facility Transported To
2 EMS	GLADES COUNTY EMS	GCSO18CAD018100	LEE MEMORIAL HOSPITAL

PERSON RECORD

Person#	Description	Vehicle #	Name	Date of Birth	Sex	Injury Severity	Ejection
5	3 Passenger	2	[redacted]	28/Oct/2005	1 Male	4 Incapacitating	1 Not Ejected

Address	City	State	Zip Code
[redacted]	[redacted]	[redacted]	[redacted]

Restraint System	Air Bag Deployed	Helmet Use	Eye Protection	Seating Location Seat	Seating Location Row	Seating Location Other
3 Shoulder and Lap Belt Used	1 Not Applicable		3 Not Applicable	3	1	

Source of Transport to Medical Facility	EMS Agency Name or ID	EMS Run Number	Medical Facility Transported To
2 EMS	GLADES COUNTY EMS	GCSO18CAD018100	LEE MEMORIAL HOSPITAL

NARRATIVE

ID Number	Rank	Name	Troop / Post	Officer Agency	Phone Number	Date Created
3992	TROOPER	M. D. SILL	F	FLORIDA HIGHWAY PATROL	239-344-1730	Jul 07, 2018

Vehicle 01 (V01) was southbound on State Road 29, approximately 0.5 miles south of Chapparal Avenue NW.

Vehicle 02 (V02) was northbound on State Road 29, approximately 0.5 miles south of Chapparal Avenue NW.

V01 crossed over the center line and rotated counterclockwise, on the wet roadway, into the northbound lane, directly in front of V02.

As a result, the front of V02 collided with the right side of V01.

V01 came to final rest, facing east, in a water filled drainage ditch, on the east shoulder of State Road 29.

V02 came to final rest, facing northeast, on the east grass shoulder of State Road 29.

Name of Deceased: [redacted]
Date of Birth: 03/04/1978.
Date of Death: 07/03/2018.
Time of Death: 3:23 pm.
Pronounced By: Paramedic John Riggs (Glades County EMS).
THI Case: FHP718-60-003.
THI Investigator: Corporal Justin Close ID# 835.
Photographs Taken By: Corporal Gabriel Cornier ID# 1148.

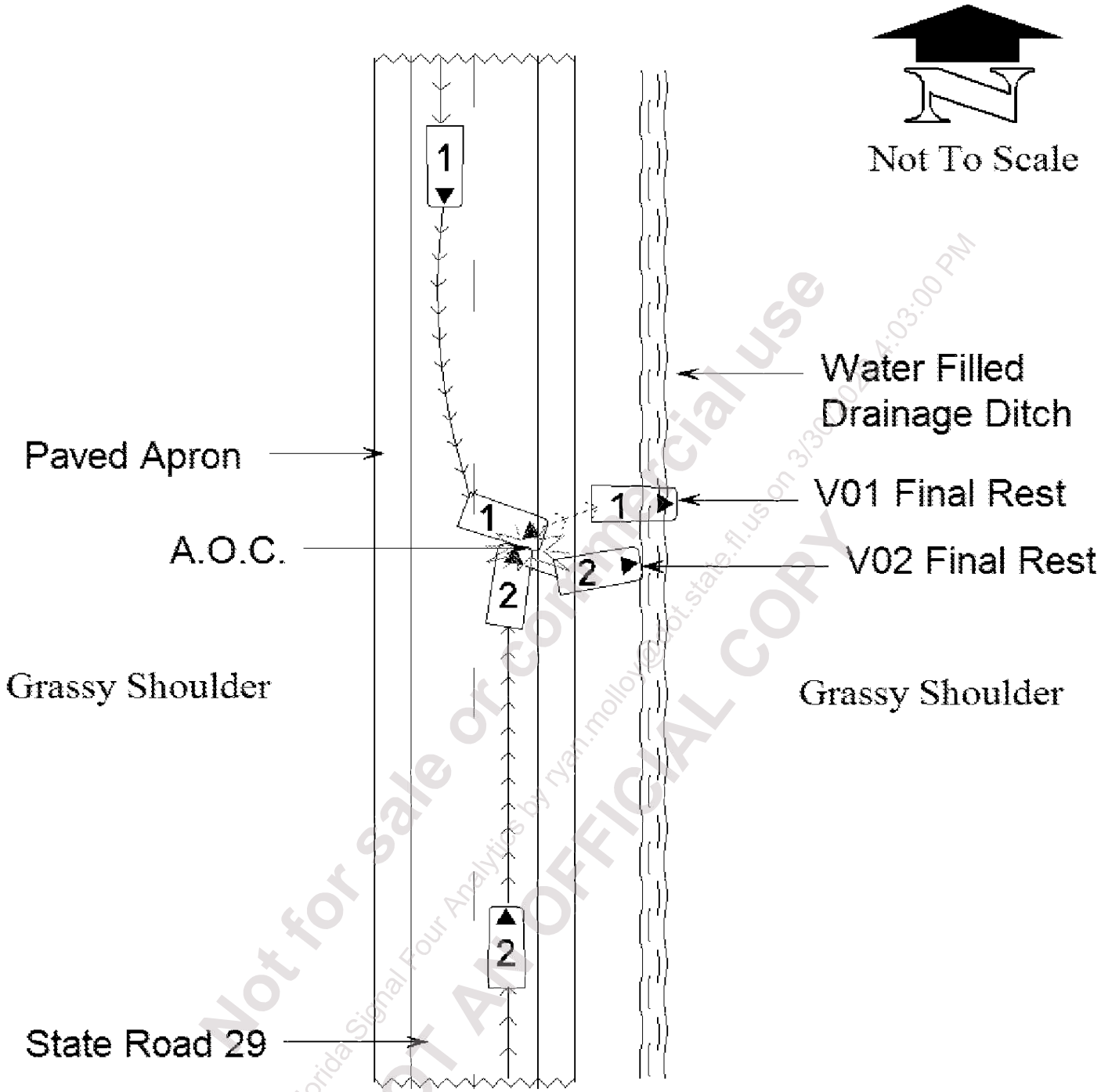
Name of Deceased: [redacted]
Date of Birth: 05/29/2007
Date of Death: 07/06/2018.
Time of Death: 1:37 pm.
Pronounced By: Doctor Drew Rideout
THI Case: FHP718-60-003.
THI Investigator: Corporal Justin Close ID# 835.
Photographs Taken By: Corporal Gabriel Cornier ID# 1148

Name of Deceased: [redacted]
Date of Birth: Stillborn
Date of Death: 07/08/2018.
Time of Death: 2:32 am.
Pronounced By: Doctor Lee
THI Case: FHP718-60-003.
THI Investigator: Corporal Justin Close ID# 835.
Photographs Taken By: Corporal Gabriel Cornier ID# 1148

REPORTING OFFICER

ID/Badge #	Rank and Name	Department	Type of Department
2569	CORPORAL J.D. CLOSE	FLORIDA HIGHWAY PATROL	FHP

Date of Crash	Date of Report	Invest. Agency Report Number	HSMV Crash Report Number
03/Jul/2018 03:11 PM	03/Jul/2018 03:11 PM	FHPF18OFF044188	87177808



FLORIDA TRAFFIC CRASH REPORT

LONG FORM ☐ SHORT FORM ☐ UPDATE ☒

(Electronic Version)

HIGHWAY SAFETY & MOTOR VEHICLES,
TRAFFIC CRASH RECORDS
NEIL KIRKMAN BUILDING, TALLAHASSEE, FL 32399-0537

Date of Crash	Time of Crash	Date of Report	Invest. Agency Report Number	HSMV Crash Report Number
15/Jul/2021	15/Jul/2021 02:13 AM	14/Feb/2022 03:05 PM	FHPF21OFF034123	88371042

CRASH IDENTIFIERS

County Code	City Code	County of Crash	Place or City of Crash	Within City Limits	Time Reported	Time Dispatched
60	0	GLADES	UNINCORPORATED	No	15/Jul/2021 02:29 AM	15/Jul/2021 02:31 AM

Time on Scene	Time Cleared Scene	Completed	Reason (if Investigation NOT Completed)	Notified By
15/Jul/2021 03:13 AM	15/Jul/2021 01:38 PM	Yes		Law Enforcement

ROADWAY INFORMATION

Crash Occured On Street, Road, Highway	At Street Address#	At Lattitude and Longitude
STATE ROAD 29		26.856493163931699 -81.374623071853904

At Feet	Or Miles	Direction	From Intersection With Street, Road, Highway	Or From Milepost #
1000		South	CHAPPARAL AVENUE NW	

Road System Identifier	Type Of Shoulder	Type Of Intersection
3 State	1 Paved	1 Not at Intersection

CRASH INFORMATION (Check if Pictures Taken) ☒

light Condition	Weather Condition	Roadway Surface Condition	School Bus Related	Manner Of Collision
5 Dark-Not Lighted	1 Clear	1 Dry	1 No	2 Front to Front

First Harmful Event Type	First Harmful Event	First Harmful Event Location	Within Interchange	First Harmful Event Relation to Junction
	14	1 On Roadway	No	1 Non.Junction

Contributing Circumstances: Road	Contributing Circumstances: Road	Contributing Circumstances: Road
1 None		

Contributing Circumstances: Environment	Contributing Circumstances: Environment	Contributing Circumstances: Environment
1 None		

Work Zone Related	Crash In Work Zone	Type Of Work Zone	Workers In Work Zone	Law Enforcement In Work Zone
1 No				

VEHICLE (Check if Commercial) ☒

Vehicle	Motor Vehicle Type	Hit and Run	Veh License Number	State	Reg. Expires	Permanent Reg.	VIN
2	1 Vehicle in Transport	1 No	[redacted]	FL	29/Jul/2021	No	[redacted]

Year	Make	Model	Style	Color	Extent of Damage	Est. Damage	Towed Due To Damage	Vehicle Removed By	Rotation
2022	PTRB	TK	TK	WHI	Disabling	50000	Yes	CLEWISTON TOWING	Rotation

Insurance Company	Insurance Policy Number
[redacted]	[redacted]

Name of Vehicle Owner (Check Box If Business)	Current Address (Number and Street)	City and State	Zip Code
[redacted] ☒	[redacted]	[redacted]	[redacted]

Trailer	License Number	State	Reg. Expires	Permanent Reg.	VIN	Year	Make	Length	Axles
Trailer One:	[redacted]	[redacted]		Yes	[redacted]	2005	TRIM	25	2
Trailer Two:									

Vehicle Traveling:	Direction	On Street, Road, Highway	At Est. Speed	Posted Speed	Total Lanes
	North	STATE ROAD 29	60	60	2

CMV Configuration	Cargo Body Type
7	3

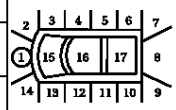
Comm GVWR/GCWR	Trailer Type (trailer one)	Trailer Type (trailer two)
3 More than 26,000 lbs (11,793 kg)	Tandem Semi Trailer	

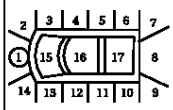
Haz. Mat. Release	Haz Mat. Placard	Number	Class
1	1		

Motor Carrier Name	US DOT Number
[redacted]	[redacted]

Motor Carrier Address	City and State	Zip Code	Phone Number
[redacted]	[redacted]	[redacted]	

Area of Initial Impact / Most Damaged Area





Comm/Non-Commercial	Vehicle Body Type	Vehicle Defects (one)	Vehicle Defects (two)	Emergency Vehicle Use	Speciual Function of MV
2	20 Medium/Heavy Trucks (more than 10,000 lbs (4,536 kg))	1 None		1 No	1 No Special Function

Vehicle Maneuver Action	Trafficway	Roadway Grade	Roadway Alignment	Most Harmful Event	Most Harmful Event Detail
1 Straight Ahead	1 Two-Way, Not Divided	1 Level	1 Straight	2 Collision with Non-Fixed Object	14 Motor Vehicle in Transport

Traffic Control Device For This Vehicle	First (1) Sequence of Events	Second (2) Sequence of Events	Third (3) Sequence of Events	Fourth (4) Sequence of Events
1 No Controls	2 Collision with Non-Fixed Object 14 Motor Vehicle in Transport	27 Guardrail Face		

VEHICLE (Check if Commercial) ☐

Vehicle	Motor Vehicle Type	Hit and Run	Veh License Number	State	Reg. Expires	Permanent Reg.	VIN
1	1 Vehicle in Transport	1 No	Y969KL	FL	18/Nov/2021	No	1B3ES56C04D634472

Year	Make	Model	Style	Color	Extent of Damage	Est. Damage	Towed Due To Damage	Vehicle Removed By	Rotation
2004	DODG	NEON	4D	RED	Disabling	7000	Yes	BILL'S TOWING OF LAB	Rotation

Date of Crash	Date of Report	Invest. Agency Report Number	HSMV Crash Report Number
15/Jul/2021 02:13 AM	15/Jul/2021 02:13 AM	FHPF21OFF034123	88371042

Insurance Company	Insurance Policy Number
DIRECT GENERAL INSURANCE COMPANY	[redacted]

Name of Vehicle Owner (Check Box If Business) ☐	Current Address (Number and Street)	City and State	Zip Code
[redacted]	[redacted]	[redacted]	[redacted]

	License Number	State	Reg. Expires	Permanent Reg.	VIN	Year	Make	Length	Axles
Trailer One:									
Trailer Two:									

Vehicle Traveling:	Direction	On Street, Road, Highway	At Est. Speed	Posted Speed	Total Lanes
	South	STATE ROAD 29	60	60	2

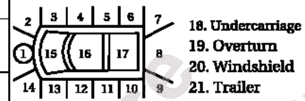
CMV Configuration	Cargo Body Type

Comm GVWR/GCWR	Trailer Type (trailer one)	Trailer Type (trailer two)

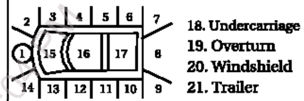
Haz. Mat. Release	Haz Mat. Placard	Number	Class

Motor Carrier Name	US DOT Number

Area of Initial Impact



Most Damaged Area



Motor Carrier Address	City and State	Zip Code	Phone Number

Comm/Non-Commercial	Vehicle Body Type	Vehicle Defects (one)	Vehicle Defects (two)	Emergency Vehicle Use	Speciual Function of MV
	1 Passenger Car	1 None		1 No	1 No Special Function

Vehicle Maneuver Action	Trafficway	Roadway Grade	Roadway Alignment	Most Harmful Event	Most Harmful Event Detail
16 Leaving Traffic Lane	1 Two-Way, Not Divided	1 Level	1 Straight	2 Collision with Non-Fixed Object	14 Motor Vehicle in Transport

Traffic Control Device For This Vehicle	First (1) Sequence of Events	Second (2) Sequence of Events	Third (3) Sequence of Events	Fourth (4) Sequence of Events
1 No Controls	45 Cross Centerline	14 Motor Vehicle in Transport	30 Concrete Traffic Barrier	

PERSON RECORD

Person#	Description	Vehicle #	Name	Date of Birth	Sex	Phone Number	Re-Exam
1	1 Driver	1	[redacted]	28/Jun/1966	2 Female		No

Address	City	State	Zip Code
[redacted]	[redacted]	[redacted]	[redacted]

Driver License Number	State	Expires	DL Type	Req. End.	Injury Severity	Ejection
[redacted]	[redacted]	29/Jul/2022	5 E/Operator	3 No Req Endorsement	5 Fatal (within 30 days)	1 Not Ejected

Restraint System	Air Bag Deployed	Helmet Use	Eye Protection	Seating Location Seat	Seating Location Row	Seating Location Other
3 Shoulder and Lap Belt Used	3 Deployed-Front		3 Not Applicable	1 Left	1 Front	

Drivers Actions at Time of Crash (first)	Drivers Actions at Time of Crash (second)	Driver Distracted By	Vision Obstruction
21 Wrong Side of Wrong Way		88 Unknown	1 Vision Not Obscured

Drivers Actions at Time of Crash (third)	Drivers Actions at Time of Crash (fourth)	Drivers Condition at Time of Crash
		88 Unknown

Suspected Alcohol Use	Alcohol Tested	Alcohol Test Type	Alcohol Test Result	BAC	Suspected Drug Use	Drug Tested	Drug Test Type	Drug Test Result
2 Yes	3 Test Given	77 Other, Explain in Narrative	2 Completed	0.140	2 Yes	3 Test Given	77 Other, Explain in Narrative	1 Positive

Source of Transport to Medical Facility	EMS Agency Name or ID	EMS Run Number	Medical Facility Transported To
1 Not Transported			

PERSON RECORD

Person#	Description	Vehicle #	Name	Date of Birth	Sex	Phone Number	Re-Exam
2	1 Driver	2	[redacted]	12/Mar/1977	1 Male	[redacted]	No

Address	City	State	Zip Code
[redacted]	[redacted]	[redacted]	[redacted]

Driver License Number	State	Expires	DL Type	Req. End.	Injury Severity	Ejection
[redacted]	[redacted]	12/Mar/2028	1 A	1 Yes	4 Incapacitating	1 Not Ejected

Restraint System	Air Bag Deployed	Helmet Use	Eye Protection	Seating Location Seat	Seating Location Row	Seating Location Other
3 Shoulder and Lap Belt Used	2 Not Deployed		3 Not Applicable	1 Left	1 Front	

Drivers Actions at Time of Crash (first)	Drivers Actions at Time of Crash (second)	Driver Distracted By	Vision Obstruction
1 No Contributing Action		1 Not Distracted	1 Vision Not Obscured

Drivers Actions at Time of Crash (third)	Drivers Actions at Time of Crash (fourth)	Drivers Condition at Time of Crash
		1 Apparently Normal

Suspected Alcohol Use	Alcohol Tested	Alcohol Test Type	Alcohol Test Result	BAC	Suspected Drug Use	Drug Tested	Drug Test Type	Drug Test Result
1 No	1 Test Not Given				1 No	1 Test Not Given		

Source of Transport to Medical Facility	EMS Agency Name or ID	EMS Run Number	Medical Facility Transported To
2 EMS	GLADES COUNTY EMS	GCSO21CAD018127	HENDRY REGIONAL HOSPITAL

NON VEHICLE PROPERTY DAMAGE

Vehicle#	Person#	Property Damage - Other Than Vehicle	Est. Amount	Business	Owner's Name	Address	City & State	Zip Code
		GUARDRAIL	10000	Yes	FDOT	5893 ENTERPRISE PKWY	FORT MYERS FL	33905

NON VEHICLE PROPERTY DAMAGE

Date of Crash	Date of Report	Invest. Agency Report Number	HSMV Crash Report Number
15/Jul/2021 02:13 AM	15/Jul/2021 02:13 AM	FHPF21OFF034123	88371042

Vehicle#	Person#	Property Damage - Other Than Vehicle	Est. Amount	Business	Owner's Name	Address	City & State	Zip Code
		ROADWAY	1000	Yes	FDOT	5893 ENTERPRISE PKWY	FORT MYERS FL	33905

NARRATIVE

ID Number	Rank	Name	Troop / Post	Officer Agency	Phone Number	Date Created
4587	TPR	S. REILLY	F	FLORIDA HIGHWAY PATROL	239-344-1730	Jul 15, 2021

Vehicle 01 (V01) was traveling southbound on State Road 29, south of Chapparal Avenue NW. Vehicle 02 (V02) was traveling northbound on State Road 29, approaching Chapparal Avenue NW. V01 veered into V02's lane of travel, causing the front of V01 to collide with the front of V02. V01 was redirected upon collision and began to rotate counterclockwise onto the west shoulder of State Road 29. V02 jackknifed and collided with a guardrail on the east shoulder of State Road 29. V01 came to final rest on the west shoulder of State Road 29 facing north. V02 came to final rest on the east shoulder of State Road 29 facing west.

Name of deceased Driver: [redacted]
Date of birth: 06/28/1966
Date of death: 07/15/2021
Time of Death: 2:26 AM
Pronounced by: Paramedics Tony Bevis and David Heflin Sr. of Glades County EMS Medic 3
THI Case Number: FHP721-60-001
THI Investigator: Corporal Matthew Sill
Photographs taken by: Corporal Matthew Sill of the Florida Highway Patrol

---

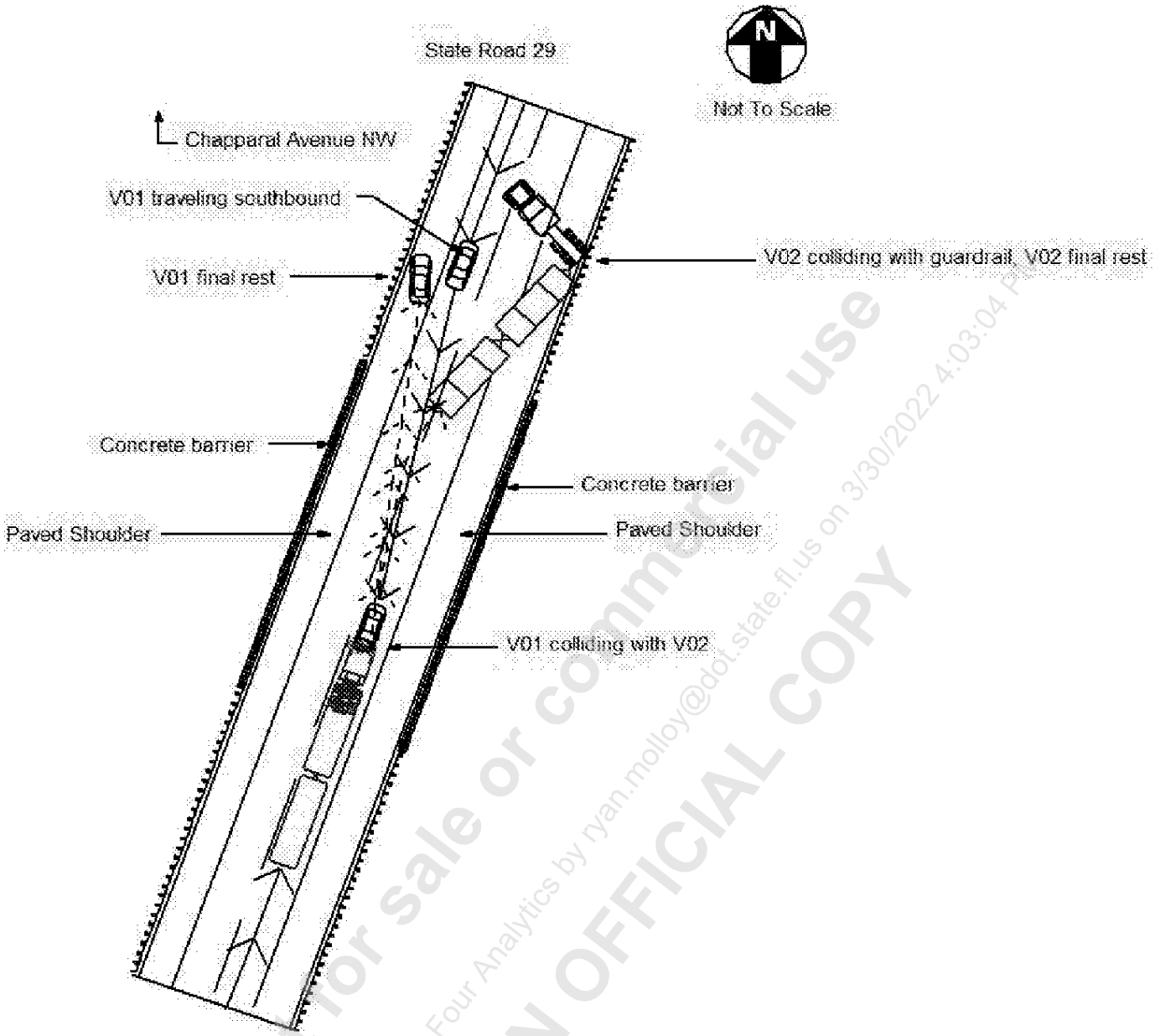
ID Number	Rank	Name	Troop / Post	Officer Agency	Phone Number	Date Created
3992	CPL	M. D. SILL	F	FLORIDA HIGHWAY PATROL	941-492-5850	Feb 14, 2022

This report was updated to show the toxicology results for D01.

REPORTING OFFICER

ID/Badge #	Rank and Name	Department	Type of Department
3992	CPL M. D. SILL	FHPF	FHP

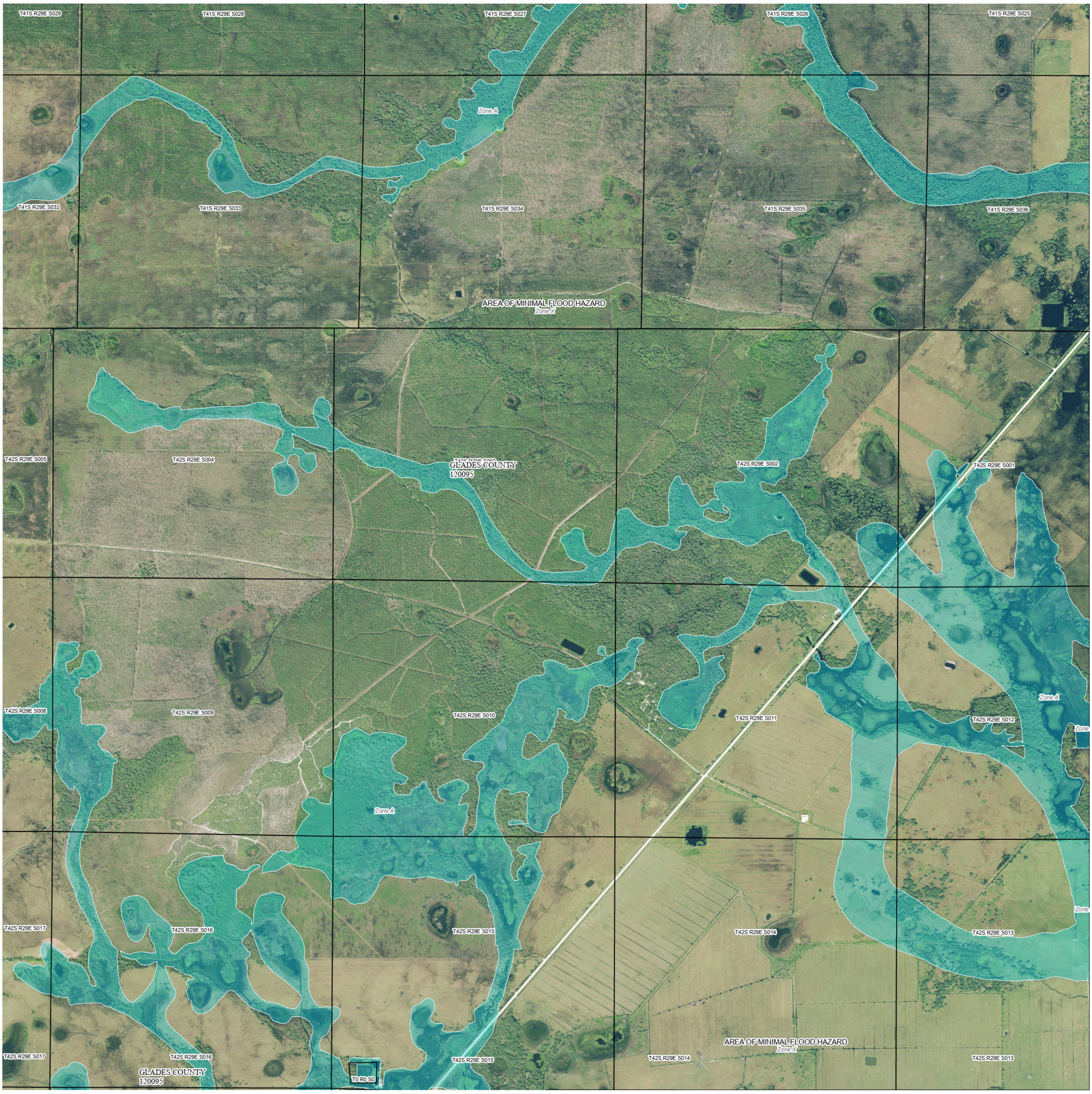
Date of Crash	Date of Report	Invest. Agency Report Number	HSMV Crash Report Number
15/Jul/2021 02:13 AM	**15/Jul/2021 02:13 AM**	**FHPF21OFF034123**	**88371042**



APPENDIX G

FEMA Floodplain Maps

81°26'15.96"W 26°52'43.22"N



81°22'29.24"W 26°48'31.87"N

FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR DRAFT FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS

- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD

- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee See Notes *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS

- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES

- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES

- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- 8 Coastal Transect
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary

NOTES TO USERS

For information and questions about this Flood Insurance Rate Map (FIRM), available products associated with this FIRM, including historic versions, the current map date for each FIRM panel, how to order products, or the National Flood Insurance Program (NFIP) in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Flood Map Service Center website at https://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Flood Map Service Center at the number listed above.

For community and countywide map dates, refer to the Flood Insurance Study Report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

Basemap information shown on this FIRM was provided in digital format by the United States Geological Survey (USGS). The basemap shown is the USGS National Map: Orthoimagery. Last refreshed October, 2020.

This map was exported from FEMA's National Flood Hazard Layer (NFHL) on **8/5/2021 12:32 PM** and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time. For additional information, please see the Flood Hazard Mapping Updates Overview Fact Sheet at https://www.fema.gov/media-library/assets/documents/118418

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards. This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date.

SCALE

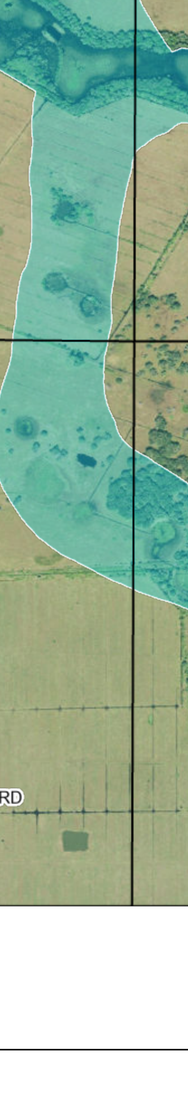
Map Projection:
GCS, Geodetic Reference System 1980;
Vertical Datum: No elevation features on this FIRM
For information about the specific vertical datum for elevation features, datum conversions, or vertical monuments used to create this map, please see the Flood Insurance Study (FIS) Report for your community at https://msc.fema.gov

N

1 inch = 1,000 feet 1:12,000

0 500 1,000 2,000 3,000 4,000 Feet

0 105 210 420 630 840 Meters



NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

PANEL **460** OF **575**

Panel Contains:

COMMUNITY	NUMBER	PANEL
GLADES COUNTY	120095	0460

MAP NUMBER
12043C0460C
EFFECTIVE DATE
September 26, 2014

APPENDIX H

Historical Drainage Reports

DRAINAGE COMPLAINT

S.R. 29
From North of S.R. 78 to Chaparral Slough
(M.P. 4.709 – 6.877)

Reference No. 05090-1

Prepared for:

Florida Department of Transportation
District 1

Need to Field review with Labelle people

Prepared By:

AIM Engineering & Surveying, Inc.
5802 Breckenridge Pkwy, Suite 100
Tampa, FL 33610

January 2010

TABLE OF CONTENTS

LIST OF APPENDICES

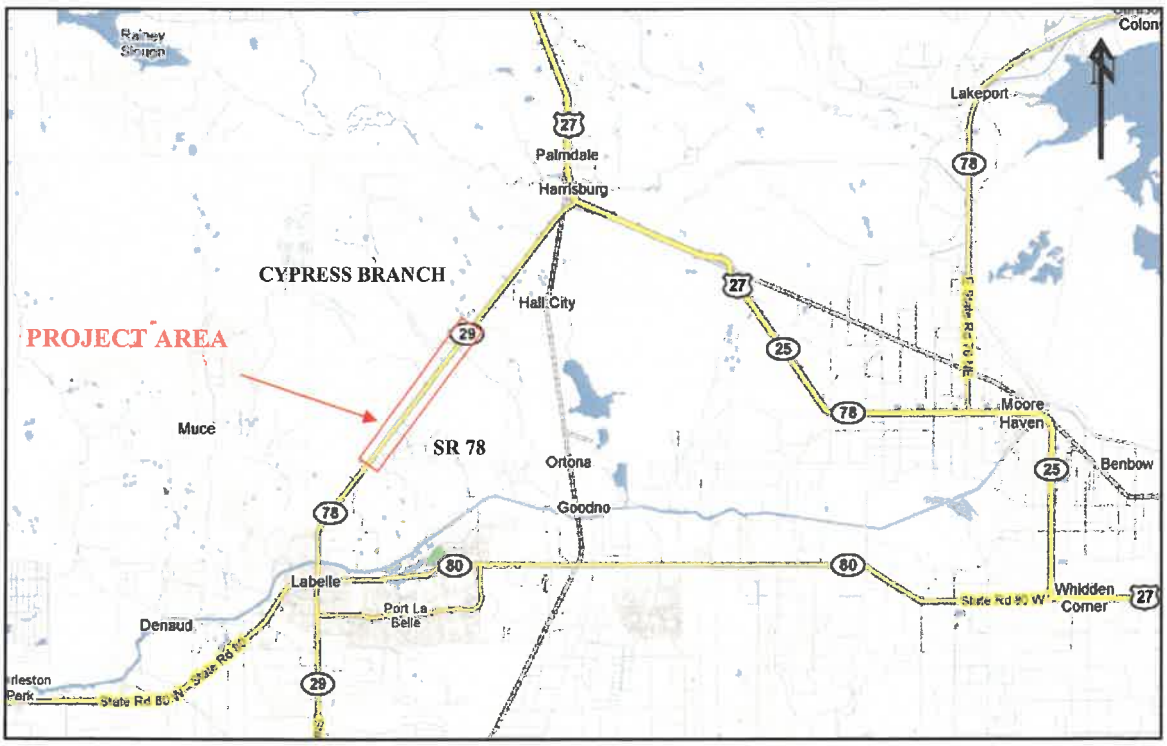
1.0 INTRODUCTION

The Florida Department of Transportation (FDOT), District One, has gathered drainage complaints from residents and maintenance staff throughout the district and compiled them into a drainage complaint inventory. The recorded complaints were ranked in importance based on frequency and severity of flooding as well as roadway classification and traffic data. This document specifically focuses on one particular drainage complaint in Glades County, Florida along State Road (S.R.) 29 from north of S.R. 78 to Chaparral Slough (see **Appendix A**). A location map is contained in **Figure 1**.

S.R. 29 is a major north/south connector between Labelle and Harrisburg. If this roadway is forced to close, traffic will have to be detoured either west to S.R. 731 or east along S.R. 78 to S.R. 25. Either option will require traffic to detour miles out of the way to other facilities that may also encounter flooding during these times.

The purpose of this report is to document the causes for the flooding problems along S.R. 29 as reported in the drainage complaint. It will also provide potential solutions, cost estimates and recommendations for mitigation.

Figure 1: Location Map



2.0 BACKGROUND RESEARCH

S.R. 29 is a two-lane undivided roadway with 5-ft paved shoulders and roadside ditches. The traffic volumes are medium. Water periodically encroaches the roadway as close as six feet from the travel lane between Lone Pine Creek and Cypress Branch bridges (Milepost (M.P.) 5 and M.P. 6). During severe storm events, water has overtopped the roadway.

Adjacent properties and ditches continually flood. The surrounding terrain is relatively flat. While the flow patterns are draining south to the Caloosahatchee River, there are no well defined channels. The adjacent properties are owned by Lykes Brothers and little to no maintenance has been performed over the years.

There are two cross drains and two bridges within the study area. As illustrated in the Straight Line Diagrams (**Appendix B**), the bridge over Lone Pine Creek is at M.P. 4.709, a triple 30" RCP at M.P. 5.500, a triple 36" RCP at M.P. 6.237 and the bridge over Cypress Branch is at M.P. 6.848. In 1977, the cross drains were extended out 24' on both sides to the right of way as part of a resurfacing project. The existing pipes remained in place.

These crossings are located within FEMA Floodplain Zone A (see **Appendix C**). Flooding of S.R. 29 has been observed at this location as far back as 1970. The drainage inventory provided by the FDOT notes that severe flooding and roadway encroachment has only occurred twice in the past 10 years during the rainy season. During their investigation, FDOT Drainage collected rainfall data from August 18th through August 21st, year unknown, and conducted a field review. The gage data obtained is shown in **Table 1** below.

Table 1: Rainfall Data

Duration	Rainfall	Frequency (per FDOT Drainage)
1 Day	3.0 in.	10 Year
2 Day	6.4 in.	25 Year
4 Day	7.7 in.	10 Year

The FDOT staff noted overtopping in the ditches and that the surrounding properties were flooded. The bridges at Lone Pine Creek and Cypress Branch were free of debris and appeared to be flowing full. The triple 30" cross drain and the triple 36" cross drain appeared to be free of debris as well. No damage was observed at the drainage structures.

A scour report was obtained for bridge number 050033 (Cypress Branch Bridge). Cypress Branch is a riverine waterway that flows perennially. The velocity measured at the bridge during a field review was less than one foot per second. All piles and bents have no known lengths or embedments. The measured scour over 10 years is 5.8 feet. Therefore, the bridge was given a medium priority scour susceptible rating. There were no scour reports available for the Lone Pine Creek Bridge number 050035.

A field meeting was held with FDOT Maintenance staff of July 1, 2009 (see **Appendix D**). Mr. John Anderson pointed out the areas of concern and how the historical and existing flow patterns function. He indicated that flooding in the area is a major concern and occurs on a yearly basis,

more often than originally indicated. In fact, the road flooded over the July 4th weekend and the traffic had to be rerouted. Another field review was conducted on July 22, 2009 to follow up on the recent flooding and to photograph the area (see **Appendix E**).

3.0 FINDINGS

An initial overview of the drainage complaint revealed that the rainfall frequencies measured in the field by FDOT drainage do not closely match the frequencies provided in the Drainage Manual for the area. See a comparison in **Table 2** below.

Table 2: Rainfall Comparison

Duration	Frequency	Rainfall (per FDOT review)	Rainfall (Precipitation Data-Drainage Manual)
1 Day	10 Year	3.0 in.	7.0 in.
2 Day	25 Year	6.4 in.	9.5 in.
4 Day	10 Year	7.7 in.	9.0 in.

According to FDOT Maintenance, the major flooding occurs at the two cross drains. The triple 30" cross drain floods more severely than the triple 36" cross drain. The two bridges at Lone Pine Creek and Cypress Branch appear to be functioning properly. The field reviews and analysis confirm this initial observation.

The original 1956 drawings, more recent resurfacing plans, and Lone Pine Creek Bridge widening plan sets were obtained from the FDOT Maintenance Office. The original drainage maps were reviewed and still appear to be appropriate (see **Appendix F**).

Based on the performed cross drain analysis (see **Appendix G**), the triple 30" cross drain appears to be undersized. This cross drain backs up and in turn floods the triple 36" cross drain upstream. Both cross drains are severely silted in, as well as the adjacent ditches, the flow path along the right of way fence. The photographs taken on July 22, 2009 (see **Appendix E**) show the water elevations approaching the top of the endwalls. The amount of silt could not be measured due to the amount of standing water present. The build up of sediment could easily be blocking flow through the pipe and even preventing water from reaching the outfall. The joints where the pipes were extended could have shifted or collected debris and in turn also cause the cross drains to flood. Furthermore, the high water elevation for the triple 30" pipes is at 35.3 ft. This is almost two feet higher than the high water elevation for the triple 36" and both bridges. The high water values were taken from the original 1956 drainage map (**Appendix F**), and still seem reasonable based on present conditions. Flow lines for both cross drains are at an approximate elevation of 30 feet. Pictures taken in the field show the water level to be at the crown of the pipe for both cross drains. This would equate to a water elevation of approximately 33 feet. Since the pictures were taken during the wet season, the water elevation closely coincides with the high water elevations.

The side drain pipe to the north of the Lone Pine Creek Bridge may also be undersized. According to the photographs taken on July 22, 2009, the cross drain is holding back a

significant amount of water. The *Analysis of Flooding Problem for S.R. 29 West of Chaparral Slough*, PBS&J, October 1999 (**Appendix H**), identifies this side drain pipe at 30" and documents flooding problems here as well. The report suggests double 72" pipes be installed to address the flooding. Currently, this side drain consists of two 54" CMP pipes based on correspondence from Labelle Maintenance (Appendix D). This can be verified from the pictures located in **Appendix E**. There is a significant amount of runoff coming to this side drain from the surrounding area. During the field review, the side drain pipes were flooded more significantly on the northern side than the southern side. Even though the existing conditions suggest a blockage, the side drain was under water and it could not be determined if there was anything blocking the pipes. However, based on the findings of the crossdrains in the area, it is assumed that the side drain is full of silt and needs to be cleaned as well.

4.0 HYDRAULIC ANALYSIS

A drainage map was developed based on the original plans. Due to the flat and unchanged topography of the area, these historic drainage maps did not appear to have any significant changes to them and therefore were closely modeled for this drainage analysis. This map is located in **Appendix F** as well as an updated drainage map that breaks apart the areas specifically traveling to the cross drains and side drain. All elevations and areas were taken from State Job No. 0504-201, Fiscal Year 1956 and verified from FPID 193957-2-52-01, Fiscal Year 2004. Using the rational method, flow rates for 25 year, 50 year, and 100 year were determined. The 500 year design flow was then approximated using a log graph of the flow rate vs. the design frequency. These values were then entered into the HY-8 program to analyze the existing cross drains. All calculations can be found in **Appendix G**. **Table 3** summarizes the results.

Table 3: Existing Overtopping Rates

Cross Drain	Overtopping Flow Rate	Frequency
Triple 30 inch	30.42 cfs	<< 25 Year
Triple 36 inch	193.86 cfs	> 500 Year

The existing triple 30" cross drain is clearly undersized. It overtops the roadway well before the 25 year design flood of 94.35 cfs. The existing triple 36" pipe has enough capacity to handle flow rates higher than the 50 year design flood.

Several scenarios were analyzed for improving the cross drain including upsizing each existing culvert separately and both of them together. The downstream bridges and culverts on S.R. 78 were also reviewed to determine if these locations were restricting the flow and causing flooding along S.R. 29. It appears that the least impact to the function of traffic along S.R. 29 would be to replace the existing triple 30" pipes with quadruple 48" pipes. For this improvement, the overtopping flow rate for this cross drain would be 113.3 cfs. This is between the 50 year and 100 year design floods. Also with the existing roadway elevation at elevation 35.45, the proposed 48" pipes should be set at a lower flow line than the existing triple 30" pipe in order to provide adequate clearance. Calculations for quadruple 30" and 36" pipes resulted in overtopping before the 25 year flood frequency as did triple 48" pipes. This analysis is based upon the structures acting independently. However, based on the flat terrain observed during

field reviews and review of old plans, during larger rain events the structures may function together. Increasing the pipe sizes could also cause problems further down stream. Water that is currently being restricted will have free range flow that could impact the drainage structures along S.R. 78.

The existing double 54" side drain north of Lone Pine Creek was also analyzed. This pipe was originally a single 30" pipe according to the *Analysis of Flooding Problem for S.R. 29 West of Chaparral Slough*, PBS&J, October 1999. It is unknown when the pipe was replaced. The report, however, recommended double 72" pipes in this area. The double 54" pipes are undersized. They have the capacity for 135.04 cfs, however the runoff generated by the offsite area coming to the cross drain is 202.3 cfs for the 10 year design flood. A minimum of 2-66" pipes or pipes of equal capacity are needed to intercept this runoff.

5.0 RECOMMENDATIONS

This particular area of Glades County is consistently wet. The large offsite areas are extremely flat. The main causes of the flooding consist of heavy siltation, flat roadway profiles, undersized cross drains, and no distinct channel for water to flow. Runoff is essentially being constrained until a large event occurs which forces it to the outfall where it then floods the low point along the road.

The permanent solution to reduce flooding in this area is to raise the profile of the road and recreate the roadside ditches. However in order to provide an immediate and cost feasible solution to this problem, it is recommended to de-silt and dig out the cross drains, side drain, and adjacent ditches. Clearing the cross drains and the adjacent ditches within the right of way shall allow more unrestricted flow. Removal and replacement of the existing triple 30' cross drain pipes with quadruple 48" pipes will significantly improve the flooding. Water is currently backing up at this location and flooding the existing triple 36" cross drain upstream since the existing triple 30" cross drain is undersized. However, if this area is not maintained, it will silt up and flooding will still be a concern. In severe rain events the roadway may still overtop. This could have adverse impacts down stream however, if the flow is not maintained. The existing triple 36" pipes are also recommended for replacement. This is mainly due to the fact that the cross drain contains the pipes from the original construction over 50 years ago. They were extended in 1977. The joints may be bad and the condition of the pipes is unknown. The pipes will remain the same size since the hydraulic analysis verified that the pipes have more than adequate capacity.

Therefore, the recommended temporary improvements to this area includes de-silting of the existing pipes and ditches, replacing the existing triple 30" pipes with quadruple 48" pipes at the first cross drain and replacement of the existing triple 36" pipes to the north due to failing joints.

This alternative may provide relief for the area, decreasing the potential for the road to flood until the facility is improved. This portion of S.R. 29 is included in the PD&E study that is currently being completed. This study may recommend that the roadway is raised which is the ultimate remedy to prevent flooding of the travel lanes.

Two preliminary cost estimates were developed using the FDOT Area 9 costs (see **Appendix I**). The first is for the proposed temporary solutions including upsizing the first cross drain,

replacing the second and regrading the ditches adjacent to the crossings. For this option, the estimated cost is $143,300. The second cost estimate includes leaving both of the existing cross drains in place with desiliting and minor ditch regrading adjacent to the crossings. For this option, the estimated cost is $11,500.

Appendix A
Original Drainage Complaint

Drainage Complaint - Inventory Data Sheet

SECTION I. LOCATION

County Glades

State Road SR 29 Reference No. 05090-1

Location - SR 29, north of SR 78 to Chaparral Slough

Road Description - 2-lane undivided roadway with shoulders and roadside ditches, with medium traffic volumes

Section/Township/Range Sec 36, T41S, R29E; Sec 1, 2, 11, 14, 15, T42S, R29E

SECTION II. PROBLEM DESCRIPTION

Problem: Flooding of right-of-way. Road does not flood.

How frequent does problem occur? 2 times in the past 10 years during the summer rainy season.

Estimate High Water Water is within 5 to 6 feet of roadway. High water is estimated to be at approximately 33.0 estimated from Historical Drainage Map (attached)

History of Problem High water in the right-of-way has occurred several times. Mr. Talbert Melton saw this section of roadway underwater in 1970.

Outfall description: Canals and natural tributaries

Persons Interviewed - FDOT personnel - Talbert Melton, Assistant Maintenance Engineer

SECTION III. PROBLEM ANALYSIS

What is the cause of the flooding? Cause of flooding in 1970 is unknown. Natural ground in areas adjacent to SR 29 just north of SR 78 is shown on the quadrangle map at approx. elevation 35. Possibly, a cross drain could be damaged or crushed. Photographs of flooded areas show one side of the roadway ditch more flooded than the other.

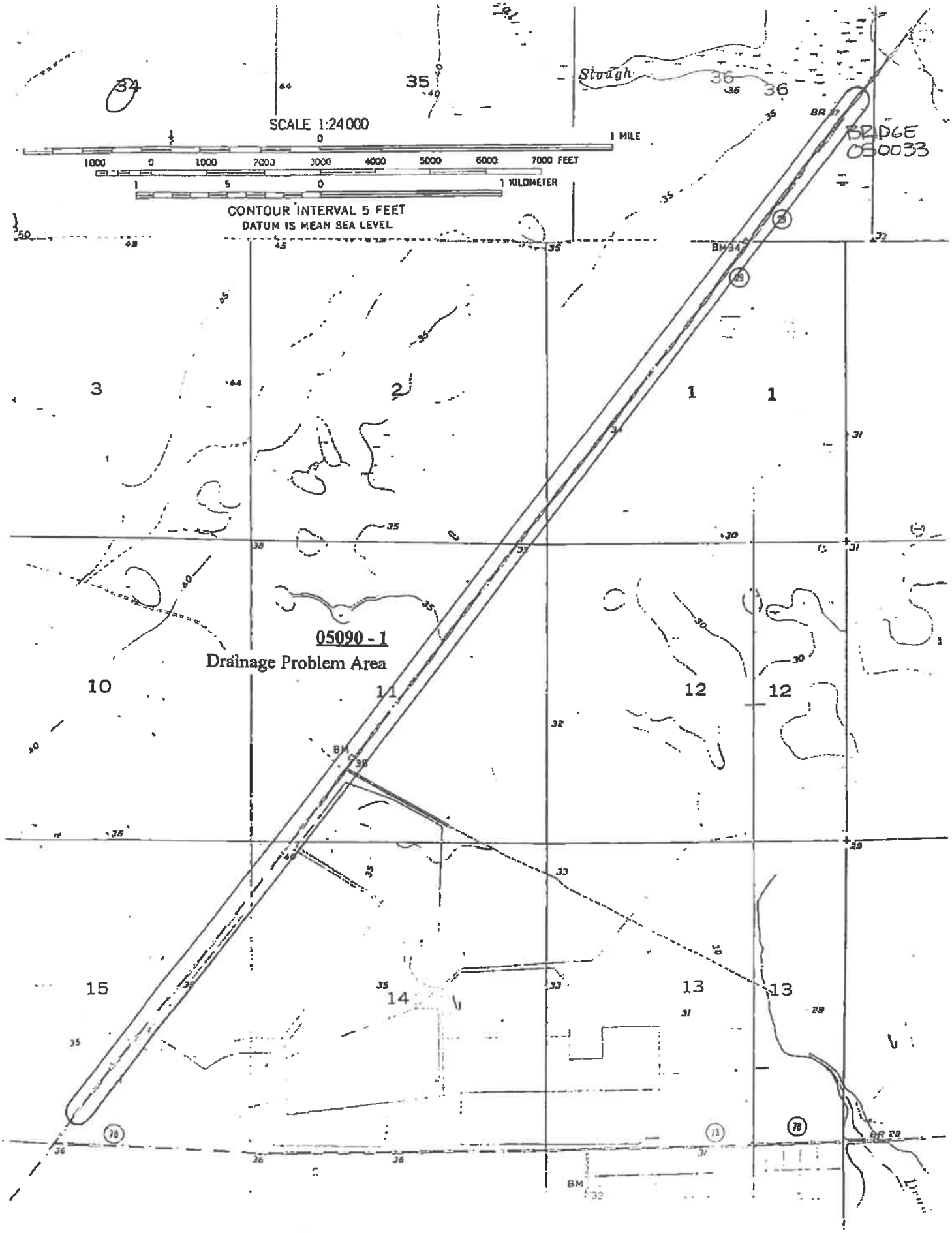
Responsible entity for maintenance of the outfall: Unknown

What efforts have been made to fix the problems? FDOT cleans and maintains the side ditches

Damages or harm resulting from the flooding: Water in the shoulder area is not desirable.

SECTION IV. PRELIMINARY CONCLUSIONS AND RECOMMENDATIONS

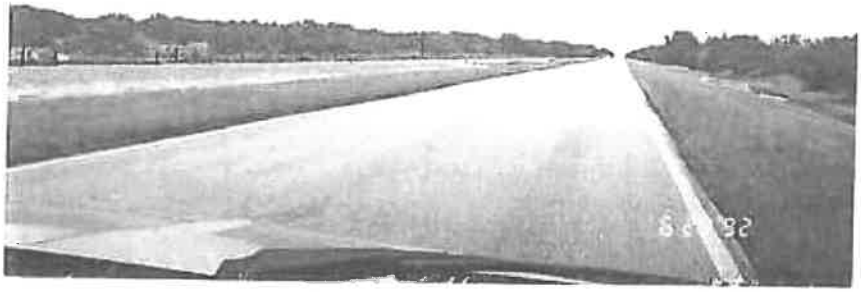
Monitor the area for future flooding events. Collect elevations at the roadway and side ditch profile elevations.


SCALE 1:24 000
1 MILE
7000 FEET
1 KILOMETER
CONTOUR INTERVAL 5 FEET
DATUM IS MEAN SEA LEVEL
Slough
BRIDGE
05090 - 1
Drainage Problem Area

Drainage Complaint - Inventory Data Sheet

Reference No. 05090 - I

SR 29 - Between Bridge 050033 and SR 78 on June 29, 1992 - wet season.



SR 29 - Between Bridge 050033 and SR 78 on June 29, 1992 - wet season.

Glades

SR 29 - Roadway ID 05090 000 **MP 4.709 – 6.877** **Location A**

From Lone Pine Creek to Cypress Branch

SFWMD Rainfall Gage Location **SR78**

Day	Rainfall
Aug. 18	0.17 in.
Aug. 19	3.44 in.
Aug. 20	2.95 in.
Aug. 21	1.14 in.

Duration	Rainfall	Frequency
1 day	3.0 in.	10 Year
2 day	6.4 in.	25 Year
4 day	7.7 in.	10 Year

Maintenance reported roadway overtopping over this stretch of SR 29. During Drainage's field visit, water had reached the low member elevations of the Lone Pine Creek and Cypress Branch bridges. Water levels in the creeks matched the elevations of water in the roadside ditches and surrounding properties. Between Mile Post 5 and 6, water encroached up to 6 feet of the WB / SB travel lane, but no overtopping was observed. The roadside ditches were overtopped and surrounding properties were inundated with water. The bridges for Lone Pine Creek and Cypress Branch were observed to be free of debris and flowing full. The cross drains at M.P. 5.5 and 6.2 appeared to be free of debris. Water stages exceeded the headwall elevation at each culvert, and water flowing through the pipes with high velocities.

During this visit no damage to any drainage structures was visible at this location. Once water levels have receded, the drainage structures will be checked again by Drainage. The flooding issues appear to be caused by the low elevation of the roadway in relation to the surrounding land. To correct this issue the roadway would need to be raised. Maintenance should continue to post signs at any location where water is encroaching upon the roadway.

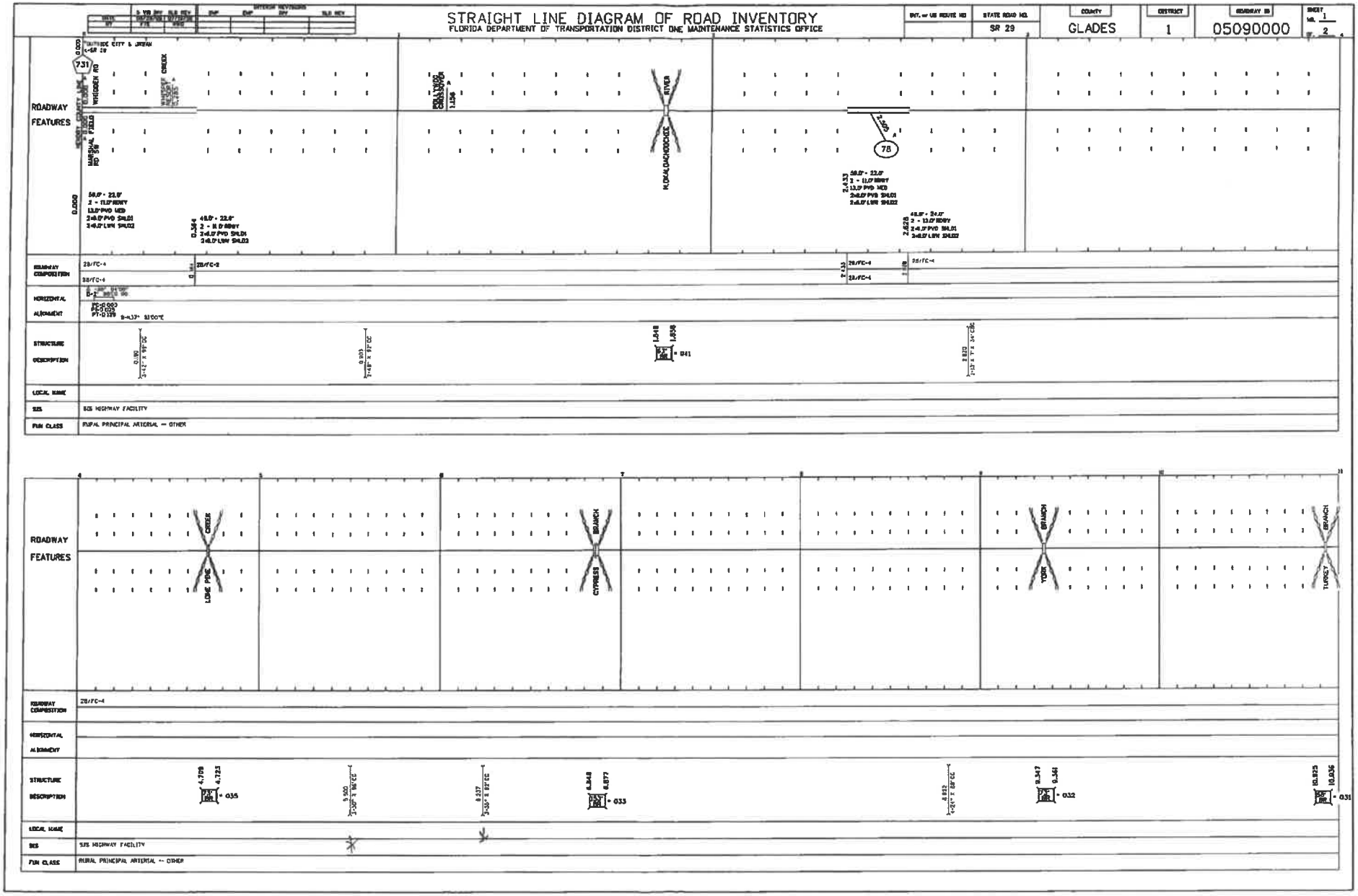
5.5 - re-address second visit. soft spots. Water was high still.

6.2 - they may not have any problems.

STRAIGHT LINE DIAGRAM OF ROAD INVENTORY

FLORIDA DEPARTMENT OF TRANSPORTATION DISTRICT ONE, MAINTENANCE STATISTICS OFFICE

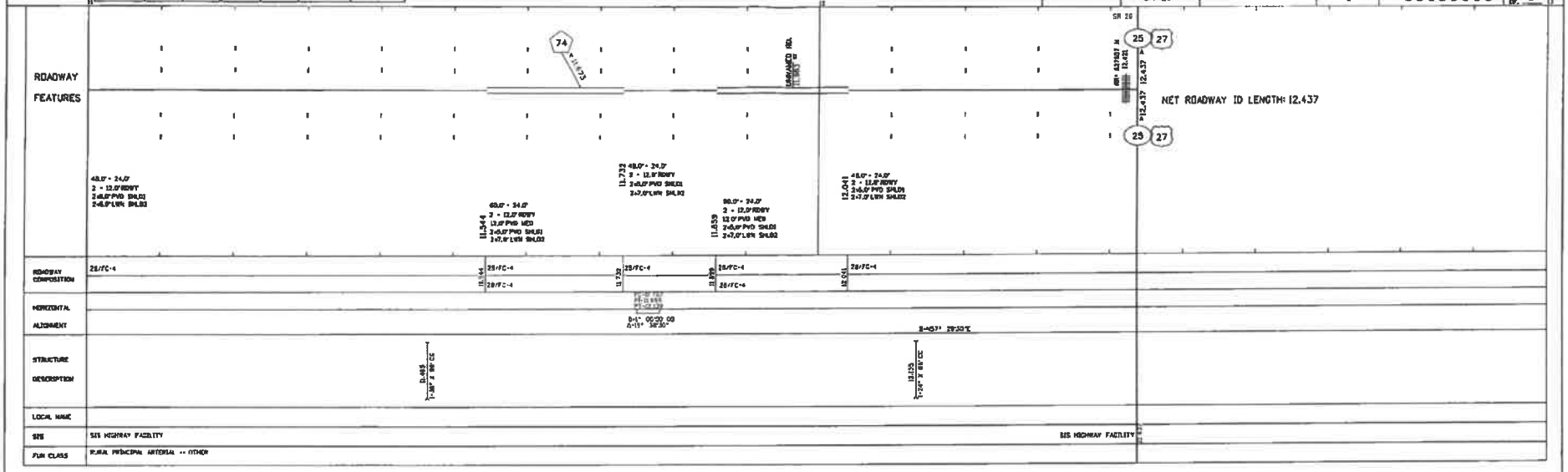
DIST. or US ROUTE NO.	STATE ROAD NO.	COUNTY	DISTRICT	ROADWAY ID	SHEET NO.
	SR 29	GLADES	1	05090000	1 of 2



STRAIGHT LINE DIAGRAM OF ROAD INVENTORY

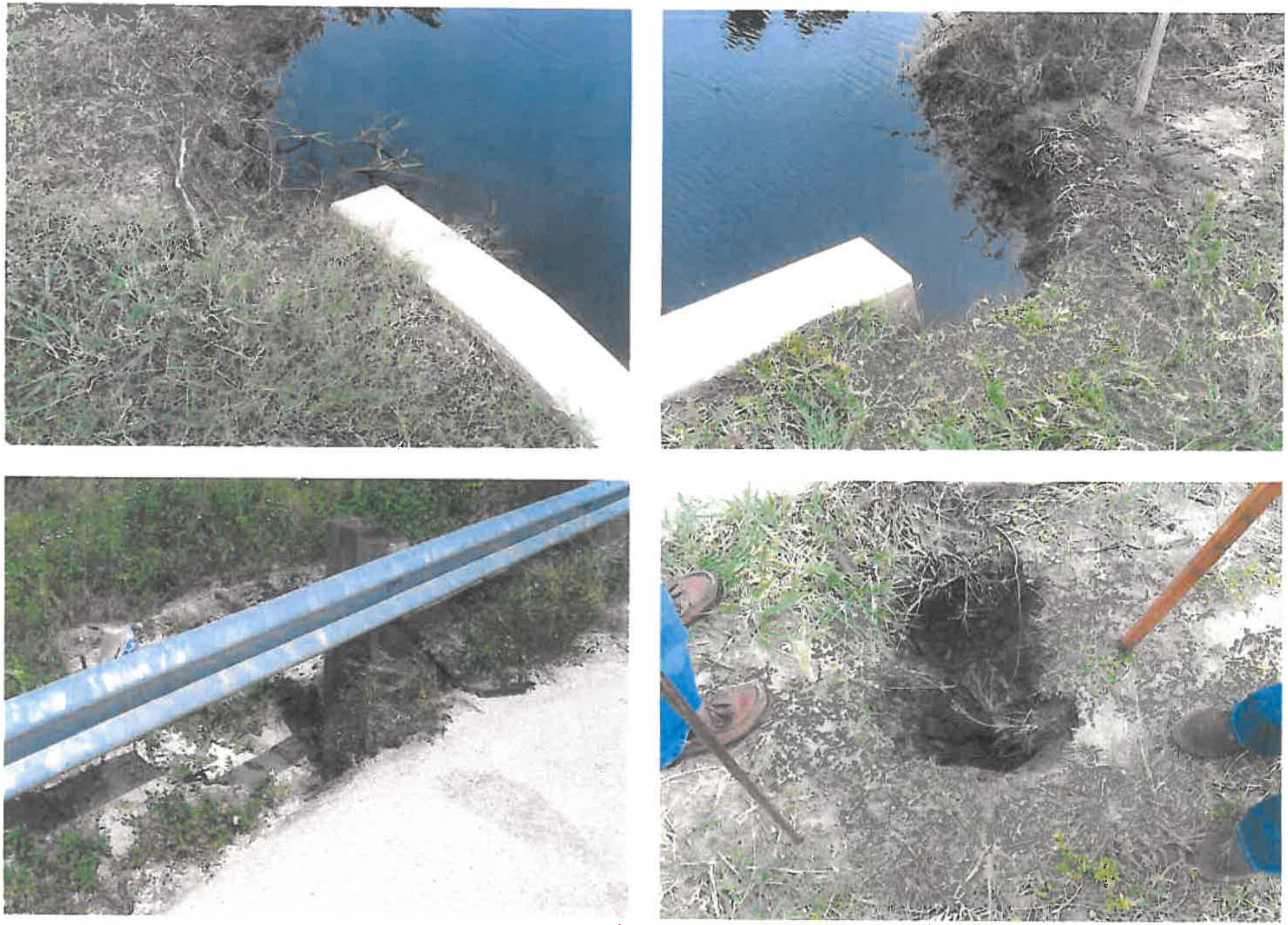
FLORIDA DEPARTMENT OF TRANSPORTATION DISTRICT ONE MAINTENANCE STATISTICS OFFICE

DIST. or MO ROUTE NO.	STATE ROAD NO.	COUNTY	DISTRICT	ROADWAY ID	SHEET NO. / OF.
	SR 29	GLADES	1	05090000	2 / 2



SR 29 Cross Drains (mp. 5.50 and 6.237) Glades

SR 29 Cross Drains (mp 5.50 and 6.257) Glades



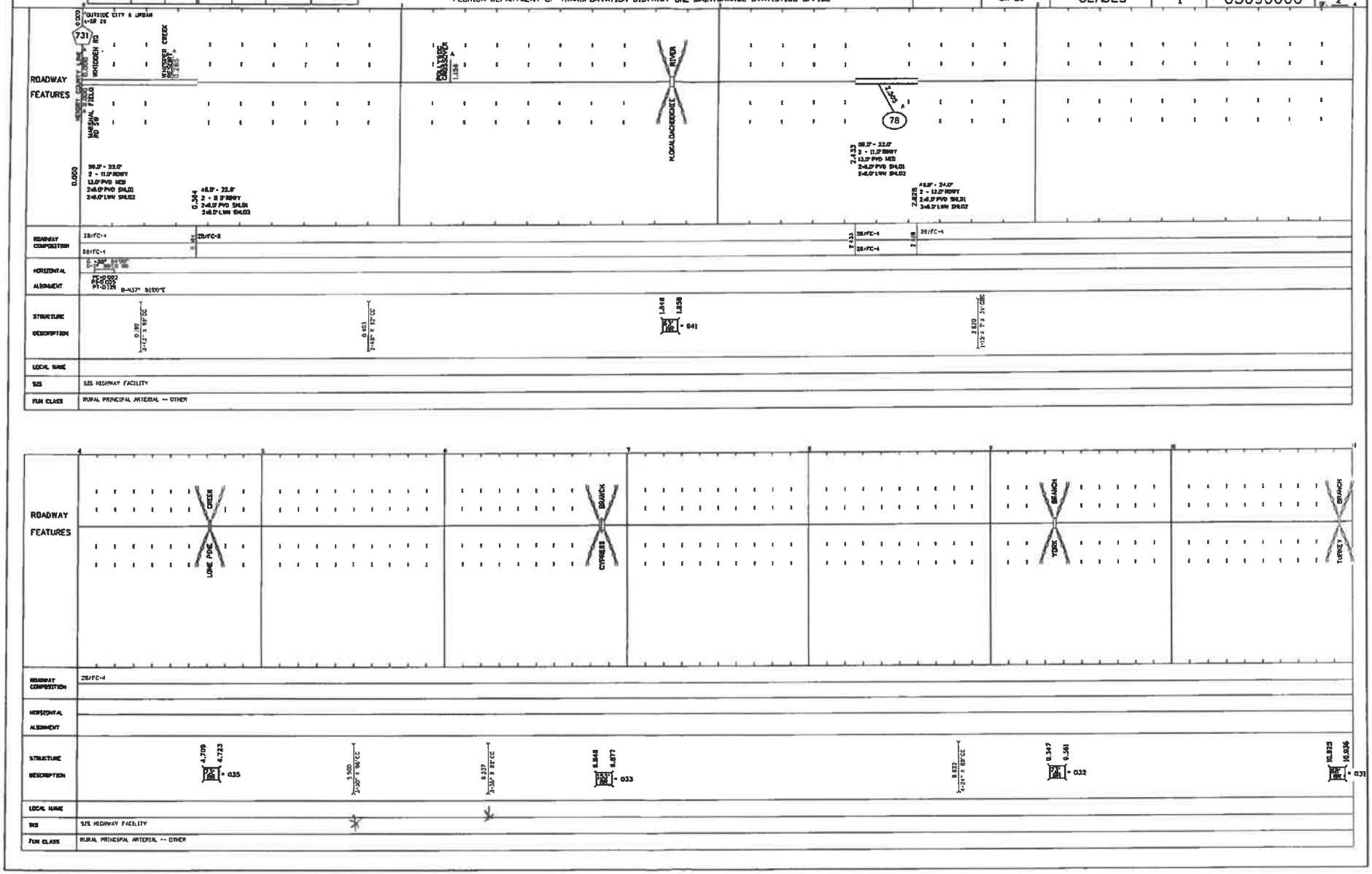
SE29 Cross drain MP. 5.50 and 6.237 Wade

Appendix B
FDOT Straight Line Diagram

STRAIGHT LINE DIAGRAM OF ROAD INVENTORY

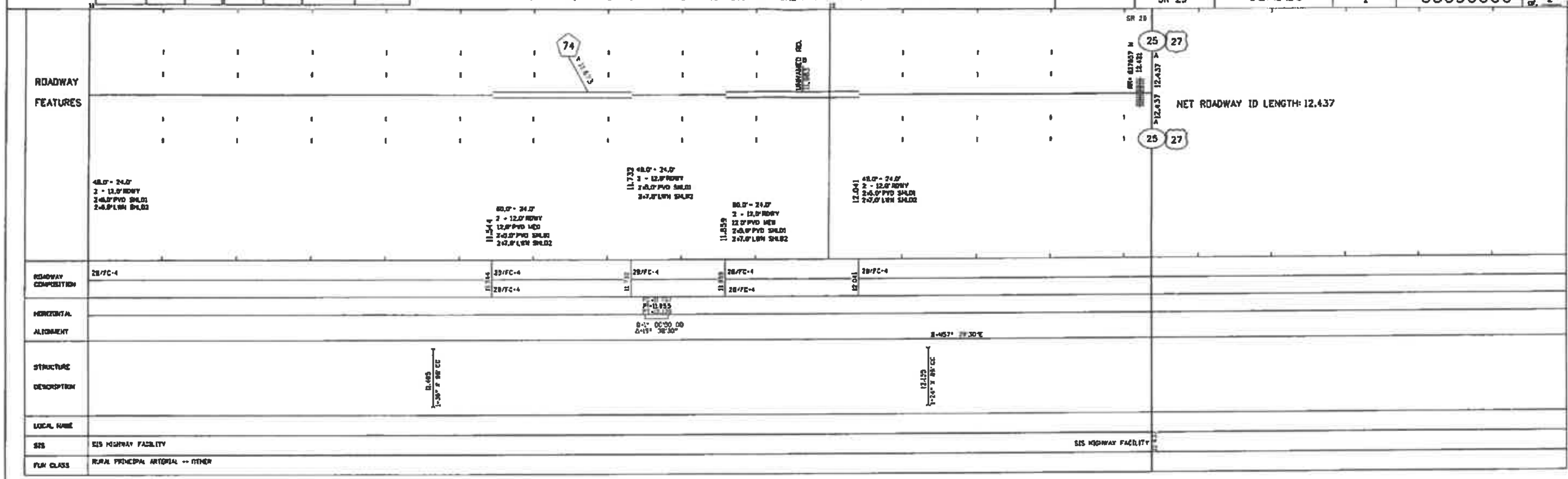
FLORIDA DEPARTMENT OF TRANSPORTATION DISTRICT ONE MAINTENANCE STATISTICS OFFICE

INT. or US ROUTE NO.	STATE ROAD NO.	COUNTY	DISTRICT	ROADWAY ID	SHEET NO.
	SR 29	GLADES	1	05090000	1 of 2

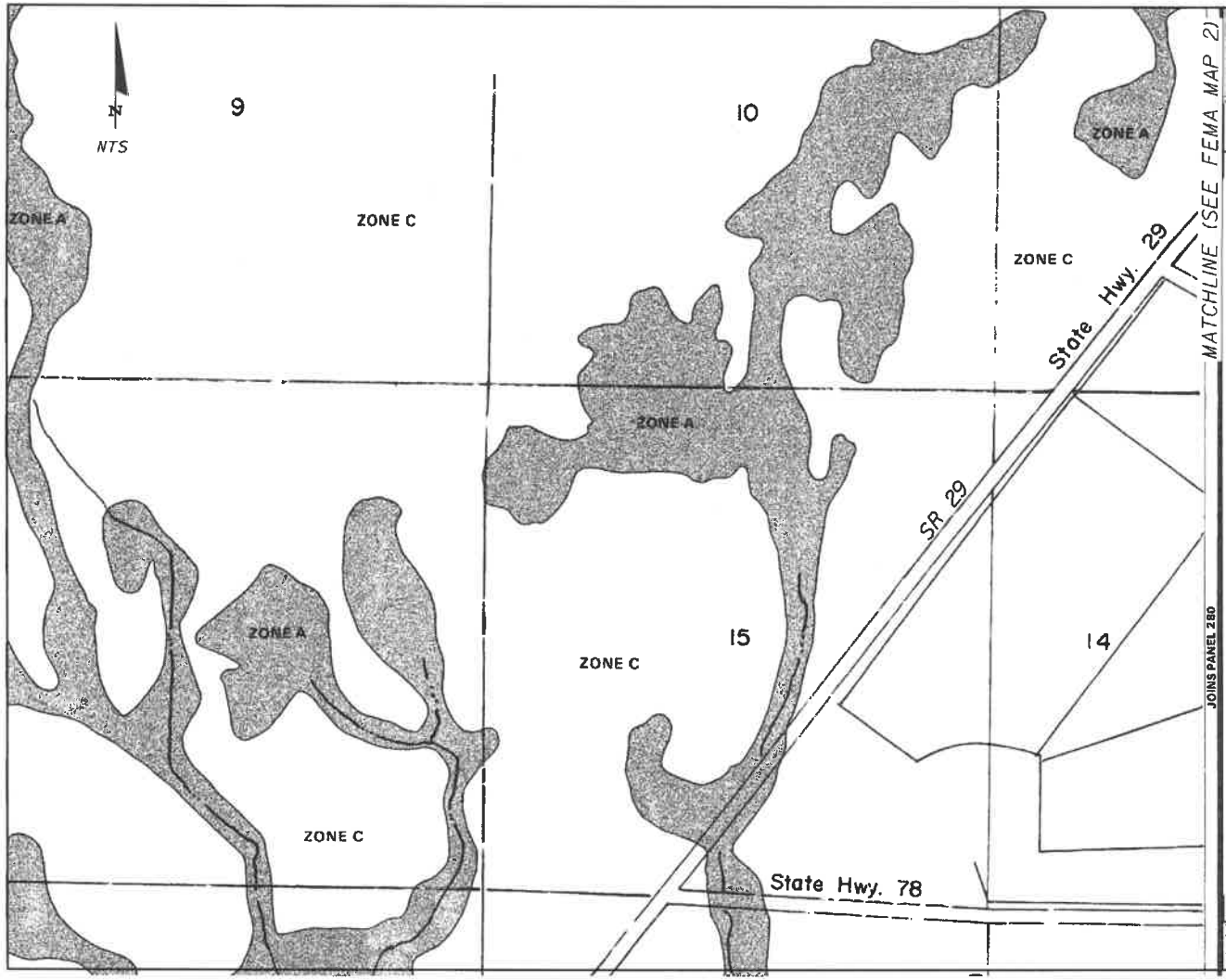


STRAIGHT LINE DIAGRAM OF ROAD INVENTORY
FLORIDA DEPARTMENT OF TRANSPORTATION DISTRICT ONE MAINTENANCE STATISTICS OFFICE

INT. or US ROUTE NO	STATE ROAD NO.	COUNTY	DISTRICT	ROADWAY ID	SHEET
	SR 29	GLADES	1	05090000	NO. 2 OF 2



Appendix C
FEMA Maps



COMMUNITY-PANEL NUMBER
120095 0260 B

EFFECTIVE DATE:

KEY TO MAP

500-Year Flood Boundary	
100-Year Flood Boundary	
Zone Designations*	ZONE B / ZONE B
100-Year Flood Boundary	
500-Year Flood Boundary	
Base Flood Elevation Line With Elevation In Feet**	513
Base Flood Elevation In Feet Where Uniform Within Zone**	(EL 987)
Elevation Reference Mark	RM7x
Zone D Boundary	
River Mile	•M1.5

**Referenced to the National Geodetic Vertical Datum of 1929

*EXPLANATION OF ZONE DESIGNATIONS

ZONE	EXPLANATION
A	Areas of 100-year flood; base flood elevations and flood hazard factors not determined.
AO	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; average depths of inundation are shown, but no flood hazard factors are determined.
AH	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; base flood elevations are shown, but no flood hazard factors are determined.
A1-A30	Areas of 100-year flood; base flood elevations and flood hazard factors determined.
A99	Areas of 100-year flood to be protected by flood protection system under construction; base flood elevations and flood hazard factors not determined.
B	Areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood. (Medium shading)
C	Areas of minimal flooding. (No shading)
D	Areas of undetermined, but possible, flood hazards.
V	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors not determined.
V1-V30	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors determined.

NOTES TO USER

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

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FAX (813) 654-1899
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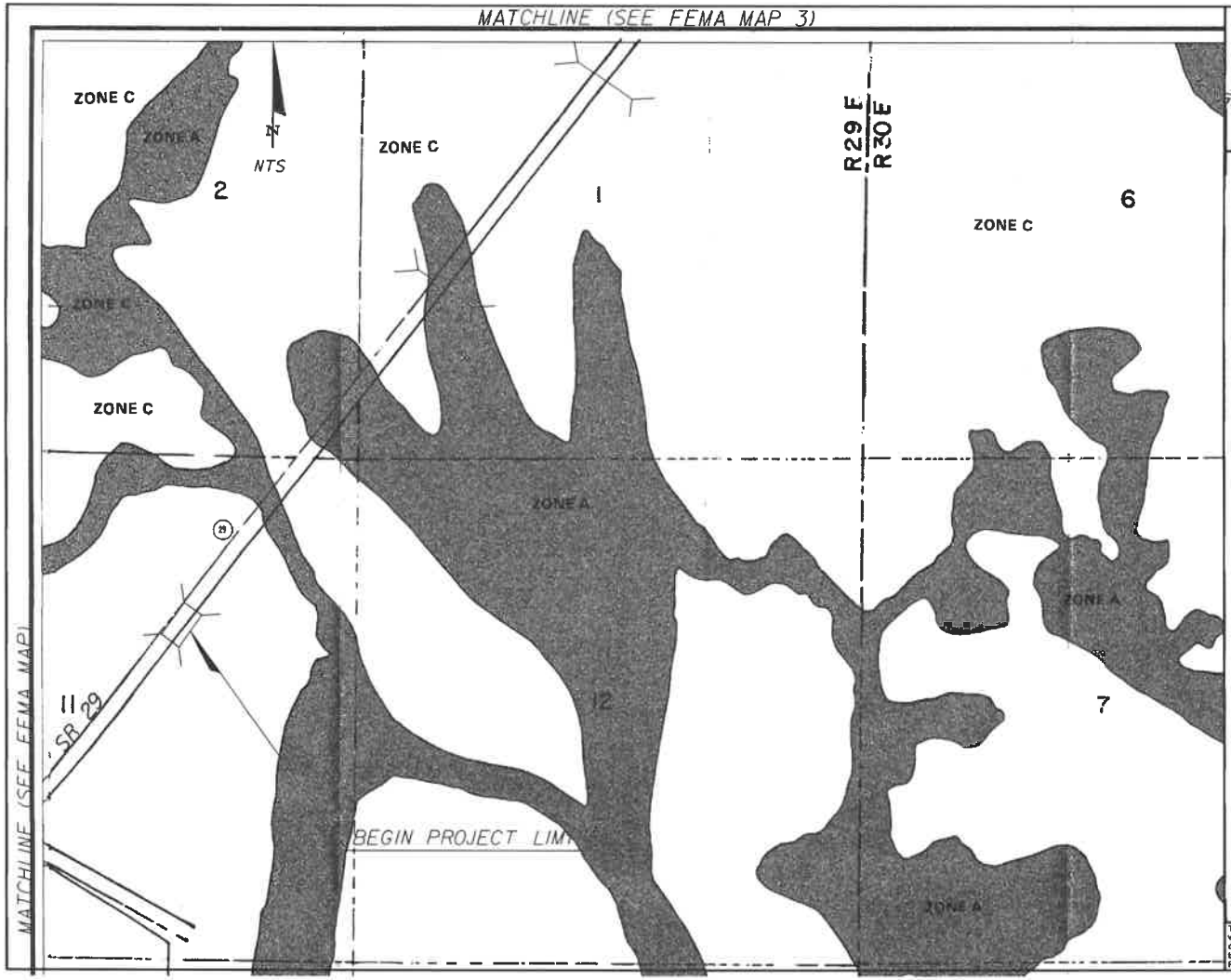
E.O.R. DAWN M. RATICAN, P.E. NO. 60226

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
29	GLADES	

FEMA MAP

SHEET NO.



COMMUNITY-PANEL NUMBER
120095 0280 B

EFFECTIVE DATE:

KEY TO MAP

- 500-Year Flood Boundary
- 100-Year Flood Boundary
- Zone Designations*
- 100-Year Flood Boundary
- 500-Year Flood Boundary
- Base Flood Elevation Line With Elevation in Feet** — 513
- Base Flood Elevation in Feet Where Uniform Within Zone** — (EL 987)
- Elevation Reference Mark — RM7×
- Zone D Boundary
- River Mile — •M1.5

**Referenced to the National Geodetic Vertical Datum of 1929

*EXPLANATION OF ZONE DESIGNATIONS

ZONE	EXPLANATION
A	Areas of 100-year flood; base flood elevations and flood hazard factors not determined.
AO	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; average depths of inundation are shown, but no flood hazard factors are determined.
AH	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; base flood elevations are shown, but no flood hazard factors are determined.
A1-A30	Areas of 100-year flood; base flood elevations and flood hazard factors determined.
AR	Areas of 100-year flood to be protected by flood protection system under construction; base flood elevations and flood hazard factors not determined.
B	Areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood. (Medium shading)
C	Areas of minimal flooding. (No shading)
D	Areas of undetermined, but possible, flood hazards.
V	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors not determined.
V1-V30	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors determined.

NOTES TO USER

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REVISIONS			
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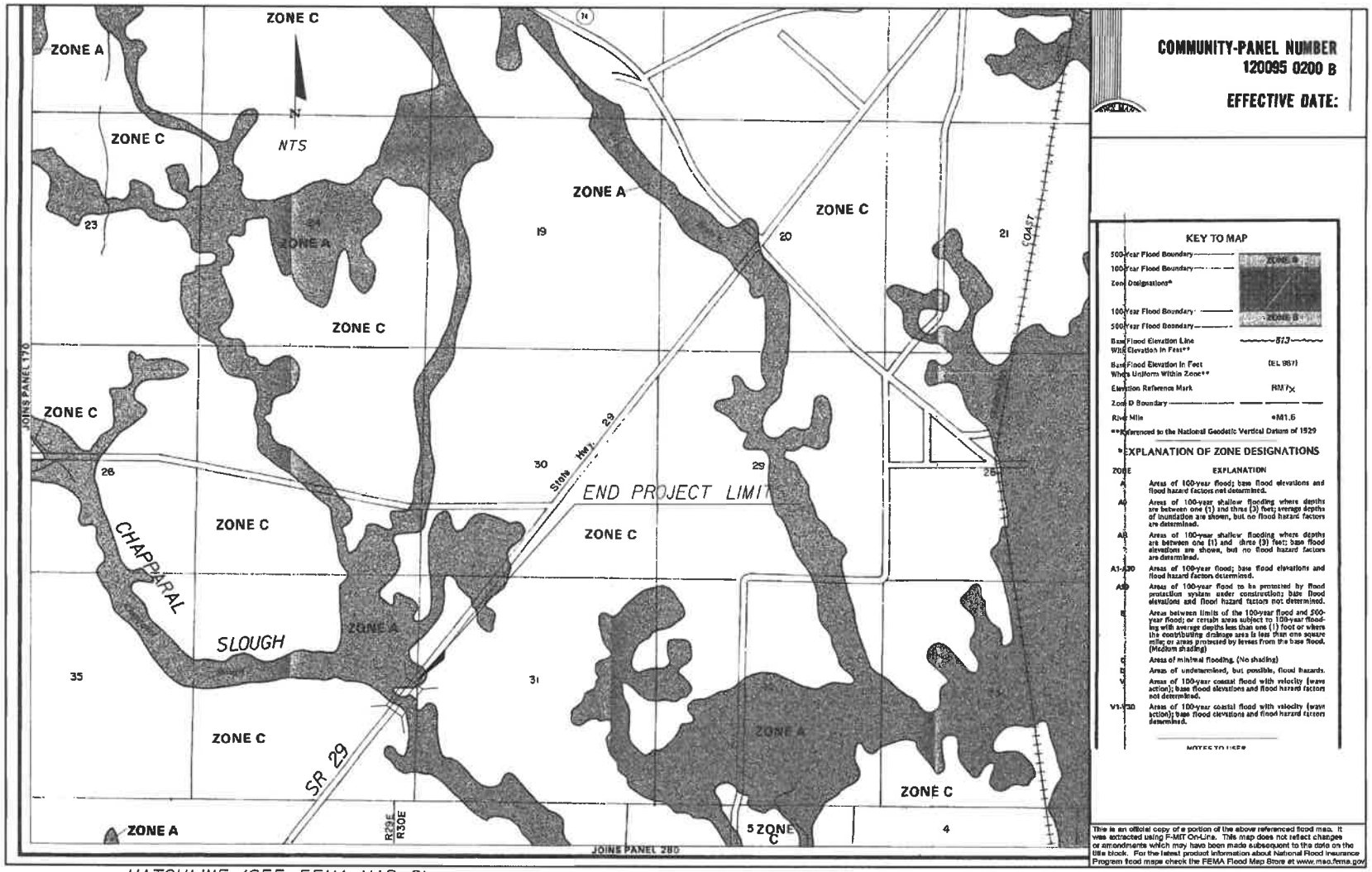
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
29	GLADES	

FEMA MAP 2

SHEET NO.

eashwell 8/5/2009 9:19:55 AM T:\PROJECTS\ENVIRONMENTAL\Old Permit and MIT\Task 4\Drainage Complaint Analyses\...SR29...



REVISIONS

DATE	DESCRIPTION	DATE	DESCRIPTION

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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
29	GLADES	

FEMA MAP 3

SHEET NO.

Appendix D
Correspondence

MEETING MINUTES

AIM Engineering & Surveying, Inc.

Tampa Office
5802 Breckenridge Parkway
Tampa, Florida 33610
813-627-4144 / Fax 813-627-1899
Toll Free: 888-627-4144

Lehigh Acres (Corporate Office) • Bartow • **Tampa** • Naples • Riviera Beach • Brooksville

Project: Drainage Complaint Analysis Task #11 Project 1 and 2

Subject: Field Meeting

Location: SR 29 and SR 78 **Date:** July 1, 2009

Attendees: John Anderson (FDOT LaBelle Operations)
Dawn Ratican (AIM)

Recorded By: Dawn Ratican

SR 29 - between Lone Pine and Cypress Branch

- 0.5 miles of roadway under water
- Sheet flow – wide open pasture both sides of road
- Channels downstream are not maintained
- Roadway shut down last year because of flooding
- Water stacks to the edge of the road on south side once a year
- 5-ft shoulders and resurfacing done 3-4 years ago. No money for pipe improvements.
- No planned projects for future
- At the culvert water is stacked up to shoulder (present) and water is stacked up to the fence in the south side.
- Both sides of roadway owned by Lykes Brothers
- No apparent flow, just a lot of standing water
- At Pine Fields water just sheet flows, nothing to restrict it.

SR 78

- 0.25 miles of roadway under water
- Lykes owns surrounding property
- 4-ft paved shoulders and pipes were replaced not upsized
- Ditches on both sides of roadway
- Right of way required for berm or dual ditch
- Deadman's branch – north side own 300-ft no issues with drainage
- Cross drain no issues some ownership to the north
- Culvert at driveway – flow from north around driveway
- Offsite single point discharge floods roadway

From: Anderson, John C [John.Anderson@dot.state.fl.us]
Sent: Wednesday, July 29, 2009 7:50 AM
To: Dawn Ratican
Subject: RE: Drainage Complaints - Glades County SR 29 & SR 78

SR78: We have only seen the flooding in the area of the driveway with the side drain (no flooding at the bridges)

SR29: The flooding is between the two bridges (starting at the two bridges) (Lone Pine and Cypress) but it does get the worst at the two culverts and the worst of the two is the south culvert.

This past July 4th both areas flooded (SR78 and SR29). Like a dummy, I didn't take any pictures. I thought about it later, but I will try to find some old pictures of the area.

From: Dawn Ratican [mailto:dratican@aimengr.com]
Sent: Monday, July 27, 2009 10:37 AM
To: Anderson, John C
Subject: RE: Drainage Complaints - Glades County SR 29 & SR 78

Thank John. We were back out reviewing these projects last week. I wanted to verify that the only flooding on SR 78 is at the driveway with the side drain. Have you seen any flooding at the bridges? Also was this area flooded the July 4th weekend as well? On SR 29, does the flooding start at the culverts/bridges and then spread or occur in between the crossings? Do you have any photos of this most recent flooding?

Thanks again for your assistance. We will be wrapping up our review in the next couple of weeks.

Dawn

From: Anderson, John C [mailto:John.Anderson@dot.state.fl.us]
Sent: Wednesday, July 22, 2009 8:56 AM
To: Dawn Ratican
Subject: RE: Drainage Complaints - Glades County SR 29 & SR 78

Answers to your questions:

1. All of our bridge information comes from District Bridge in Tampa.
   (Jose Garcia 813-744-6050 ext. 21227)
   (jose.garcia1@dot.state.fl.us)
2. On SR29 the water flows from the west to the east. It will flow over the entire roadway (both lanes). Approximately a week after I meet with you (July 4th weekend) the road went under water due to heavy rains in the area, and yes almost every year this accurse.
3. SR 78 is the same. SR 29 goes under water then approximately 8 to 10 hours later SR78 will go under water. SR78 also went under water the July 4th weekend.

From: Dawn Ratican [mailto:dratican@aimengr.com]
Sent: Tuesday, July 21, 2009 3:14 PM
To: Anderson, John C
Subject: Drainage Complaints - Glades County SR 29 & SR 78

Good afternoon John. I will be picking up the plans tomorrow that were copied for the SR 29 and SR 78 projects that we met on a few weeks back. I wanted to ask you a couple of more questions.

1. I am looking for the BHRs and Bridge Inspection Reports for all of the bridges. I believe that includes the Lone Pine Creek and Cypress Branch along SR 29 and Deadman's Branch and Cypress Branch along SR 78. Do you

have these or can you tell me who I should contact to obtain these?

2. I wanted to verify that during our discussions regarding the SR 29 flooding area, that water overtops the road from the downstream side (east side of road). I know that the road was shut down last year. Do you recall at what time of the year, also does this occur every year?

3. For the SR 78 flooding, when was the last time that the road overtopped? Again, is this a regular occurrence, or did the flooding take place during the construction of the shoulder improvements along this section?

Feel free to email me or call, whatever is most convenient for you. I will be heading down to Labelle tomorrow, so I can be reached on my cell phone (813-918-0280).

Thank you again for your help with these projects.

Dawn

Dawn Ratican, P.E.
AIM Engineering & Surveying, Inc.
5802 Breckenridge Parkway, Suite 100
Tampa, Florida 33610
813.627.4144 (o)
813.918.0280 (c)

Dawn Ratican

From: Anderson, John C [John.Anderson@dot.state.fl.us]
Sent: Tuesday, November 24, 2009 3:17 PM
To: 'dratican@aimengr.com'
Subject: Fw: SR 29 and SR 78 Drainage Complaints

Sorry, it is in this one. It is the pipes at the cow pines.

John C. Anderson
LaBelle Operation Center
Telephone: 863-674-4027
Fax: 863-674-4030
Cell: 863-673-4056
E-Mail: john.anderson@dot.state.fl.us

From: McCormick, Steve
To: Anderson, John C
Sent: Tue Nov 24 10:52:34 2009
Subject: RE: SR 29 and SR 78 Drainage Complaints

The pipes at the cow pens appear to be 2- 54" corrugated pipe, they are still under water. The next headwall north of there is 3- 30" pipe and the one to the north of that is 3- 36" pipe.

Steve

Steve McCormick
Contracts Manager
LaBelle Operation Center
Florida Department Of Transportation
(863)674-4027 , Cell (863)673-4054
steve.mccormick@dot.state.fl.us

From: Anderson, John C
Sent: Tuesday, November 24, 2009 8:27 AM
To: McCormick, Steve
Subject: Fw: SR 29 and SR 78 Drainage Complaints

Can you get me the size and number of pipes at these head walls on SR29. It is the two were it always floods. Thanks

John C. Anderson
LaBelle Operation Center
Telephone: 863-674-4027
Fax: 863-674-4030
Cell: 863-673-4056
E-Mail: john.anderson@dot.state.fl.us

From: Dawn Ratican
To: Anderson, John C
Sent: Mon Nov 23 10:14:31 2009
Subject: SR 29 and SR 78 Drainage Complaints
Good morning John. I wanted to see if you had an opportunity to review the draft reports we submitted to you for the SR 29 and SR 78 Drainage Complaints. We are finalizing the reports based on comments we received from FDOT D-1 Drainage Staff and want to include any revisions based on your comments.

Also, we are trying to determine the size of the side drain pipe on the west side of SR 29 just north of Lone Pine Creek. In 1999 we know that there was one 30" pipe. Today there are two CMPs however due to the high elevation of standing water we were not able to determine the size. Do you know when these were replaced, who replaced them and what the current sizes are? Attached is a photo of the side drain.

Thanks for your assistance,

Dawn

Dawn Ratican, P.E.
AIM Engineering & Surveying, Inc.
5802 Breckenridge Parkway, Suite 100
Tampa, Florida 33610
813.627.4144 (o)
813.918.0280 (c)

Appendix E
Photos

S.R. 29

Bridge Culvert at Lone Pine Creek:

Looking south along S.R. 29 from the bridge culvert.

Ditch on southeast side of bridge.

Bridge structure number and name of water body.

East side of bridge.

Looking east from east side of bridge.

Ditch on northeast side of bridge.

Ditch on northwest side of bridge.

Water stains on west side of bridge.

Looking west from west side of bridge.

Sidedrain at cow pens, just north of bridge on S.R. 29. Ditch almost at capacity.

West side of bridge.

Ditch on north side of driveway facing north.

Ditch on southwest side of bridge.

Triple 30" Cross Drain:

Looking south along S.R. 29 from cross drain.

Looking east from east side of cross drain.

Ditch on northeast side of cross drain.

Erosion at headwall on east side of cross drain.

Erosion at headwall on east side of cross drain.

Staining on headwall on east side of cross drain.

Ditch on northwest side of cross drain.

Looking west from headwall on west side of cross drain.

Ditch on southwest side of cross drain.

Headwall on west side of cross drain.

Water stains on headwall on west side of cross drain.

Triple 36" Cross Drain:

Ditch on southeast side of cross drain.

Looking east from east side of cross drain.

Headwall on east side of cross drain.

Looking west from west side of cross drain.

Looking northeast from east side of cross drain.

Ditch on southwest side of cross drain.

Ditch on northeast side of cross drain.

Bridge at Cypress Branch:

Bridge number.

Ditch on northwest side of cross drain.

Ditch on southeast side of bridge.

Ditch on northwest side of bridge.

East side of bridge.

Facing south along shoulder, west side of bridge.

Looking east from east side of bridge.

West side of bridge.

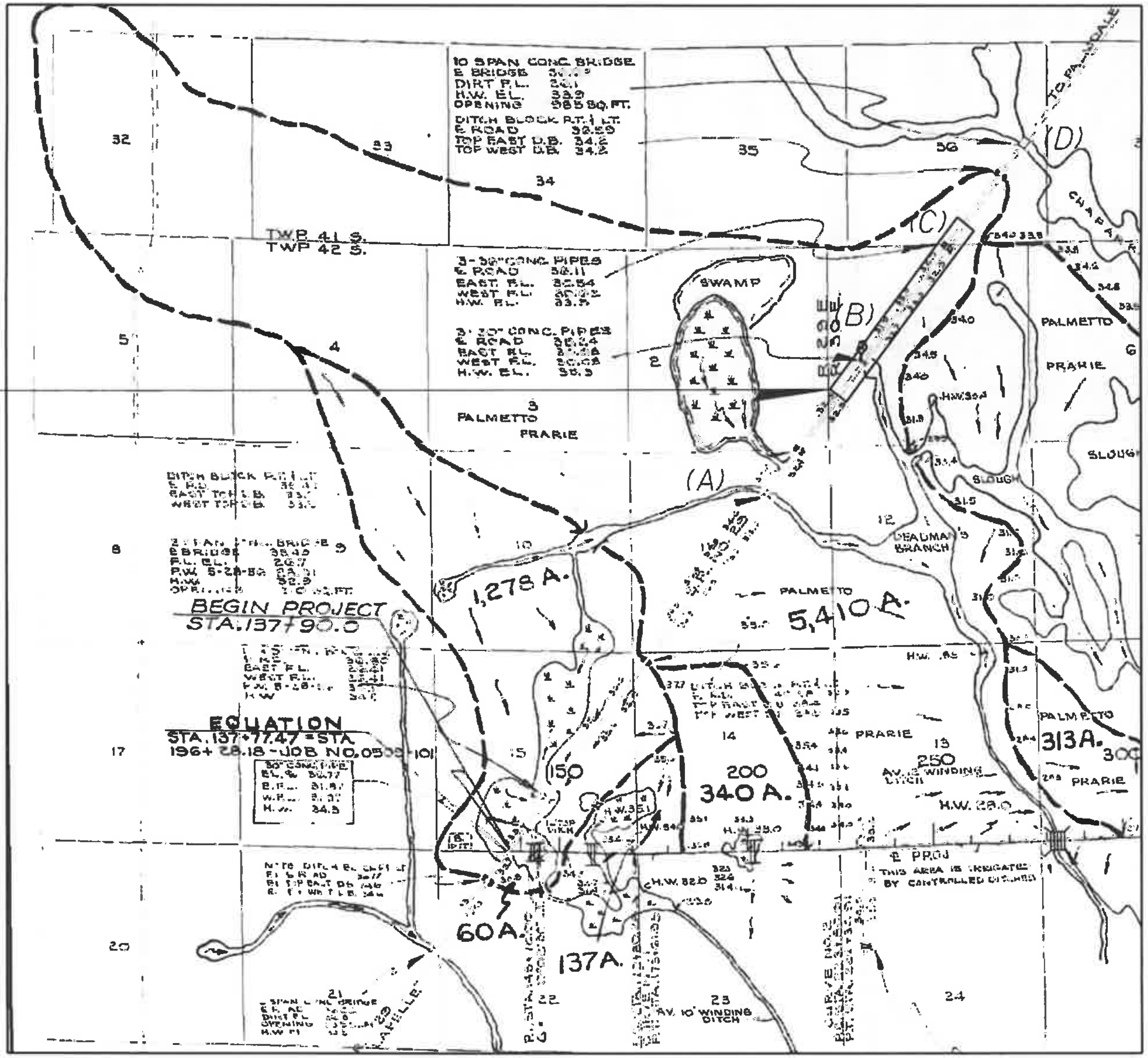
Ditch on northeast side of bridge.

Facing west from west side of bridge.

Facing southwest from west side of bridge. Trees appear to have water stains pretty high.

Ditch on southwest side of bridge.

Appendix F
Drainage Maps



(A)

3 SPAN CONC BRIDGE
℄ BRIDGE: 35.43
FL: 26.7
PW (5/28/56): 28.31
HW: 32.9
OPENING: 310 SQ FT

(B)

3 30" CONC PIPES
℄ ROAD: 35.24
FL (E): 30.08
FL (W): 30.08
HW: 35.3

(C)

3 36" CONC PIPES
℄ ROAD: 36.11
FL (E): 30.54
FL (W): 30.62
HW: 33.5

(D)

10 SPAN CONC BRIDGE
℄ BRIDGE: 36.62
FL: 26.1
HW: 33.9
OPENING: 985 SQ FT

NOTE: MAP WAS TAKEN FROM JOB NO. 0504-201, SR 78, GLADES COUNTY, FISCAL YEAR 1956

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
29	GLADES	

HISTORICAL DRAINAGE MAP

SHEET NO.

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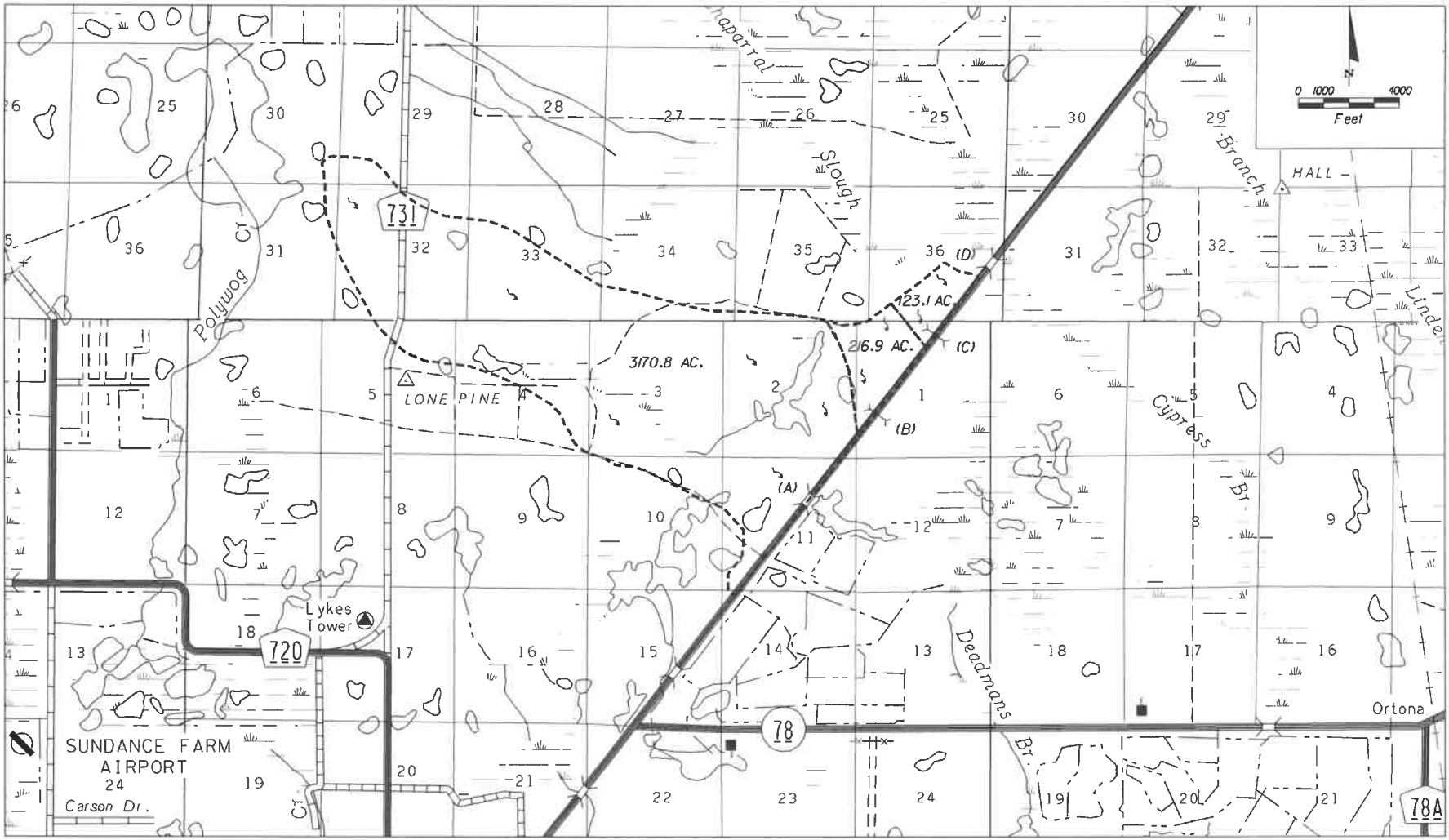

(A) LONE PINE CREEK BRIDGE
(B) TRIPLE 30" PIPES
(C) TRIPLE 36" PIPES
(D) CYPRESS BRANCH BRIDGE

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
29	GLADES	

DRAINAGE MAP

SHEET NO.

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Appendix G
Design Calculations

SR 29

Triple 30" Pipe

From Drainage Map: Total area is 216.9 Acres
Project is located in Zone 8.
Design Frequency is 50 years.
Time of concentration is 3.7 hours.
Area is grass and dirt and very flat, therefore the runoff coeficient is 0.3

Rational Method

$$Q = CIA$$

Q: Flow Rate (cfs)
C: Runoff Coeficient
I: Rainfall Distribution (in/hr)
A: Area (acres)

Frequency (years)	I (in/hr)	Probability
25	1.45	
50	1.60	0.02
100	1.75	0.01
500		0.002

$$Q_{25} = 0.3*1.45*216.9$$
$$Q_{25} = 94.35 \text{ cfs}$$

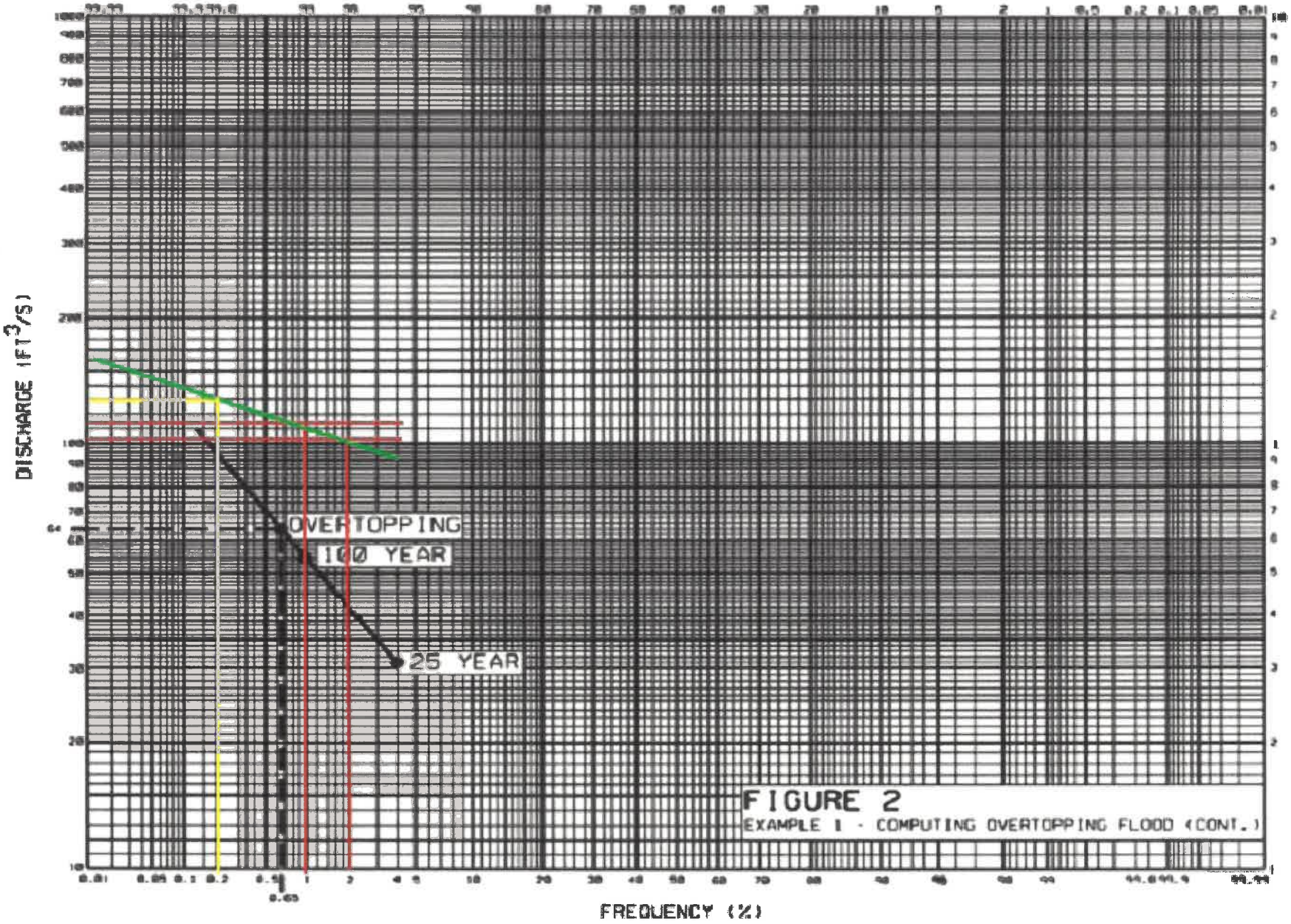
$$Q_{50} = 0.3*1.60*216.9$$
$$Q_{50} = 104.11 \text{ cfs}$$

$$Q_{100} = 0.3*1.75*216.9$$
$$Q_{100} = 113.87 \text{ cfs}$$

From graph:

$$Q_{500} = 130 \text{ cfs}$$

Figure 2, Example 1 taken from Drainage Handbook Culvert Design.



500 year design discharge (yellow) was found by drawing in the calculated Q values vs. the design frequency (red) and plotting a best fit line (green).

Project: **SR 29** By: DMR Date:
Subject: **Time of Concentration, Tc** Check: Date:
Revised: Date:

Existing Conditions
Triple 30" Cross Drain

Sheet Flow

			Segment ID	AB				
1.	Surface description (table 3-1, TR-55)			Grass				
2.	Manning's Roughness coefficient, n (table 3-1, TR-55)			0.13				
3.	Two year 24 hour rainfall, P2		in	4.50				
4.	Flow length, L (total L< 300 ft)		ft	300				
5.	Land slope , s	Begin Elev.	ft	35.00				
		End Elev.	ft	34.80				
	Slope = (E1-E2)/L	Slope	ft/ft	0.001				
6.	Tt = (0.007*(nL)^0.8)/((P2^0.5)(s^0.4)) * 60	Compute Tt	min.	69.2	+		=	69.2

Shallow Concentrated Flow

	Grass	Segment ID		BD				
7.	Surface description (paved or unpaved)			Unpaved				
	Velocity Coefficient K (Paved = 20.328, Unpaved = 16.1345)			16.1345				
8.	Flow length, L		ft	3700				
9.	Watercourse slope, s	Begin Elev.	ft	34.8				
		End Elev.	ft	32.5				
	Slope = (E1-E2)/L	Slope	ft/ft	0.001				
10.	Average velocity, V (V = K*S^0.5)		ft/s	0.40				
11.	Tt = L/(60*V)	Compute Tt	min.	153.3	+		=	153.3

Channel Flow (Ditch)

			Segment ID					
12.	Hydraulic radius, R = A / WP (Depth of Flow)		ft					
13.	Flow length, L		ft					
14.	Slope, s	Begin Elev.	ft					
		End Elev.	ft					
	Slope = (E1-E2)/L	Slope	ft/ft					
15.	Manning's roughness coefficient, N (table 3-1, TR-55)							
16.	V = (1.49*R^.67*s^0.5)/N		ft/s					
17.	Tt = L/(60*V)	Compute Tt	min.				=	0.0

18.	Total of 6, 11 and 17	min.		=	222.5
	Minimum Time of Concentration	min.	10.0		
	Time of Concentration	min.			222.5
		hr			3.71

SR 29 – Existing Triple 30" Cross Drain

Project Notes

Project Title: Drainage Complaint SR 29

Designer: EC

Project Date: Monday, August 03, 2009

Notes: The roadway overtops at a flow rate of 30.42 cfs. This is below the flow rate for the 25 year design frequency. The cross drain is undersized. All elevations were taken from old plans.

Table 1 - Summary of Culvert Flows at Crossing: Triple 30" Cross Drain

Headwater Elevation (ft)	Total Discharge (cfs)	Culvert 1 Discharge (cfs)	Roadway Discharge (cfs)	Iterations
36.10	94.35	70.51	23.89	5
36.14	97.91	72.05	25.85	3
36.17	101.48	73.55	27.91	3
36.20	104.11	74.65	29.44	3
36.24	108.61	76.48	32.10	3
36.28	112.18	77.90	34.25	3
36.31	115.74	79.28	36.44	3
36.35	119.30	80.63	38.66	3
36.38	122.87	81.94	40.90	3
36.42	126.44	83.23	43.18	3
36.45	130.00	84.47	45.50	3

*Highlighted values represent the 25 year, 50 year, and 500 year design frequencies.

Table 2 - Culvert Summary Table: Culvert 1

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
94.35	70.51	36.10	2.600	6.021	4-FFf	2.500	1.645	2.500	5.220	4.788	0.000
97.91	72.05	36.14	2.641	6.056	4-FFf	2.500	1.664	2.500	5.220	4.892	0.000
101.48	73.55	36.17	2.682	6.092	4-FFf	2.500	1.682	2.500	5.220	4.994	0.000
104.11	74.65	36.20	2.712	6.118	4-FFf	2.500	1.696	2.500	5.220	5.069	0.000
108.61	76.48	36.24	2.763	6.163	4-FFf	2.500	1.718	2.500	5.220	5.194	0.000
112.18	77.90	36.28	2.803	6.198	4-FFf	2.500	1.736	2.500	5.220	5.290	0.000
115.74	79.28	36.31	2.843	6.233	4-FFf	2.500	1.752	2.500	5.220	5.383	0.000
119.30	80.63	36.35	2.882	6.267	4-FFf	2.500	1.766	2.500	5.220	5.475	0.000
122.87	81.94	36.38	2.920	6.302	4-FFf	2.500	1.779	2.500	5.220	5.564	0.000
126.44	83.23	36.42	2.958	6.336	4-FFf	2.500	1.792	2.500	5.220	5.652	0.000
130.00	84.47	36.45	2.996	6.370	4-FFf	2.500	1.804	2.500	5.220	5.736	0.000

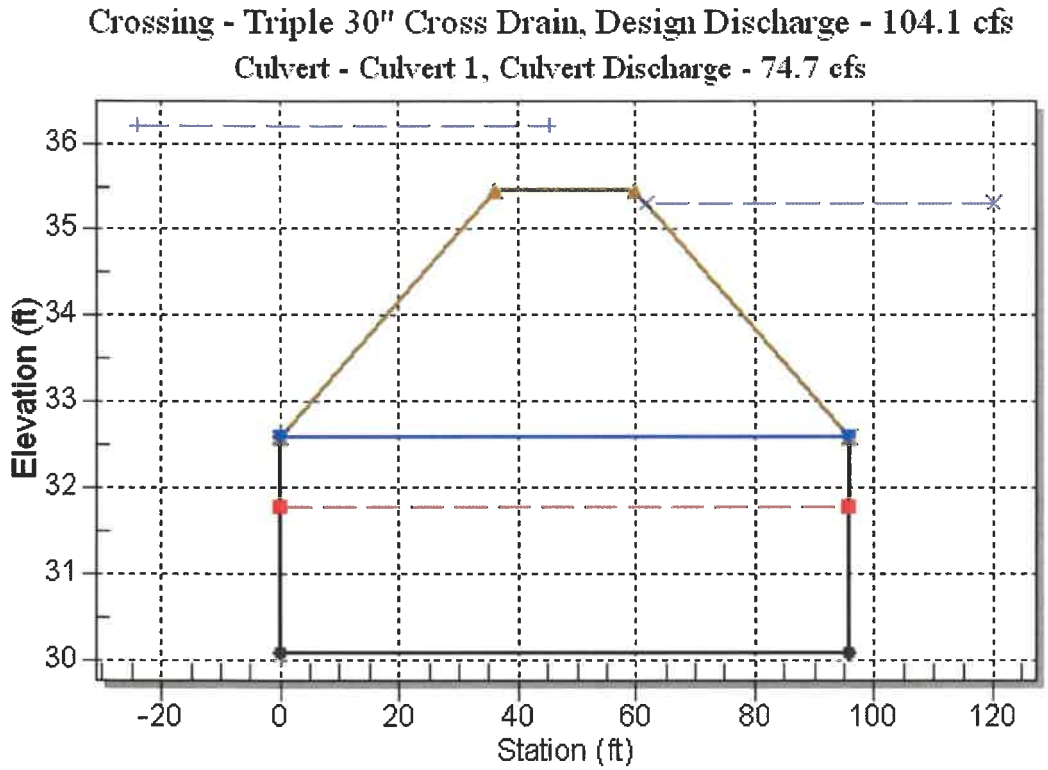
****

Inlet Elevation (invert): 30.08 ft, Outlet Elevation (invert): 30.08 ft

Culvert Length: 96.00 ft, Culvert Slope: 0.0000

****

Water Surface Profile Plot for Culvert: Culvert 1



Site Data - Culvert 1

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 30.08 ft (SR 78, Job No. 0504-201, Glades County, Fiscal Year 1956)

Outlet Station: 96.00 ft (Straight Line Diagrams 05090000)

Outlet Elevation: 30.08 ft (SR 78, Job No. 0504-201, Glades County, Fiscal Year 1956)

Number of Barrels: 3

Culvert Data Summary - Culvert 1

Barrel Shape: Circular

Barrel Diameter: 2.50 ft

Barrel Material: Concrete

Barrel Manning's n: 0.0120

Inlet Type: Conventional

Inlet Edge Condition: Square Edge with Headwall

Inlet Depression: None

Tailwater Channel Data - Triple 30" Cross Drain

Tailwater Channel Option: Enter Constant Tailwater Elevation

Constant Tailwater Elevation: 35.30 ft (SR 78, Job No. 0504-201, Glades County, Fiscal Year 1956)

Roadway Data for Crossing: Triple 30" Cross Drain

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 15.00 ft

Crest Elevation: 35.45 ft (SR 78, Job No. 0504-201, Glades County, Fiscal Year 1956)

Roadway Surface: Paved

Roadway Top Width: 24.00 ft

SR 29

Triple 36" Pipe

From Drainage Map: Total area is 123.1 Acres
Project is located in Zone 8.
Design Frequency is 50 years.
Time of concentration is 2.7 hours.
Area is grass and dirt and very flat, therefore the runoff coeficient is 0.3

Rational Method

$$Q = CIA$$

Q: Flow Rate (cfs)
C: Runoff Coeficient
I: Rainfall Distribution (in/hr)
A: Area (acres)

Frequency (years)	I (in/hr)	Probability
25	1.80	
50	2.00	0.02
100	2.20	0.01
500		0.002

$Q_{25} = 0.3*1.80*123.1$

$Q_{25} = 66.47$ cfs

$Q_{50} = 0.3*2.00*123.1$

$Q_{50} = 73.86$ cfs

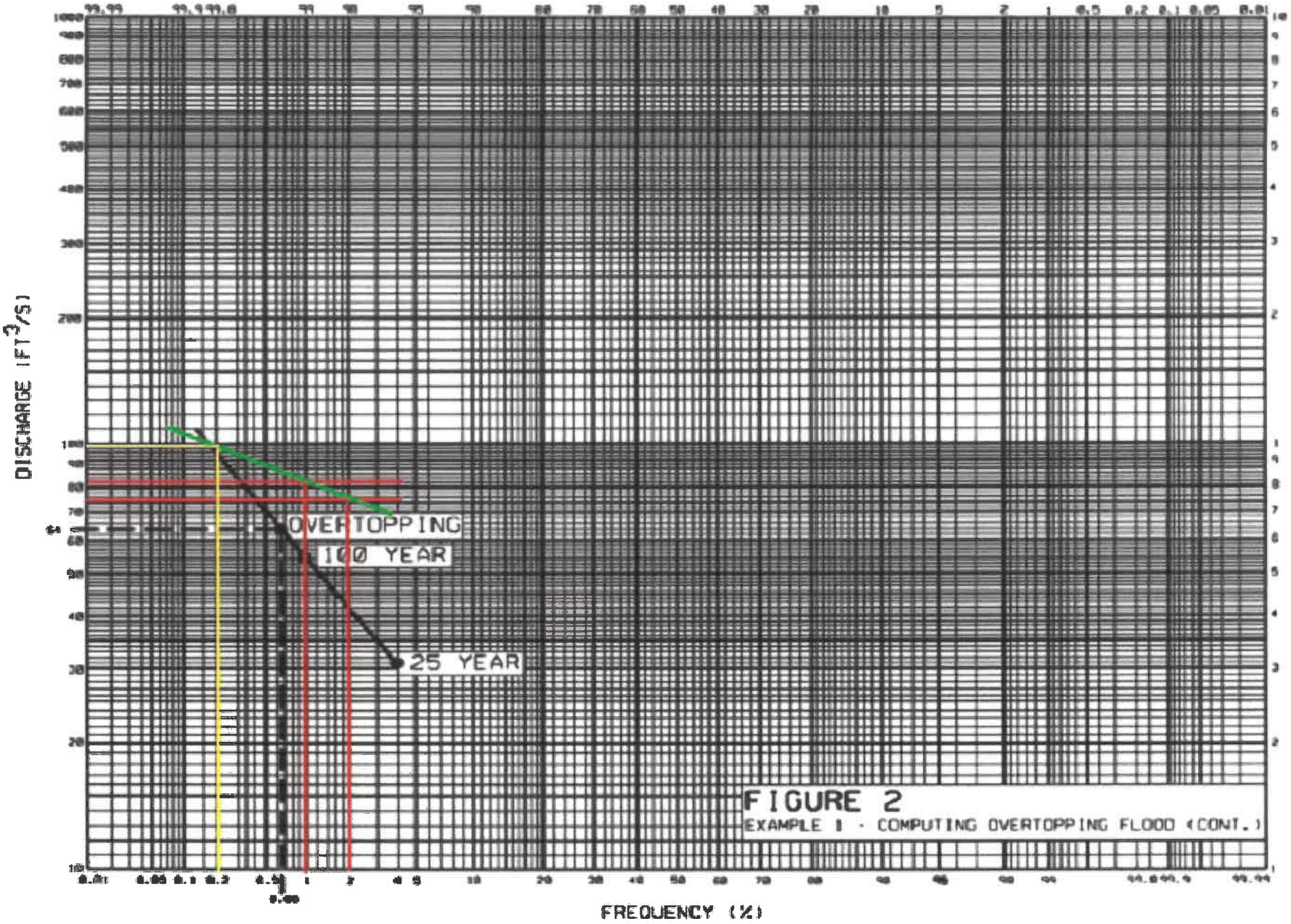
$Q_{100} = 0.3*2.20*123.1$

$Q_{100} = 81.25$ cfs

From graph:

$Q_{500} = 100$ cfs

Figure 2, Example 1 taken from Drainage Handbook Culvert Design.



500 year design discharge (yellow) was found by drawing in the calculated Q values vs. the design frequency (red) and plotting a best fit line (green).

Project: **SR 29** By: DMR Date:
Subject: **Time of Concentration, Tc** Check: Date:
Revised: Date:

Existing Conditions

Sheet Flow

			Segment ID	AB				
1.	Surface description (table 3-1, TR-55)			Grass				
2.	Manning's Roughness coefficient, n (table 3-1, TR-55)			0.13				
3.	Two year 24 hour rainfall, P2		in	4.50				
4.	Flow length, L (total L< 300 ft)		ft	300				
5.	Land slope , s	Begin Elev.	ft	35.00				
		End Elev.	ft	34.50				
	Slope = (E1-E2)/L	Slope	ft/ft	0.002				
6.	Tt = (0.007*(nL)^0.8)/((P2^0.5)(s^0.4)) * 60	Compute Tt	min.	47.9	+		=	47.9

Shallow Concentrated Flow

	Grass	Segment ID		BD				
7.	Surface description (paved or unpaved)			Unpaved				
	Velocity Coefficient K (Paved = 20.328, Unpaved = 16.1345)			16.1345				
8.	Flow length, L		ft	2700				
9.	Watercourse slope, s	Begin Elev.	ft	34.5				
		End Elev.	ft	32.9				
	Slope = (E1-E2)/L	Slope	ft/ft	0.001				
10.	Average velocity, V (V = K*S^0.5)		ft/s	0.39				
11.	Tt = L/(60*V)	Compute Tt	min.	114.6	+		=	114.6

Channel Flow (Ditch)

		Segment ID						
12.	Hydraulic radius, R = A / WP (Depth of Flow)		ft					
13.	Flow length, L		ft					
14.	Slope, s	Begin Elev.	ft					
		End Elev.	ft					
	Slope = (E1-E2)/L	Slope	ft/ft					
15.	Manning's roughness coefficient, N (table 3-1, TR-55)							
16.	V = (1.49*R^.67*s^0.5)/N		ft/s					
17.	Tt = L/(60*V)	Compute Tt	min.				=	0.0

18.	Total of 6, 11 and 17		min.		=	162.5
	Minimum Time of Concentration		min.	10.0		
	Time of Concentration		min.			162.5
			hr			2.71

SR 29 – Existing Triple 36" Cross Drain

Project Notes

Project Title: Drainage Complaint SR 29

Designer: EC

Project Date: Monday, August 03, 2009

Notes: The roadway overtops at a flow rate of 193.86 cfs which is well beyond the flow rate for the 500 year design frequency. This cross drain seems to be sized properly. All elevations were taken from old plans.

Table 1 - Summary of Culvert Flows at Crossing: Triple 36" Cross Drain

Headwater Elevation (ft)	Total Discharge (cfs)	Culvert 1 Discharge (cfs)	Roadway Discharge (cfs)	Iterations
33.81	66.47	66.47	0.00	1
33.85	69.82	69.82	0.00	1
33.88	73.18	73.18	0.00	1
33.89	73.86	73.86	0.00	1
33.96	79.88	79.88	0.00	1
34.00	83.23	83.23	0.00	1
34.04	86.59	86.59	0.00	1
34.08	89.94	89.94	0.00	1
34.12	93.29	93.29	0.00	1
34.17	96.65	96.65	0.00	1
34.22	100.00	100.00	0.00	1

*Highlighted values represent the 25 year, 50 year, and 500 year design frequencies.

Table 2 - Culvert Summary Table: Culvert 1

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
66.47	66.47	33.81	2.237	3.192	7-M1t	2.605	1.513	2.960	2.880	3.156	0.000
69.82	69.82	33.85	2.305	3.229	3-M2t	3.000	1.550	2.960	2.880	3.316	0.000
73.18	73.18	33.88	2.372	3.263	3-M2t	3.000	1.587	2.960	2.880	3.475	0.000
73.86	73.86	33.89	2.386	3.270	3-M2t	3.000	1.594	2.960	2.880	3.507	0.000
79.88	79.88	33.96	2.504	3.337	7-M2t	3.000	1.661	2.960	2.880	3.793	0.000
83.23	83.23	34.00	2.569	3.377	7-M2t	3.000	1.698	2.960	2.880	3.953	0.000
86.59	86.59	34.04	2.634	3.418	7-M2t	3.000	1.735	2.960	2.880	4.112	0.000
89.94	89.94	34.08	2.699	3.460	7-M2t	3.000	1.771	2.960	2.880	4.271	0.000
93.29	93.29	34.12	2.764	3.505	7-M2t	3.000	1.807	2.960	2.880	4.430	0.000
96.65	96.65	34.17	2.829	3.550	7-M2t	3.000	1.838	2.960	2.880	4.589	0.000
100.00	100.00	34.22	2.894	3.598	7-M2t	3.000	1.870	2.960	2.880	4.749	0.000

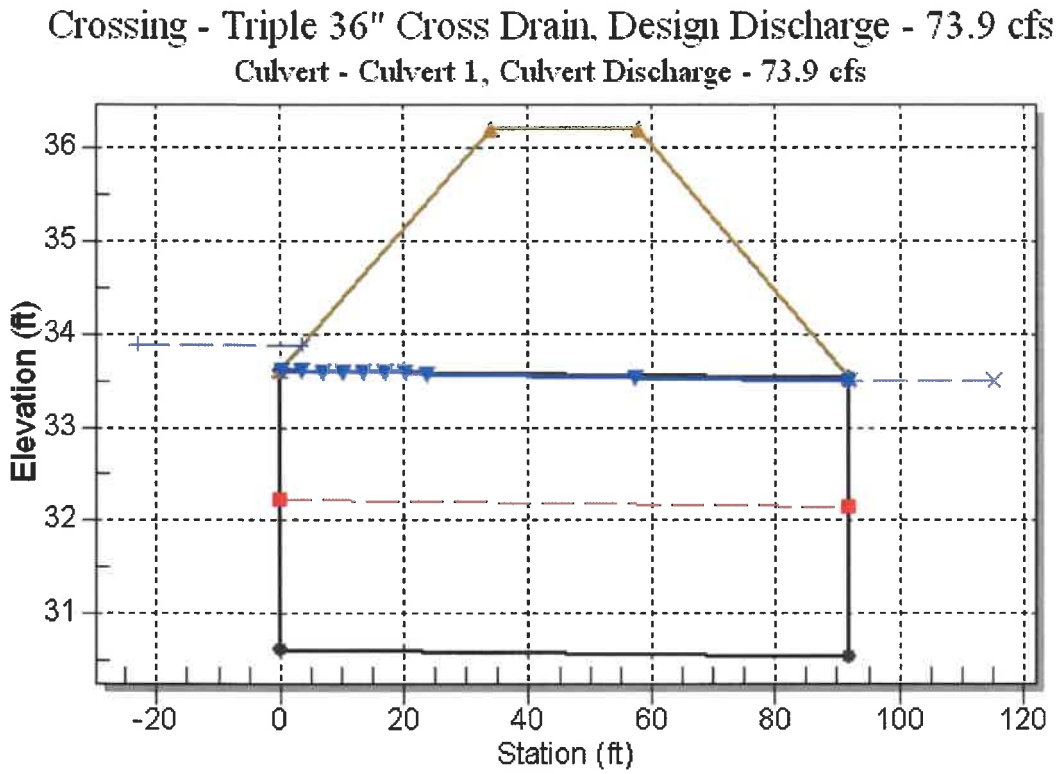
****

Inlet Elevation (invert): 30.62 ft, Outlet Elevation (invert): 30.54 ft

Culvert Length: 92.00 ft, Culvert Slope: 0.0009

****

Water Surface Profile Plot for Culvert: Culvert 1



Site Data - Culvert 1

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 30.62 ft

Outlet Station: 92.00 ft

Outlet Elevation: 30.54 ft

Number of Barrels: 3

Culvert Data Summary - Culvert 1

Barrel Shape: Circular

Barrel Diameter: 3.00 ft

Barrel Material: Concrete

Barrel Manning's n: 0.0120

Inlet Type: Conventional

Inlet Edge Condition: Square Edge with Headwall

Inlet Depression: None

Tailwater Channel Data - Triple 36" Cross Drain

Tailwater Channel Option: Enter Constant Tailwater Elevation

Constant Tailwater Elevation: 33.50 ft (design highwater from historical plans)

Roadway Data for Crossing: Triple 36" Cross Drain

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 20.00 ft

Crest Elevation: 36.20 ft

Roadway Surface: Paved

Roadway Top Width: 24.00 ft

SR 29 – Proposed Quadruple 48" Cross Drain

Project Notes

Project Title: Drainage Complaint SR 29

Designer: EC

Project Date: Monday, August 03, 2009

Notes: The roadway would overtop at a flow rate of 113.3 cfs if this scenario were used. This falls between the 50 year and 100 year design floods and would be acceptable.

Table 1 - Summary of Culvert Flows at Crossing: Quadruple 48" Cross Drain

Headwater Elevation (ft)	Total Discharge (cfs)	Culvert 1 Discharge (cfs)	Roadway Discharge (cfs)	Iterations
35.40	94.35	94.35	0.00	1
35.41	97.91	97.91	0.00	1
35.42	101.48	101.48	0.00	1
35.43	104.11	104.11	0.00	1
35.44	108.61	108.61	0.00	1
35.45	112.18	112.18	0.00	1
35.46	115.74	115.74	0.02	3
35.47	119.30	119.25	0.09	3
35.48	122.87	122.73	0.18	3
35.49	126.44	126.17	0.30	3
35.50	130.00	129.71	0.44	3

*Highlighted values represent the 25 year, 50 year, and 500 year design frequencies.

Table 2 - Culvert Summary Table: Culvert 1

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
94.35	94.35	35.40	1.985	5.324	4-FFf	4.000	1.421	4.000	5.220	1.877	0.000
97.91	97.91	35.41	2.030	5.332	4-FFf	4.000	1.450	4.000	5.220	1.948	0.000
101.48	101.48	35.42	2.077	5.340	4-FFf	4.000	1.478	4.000	5.220	2.019	0.000
104.11	104.11	35.43	2.111	5.347	4-FFf	4.000	1.499	4.000	5.220	2.071	0.000
108.61	108.61	35.44	2.168	5.358	4-FFf	4.000	1.536	4.000	5.220	2.161	0.000
112.18	112.18	35.45	2.213	5.367	4-FFf	4.000	1.564	4.000	5.220	2.232	0.000
115.74	115.74	35.46	2.257	5.377	4-FFf	4.000	1.593	4.000	5.220	2.303	0.000
119.30	119.25	35.47	2.300	5.386	4-FFf	4.000	1.617	4.000	5.220	2.372	0.000
122.87	122.73	35.48	2.342	5.396	4-FFf	4.000	1.639	4.000	5.220	2.442	0.000
126.44	126.17	35.49	2.383	5.406	4-FFf	4.000	1.662	4.000	5.220	2.510	0.000
130.00	129.71	35.50	2.424	5.417	4-FFf	4.000	1.684	4.000	5.220	2.581	0.000

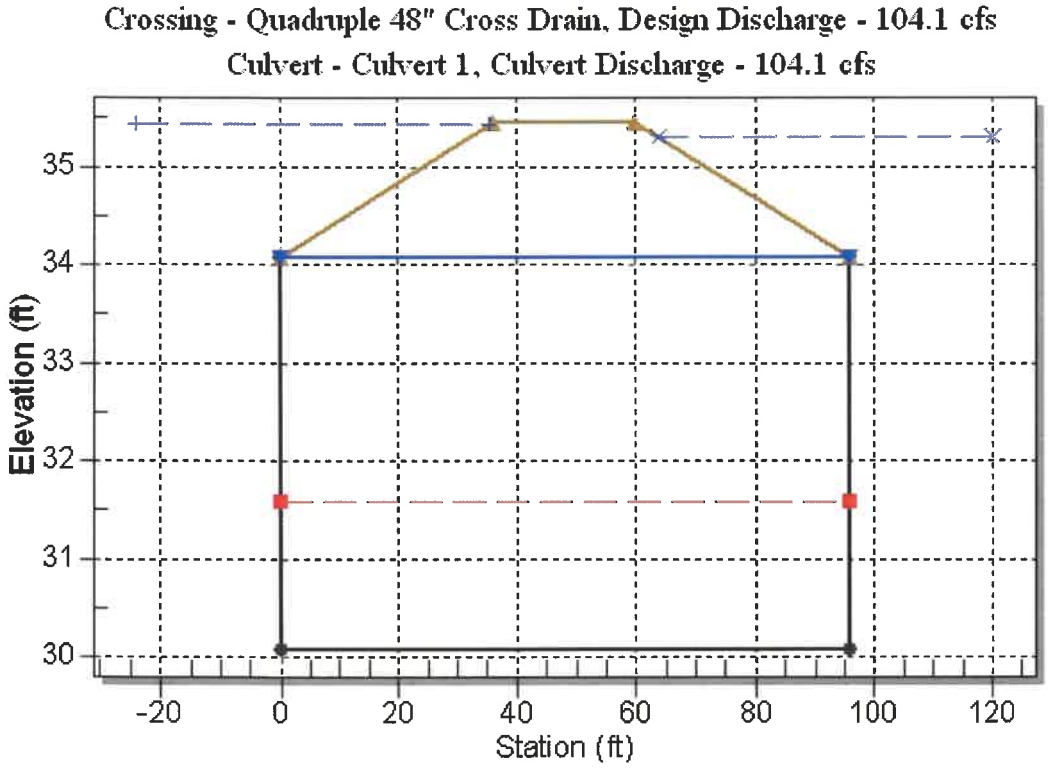
****

Inlet Elevation (invert): 30.08 ft, Outlet Elevation (invert): 30.08 ft

Culvert Length: 96.00 ft, Culvert Slope: 0.0000

****

Water Surface Profile Plot for Culvert: Culvert 1



Site Data - Culvert 1

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 30.08 ft (SR 78, Job No. 0504-201, Glades County, Fiscal Year 1956)

Outlet Station: 96.00 ft (Straight Line Diagrams 05090000)

Outlet Elevation: 30.08 ft (SR 78, Job No. 0504-201, Glades County, Fiscal Year 1956)

Number of Barrels: 4

Culvert Data Summary - Culvert 1

Barrel Shape: Circular

Barrel Diameter: 4.00 ft

Barrel Material: Concrete

Barrel Manning's n: 0.0120

Inlet Type: Conventional

Inlet Edge Condition: Square Edge with Headwall

Inlet Depression: None

Tailwater Channel Data - Quadruple 48" Cross Drain

Tailwater Channel Option: Enter Constant Tailwater Elevation

Constant Tailwater Elevation: 35.30 ft (SR 78, Job No. 0504-201, Glades County, Fiscal Year 1956)

Roadway Data for Crossing: Quadruple 48" Cross Drain

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 15.00 ft

Crest Elevation: 35.45 ft (SR 78, Job No. 0504-201, Glades County, Fiscal Year 1956)

Roadway Surface: Paved

Roadway Top Width: 24.00 ft

SR 29

Project is located in Zone 8.
Area is grass and dirt and very flat, therefore the runoff coeficient is 0.3
Areas were taken from the drainage map

Rational Method

Existing flow rates generated from runoff

$$Q = CIA$$

Q: Flow Rate (cfs)
C: Runoff Coeficient, **0.3**
I: Rainfall Distribution (in/hr), **1.1**
A: Area (acres), **612.9**

54" Side drain pipe

$Q_{10} = 0.3*1.1*612.9$

$Q_{10} = 202.3$ cfs

Manning's Equation

Side drain pipe capacity

$$Q = 1.49/n\ (A)(R)^{2/3}(S)^{1/2}$$

Q: Flow Rate (cfs)
n: Roughness Coefficient
A: Area of Pipe (ft^2)
R: Hydraulic Raduis (ft)
S: Slope of Pipe

Pipe Size	Area, A	Wetted Perimeter, WP	Hydraulic Radius, R	n	S	Q (per Barrel)
54.00	**15.90**	**14.13**	**1.13**	**0.012**	**0.001**	**67.52**
60.00	19.63	15.70	1.25	0.012	0.001	89.42
66.00	23.75	17.27	1.38	0.012	0.001	115.29

*existing pipe size is bolded

Project: **SR 29** By: DMR Date:
Subject: **Time of Concentration, Tc** Check: Date:
Revised: Date:

Existing Conditions
Double 54" Side Drain

Sheet Flow

			Segment ID	AB				
1.	Surface description (table 3-1, TR-55)			Grass				
2.	Manning's Roughness coefficient, n (table 3-1, TR-55)			0.13				
3.	Two year 24 hour rainfall, P2		in	4.50				
4.	Flow length, L (total L< 300 ft)		ft	300				
5.	Land slope , s	Begin Elev.	ft	48.00				
		End Elev.	ft	46.00				
	Slope = (E1-E2)/L	Slope	ft/ft	0.007				
6.	Tt = (0.007*(nL)^0.8)/((P2^0.5)(s^0.4)) * 60	Compute Tt	min.	27.5	+		=	27.5

Shallow Concentrated Flow

	Grass	Segment ID		BD				
7.	Surface description (paved or unpaved)			Unpaved				
	Velocity Coefficient K (Paved = 20.328, Unpaved = 16.1345)			16.1345				
8.	Flow length, L		ft	8300				
9.	Watercourse slope, s	Begin Elev.	ft	46.0				
		End Elev.	ft	35.0				
	Slope = (E1-E2)/L	Slope	ft/ft	0.001				
10.	Average velocity, V (V = K*S^0.5)		ft/s	0.59				
11.	Tt = L/(60*V)	Compute Tt	min.	235.5	+		=	235.5

Channel Flow (Ditch)

		Segment ID						
12.	Hydraulic radius, R = A / WP (Depth of Flow)		ft					
13.	Flow length, L		ft					
14.	Slope, s	Begin Elev.	ft					
		End Elev.	ft					
	Slope = (E1-E2)/L	Slope	ft/ft					
15.	Manning's roughness coefficient, N (table 3-1, TR-55)							
16.	V = (1.49*R^.67*s^0.5)/N		ft/s					
17.	Tt = L/(60*V)	Compute Tt	min.				=	0.0

18.	Total of 6, 11 and 17	min.		=	263.1
	Minimum Time of Concentration	min.	10.0		
	Time of Concentration	min.			263.1
		hr			4.38

Appendix H
Analysis of Flooding Report

ANALYSIS OF FLOODING PROBLEM FOR S.R. 29 WEST OF CHAPARRAL SLOUGH

05090 Glade Co.

Financial Project ID 198356-1-32-04
Work Program Item No. 1119960
S.R. 29 between S.R. 78 and Chaparral Slough

Prepared for:

The Florida Department of Transportation
District One
801 North Broadway
Bartow, FL 33831-12349

Prepared by:

PBS&J, Inc.
5300 W. Cypress Street
Suite 300
Tampa, FL 33607-1066

October 1999

Larry Dadley
10/26/99

TABLE OF CONTENTS

INTRODUCTION

The project is located in Glades County, just east of the City of Labelle. It is a two lane rural highway constructed in the late 1940's. See Appendix D for the original drainage map, dated 1947 and a drainage map for SR 78 dated 1956 which includes this section of roadway. As noted on the original map, the section of roadway between Lone Pine Creek Bridge and 600 ft west of Chaparral Slough Bridge (between Stations 366+00 and 426+00) is flat, with a profile elevation of 35.4. This section of roadway has flooded twice since sometime in the early 1970's, see Appendix B for flooding correspondence. See Appendix A for photographs of a flooding event on March 20, 1998 and a near flood event on February 18, 1998.

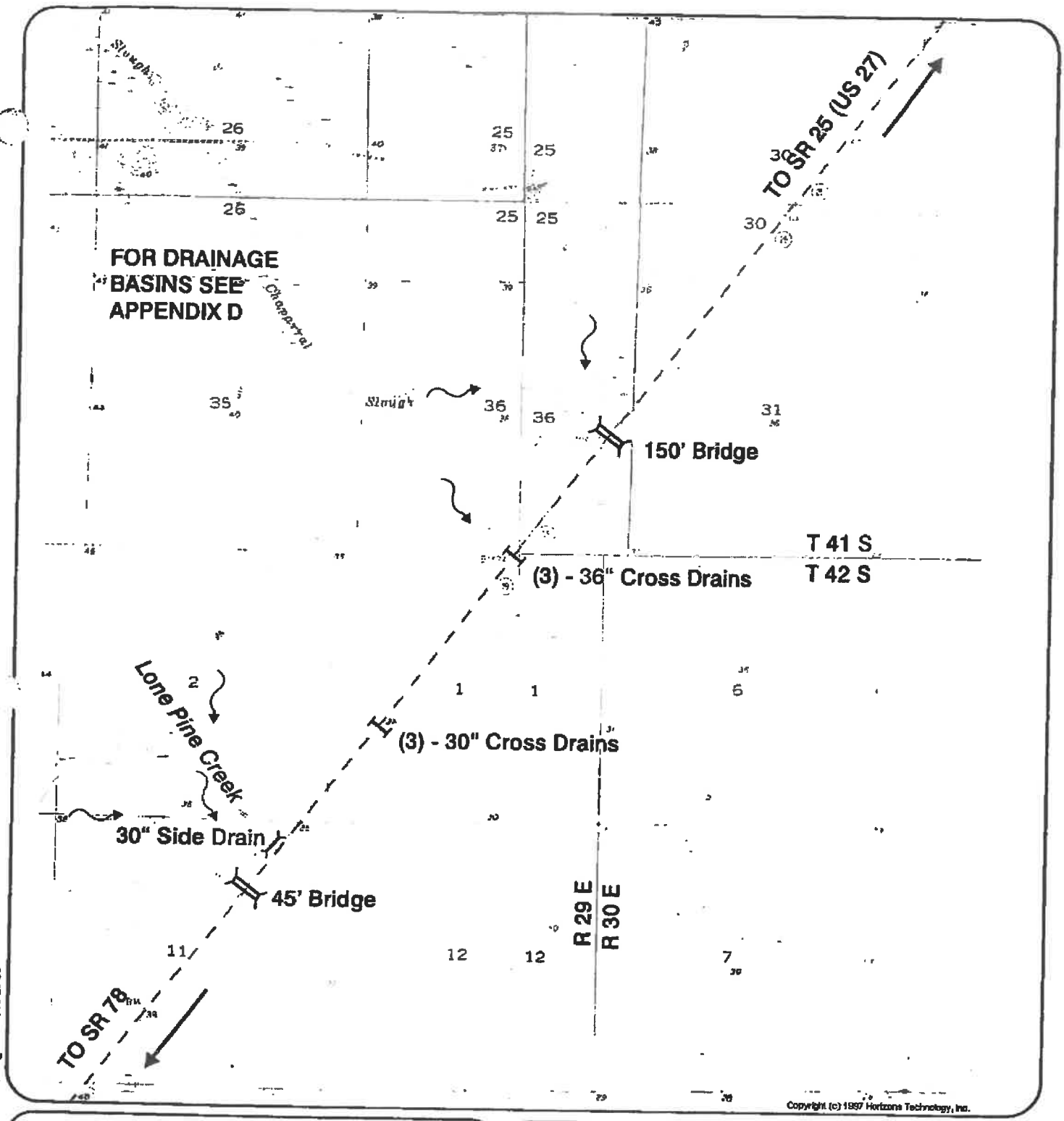
The intent of this engineering analysis is to determine the cause of the flooding and provide recommendations regarding the most cost effective remedy.

EXISTING DRAINAGE PATTERNS

Drainage is generally toward the south and consists of shallow sloughs, marshes, and wetlands. Because the terrain is so flat, flow is at low velocity and the difference between flood stages and normal wet season water levels is only a few feet. There is significant storage within the basins. Drainage structures within and near the flooding area consist of a 45' bridge at Lone Pine Creek, a 150' bridge at Chaparral Slough, (3) - 30" cross drain pipes at approximately Sta. 354+00, (3) – 36" cross drain pipes at approximately Sta. 392+00, and a 30" side drain pipe under a drive approximately 700 ft northeast of Lone Pine Creek Bridge. All structures except the side drain and (3) - 36" pipe were constructed on the original project. Time of construction and reason for the (3) - 36" pipes are unknown.

The original roadway project provided a large R/W ditch on the northwest side of SR 29 between Lone Pine Creek Bridge and a slough approximately 1500 ft northeast of the bridge. It connected the slough, which drains a 2618 acre basin (see original project drainage map), with Lone Pine Creek Bridge. The old plans show the R/W ditch begins at station 315+70.50 and ends at approximately 325+00. The ditch has a 20 ft bottom width and a 0.15% profile grade (Elv 28.65 @ Sta 316+00 to Elv 30.00 @ Sta 325+00).

During flood conditions, a large area northwest of SR 29 stores runoff and rises to elevation 35.4 before overtopping occurs. There is a slight gradient on the pool due to its movement toward the southwest.



LEGEND

FLORIDA DEPARTMENT OF TRANSPORTATION

S.R. 29
STUDY
West of Chaparral Slough
Glades County, Florida

EXISTING DRAINAGE PATTERNS

FIGURE 1

COREL\DRAINAGE '9 GLADES COUNTY\REPORT\FIG_1.CDR\10-25-99

POTENTIAL CAUSES OF FLOODING

A review of the area drainage was performed using the following sources:

Two field reviews. (August 26, 1999 and September 7, 1999)
Drainage maps for SR 29, Project 05090-1 (date 1947) and SR 78, Project 05040- (date 1956)
USGS Quadrangle maps
Photographs of flood events.
Interviews with Talbert Melton (FDOT Maintenance - Labelle), George Vialas (Engineer for Lykes Bros.), Joseph Phillips (FDOT SWAO Drainage Engineer)
District One Flood Inventory, 1996
Bridge Hydraulic Report for Lone Pine Creek Bridge, by JMI Engineers, March 7, 1996
Aerial reconnaissance, August 29, 1999

Potential causes and their evaluations are listed below:

- The flow capacity of Chaparral Slough Bridge could be significantly reduced by partial blockage resulting from accumulation of Water Hyacinths. This could cause diversion of flow to the southwest and overload the pipes and Lone Pine Creek bridge. *A review of the photograph taken at Chaparral Slough bridge during flooding conditions on February 18, 1998 shows low velocities through the bridge, thus significant head losses would not be possible.*

- The large R/W ditch northeast of Lone Pine Creek Bridge is restricted by a 30" side drain pipe under a driveway, approximately 700 ft from the bridge. This restriction could be contributing to the flooding problem in two ways. It could increase the head losses, which will cause immediate and direct impacts to flood stages and/or it could indirectly raise flood stages by raising the seasonal high waters, thus reducing available storage. *This could be a significant problem, depending on the ratio between the flow carried in the R/W ditch and that carried overland in shallow depth flow. It is obvious that the 30" pipe violates the design intent of the R/W ditch, since its capacity is so much less than the ditch.*

- The water elevation observed on August 26, 1999 at Chaparral Slough was approximately 1 ft below the bottom slab of the bridge. This is estimated to be

elevation 34.0, which is the same elevation of the highwater shown on the old drainage map. Since no significant rainfall had occurred within several days it suggest the seasonal high water stages downstream of Chaparral Slough Bridge may have been raised through land alterations. This would raise flood elevations for two reasons, bridge hydraulics and the loss of storage. *No land alterations south of the bridge were observed during aerial reconnaissance.*

- Chaparral Slough may overtop its western basin boundary during flood stages and increase flow to the (3)–30", (3)–36", and Lone Pine Creek Bridge above that anticipated in the original design. This diversion of flow could be natural or caused by land alteration. *Survey efforts and comprehensive modeling will be required to determine if this is occurring, however it is not warranted at this time. It is obvious that the discharge to the pipes and Lone Pine Creek Bridge exceed their capacity, regardless of source.*

- The location of the (3)-30" pipes offers a more efficient path for removal of flood waters than either Lone Pine Creek or Chaparral Slough. This is apparent from the photographs of flooding. It is obvious that the tailwater stages at this site are 2' to 3' below upstream stages. Low velocities at the bridge, observed during flood events, indicate losses through the bridges are low. If the headwaters are near 35.5, as shown in the photograph, then the tailwaters at the bridges are much closer to the 35.5 than at the pipes. An examination of the USGS Quadrangle map adds further support to the hypothesis that tailwater stages are lower at the pipes than at the two bridges. Based on these facts, the original design may not have been the most hydraulically effective. *Clearly, the most certain remedy for the flood condition is a significant enlargement of the (3)-30" pipes, however such alteration can have far reaching impacts. The increased discharge rate downstream would require concurrence of property owners and the Water Management District.*

RECOMMENDATIONS

Improvements should be implemented in a two step process as follows:

- Replace the 30" side drain pipe in the R/W ditch at approximately Sta 320+22 with 40 ft of double 72" pipes at approximately elevation 28.8. This will provide capacity

which conforms to the original design intent at a relatively economical expense, especially if FDOT Maintenance employees perform the work. This improvement will reduce flood levels in two ways; (1) it will reduce head losses through the side drain and (2) it will draw down water levels more rapidly which, in turn, will increase storage available, and thus will lower flood stages. Benefits provided by this action are unknown without a significant surveying and modeling effort since they depend on the ditch conveyance as compared to overland conveyance. It is more cost effective to invest in the pipe than in the study to predict their benefits.

- Step two is to be implemented if the side drain enlargement does not reduce flooding to an acceptable level. It requires replacement of the (3)-30" cross drain pipes with a box culvert. This modification will involve design, permitting, and possible acquisition of flood rights from downstream property owners.

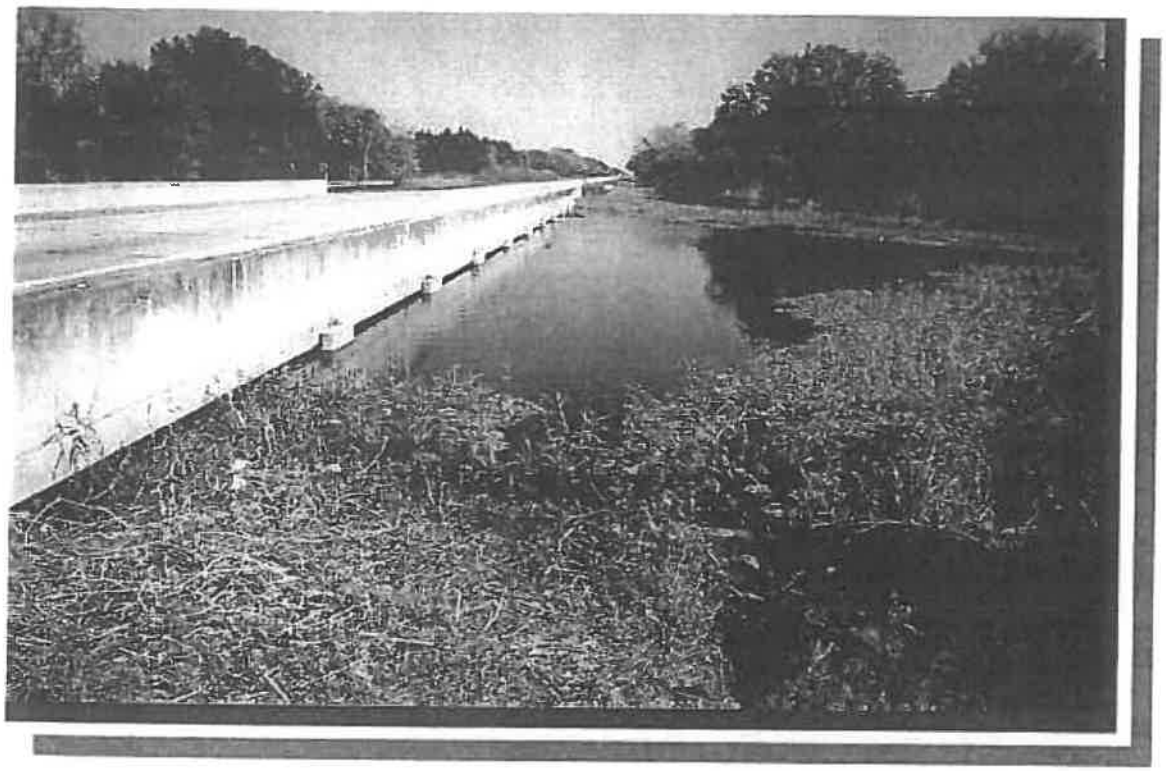
If Step Two cannot be implemented, two options are available, both of which are significantly more expensive:

- Option One requires raising the roadway grade for approximately 2 miles, extending cross drains, and adding 48" cross drains uniformly spaced along the raised segment. Weirs with crest elevations to match existing roadway elevation (35.4) will be affixed to the 48" cross drains to serve as control structures to match existing conditions, i.e. restricted pipe flow up to 35.4 and a large capacity increase above 35.4. This modification can be designed to provide stage-discharge characteristics similar to existing overtopping conditions, thus maintaining existing flow conditions. There are significant construction cost attached to this option.

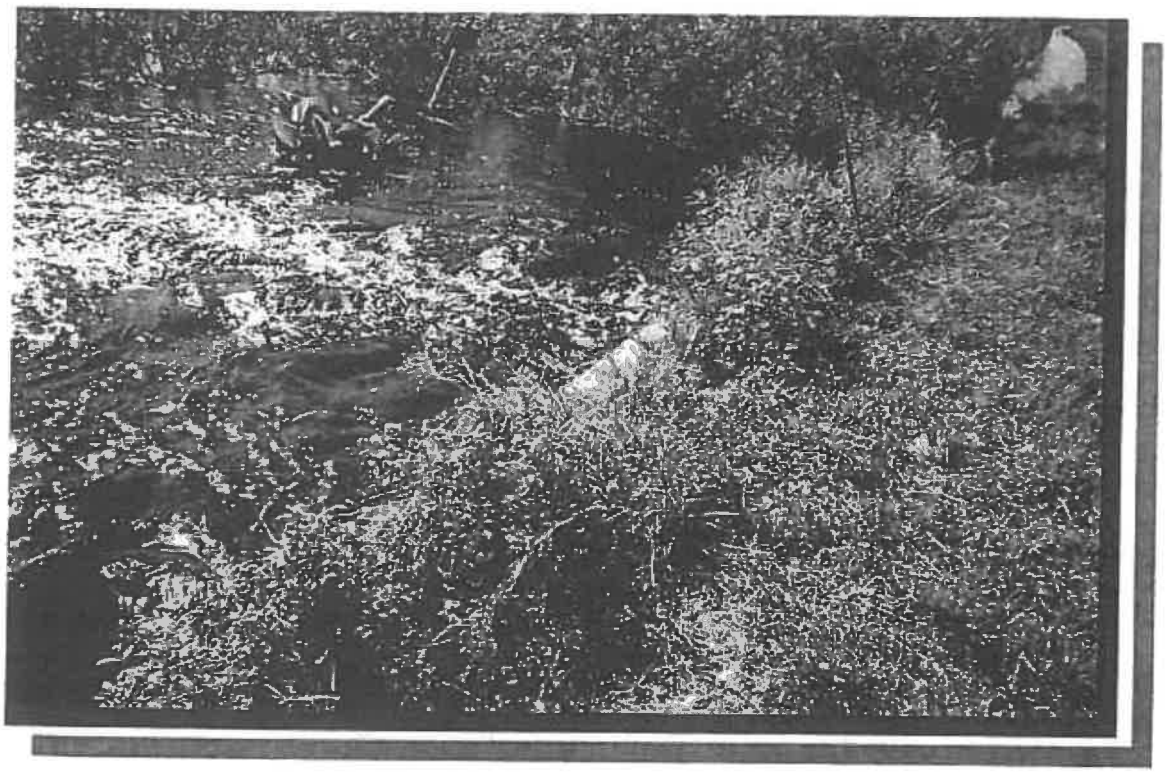
- Option Two will provide a raised berm along the northwest R/W line at elevation 35.4 with openings equivalent to existing pipes. Several 48" cross drains will be provided under the roadway to carry the large berm overtopping flow and distribute it along the southeast R\W line in a manner similar to what happens during existing roadway overtopping. Construction cost will be less than Option One, however it will require a R\W strip along the northwest side in order to provide sufficient width to construct the berm and ditches (one on either side of the berm). Option Two will be more economical than option one because R/W acquisition will involve undeveloped property in one ownership.

APPENDIX A

PHOTOGRAPHS OF FLOODING



LOOKING NORTHEAST ALONG S.R. 29 AT CHAPARRAL SLOUGH BRIDGE

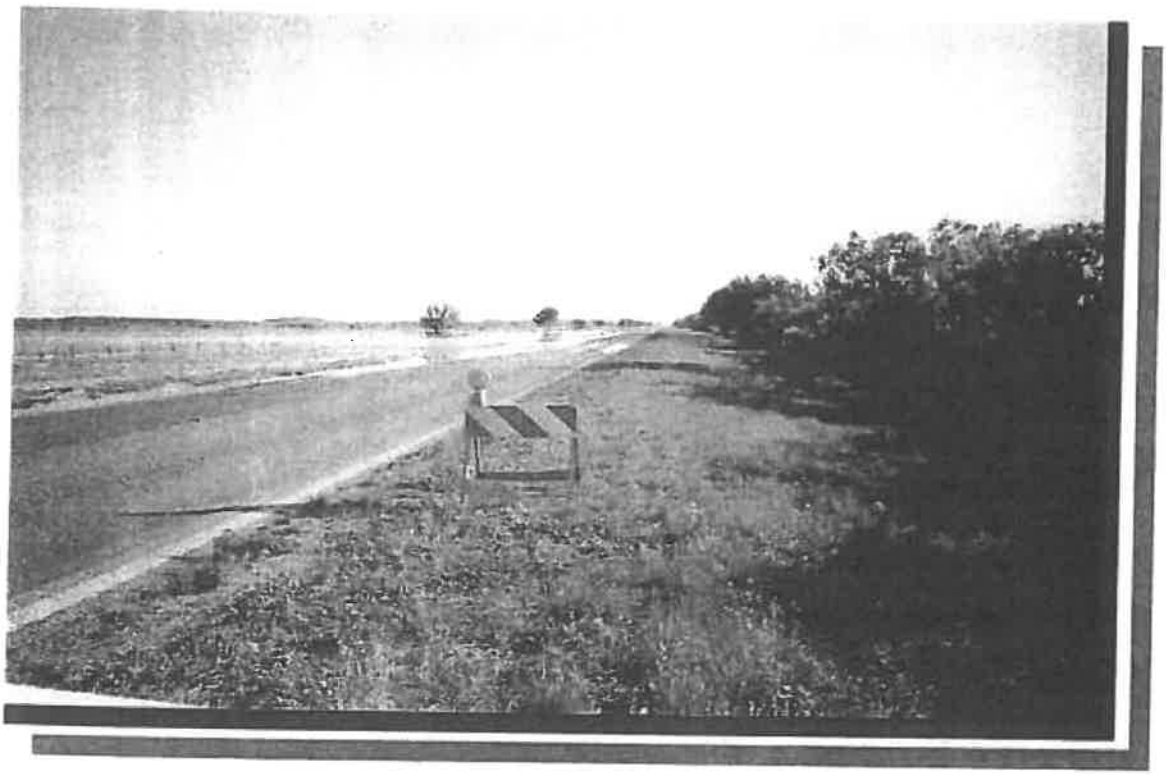


LOOKING SOUTH ALONG S.R. 29 AT (3) 30" RCP APPROXIMATELY STA. 354+00

LOOKING SOUTHWEST ALONG S.R. 29 BETWEEN LONE PINE CREEK AND CHAPARRAL SLOUGH

LOOKING SOUTHWEST ALONG S.R. 29 BETWEEN LONE PINE CREEK AND CHAPARRAL SLOUGH

LOOKING NORTHEAST ALONG S.R. 29 BETWEEN LONE PINE CREEK AND CHAPARRAL SLOUGH



LOOKING NORTHEAST ALONG S.R. 29 BETWEEN LONE PINE CREEK AND CHAPARRAL SLOUGH

APPENDIX B

FLOODING CORRESPONDENCE

TELEPHONE CONVERSATION
MEMORANDUM

DATE: 02/07/96 **PROJECT NO:** 9523

TIME: 10:29 AM **CALL PLACED/~~RECEIVED~~ BY:** Paula

FIRM CALLED: FDOT Maintenance **TELEPHONE #** (941) 674-4027

SPOKE WITH: Talbert Melton

Subject: Flooding on SR29

I asked Mr. Melton specifically about June 1995 when Ken Howard recalls there was a need for barricades on a portion of SR 29 where water was coming onto the roadway. He does not remember ever having to take barricades out there. He said that the water frequently comes up and will quickly runoff the roadway. At times they have gone out and driven fluorescent painted stakes at the edge of the pavement, however they have not had to drive stakes in a while.

He also spoke with field superintendent Robert Crawford who would actually gone out into the field. Mr. Crawford does not remember water over the road or bridges. He did not take barricades out during this event.

The other field superintendent, Wally Thalen, was out of the office but will call when he gets in.

		Project/Proposal
cc:	File, Dave, Art	9523

TELEPHONE CONVERSATION
MEMORANDUM

DATE: 02/07/96 **PROJECT NO:** 9523

TIME: 11:40 AM **CALL ~~PLACED~~/RECEIVED BY:** Paula

FIRM CALLED: FDOT Maintenance **TELEPHONE #** (941) 674-4027

SPOKE WITH: Wallace Thalen

Subject: Flooding on SR29

The area of flooding during June 1995 was at a 36" cross drain located between bridges 050033 and 050035. It is approximately 0.5 - 0.6 miles south of bridge 050033. This is the area that they have the most problems with. During June the water was up to the edge of pavement. It lacked only a few inches to overtop the road. You could not pull off the highway.

Water flows 'real good' through bridge 050035. It washes sand up on the east side of the highway. He does not remember the water level ever coming up to the bridge.

		Project/Proposal
cc:	File, Dave, Art	9523

TELEPHONE CONVERSATION
MEMORANDUM

DATE: 02/07/96 **PROJECT NO:** 9523

TIME: 09:23 AM **CALL PLACED/~~RECEIVED~~ BY:** Paula

FIRM CALLED: Glades Co. Emergency Management **TELEPHONE #** (941) 946-1217

SPOKE WITH: Ken Howard, Director

Subject: Flooding on SR29

I called Mr. Howard about the flooding which occurred around June 23, 1995 (per Art de Laski). He stated that the road was never completely closed during this time. There was an area where the water was over the road, however the road was still passible. A Florida Highway Patrol first noticed the water on the road and notified the EMA, who notified the Glades Co. Road Department who put up barricades and warnings for travelors.

Mr. Howard stated that this area was located about 5 miles south of the intersection of SR 29 and US 27. He said that it was not at a bridge, it was only the roadway. The water receded in about 24 hours.

Mr. Howard stated that all this information was his own personal experience. This past year was unusual due to several tropical storms, hurricanes, etc. and there were a lot of areas flooded which usually don't. In the last 7-10 years, he does not remember SR 29 ever overtopping. The EMA does not have detailed records of flooding and road closures. Since this is a state road, he recommended contacting the FDOT Maintenance.

He mentioned contacting Tommy Greenwood, Director of the Glades County Road Department for possibly more information. (941) 946-0771

	Project/Proposal
cc: File, Dave, Art	9523

TELEPHONE CONVERSATION
MEMORANDUM

DATE: 02/23/96 **PROJECT NO:** 9523

TIME: 09:11 AM **CALL PLACED/~~RECEIVED~~ BY:** Paula

FIRM CALLED: Glades Co. Schools **TELEPHONE #** (941) 946-0323 ext. 13

SPOKE WITH: Norman (Sonny) Hughes, Dir. of Transportation

Subject: Flooding on SR 29

Mr. Hughes has been with the Glades Co. School Department for 29 years. Glades Co. School buses travel SR 29 from LaBelle to Palmdale and are not allowed to drive on roads which have water overtopping them. He said that during the period of time he has been with Glades Co., SR 29 has never been blocked for the school buses. He said that there have been other roads which have been blocked but not SR 29.

Project/Proposal

cc: FILE, DFS 9523

TELEPHONE CONVERSATION
MEMORANDUM

DATE: 02/23/96 **PROJECT NO:** 9523

TIME: 10:01 AM **CALL PLACED/~~RECEIVED~~ BY:** Paula

FIRM CALLED: Glades Co. **TELEPHONE #** (941) 946-0533

SPOKE WITH: Jerry Harris, Building Director

Subject: Flooding on SR 29

Mr. Harris is the former Glades Co. Emergency Management Director (1978-1995). He also has been the FEMA Flood Program Administrator since 1982. He was born and raised in Clewiston and considers himself a "Sawgrass Mugrat".

Speaking with Mr. Harris about flooding on SR 29, he mentioned that the only location where they have had trouble on this road is at Chaparral Slough. He recalls that the water has come up very high at this location, enough to damage the roadway base, but has not overtopped the roadway.

He said that during heavy rains water will spread out on both sides of SR 29, and sheetflow across the floodplain approximately 200 square miles. He said that all the water in this area is trying to reach the Caloosahatchee River regardless of the direction it travels.

	Project/Proposal
cc: FILE, DFS	9523

TELEPHONE CONVERSATION
MEMORANDUM

DATE: 02/26/96 **PROJECT NO:** 9523

TIME: 11:59 AM **CALL PLACED/~~RECEIVED~~ BY:** Paula

FIRM CALLED: Glades Co. **TELEPHONE #** (941) 675-0124

SPOKE WITH: David Whiddon. Former Road Department Superintendent

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Subject: Flooding on SR29

Mr. Whiddon was with the road department from 1980-93, prior to Tommy Greenwood. He has lived in Glades County all his life, 48 years.

To his knowledge, SR 29 has never overtopped. He stated that the land to the west of SR 29, north of SR 78 approximately 3-4 miles stays wet for most of the year.

He warned that if the flow was increased through SR 29, this could cause increased flooding at SR 78. He said that the residents on Marshall Field Road get mad every year because of flooding. If we increase the risk of flooding for these residents, he said for us to expect a lawsuit.

He said that during heavy rains, the water already comes up to the edge of pavement on SR 78.

	Project/Proposal
cc: File, Dave, Art	9523

APPENDIX C

HYDRAULIC CALCULATIONS

BSJ

COMP. BY: MDM
CHK. BY: REG
DATE: 9/14/99
SHEET NO:
JOB NO:

SUBJECT: SR 29 - 50_{yr} Flow Rate for Lone Fire Creek

$Q_{50yr} = 598_{cfs}$ (See BHR for SR29 Crossing for Lone Fire Creek Bridge No. 050035, JMI Engineers March 7, 1996)

Drainage Area = 4833 Ac (From original Drainage Map)

Area blocked by Driveway = 2618 Ac
(Existing 30" cmp side Drain)

$$Q_{50yr\ @\ Ex\ 30"cmp} = \frac{2618\ Ac}{4833\ Ac} \times 598_{cfs} = 324\ cfs$$

Size proposed Side Drain for a velocity of 6 fps for 50yr event.

$$Q = V\ A$$

$$A = \frac{Q}{V} = \frac{324}{6} = 54\ ft^2$$

USE (2) - 72" RCP

$$A = 2 \times \frac{6^2}{4} \times 3.142 = 56.6\ ft^2$$

Peak Basin Discharge				
	USGS Regression Equations, Region A		FHWA Regression Equations, Zone 1	
Storm (yr.)	Flow (m^3/m)	Flow (cfs)	Flow (m^3/m)	Flow (cfs)
2	234	138	514	303
50	1015	598	2138	1258
100	1164	685	2498	1470
500	1485	874	N/A	N/A

Table 1. Peak Basin Discharge

The resistance to flow, Manning's "n" coefficients, in the main channel and the flood plain have been calculated using procedures and equations found in the Guide for Selecting Manning's Roughness Coefficients for Natural Channels and Flood Plains, FHWA-TS-84-204. Very high amounts of vegetation, a severe degree of irregularity, and a negligible effect of obstructions in the main channel are factors which effect the resistance to flow. A Manning's Roughness Coefficient of 0.10 was used to account for this resistance to flow in the main channel of Lone Pine Creek (calculations provided in Appendix B).

The Manning's Roughness Coefficients for the flood plain were computed without using the vegetation-density method. Since the roughness is not uniformly distributed across the flood plain it has been subdivided into two sections. These sections include an area with trees and area of pasture (no trees). The computed "n" value for the pasture section is 0.06 and 0.15 for the section with trees (calculations and photographs provided in Appendix B).

Hydraulic Analysis

FHWA's Bridge Waterways Analysis Model (WSPRO) was used to create a hydraulic model of Lone Pine Creek at the crossing of SR 29.

APPENDIX D

DRAINAGE MAPS

Appendix I
Cost Estimate

AIM ENGINEERING & SURVEYING, INC.
5802 Breckenridge Prky.
Tampa, Florida 33610
(813) 627-4144

ENGINEER'S ESTIMATE OF CONSTRUCTION COST

Project Name: SR 29 From North of SR 78 to Chaparral Slough (M.P 4.709 to 6.877) - Ditch Regrading					
County: Glades County					
Engineer of Record: Dawn Ratican, P.E.			AIM Project No: 09-9662		
Type of Estimate: Preliminary Planning (X)	Phase I ( )	Phase II ( )	Phase III ( )	Phase IV ( )	Final ( )
Estimated By: Liz Cashwell			Date: 08/26/09		Spec Year:
Checked By: Dawn Ratican			Date: 08/28/09		

				Estimated Cost	Percent of Total Cost
COMPONENT GROUPS					
200 - ROADWAY				$ 7,930.65	100.00%
			COMPONENT SUB-TOTAL	$ 7,930.65	100.00%
			(101-1) MOBILIZATION (10%)	$ 793.07	10.00%
			(102-1) MAINTENANCE OF TRAFFIC (10%)	$ 793.07	10.00%
			(999-25) CONTINGENCY (Do Not Bid) (25%)	$ 1,982.66	25.00%
			PROJECT GRAND TOTAL =	**$ 11,499.44**	

NOTES : Unit costs were determined from previously bid unit cost averages of Area 9 and Statewide.

Pay Item Number	Item Description	Estimated Quantity	Unit	Unit Cost	Estimated Cost
	ROADWAY				
101-1	Mobilization	1.0	LS	$0.00	$ -
102-1	Maintenance of Traffic	1.0	LS	$0.00	$ -
104-11	Floating Turbidity Barrier	100.0	LF	$5.73	$ 573.00
104-12	Staked Turbidity Barrier	50.0	LF	$5.97	$ 298.50
104-13-1	Silt Fence Staked (Type III)	400.0	LF	$7.60	$ 3,040.00
110-1-1	Clearing & Grubbing	0.75	AC	$551.96	$ 413.97
120-1	Excavation, Regular	350	CY	$1.81	$ 633.50
430-94-2	Desilt Pipe (25" - 36")	656	LF	$4.53	$ 2,971.68
430-94-4	Desilt Pipe (49" - 60")	100.0	LF	$10.60	$ 1,060.00
570-1-2	Turf Complete (Sodding)	3,630	SY	$1.31	$ 4,755.30
				Subtotal = $	**7,930.65**

AIM ENGINEERING & SURVEYING, INC.
5802 Breckenridge Prky.
Tampa, Florida 33610
(813) 627-4144

ENGINEER'S ESTIMATE OF CONSTRUCTION COST

Project Name: SR 29 From North of SR 78 to Chaparral Slough (M.P 4.709 to 6.877) - Culvert Replacement					
County: Glades County					
Engineer of Record: Dawn Ratican, P.E.			AIM Project No: 09-9662		
Type of Estimate: Preliminary Planning (X)	Phase I ( )	Phase II ( )	Phase III ( )	Phase IV ( )	Final ( )
Estimated By: Liz Cashwell			Date: 08/26/09		Spec Year:
Checked By: Dawn Ratican			Date: 08/28/09		

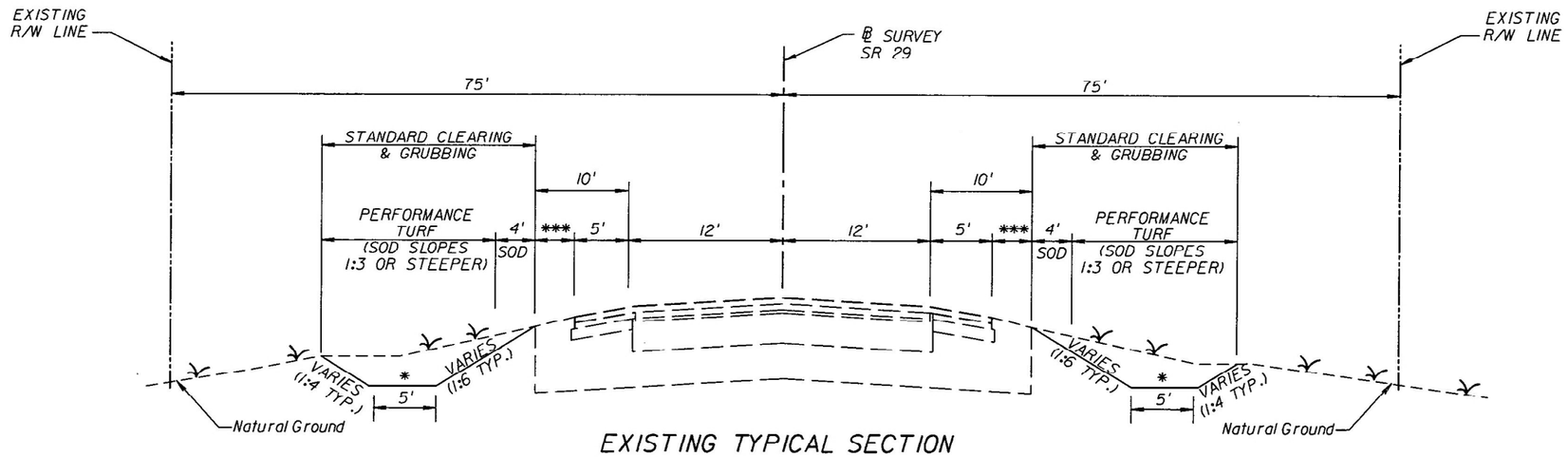
				Estimated Cost	Percent of Total Cost
COMPONENT GROUPS					
200 - ROADWAY				$ 98,798.51	100.00%
			COMPONENT SUB-TOTAL	$ 98,798.51	100.00%
			(101-1) MOBILIZATION (10%)	$ 9,879.85	10.00%
			(102-1) MAINTENANCE OF TRAFFIC (10%)	$ 9,879.85	10.00%
			(999-25) CONTINGENCY (Do Not Bid) (25%)	$ 24,699.63	25.00%
			PROJECT GRAND TOTAL =	**$ 143,257.84**	

NOTES : Unit costs were determined from previously bid unit cost averages of Area 9 and Statewide.

Pay Item Number	Item Description	Estimated Quantity	Unit	Unit Cost	Estimated Cost
ROADWAY					
101-1	Mobilization	1.0	LS	$0.00	$ -
102-1	Maintenance of Traffic	1.0	LS	$0.00	$ -
104-11	Floating Turbidity Barrier	100.0	LF	$5.73	$ 573.00
104-12	Staked Turbidity Barrier	50.0	LF	$5.97	$ 298.50
104-13-1	Silt Fence Staked (Type III)	400.0	LF	$0.76	$ 304.00
110-1-1	Clearing & Grubbing	0.75	AC	$551.96	$ 413.97
120-1	Excavation, Regular	350	CY	$1.81	$ 633.50
400-1-2	Conc Class I (Endwalls)	43.6	CY	$773.16	$ 33,725.24
430-175-102	Pipe Culv (Opt Matl) (Round 25" to 36" S/CD)	276.0	LF	$69.23	$ 19,107.48
430-175-103	Pipe Culv (Opt Matl) (Round 37 to 48" S/CD)	384	LF	$101.53	$ 38,987.52
570-1-2	Turf Complete (Sodding)	3,630	SY	$1.31	$ 4,755.30
				Subtotal = $	**98,798.51**

APPENDIX I

Existing Typical Section



EXISTING TYPICAL SECTION
SR 29
STA. 209+40.00 TO STA. 532+00.00 **
RE-GRADE ROADSIDE DITCHES

* DEPTH VARIES (SEE CROSS SECTIONS)

** SEE ROADWAY PLAN SHEETS FOR LIMITS OF RE-GRADE ROADSIDE DITCHES

*** ALL AREAS OUTSIDE THE LIMITS OF CLEARING & GRUBBING THAT ARE DISTURBED BY THE CONTRACTOR ARE TO BE SODDED (SAME TYPE AS EXISTING) AT THE CONTRACTOR'S EXPENSE.

POSTED SPEED = 55 MPH

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

AIM Engineering & Surveying, Inc.
5802 BRECKENRIDGE PARKWAY STE. 100
TAMPA, FLORIDA 33610
TELEPHONE (888) 627-4144
FAX (813) 664-1899
CERTIFICATE OF AUTHORIZATION NO. 3114
E.O.R. DAWN M. RATICAN, P.E. NO. 60226

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
29	GLADES	431394-1-52-01

TYPICAL SECTION

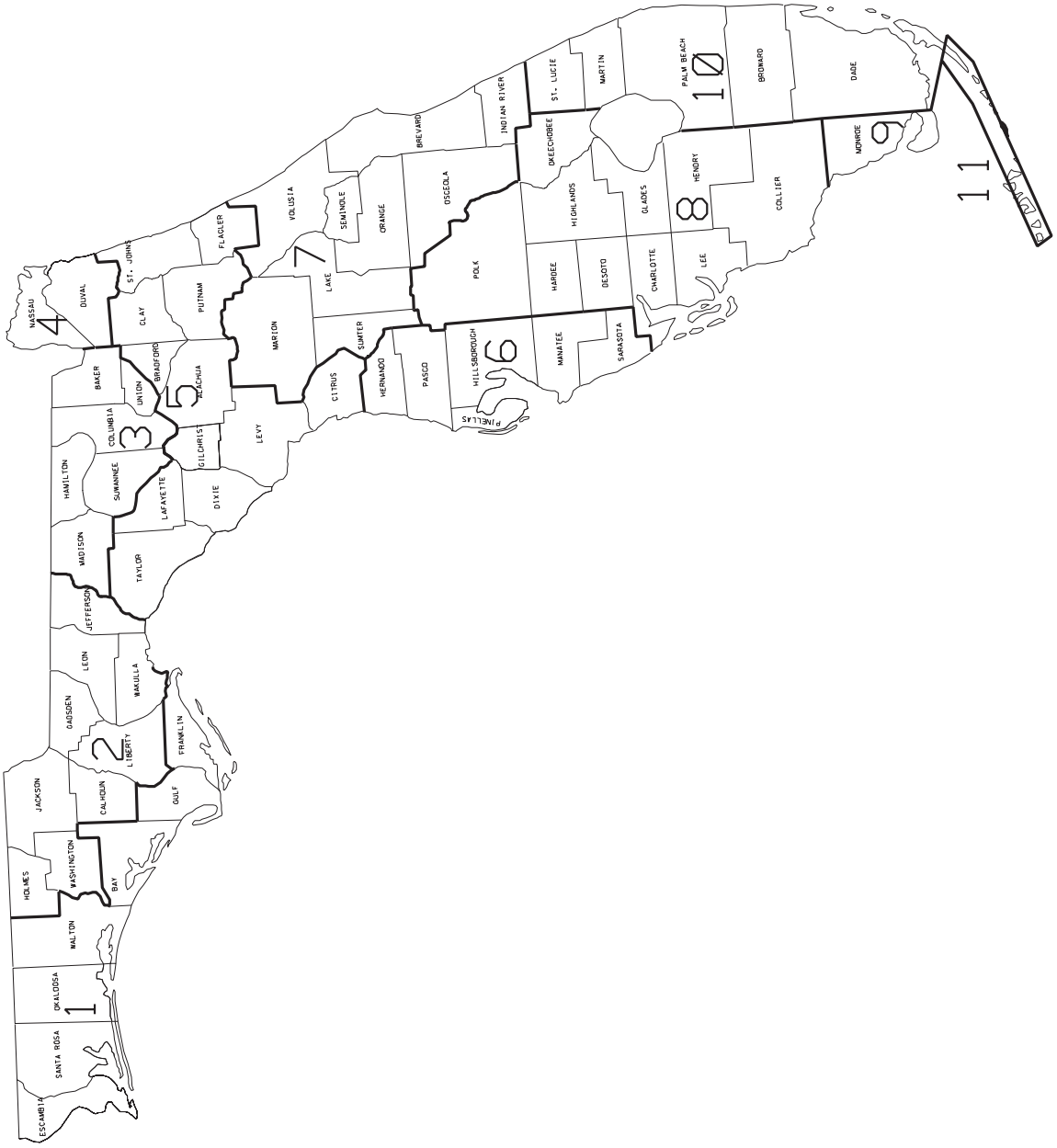
SHEET NO. 3

thawkins 5/2/2012 2:36:04 PM T:\PROJECTS\ENVIRONMENTAL\DIDW Permit and Mit\Task 12 Drainage Improvements Construction Plans\SR29_GladesCounty\431394152O1\roadway\typsrd01.dgn

APPENDIX J

Historical Rainfall Data

ZONES FOR PRECIPITATION IDF CURVES DEVELOPED BY THE DEPARTMENT



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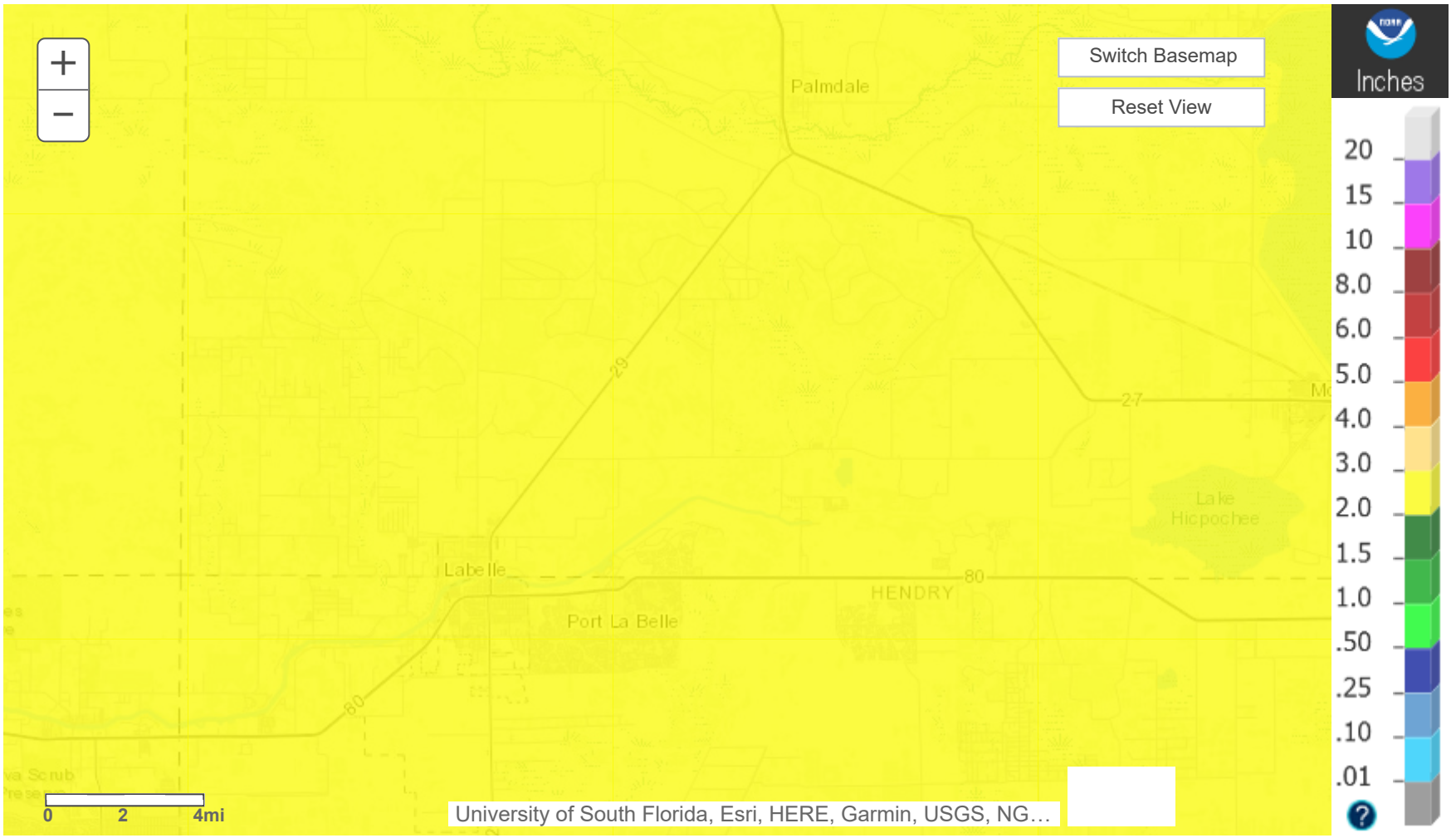

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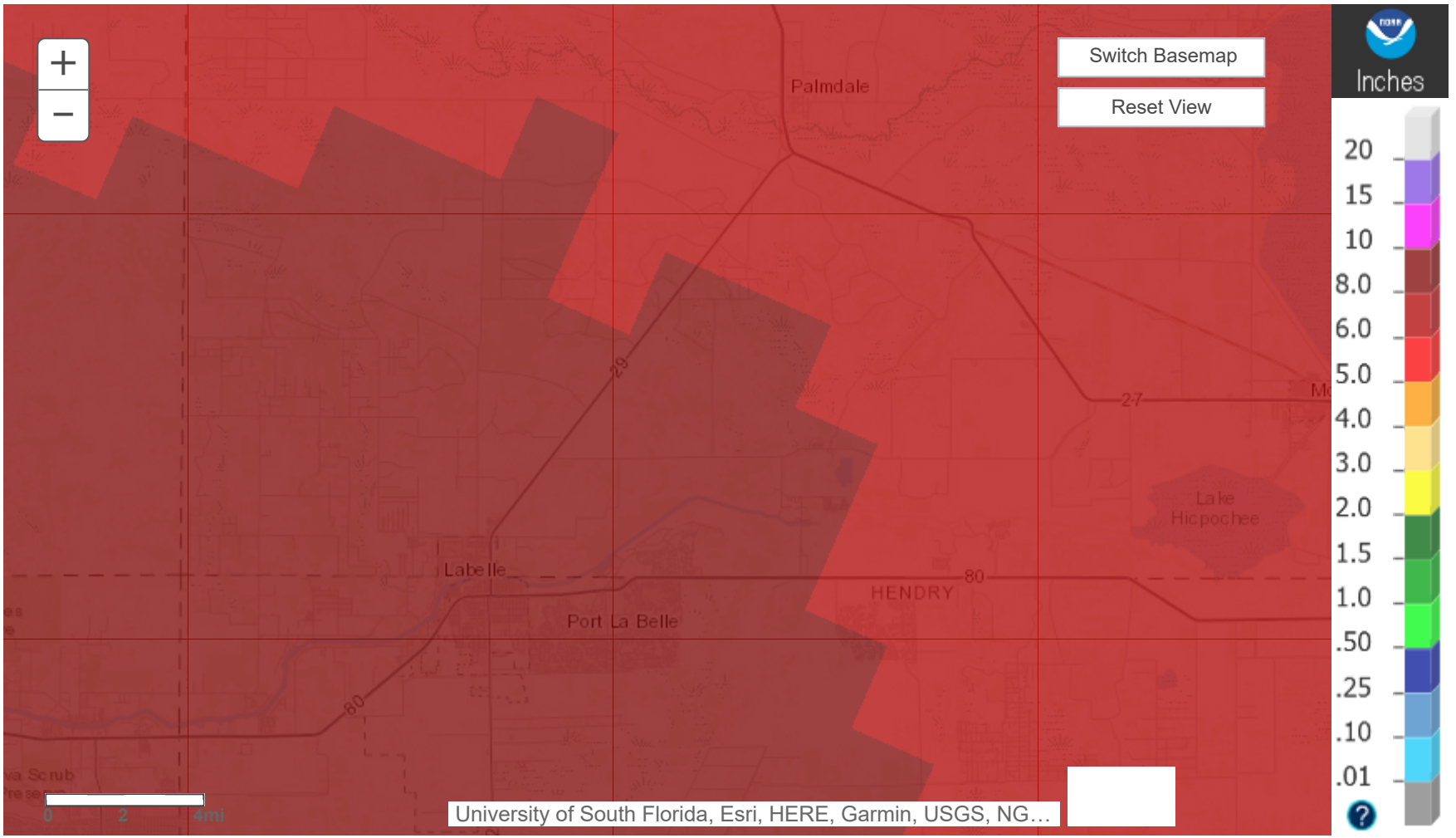
Valid on: May 01, 2018 12:00 UTC
What is UTC time? Map Help

Observed Precipitation



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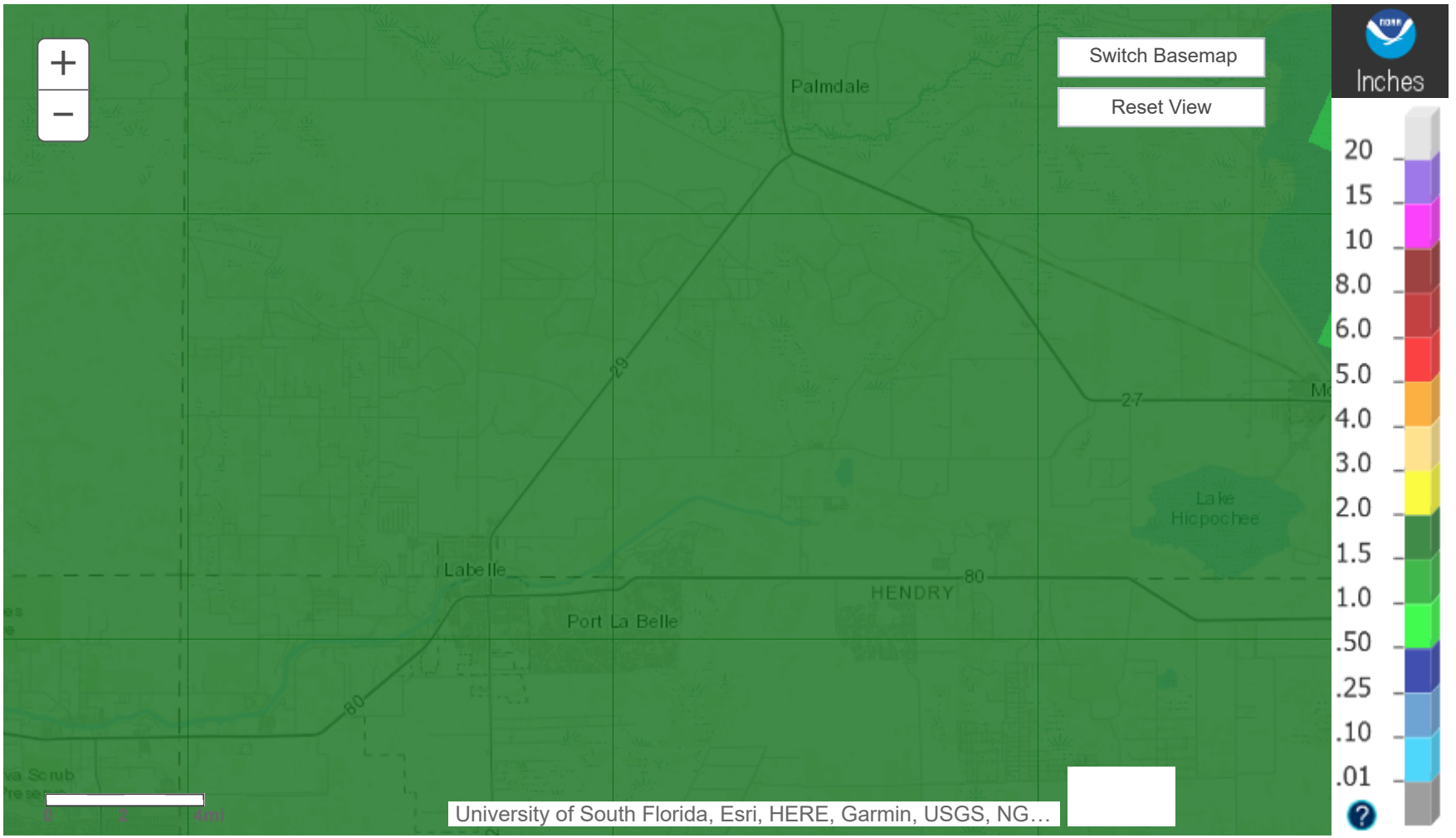
What is UTC time? Map Help

Observed Precipitation



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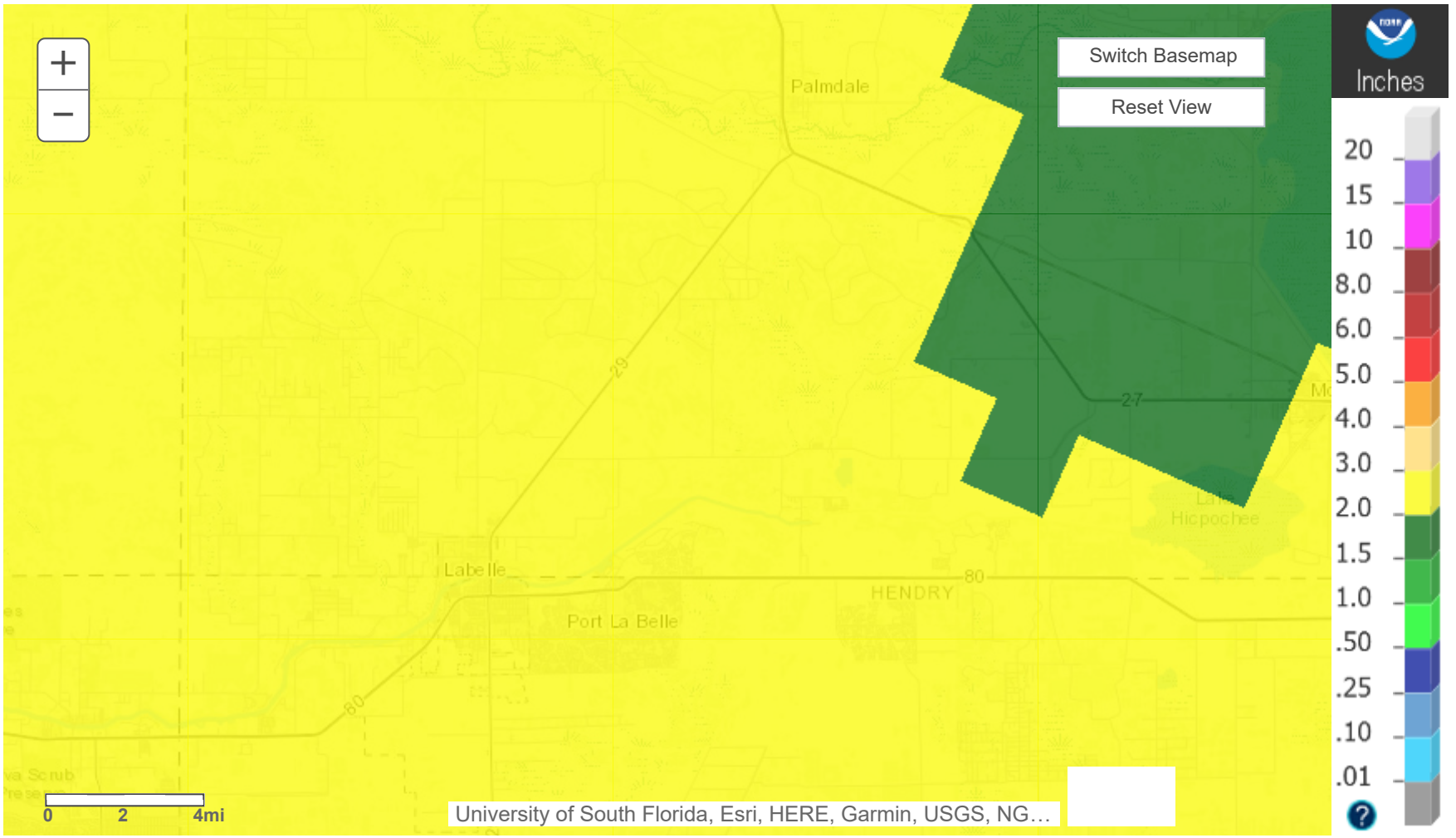
What is UTC time? Map Help

Observed Precipitation



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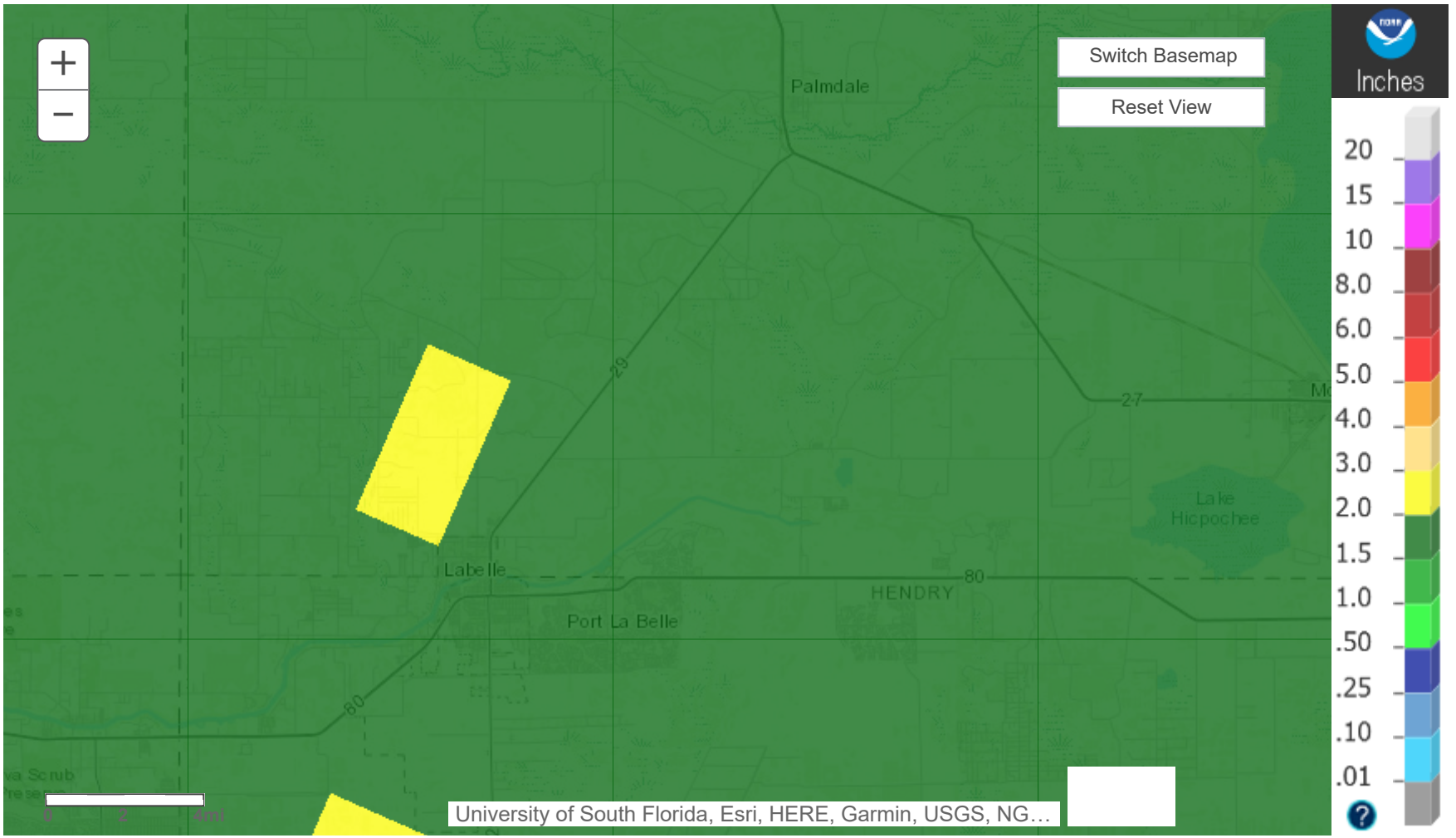
What is UTC time? Map Help

Observed Precipitation



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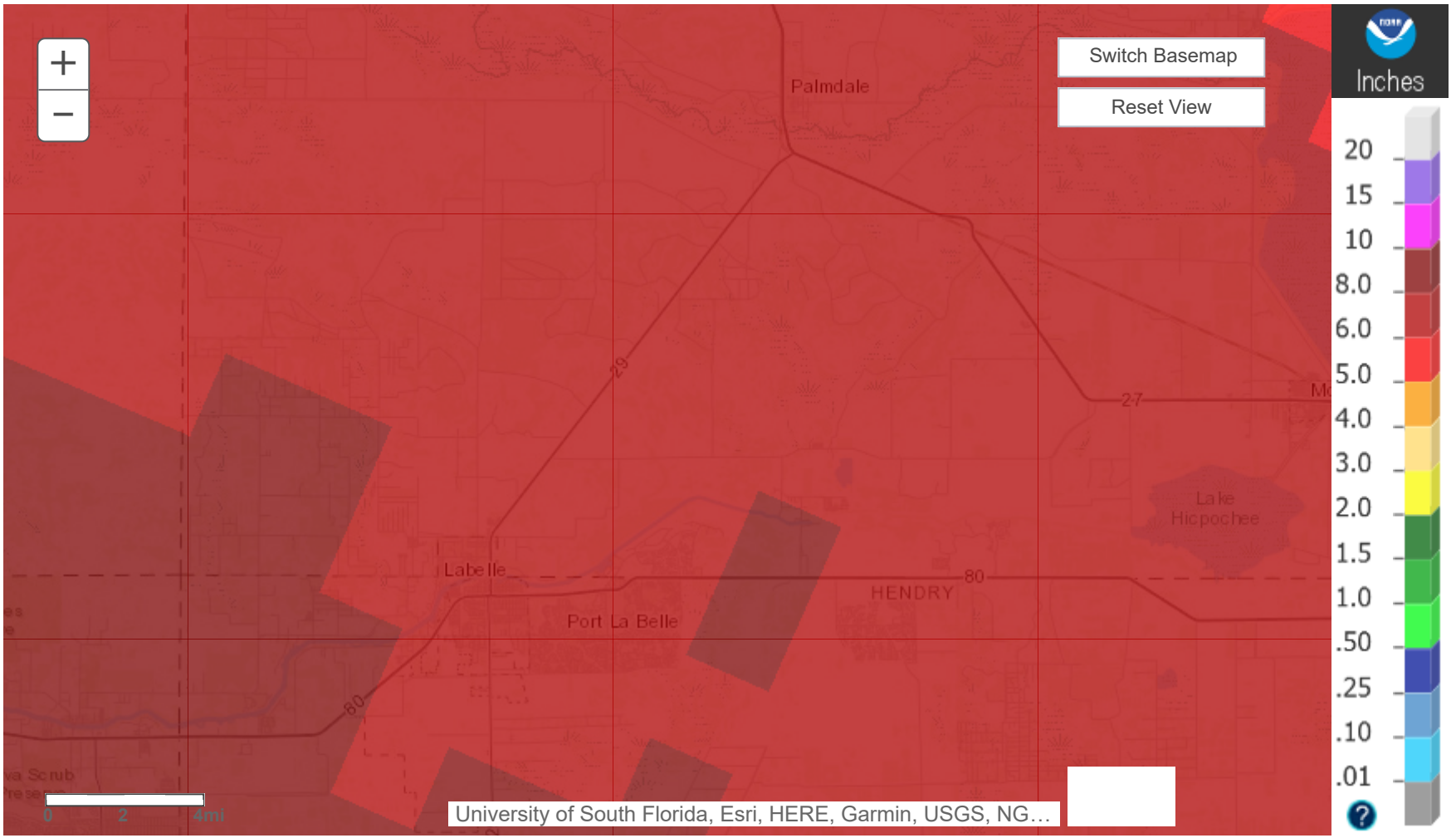
What is UTC time? Map Help

Observed Precipitation



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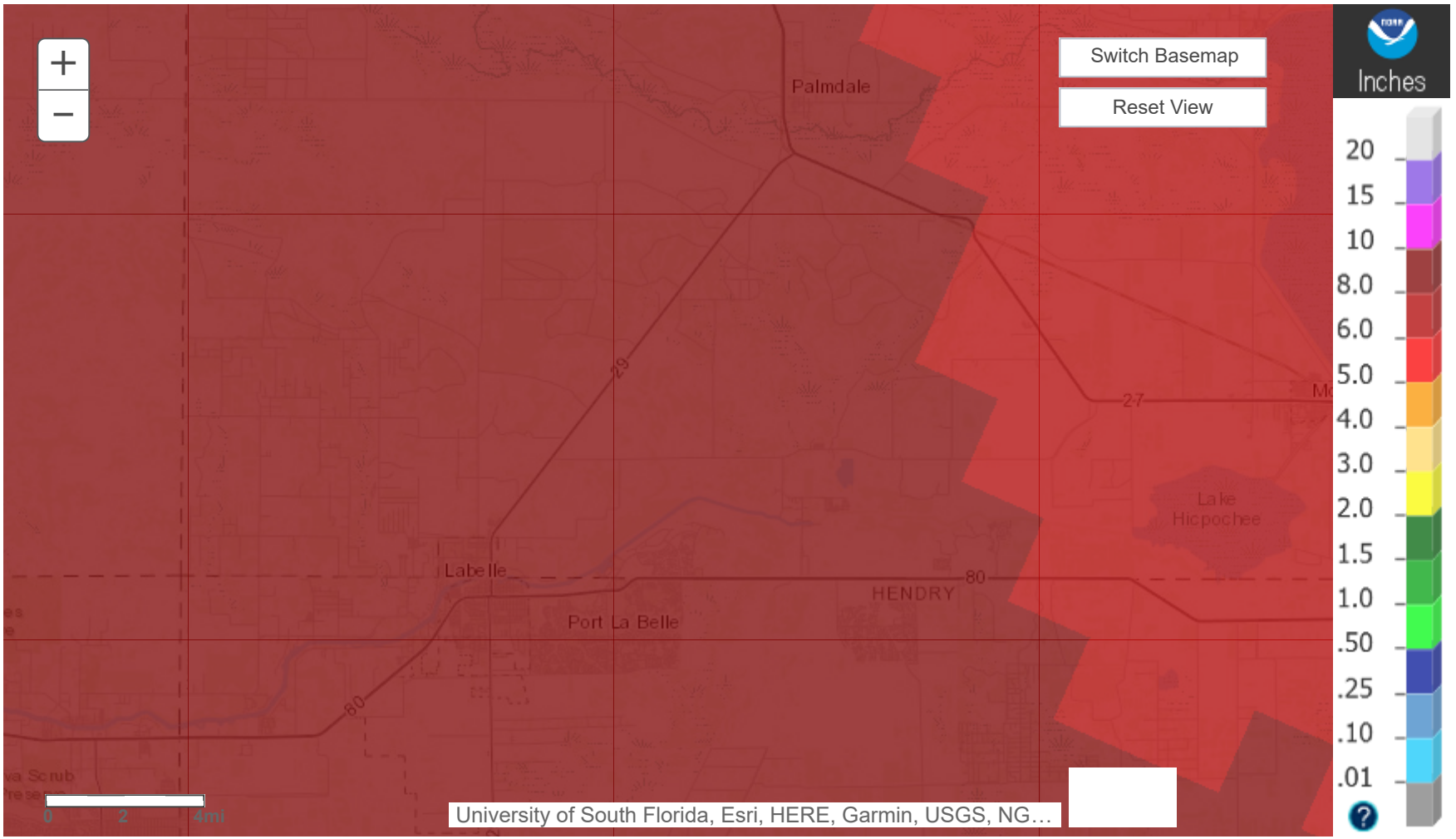
What is UTC time? Map Help

Observed Precipitation



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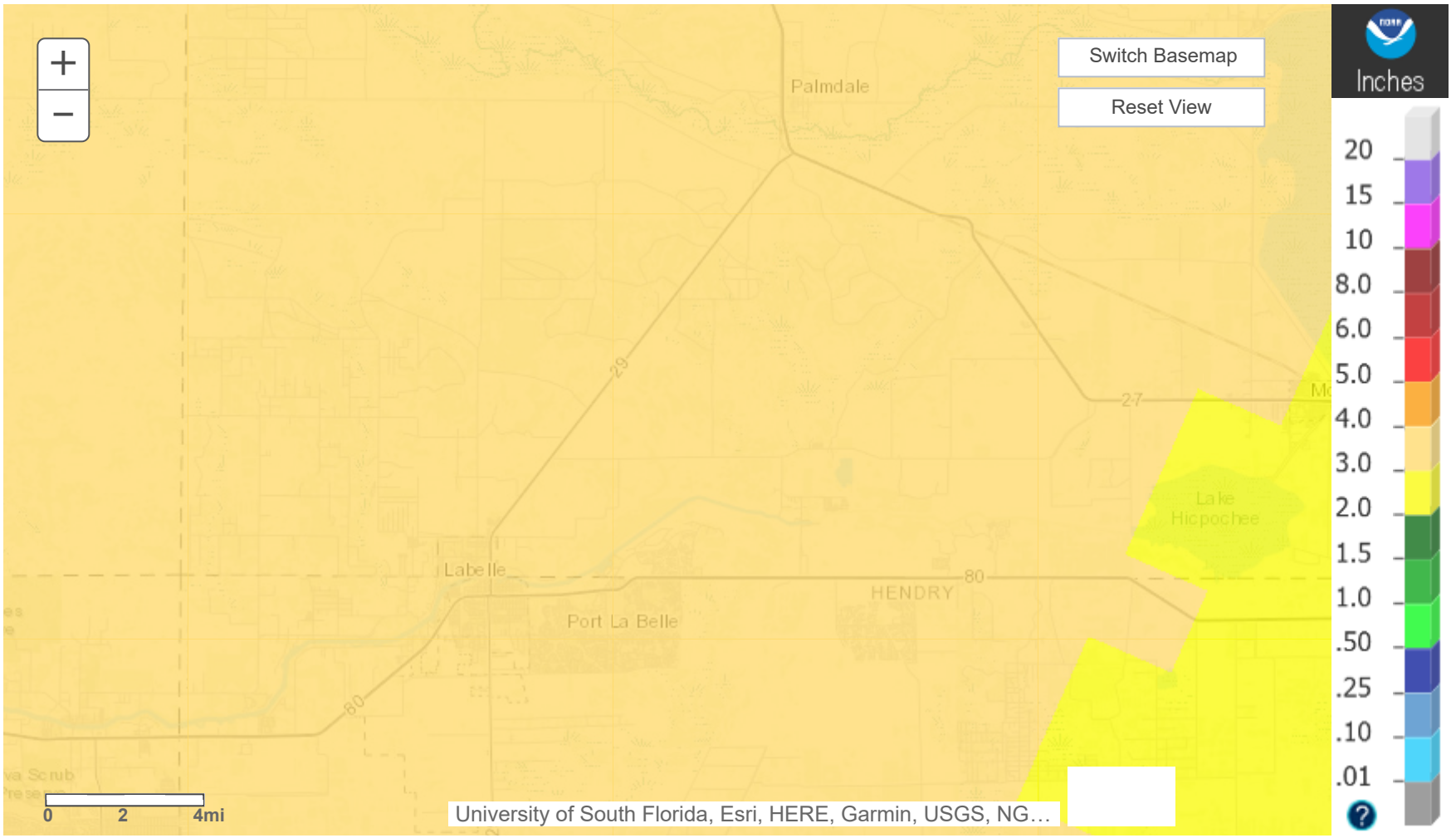
What is UTC time? Map Help

Observed Precipitation



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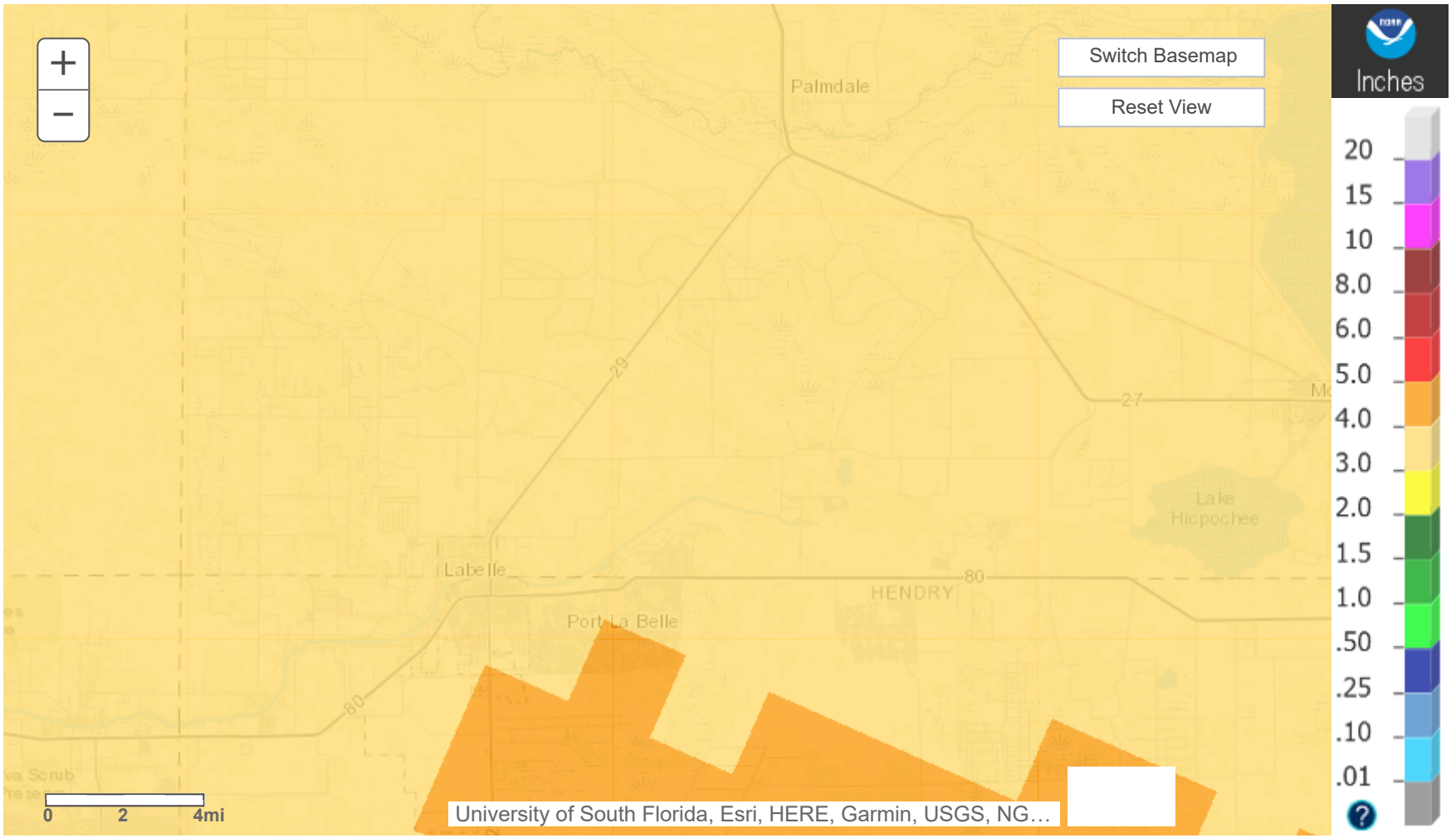
What is UTC time? Map Help

Observed Precipitation



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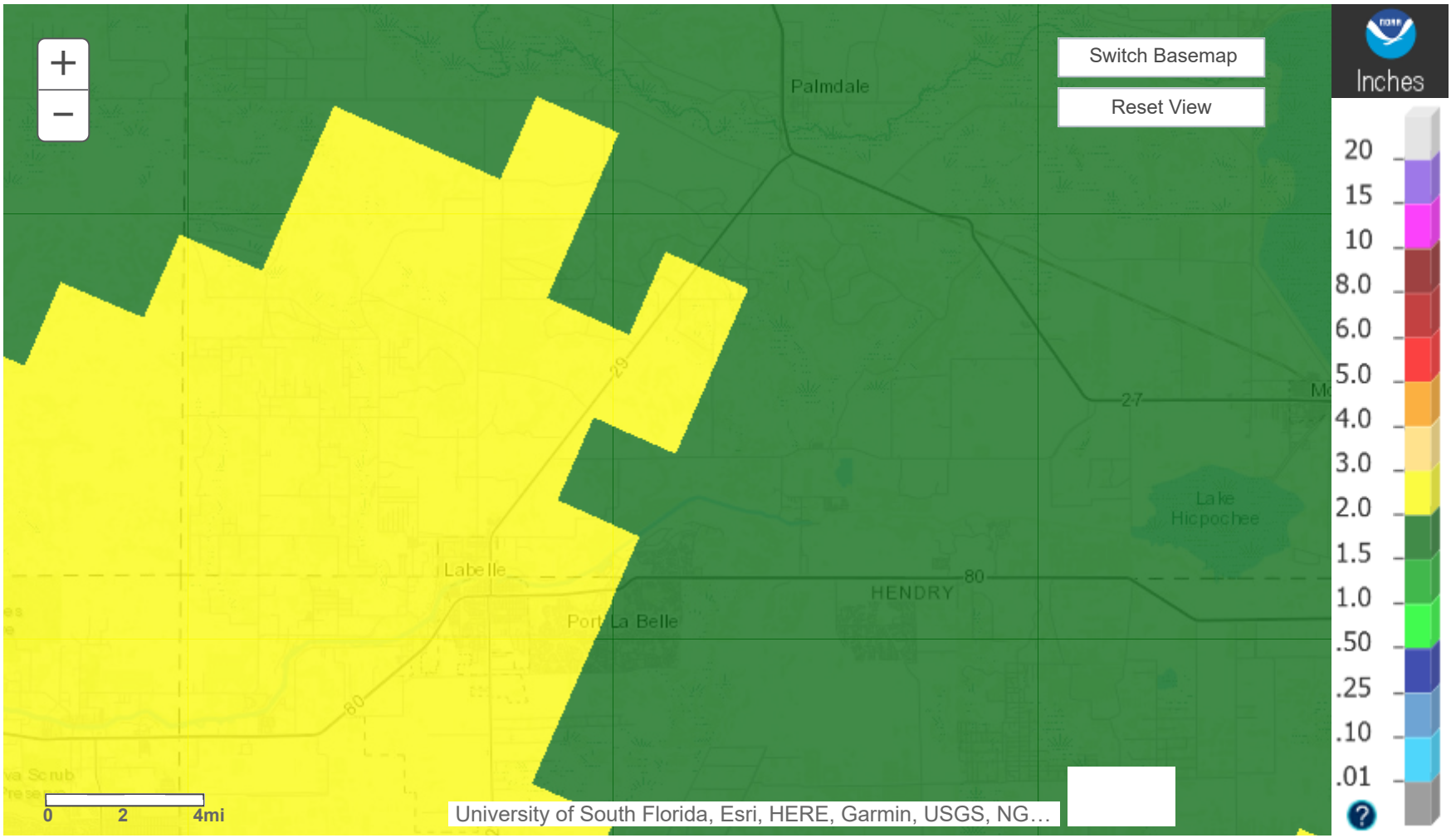
What is UTC time? Map Help

Observed Precipitation



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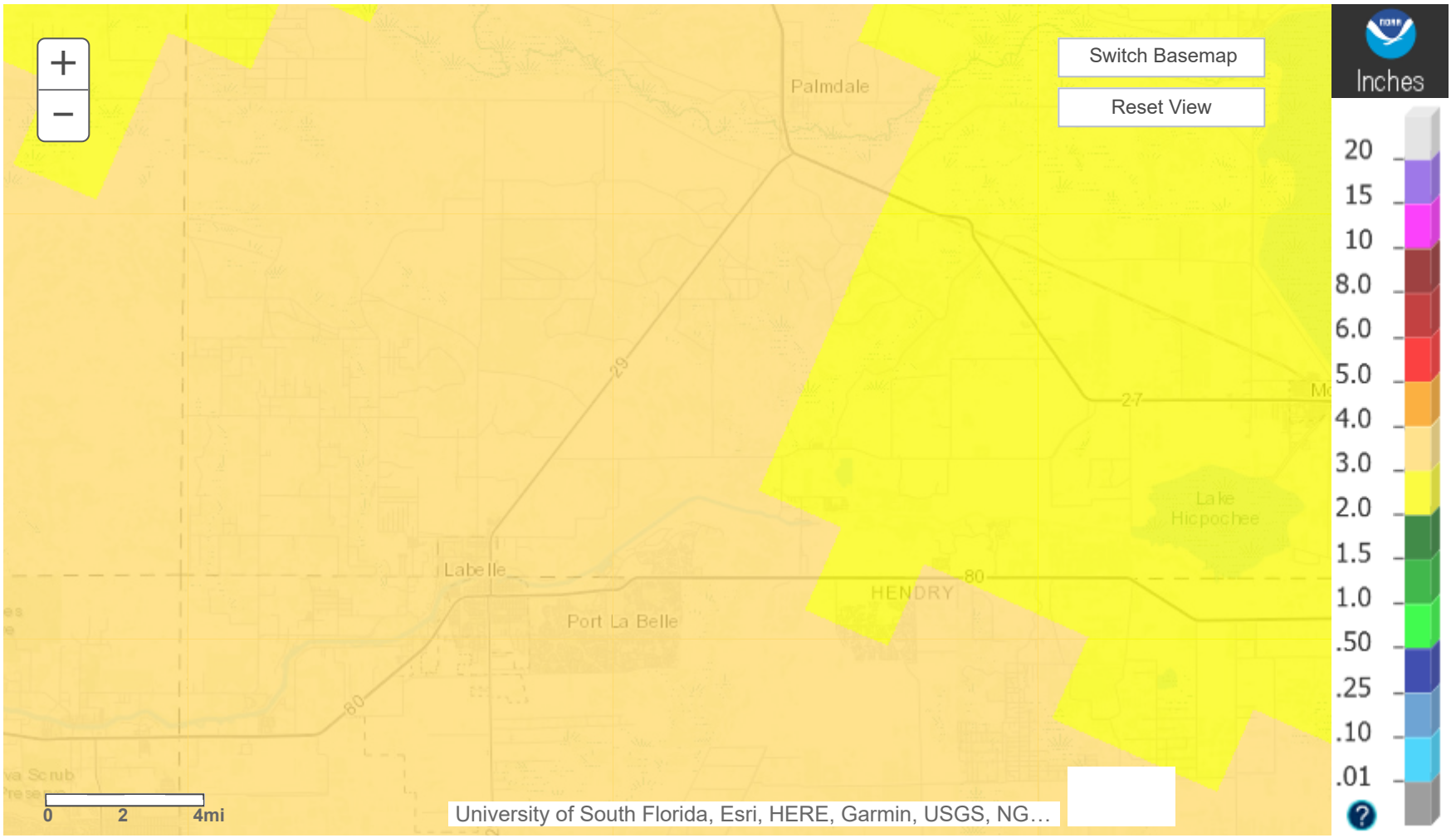
What is UTC time? Map Help

Observed Precipitation



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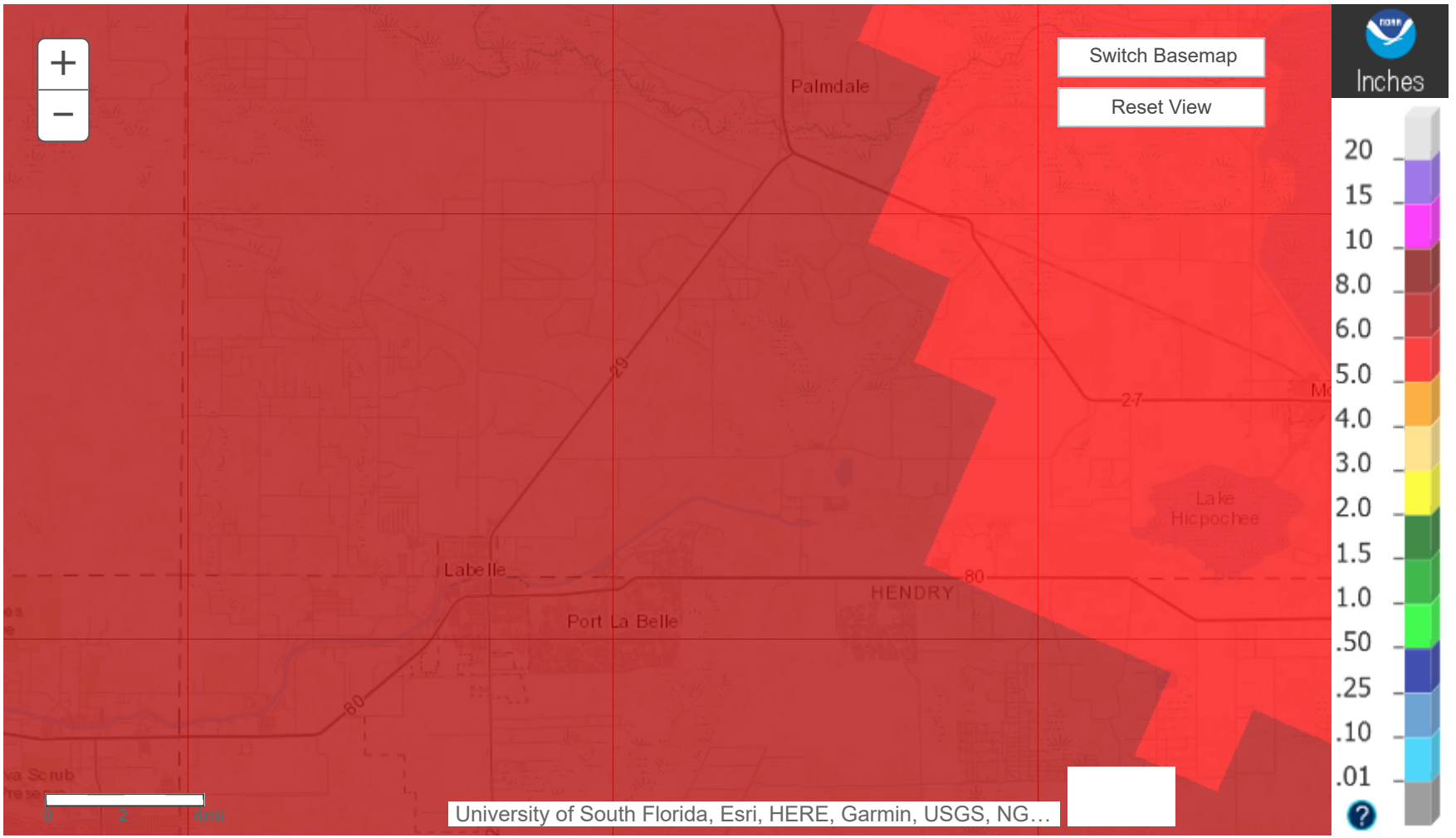
What is UTC time? Map Help

Observed Precipitation



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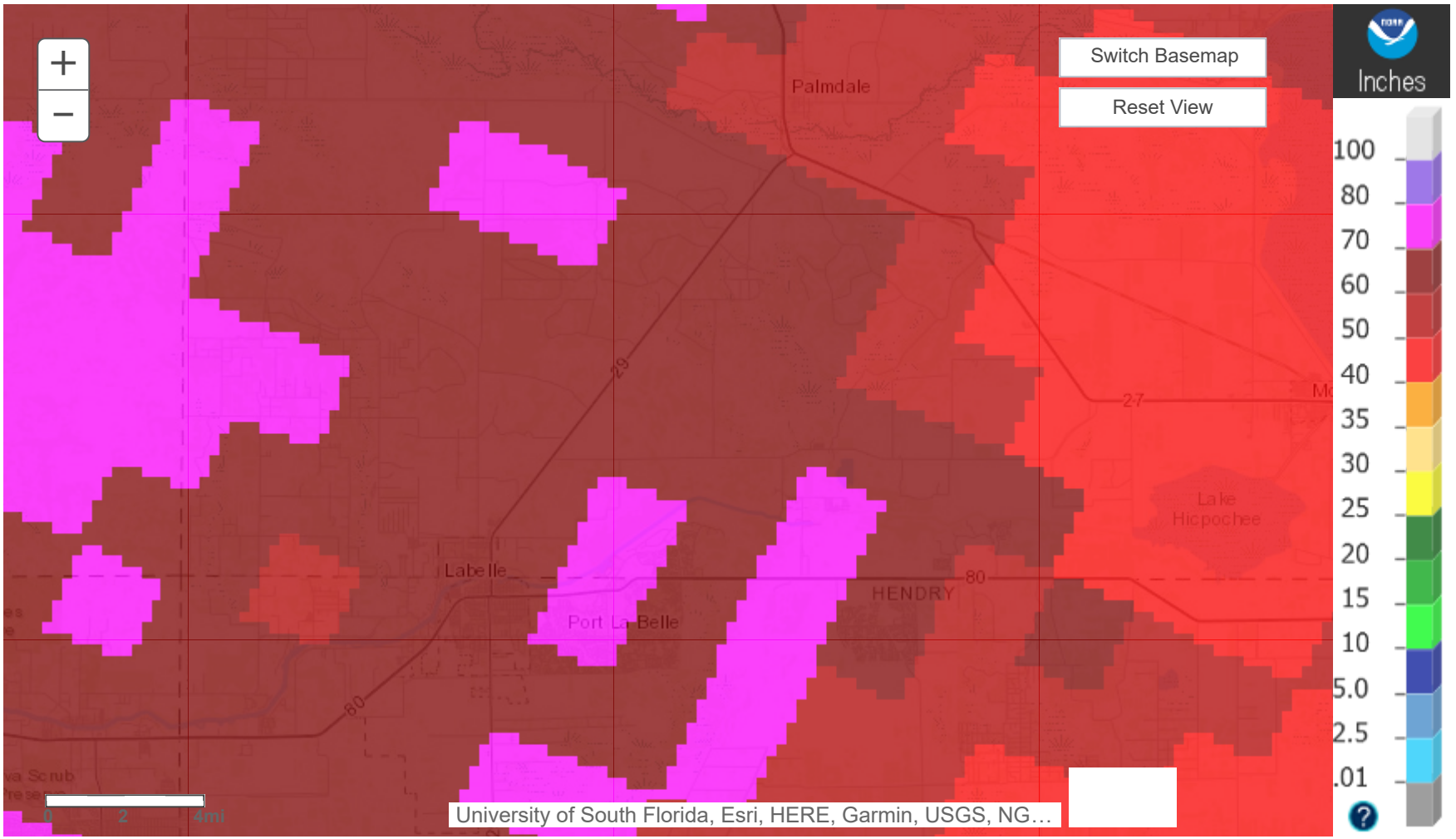
What is UTC time? Map Help

Observed Precipitation



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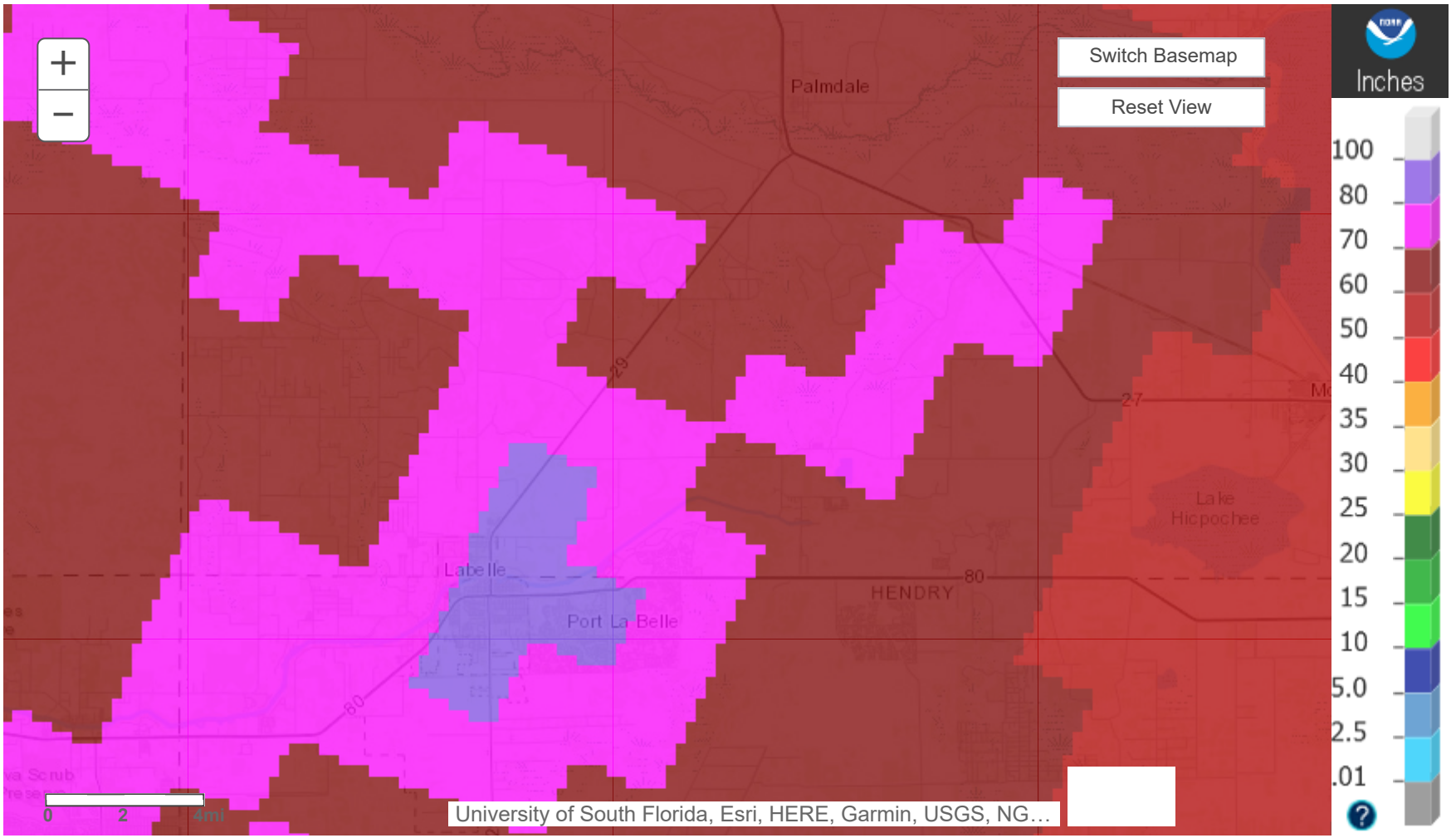
What is UTC time? Map Help

Observed Precipitation



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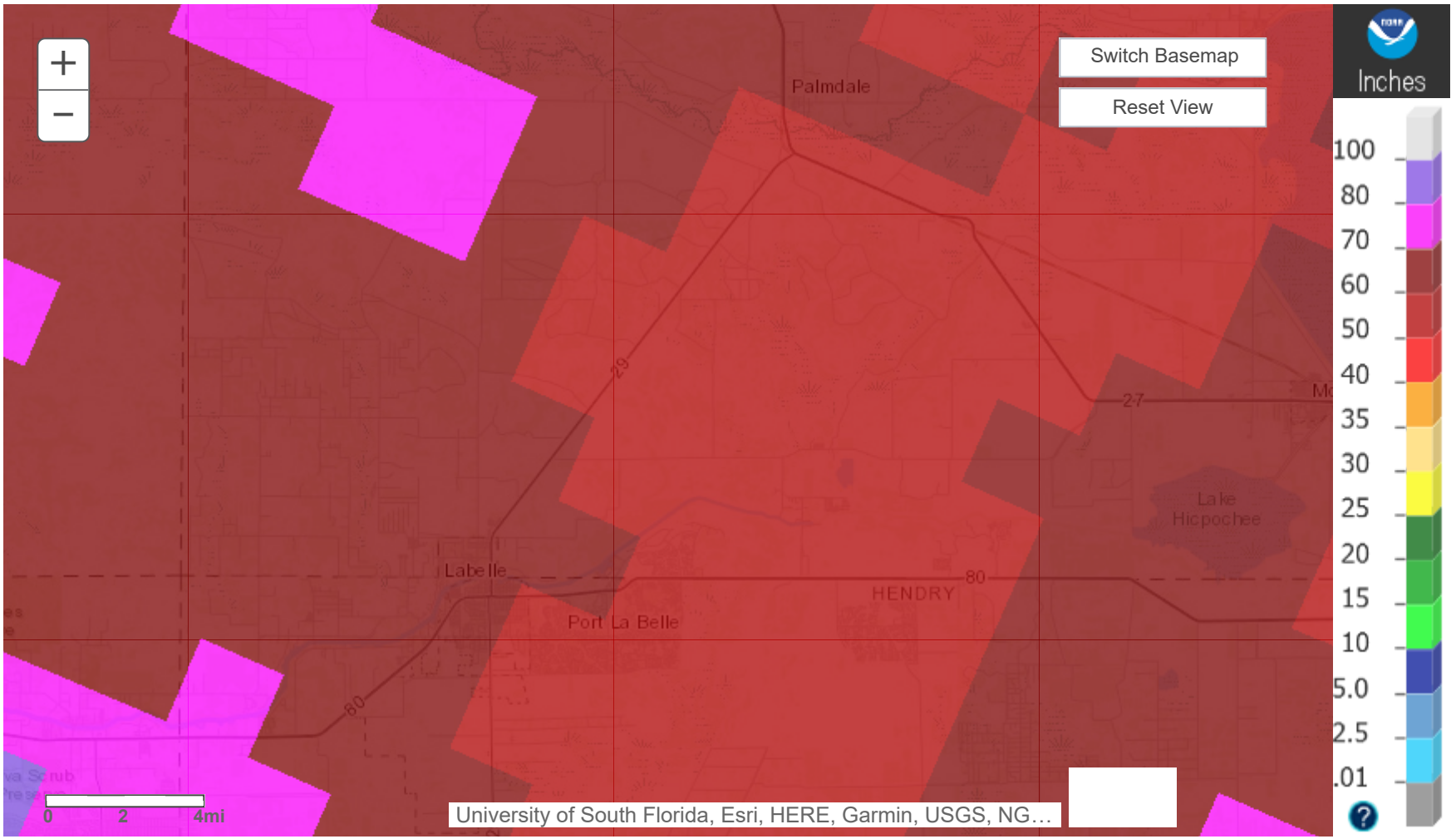
What is UTC time? Map Help

Observed Precipitation



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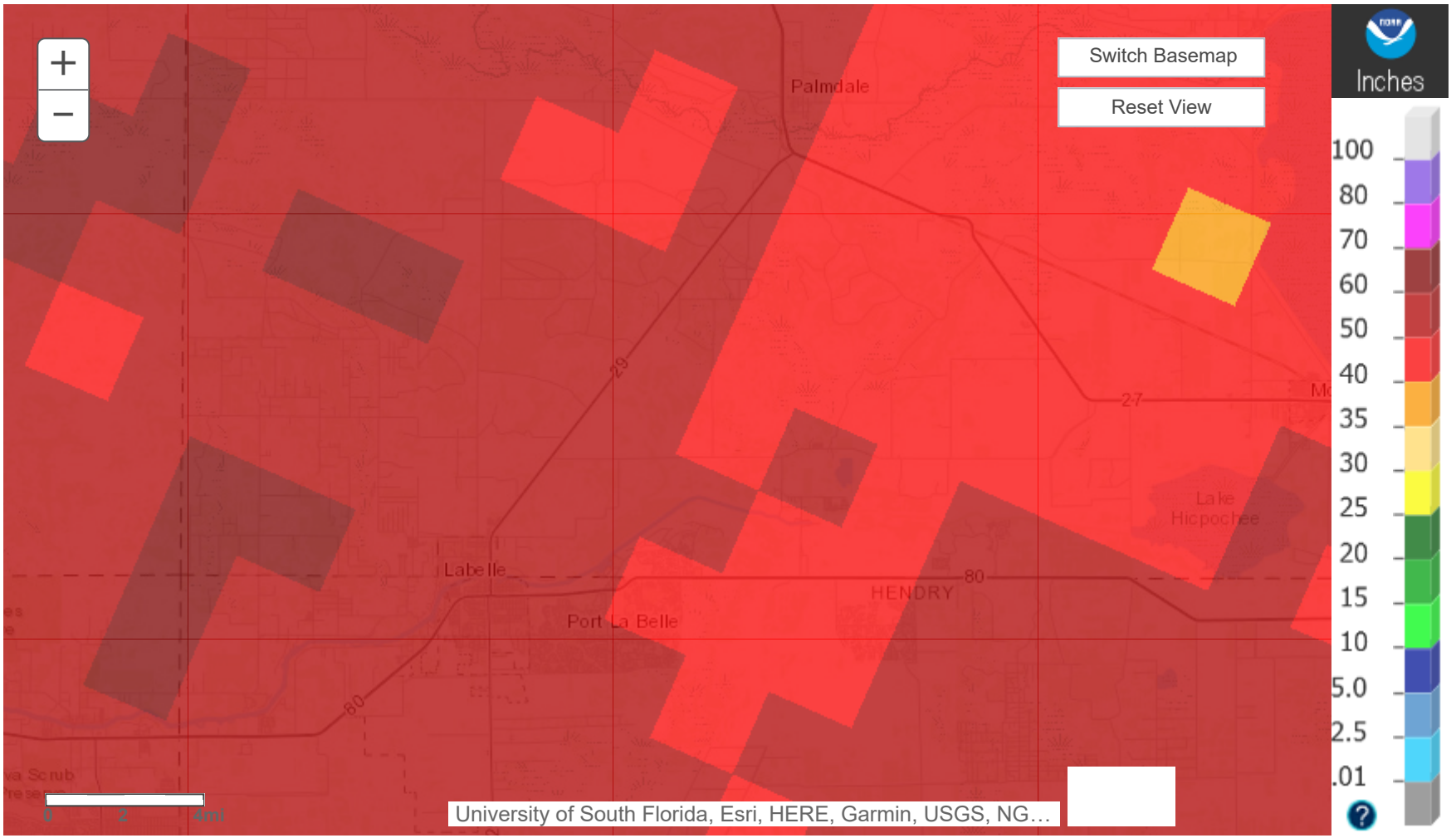
What is UTC time? Map Help

Observed Precipitation



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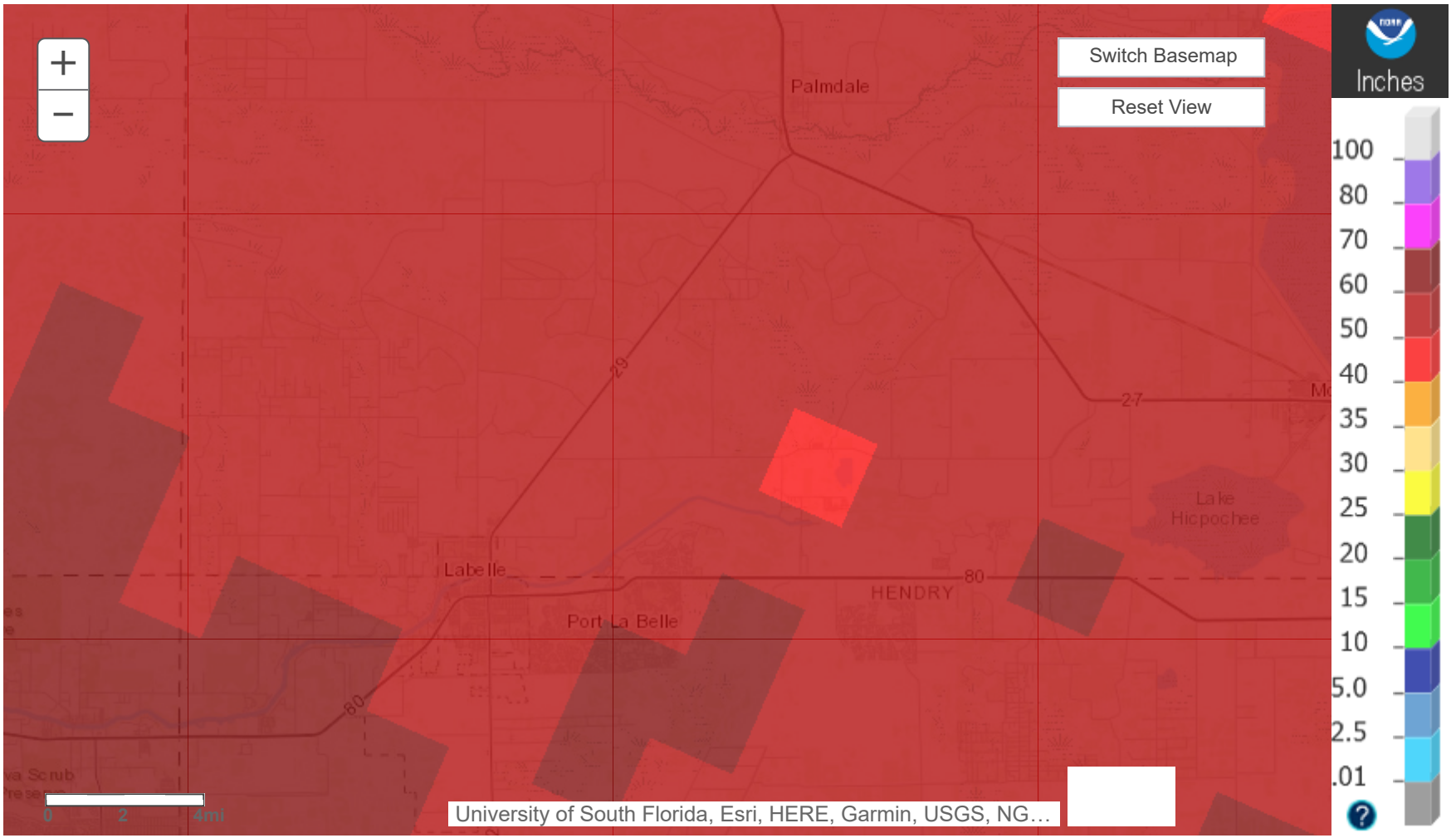
Valid on: January 01, 2019 12:00 UTC
What is UTC time? Map Help

Observed Precipitation



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What is UTC time? Map Help

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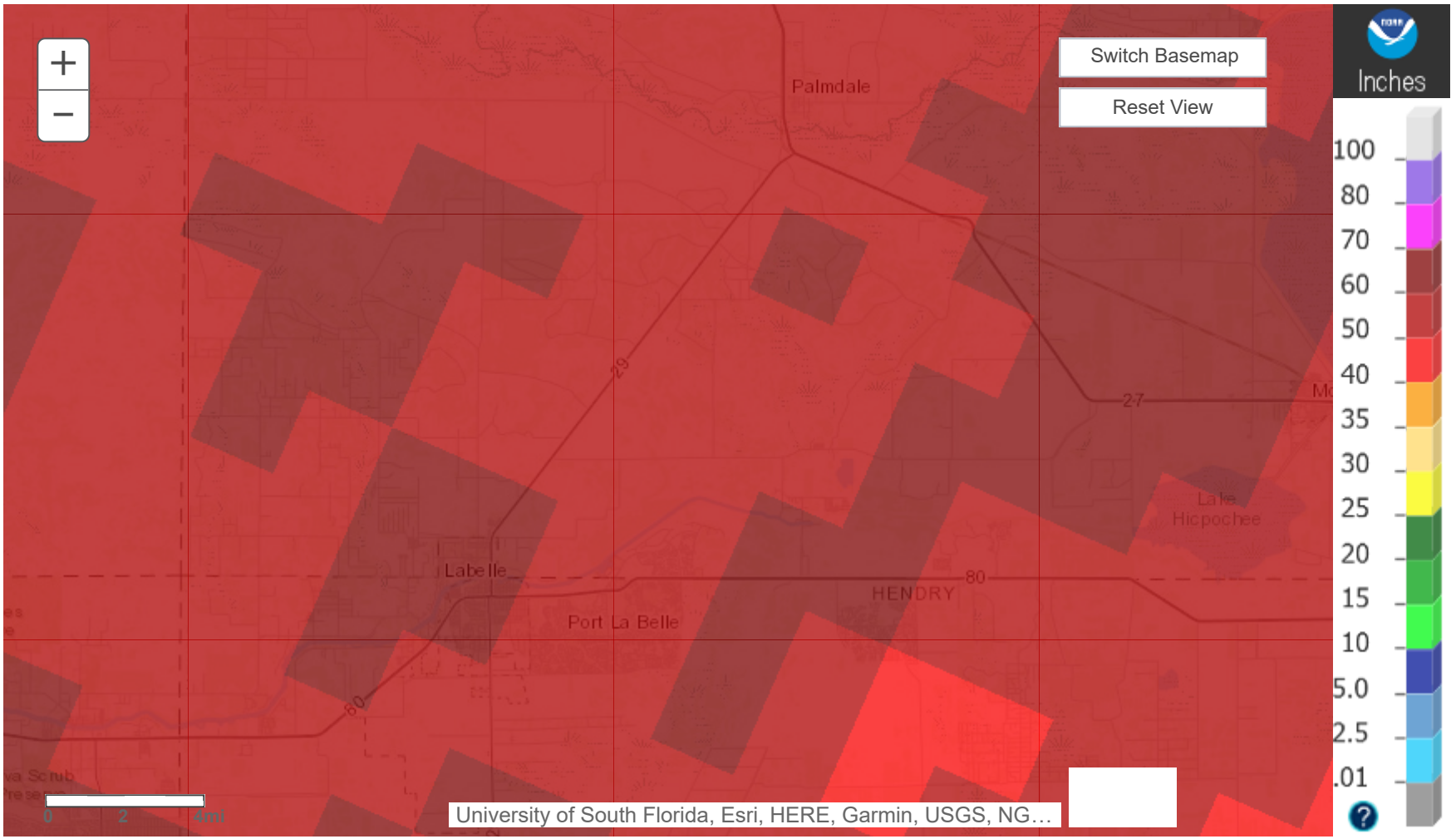

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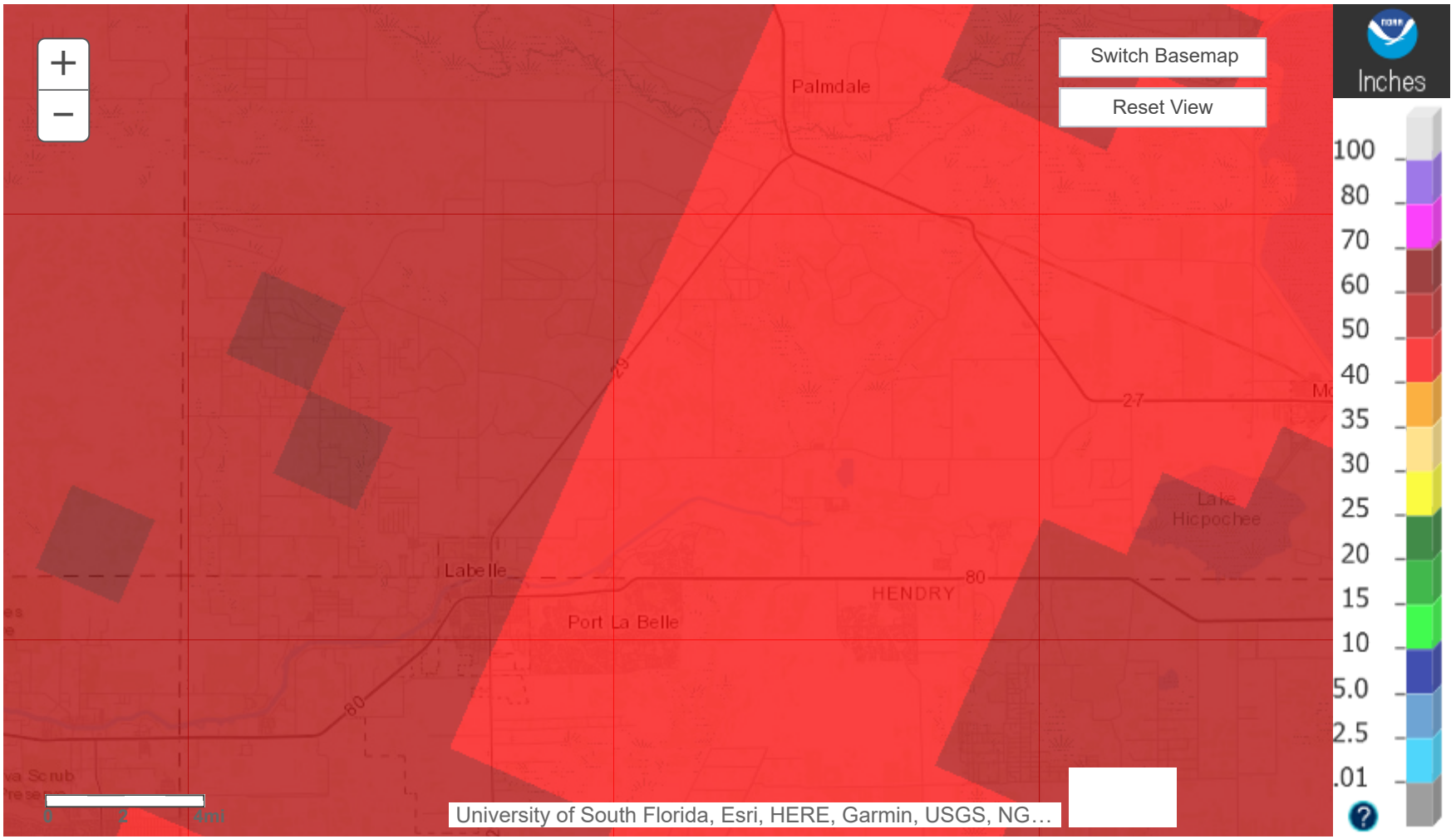
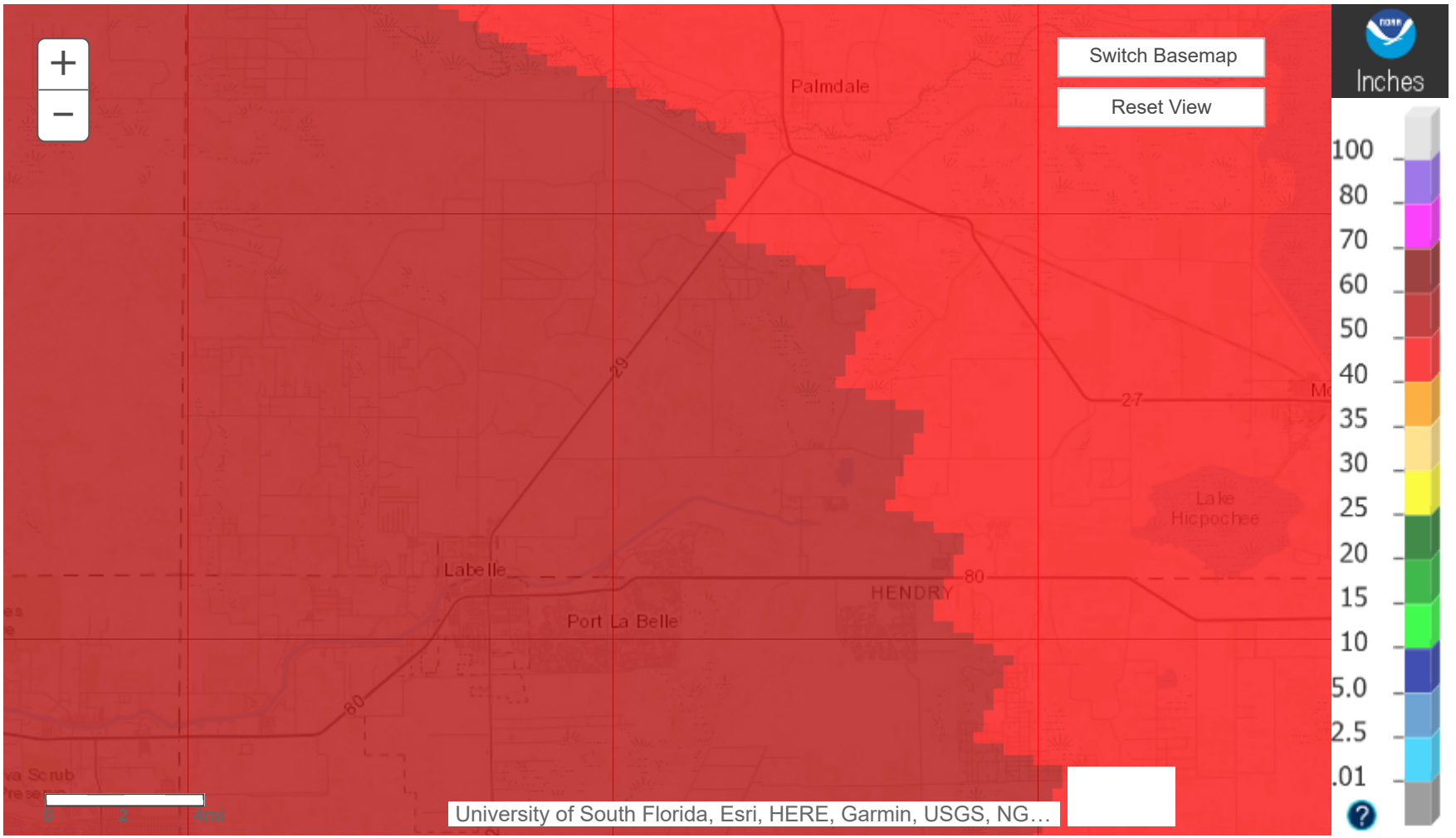
What is UTC time? Map Help

Observed Precipitation



Displaying 2021 Annual Observed Precipitation
Valid on: January 01, 2022 12:00 UTC
What is UTC time? Map Help

Observed Precipitation



Displaying 2015 Annual Normal Precipitation
Valid on: January 01, 2016 12:00 UTC
What is UTC time? Map Help

APPENDIX K
Hydraulic Modeling Data

Fuller, Davis & Associates, Inc.
5525 W. CYPRESS ST. - SUITE 300
TAMPA, FLORIDA 33607-1707
CERTIFICATE OF AUTHORIZATION NO.: 5864
DEBORAH L. KNIGHTON, P.E. NO.: 43920

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 29	GLADES	417878-1-22-01

DRAINAGE AREA
CROSSDRAIN AT STA. 356+00

SHEET NO.

Project: **SR 29** By: DMR Date:
Subject: **Time of Concentration, Tc** Check: Date:
Revised: Date:

Existing Conditions
Triple 30" Cross Drain

Sheet Flow

			Segment ID		AB				
1.	Surface description (table 3-1, TR-55)				Grass				
2.	Manning's Roughness coefficient, n (table 3-1, TR-55)				0.13				
3.	Two year 24 hour rainfall, P2			in	4.50				
4.	Flow length, L (total L< 300 ft)			ft	300				
5.	Land slope , s		Begin Elev.	ft	35.00				
			End Elev.	ft	34.80				
	Slope = (E1-E2)/L		Slope	ft/ft	0.001				
6.	Tt = (0.007*(nL)^0.8)/((P2^0.5)(s^0.4)) * 60		Compute Tt	min.	69.2	+		=	69.2

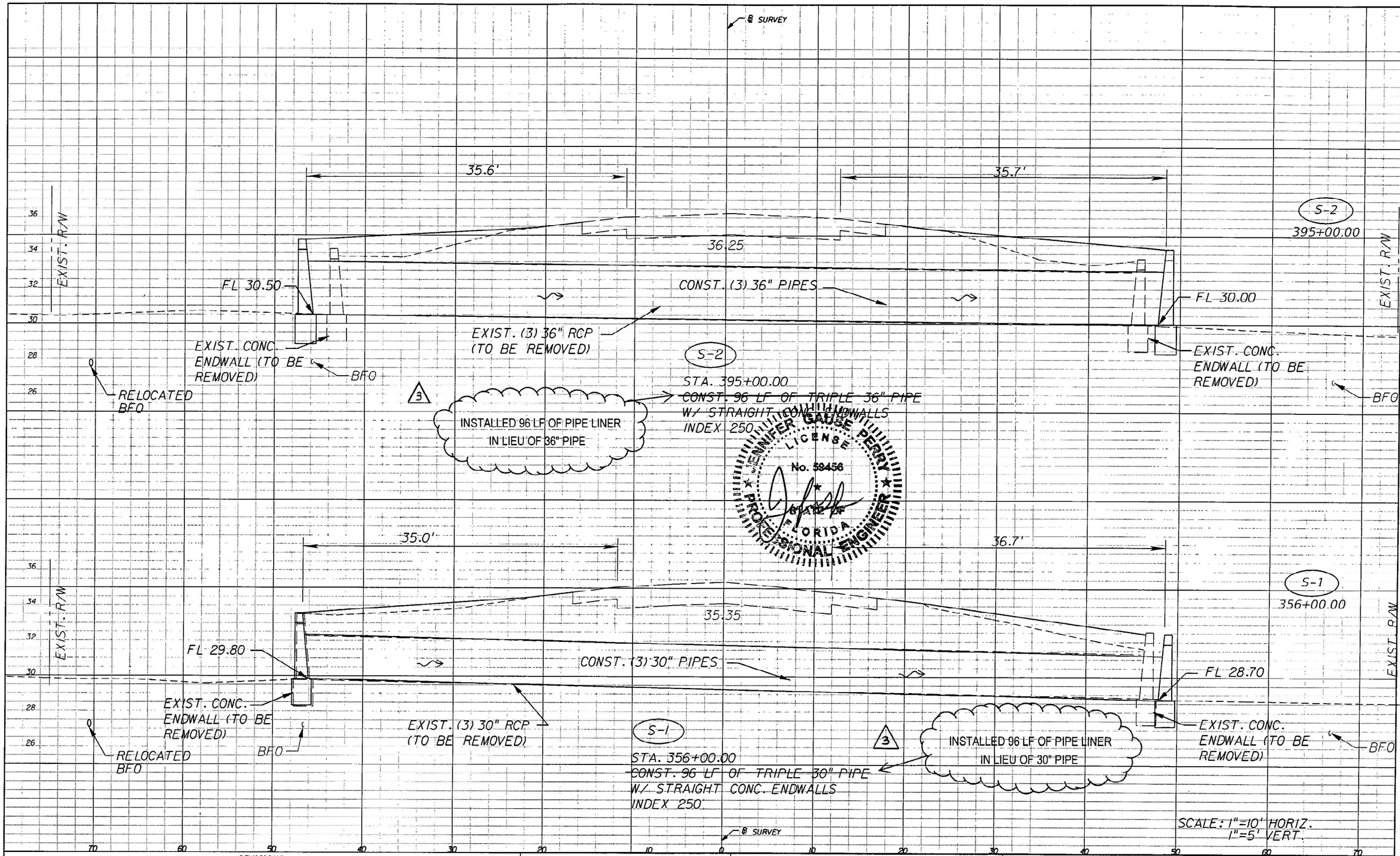
Shallow Concentrated Flow

	Grass		Segment ID		BD				
7.	Surface description (paved or unpaved)				Unpaved				
	Velocity Coefficient K (Paved = 20.328, Unpaved = 16.1345)				16.1345				
8.	Flow length, L			ft	3700				
9.	Watercourse slope, s		Begin Elev.	ft	34.8				
			End Elev.	ft	32.5				
	Slope = (E1-E2)/L		Slope	ft/ft	0.001				
10.	Average velocity, V (V = K*S^0.5)			ft/s	0.40				
11.	Tt = L/(60*V)		Compute Tt	min.	153.3	+		=	153.3

Channel Flow (Ditch)

			Segment ID						
12.	Hydraulic radius, R = A / WP (Depth of Flow)			ft					
13.	Flow length, L			ft					
14.	Slope, s		Begin Elev.	ft					
			End Elev.	ft					
	Slope = (E1-E2)/L		Slope	ft/ft					
15.	Manning's roughness coefficient, N (table 3-1, TR-55)								
16.	V = (1.49*R^.67*s^0.5)/N			ft/s					
17.	Tt = L/(60*V)		Compute Tt	min.				=	0.0

18.	Total of 6, 11 and 17		min.		=	222.5
	Minimum Time of Concentration		min.	10.0		
	Time of Concentration		min.			222.5
			hr			3.71



JENNIFER GAUSE PERRY
LICENSE
No. 59456
STATE OF FLORIDA
PROFESSIONAL ENGINEER

NOTICE: THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE SIGNED AND SEALED UNDER RULE 61G15-23.003, F.A.C.

SCALE: 1"=10' HORIZ.
1"=5' VERT.

REVISIONS

DATE	DESCRIPTION	DATE	DESCRIPTION
	3 DRAINAGE STRUCTURES SHEETS 33 & 34 (REVISED 5-20-13)		

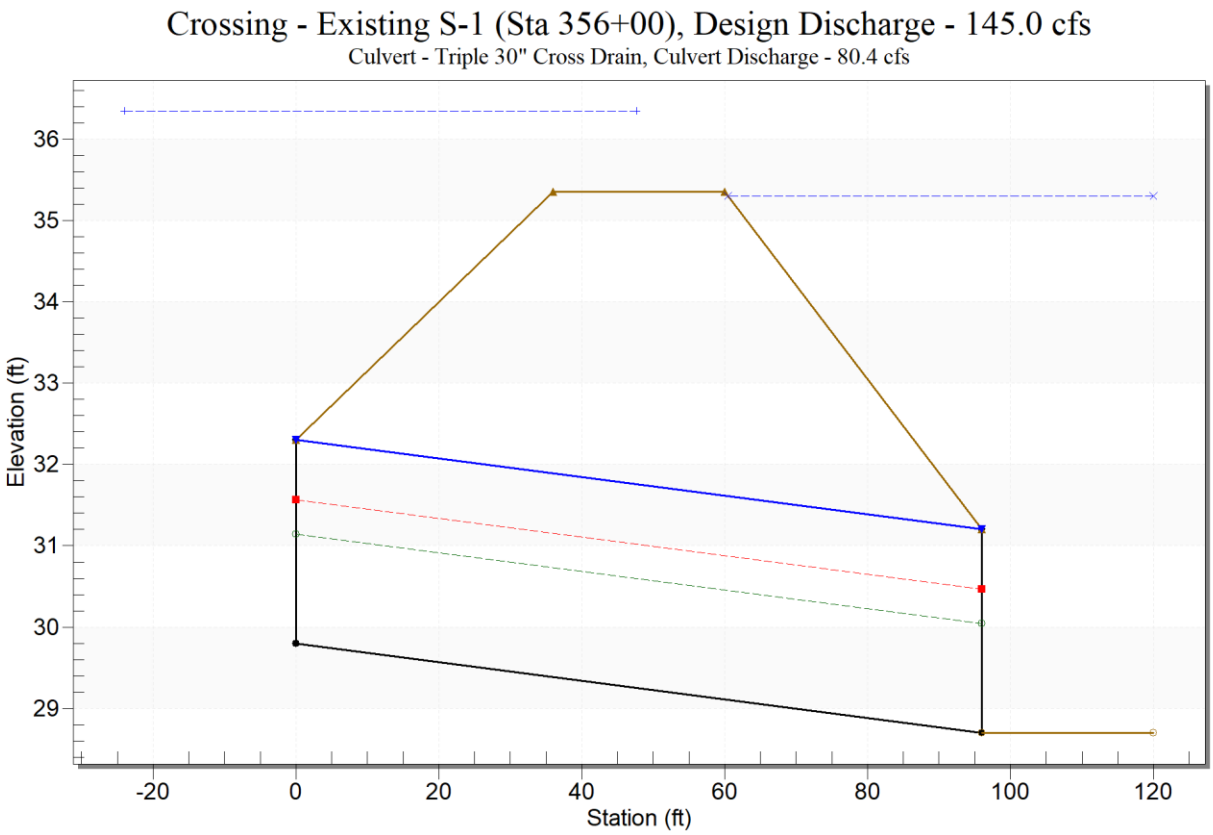
AIM Engineering & Surveying, Inc.
5802 BRECKENRIDGE PARKWAY STE. 100
TAMPA, FLORIDA 33610
TELEPHONE (888) 627-4144
FAX (813) 664-1899
CERTIFICATE OF AUTHORIZATION NO. 3114
E.O.R. DAWN M. RATICAN, P.E. NO. 60226

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
29	GLADES	431394-1-52-01

DRAINAGE STRUCTURES

SHEET NO. 33



Site Data – Existing 30" Triple Cross Drain

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 29.80 ft (As-builts from FPID 431394-1-52-01)

Outlet Station: 96.00 ft (As-builts from FPID 431394-1-52-01)

Outlet Elevation: 28.70 ft (As-builts from FPID 431394-1-52-01)

Number of Barrels: 3

Culvert Data Summary – Existing 30" Triple Cross Drain

Barrel Shape: Circular

Barrel Diameter: 2.50 ft

Barrel Material: Concrete

Barrel Manning's n: 0.0120

Culvert Type: Straight

Inlet Configuration: Square Edge with Headwall (Ke=0.5)

Tailwater Channel Data – Existing 30" Triple Cross Drain

Tailwater Channel Option: Enter Constant Tailwater Elevation

Constant Tailwater Elevation: 35.30 (SR 78, Job No 0504-201, Glades County, Fiscal Year 1956)

Roadway Data for Crossing – Existing 30" Triple Cross Drain

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 21.50 ft

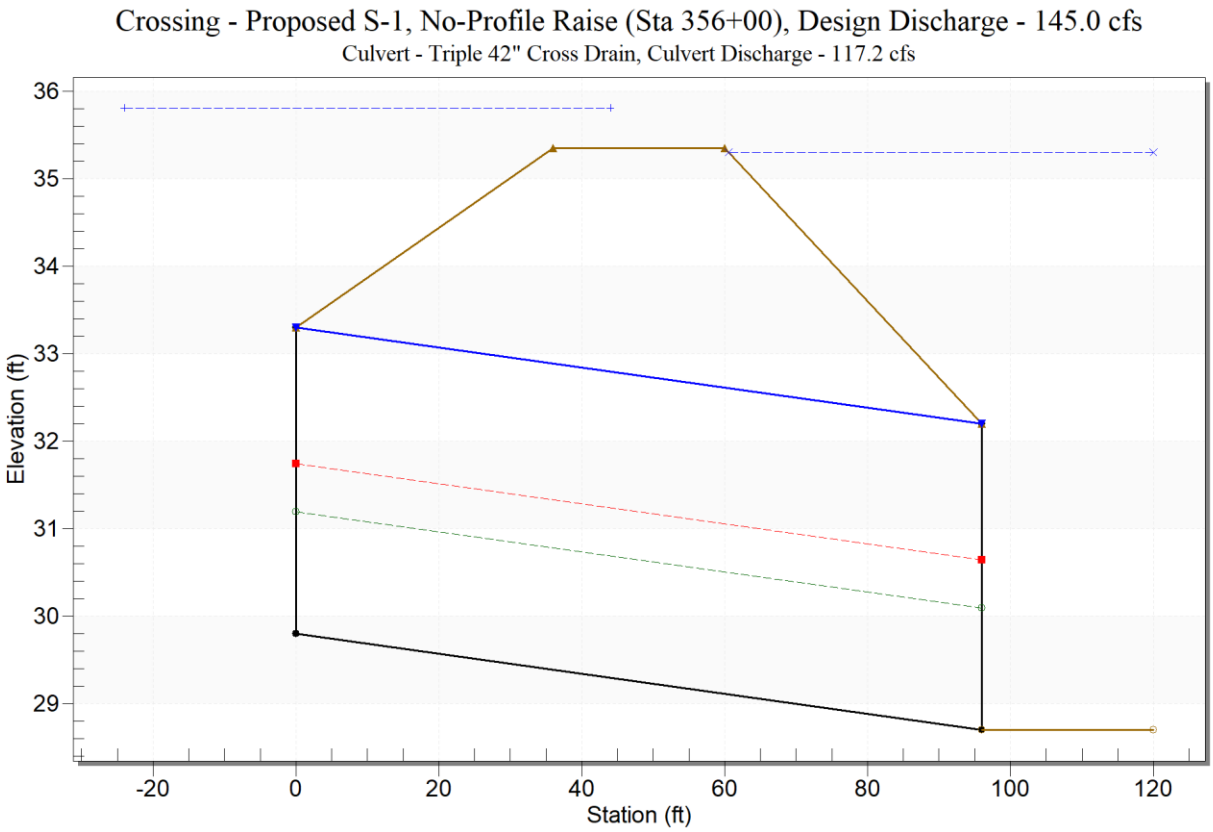
Crest Elevation: 35.35 ft (As-builts from FPID 431394-1-52-01)

Roadway Surface: Paved

Roadway Top Width: 34.00 ft

Headwater Elevation (ft)	Discharge Names	Total Discharge (cfs)	Triple 30" Cross Drain Discharge (cfs)	Roadway Discharge (cfs)	Iterations
36.34	50 year	145.00	80.45	64.52	4

Discharge Names	Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Normal Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
50 year	145.00	80.45	36.34	1.34	2.50	6.60	5.46	0.00



Site Data – Proposed 42" Triple Cross Drain, No Profile Rise

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 29.80 ft (As-builts from FPID 431394-1-52-01)

Outlet Station: 96.00 ft (As-builts from FPID 431394-1-52-01)

Outlet Elevation: 28.70 ft (As-builts from FPID 431394-1-52-01)

Number of Barrels: 3

Culvert Data Summary – Proposed 42" Triple Cross Drain, No Profile Rise

Barrel Shape: Circular

Barrel Diameter: 3.50 ft

Barrel Material: Concrete

Barrel Manning's n: 0.0120

Culvert Type: Straight

Inlet Configuration: Square Edge with Headwall (Ke=0.5)

Tailwater Channel Data – Proposed 42" Triple Cross Drain, No Profile Rise

Tailwater Channel Option: Enter Constant Tailwater Elevation

Constant Tailwater Elevation: 35.30 (SR 78, Job No 0504-201, Glades County, Fiscal Year 1956)

Roadway Data for Crossing – Proposed 42" Triple Cross Drain, No Profile Rise

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 29.83 ft

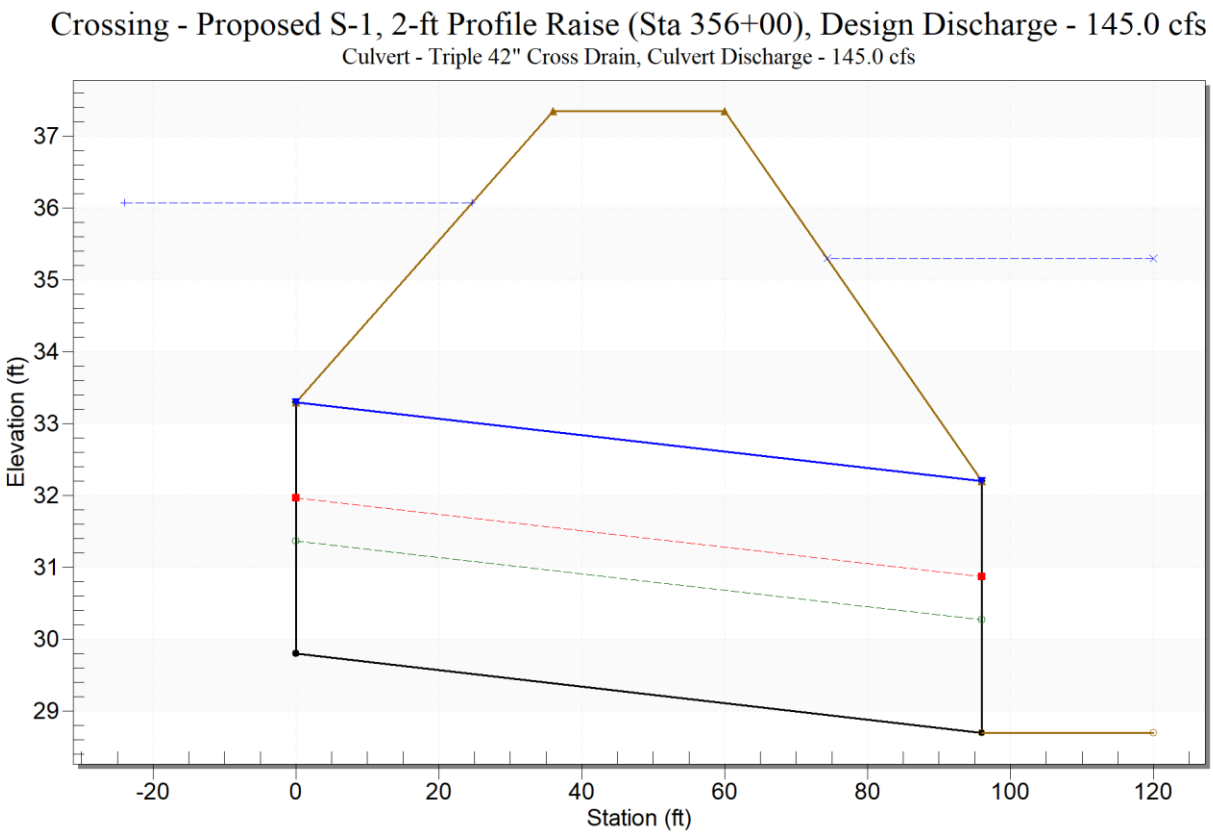
Crest Elevation: 35.35 ft (As-builts from FPID 431394-1-52-01)

Roadway Surface: Paved

Roadway Top Width: 34.00 ft

Headwater Elevation (ft)	Discharge Names	Total Discharge (cfs)	Triple 42" Cross Drain Discharge (cfs)	Roadway Discharge (cfs)	Iterations
35.81	50 year	145.00	117.23	27.85	7

Discharge Names	Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Normal Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
50 year	145.00	117.23	35.81	1.39	3.50	6.60	4.06	0.00



Site Data – Proposed 42" Triple Cross Drain, 2-ft Profile Rise

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 29.80 ft (As-builts from FPID 431394-1-52-01)

Outlet Station: 96.00 ft (As-builts from FPID 431394-1-52-01)

Outlet Elevation: 28.70 ft (As-builts from FPID 431394-1-52-01)

Number of Barrels: 3

Culvert Data Summary – Proposed 42" Triple Cross Drain, 2-ft Profile Rise

Barrel Shape: Circular

Barrel Diameter: 3.50 ft

Barrel Material: Concrete

Barrel Manning's n: 0.0120

Culvert Type: Straight

Inlet Configuration: Square Edge with Headwall (Ke=0.5)

Tailwater Channel Data – Proposed 42" Triple Cross Drain, 2-ft Profile Rise

Tailwater Channel Option: Enter Constant Tailwater Elevation

Constant Tailwater Elevation: 35.30 (SR 78, Job No 0504-201, Glades County, Fiscal Year 1956)

Roadway Data for Crossing – Proposed 42" Triple Cross Drain, 2-ft Profile Rise

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 29.83 ft

Crest Elevation: 37.35 ft

Roadway Surface: Paved

Roadway Top Width: 34.00 ft

Headwater Elevation (ft)	Discharge Names	Total Discharge (cfs)	Triple 42" Cross Drain Discharge (cfs)	Roadway Discharge (cfs)	Iterations
36.08	50 year	145.00	145.00	0.00	1

Discharge Names	Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Normal Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
50 year	145.00	145.00	36.08	1.57	3.50	6.60	5.02	0.00

APPENDIX L

Detour Map

SR 29 Detour Route Map