

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
TECHNICAL REPORT COVERSHEET

650-050-38
ENVIRONMENTAL
MANAGEMENT
07/24

CONCEPTUAL DRAINAGE REPORT

Florida Department of Transportation

District 1

PD&E Study - SR 72 from CR 661 to SR 70 & SR 70 from CR 661 to the Peace River Bridge

Limits of Project: SR 72 from CR 661 northeast approximately 0.85 miles to SR 70 and extends on SR 70 from CR 661 southeast approximately 1.06 miles to the Peace River Bridge

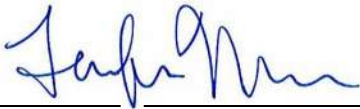
DeSoto County, Florida

Financial Management Number: 443123-2-22-01

ETDM Number: N/A

Date: February 2026

The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being, or have been, carried out by the Florida Department of Transportation (FDOT) pursuant to 23 U.S.C. § 327 and a Memorandum of Understanding dated May 26, 2022 and executed by the Federal Highway Administration and FDOT.



Authorized Signature

Jennifer Nunn, P.E.

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CONCEPTUAL DRAINAGE REPORT

SR 72 from CR 661 to SR 70 & SR 70 from CR 661 to the

Peace River Bridge

DeSoto County, Florida

Financial Management Number:

443123-2-22-01

Prepared by

The Balmoral Group

April 2026

PROFESSIONAL ENGINEER CERTIFICATION

I hereby certify that I am a registered professional engineer in the State of Florida practicing engineering with **The Balmoral Group** and that I have supervised the preparation of and approve the analysis, findings, opinions, conclusions and technical advice hereby reported for:

PROJECT: SR 72 from C.R. 661 to SR 70 & SR 70 from C.R. 661 to the Peace River Bridge
Financial Management Number: 443123-1-22-01
DeSoto County, Florida

PROJECT DOCUMENT: Conceptual Drainage Report

The engineering work represented by this document was performed through the following duly authorized engineering business:

The Balmoral Group
200 W Welbourne Ave
Winter Park, Florida 32789
Telephone: (407) 629-2185

This Conceptual Drainage Report provides the results of the analysis of the existing drainage conditions, limited analysis required for Best Management Practices sizing and outfall identification for the Project Development and Environment Study for SR 72 from C.R. 661 to SR 70 & SR 70 from C.R. 661 to the Peace River Bridge. I acknowledge that the procedures and references used to develop the results contained in this report are standard to the professional practice of hydrologic analysis and hydraulic engineering as applied through professional judgment and experience.

Any engineering analysis, documents, conclusions or recommendations relied upon from other professional sources or provided with responsibility by the client are referenced accordingly in the following report.

FLORIDA REGISTERED ENGINEER:

Jennifer Ann Nunn, State of Florida, Professional Engineer, License No. 70709

This item has been electronically signed and sealed by:

Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

EXECUTIVE SUMMARY

The Florida Department of Transportation (FDOT), District One, conducted a Project Development and Environment (PD&E) study for proposed improvements, including consideration of a single lane roundabout at the intersection of State Road (SR) 70 and SR 72 west of Arcadia in DeSoto County, Florida. This project involves raising and realigning SR 72 for approximately 0.85 miles between County Road (CR) 661 and SR 70. The SR 70 alignment will also be raised above historic flood levels and will require roughly a 1.05 mile of raising and reconstruction of SR 70 from CR 661 to the Peace River Bridge. A roundabout is proposed in lieu of the stop-controlled intersection. The proposed project would improve the overall safety and operations of both roadway facilities by mitigating the risk of flood damage to the road, reducing unplanned road closures due to severe flooding, and improve the overall safety of the intersection. Multi-modal improvements, including a shared use path are proposed as additional safety improvements.

The purpose of this conceptual drainage analysis is to review the existing drainage patterns and outfalls, estimate a preliminary Best Management Practice (BMP) stormwater management facility size to accommodate the required treatment and attenuation volume, and discuss the conceptual approach to the proposed stormwater management design.

The project area is within an open basin where runoff flows via sheet flow to roadside ditches and through existing cross drains in a general southeast direction towards the Peace River. The study area is within the Peace River Above Joshua Creek (WBID #1623C), which is not listed as impaired for nutrients and is not an Outstanding Florida Water (OFW). There are four cross drains which convey flow from the north side of SR 72 to the south side, towards the Peace River. Off-site conveyance is further discussed in the Location Hydraulics Report (under separate cover). The two existing cross drains along SR 72 closest to SR 70 share a common outfall location and therefore, there are three major outfalls within the project limits. Improvements at the Peace River bridge and relief bridge are further discussed in the Bridge Hydraulic Report (BHR) (under separate cover).

Proposed basins are anticipated to mimic existing drainage patterns. A dry retention pond (wide swale) is proposed north of SR 70 between the roundabout and the Peace River relief bridge to provide stormwater management for SR 72 and portions of SR 70. This BMP will be required to treat all runoff along SR 72 within the project limits (Station 551+00 to 588+50). It was also sized to stack the 25-year/24-hour attenuation volume atop the required treatment volume. The proposed pond size demonstrates sufficient capacity to accommodate the proposed improvements. Floodplain compensation will be demonstrated through no adverse impacts analysis.

The project is within the Southwest Florida Water Management District (SWFWMD) and will require an individual Environmental Resource Permit (ERP).

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List of Acronyms

- BFE – Base Flood Elevation
- BMP – Best Management Practice
- CR – County Road
- DEM – Digital Elevation Model
- ERP – Environmental Resource Permit
- ETDM – Efficient Transportation Decision Making
- FDOT – Florida Department of Transportation
- FEMA – Federal Emergency Management Agency
- FIRM – Flood Insurance Rate Map
- FHWA – Federal Highway Administration
- LOS – Level of Service
- NRCS – Natural Resources Conservation Service
- NWFWMD – Northwest Florida Water Management District
- OFW – Outstanding Florida Water
- PD&E – Project Development and Environment
- R/W – Right-of-Way
- SIS – Strategic Intermodal System
- SMF – Stormwater Management Facility
- SMP – Strategic Monitoring Program
- SR – State Road
- SSURGO – Survey Geographic Database
- USGS – United States Geological Survey
- WBID – Waterbody Identification Number



1. PROJECT DESCRIPTION

The Florida Department of Transportation (FDOT), District One, conducted a Project Development and Environment (PD&E) study for proposed improvements, including consideration of a single lane roundabout at the intersection of State Road (SR) 70 and SR 72 west of Arcadia in DeSoto County, Florida. This project involves raising and realigning SR 72 for approximately 0.85 miles between County Road (CR) 661 and SR 70. The SR 70 alignment will also be raised above historic flood levels and will require roughly a 1.05 mile of raising and reconstruction of SR 70 from CR 661 to the Peace River Bridge. A roundabout is proposed in lieu of the stop-controlled intersection. The proposed project would improve the overall safety and operations of both roadway facilities by mitigating the risk of flood damage to the road, reducing unplanned road closures due to severe flooding, and improve the overall safety of the intersection. Multi-modal improvements, including a shared use path are proposed as additional safety improvements.

The project horizontal datum is Florida State Plane North Zone (NAD 1983), and the vertical datum is NAVD'88, which is 1.10 feet below NGVD'29 (0.00 feet NGVD'29 = -1.10 feet NAVD'88). The project is located in Section 26, 27, and 34, Township 37 South, Range 24 East. See **Figure 1** and **Figure 2** in **Appendix A** for the Location Map and United States Geological Survey (USGS) Map.



Plate 1 - Project Location Map

a. Land Use and Topography

The existing land use along SR 72 within the project limits is primarily agricultural with some residential parcels. An existing gas station is located on the southern corner of the SR 72 and SR 70 intersection. Along SR 70, the existing land use consists mainly of recreational land, vacant land, or water (Peace River), commercial and services, residential high density, and residential medium density. Refer to **Figure 3** in **Appendix A** for the Existing Land Use Map.

The terrain of the project area generally slopes towards the Peace River. Within the project limits, SR 72 begins at elevation 50.0 feet NAVD and slopes to elevation 20.0 feet NAVD at the SR 70 intersection. Within the project limits, SR 70 western limits begin at elevation 32.0 feet NAVD but then flatten out to elevation 27.0 feet NAVD for most of the study limits before rising to elevation 30.0 feet to cross the Peace River. A Digital Elevation Model (DEM) was developed from 2019 USGS Statewide LiDAR data. Topographic information can be found in **Figure 4** in **Appendix A**.

b. Soil Characteristics

U.S. Department of Agriculture Natural Resources Conservation Service (NRCS) Soil Survey Geographic Database (SSURGO) data was used to identify the soil types within and adjacent to the proposed project on the SR 72 and SR 70 corridors. The majority of the project is within Type B/D soils which means the undrained areas have soils with a Type D classification, which are soils having a very slow infiltration rate (high runoff potential). Refer to **Figure 5** in **Appendix A** for an exhibit of the project soils.

c. Floodplains

The Federal Emergency Management Agency's (FEMA) effective Flood Insurance Rate Maps (FIRMs), dated November 6, 2013, depict Zone AE, A, and X floodplain limits within the project proximity. The Zone AE floodplains, which are areas that have a 1% chance of annual flooding, and are consistent with the Peace River and its overbank area. This riverine floodplain encroaches into the SR 72 and SR 70 right-of-way and has a Base Flood Elevation (BFE) of 25.0 feet and 26.0 feet. The Zone A floodplains, which are areas that have a 1% annual chance of flooding, but do not have an established BFE are located along the western portion of SR 72 within the project limits. Refer to **Figure 6** in **Appendix A** for the FEMA Flood Map.

d. Existing Drainage Patterns

The project area is within an open basin where runoff flows via sheet flow to roadside ditches and through existing cross drains in a general southeast direction towards the Peace River. There is currently no existing permit for the area and the runoff is untreated prior to discharge.

There are four existing cross drains which convey flow from the north side of SR 72 to the south side, towards the Peace River.

- EX-0: 8-ft high x 8-ft wide concrete box culvert is located approximately 1200 feet southwest of the begin project limits
- EX-1: 4-ft high x 5-ft wide concrete box culvert is located 2500 feet northeast of the begin project limits
- EX-2: 30-inch reinforced concrete pipe located 1000 feet southwest of the SR 70 and SR 72 intersection

- EX-3: double 24-inch reinforced concrete pipe located 130 feet southwest of the SR 70 and SR 72 intersection

The project site is located within the Peace River above Joshua Creek watershed (WBID #1623C) (Refer to **Figure 7** in **Appendix A** for the WBID Map). This is not a tidal basin. It is not listed on the FDEP verified list for any impairments. The Peace River is not an Outstanding Florida Water (OFW).

The Peace River crosses SR 70 in two locations directly downstream of the project area.

- SR 70 over Peace River Relief Bridge No. 040002, 14 span, 600 feet long
- SR 70 over Peace River Bridge No. 040023, 7 span, 320 feet long

Coordination has been ongoing with Florida Department of Transportation (FDOT) Maintenance. This study area has known local flooding issues with significant flooding during Hurricane Ian and Hurricane Irma. Documentation from these events is included in **Appendix C**.

2. PURPOSE AND NEED

The purpose of this project is to address flooding and safety issues identified within the project area. The need for this project is to ensure SR 72 and SR 70 are traversable after severe storm events and to reduce crashes associated with the intersection of SR 72 and SR 70. Another goal of the project is to enhance multi-modal access.

FLOOD MITIGATION: Add Resiliency Measures and Prevent Roadway Closures

The segment of SR 72 between CR 661 and SR 70 has been prone to severe flooding over the years. The Federal Emergency Management Agency's (FEMA) effective Flood Insurance Rate Maps (FIRMs), dated November 6, 2013, depict Zone AE, A, and X floodplain limits within the project proximity. The Zone AE floodplains, which are areas that have a 1% chance of annual flooding, are consistent with the Peace River and its overbank area. This riverine floodplain encroaches into the SR 72 and SR 70 R/W and has a Base Flood Elevation (BFE) of 25.0 feet and 26.0 feet. The Zone A floodplains, which are areas that have a 1% annual chance of flooding, but do not have an established BFE are located along the western portion of SR 72 within the project limits. Several publications and other historical records have shown this portion of the roadway frequently inundated during hurricane season. A shallow base clearance coupled with repeated high-water levels from the Peace River, decreases the overall service life of the roadway and leads to more unscheduled repairs and maintenance. The project area is within an open basin where runoff flows via sheet flow to roadside ditches and through existing cross drains in a general southeast direction towards the Peace River. There is currently no existing permit for the area and the runoff is untreated prior to discharge. Frequent flooding restricts regional travel as well as adversely affects access and mobility for the local community. Public safety is at notable risk during these flooding events as it can delay emergency response, restrict access to important shelters, hospitals, medical facilities, and necessary goods and services.

SAFETY: Reduce Crash Potential

The intersection of SR 72 and SR 70 is currently a T-intersection, stop-controlled at the terminus of SR 72 where it intersects with SR 70. SR 72 has a high level of truck traffic due to citrus fruit being brought from regional groves to the Peace River Citrus Products facility, located approximately 0.70 miles southwest of the project limits on SR 72. The truck traffic from this facility and other regional agricultural or rural-residential uses creates a high number of large-vehicle turning movements at the intersection of SR 72 and SR 70. Further complicating the safety of this intersection is the presence of the gas station at the south corner, with large, full access driveways on SR 72 and SR 70. The driveway apron on SR 72 is located approximately 65 feet from the SR 70 intersection and the apron on SR 70 is located within approximately 10 feet of the return radius of the intersection of SR 72. The proximity of these driveways to the intersection increases the potential for crashes. The spacing between these two driveways are too close together and do not meet the separation requirements per FDOT Design Manual (FDM) Table 201.4.2. A review of the crash data (2021-2025) [151 crashes reported at the SR 72/SR 70 intersection, including 1 fatality, 7 incapacitating injuries, and 16 possible injury crashes] indicates a high number of crashes that occur result in injury.

MODAL INTERRELATIONSHIPS: Enhance Mobility Options and Multi-Modal Access

There is a lack of bicycle and pedestrian connectivity in the area. The DeSoto Veterans Memorial Park is located adjacent to the project area on the north side of SR 70 and the Peace River Campground and Canoe Rental business is located on the northwest of the project area. Each of these recreation facilities creates non-vehicular demand, primarily for visiting the gas station. No pedestrian pathways connect to the store and no crossing facilities exist at the SR 72 and SR 70 intersection or within the project area. Crash data shows a pedestrian fatality occurred within the project area along SR 70 in 2016 in an area with no pedestrian facilities. A pedestrian was struck while walking along the westbound SR 70 shoulder.

3. DESIGN CONSIDERATIONS

a. Alternatives Analysis

One Build Alternative was developed for this PD&E Project. The Build Alternative proposes raising the profile of SR 72 and SR 70. A dry retention pond (wide swale) is proposed north of SR 70 between the roundabout and the Peace River relief bridge to provide stormwater management for SR 72 and portions of SR 70. Drainage for the SR 70 portion east of the bridge will remain existing open roadside ditches and existing inlets at the bridges. SR 70 runoff flowing to the north side of SR 70 will be conveyed to the pond via open swale, inlets, and pipes. The remainder of SR 70 will follow existing drainage patterns. Offsite water will utilize existing cross-drains and will bypass the proposed treatment swale.

Another improvement that was adopted from previous traffic studies was introducing a roundabout at the intersection of SR 72 and SR 70. This improvement addresses the safety needs of the project by reducing the overall severity of crashes as well as the overall number of crashes as compared to the current stop control. The roundabout design requires realigning the SR 72 alignment to the west in order to avoid the existing transmission pole.

As shown in **Plate 2 & Plate 3**, the main typical section for both SR 72 and SR 70 consists of two 12-foot lanes with 10-foot shoulders (5-foot paved) with various configurations of roadside ditches for the conveyance of runoff. The right-of-way varies from 200' to 250'.

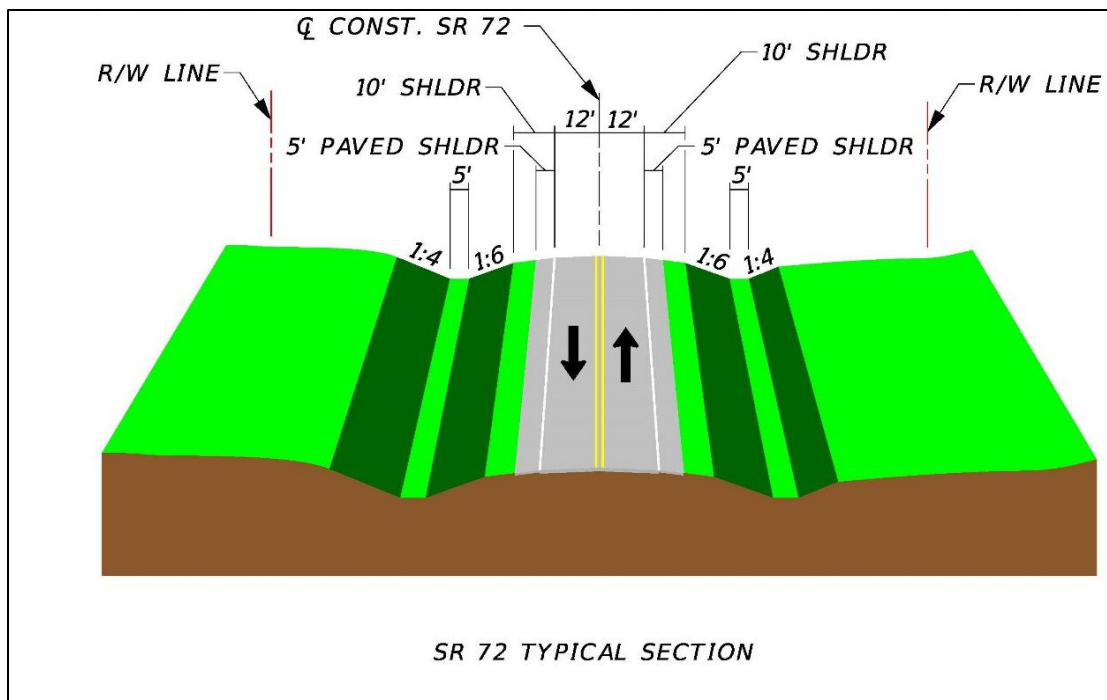


Plate 2 – Typical Section of SR 72

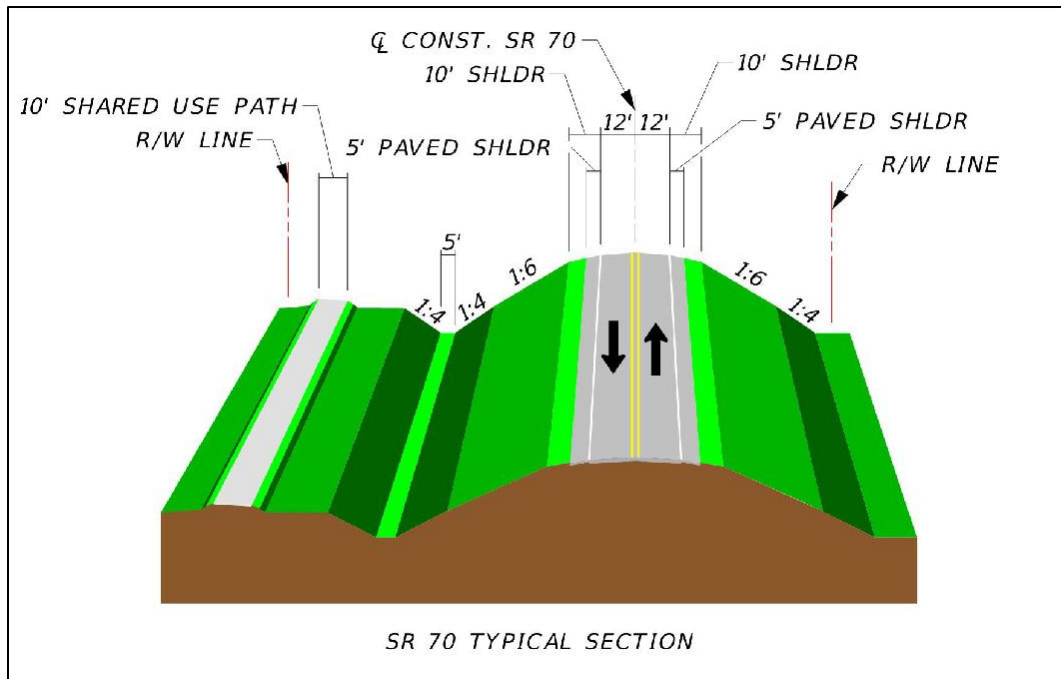


Plate 3 - 200-foot Typical Section of SR 70

b. Permit Agency Coordination

Southwest Florida Water Management District

The project is contained within the SWFWMD. An individual ERP will be required for this project. A coordination meeting was held to discuss this project and the associated criteria on February 2, 2023. These are included in **Appendix C**.

c. Airport Buffer Zones

The project limits are outside of the 10,000 feet buffer of the runway for the Arcadia Municipal Airport. Refer to **Figure 8** in **Appendix A** for the Airport Buffer Zones.

4. STORMWATER MANAGEMENT FACILITY (SMF) SIZING ANALYSIS

a. Proposed Drainage Basins

The anticipated proposed improvements of SR 72 and SR 70 will include raising the roadway profile of both alignments. Some increase in impervious area is anticipated with the realignment of SR 72, partial realignment of SR 70 and the proposed roundabout. Proposed basins are anticipated to mimic existing basins with the established outfall locations remaining unchanged. Outfall sizes along SR 72 may change to accommodate an increase in flow through the cross drain, rather than roadway overtopping, and to allow for wildlife crossing. This will be further discussed in the *Location Hydraulics Report*, under separate cover.

Within the project limits, roadway runoff along SR 72 will be conveyed primarily via roadside ditches to inlets that will convey runoff to a dry retention pond, Pond 1, to provide treatment and attenuation prior to discharge. Off-site runoff is proposed to bypass the roadside ditches and will flow through the right-of-way utilizing the proposed cross drains at the existing locations. By maintaining separate systems for on-site runoff, the required treatment volume will only be sized for the on-site R/W area.

Within the project limits, roadway runoff along SR 70 will maintain existing drainage patterns and utilize roadside ditches, shoulder gutter, inlets and pipes west of the relief bridge to direct the runoff on the north side of SR 70 to the proposed retention Pond 1 on the north side. The remaining project area will directly discharge into the Peace River as it does in the current condition.

Table 1 shows a summary of the proposed basin for the project.

Table 1 – Proposed Basin Summary

Name	Basin Limits	Drainage Area (ac)	Impervious Area (ac)	BMP
Basin 1	Station 551+00 to 588+50 (SR 72) Station 603+00 to 632+00 (SR 70)	36.90	8.50	Retention Pond 1

b. BMP Sizing

Required treatment volume was estimated for the entire limits of proposed work along SR 72 and the limits of SR 70 west of the Peace River Relief Bridge. Treatment volume is governed by the greater of one-inch of rainfall over the contributing area or half inch of runoff over the drainage area. Since the runoff coefficient was estimated to be 0.45 for the proposed basin.

The existing and proposed basins are considered open with positive outfall to Peace River. Per coordination at the SWFWMD meeting, the mean annual, 10-year, 25-year, and 100-year storm events will be modeled during design to identify any adverse impacts. For the purposes of preliminary sizing, the 25-year/24-hour storm event was used to estimate the increase in runoff generated by the proposed condition.

Table 2 summarizes the required volume for the proposed pond. Calculations can be found in **Appendix B**.

Table 2 – Required Pond Volume Summary

Basin	Required Treatment Volume (ac-ft)	Required Attenuation Volume (ac-ft)	Total Required Volume (ac-ft)
Basin 1	1.54	2.26	3.80

Dry Retention Pond

Pond 1 is a proposed dry retention pond located in the northeast quadrant of the proposed roundabout at the SR 72 and SR 70 intersection. The proposed pond bottom elevation is 24.0 feet NAVD and the top of maintenance berm is elevation 28.0 feet NAVD. With natural ground around elevation 20 feet NAVD and an estimated seasonal high groundwater elevation of 19.0, the soils under the proposed pond will be specified as clean sand with minimal fines. There is 5.0 feet to the water table, which should provide ample recovery of the storage capacity and treatment volume. The proposed pond side slopes assume 1:6 along the proposed roadway with 1:4 side slopes along the back slope.

With this proposed layout, the treatment volume depth is estimated to be 1.29 feet (1.54 ac-ft treatment volume) with a total storage depth of 2.93 feet (2.26 ac-ft attenuation volume released through the weir) for the 25-year/24-hour stage. This storage volume provides 1.38 feet of freeboard in the preliminary design. Pond sizing volume calculations can be found in **Appendix B**.

5. FLOODPLAIN IMPACTS AND MITIGATION

The anticipated proposed improvements of SR 72 and SR 70 will include raising the roadway profile of both alignments and will include additional fill material within the floodplain. The floodplain impacts have been estimated at 48.3 ac-ft. An ICPR model was used in the LHR to demonstrate that the proposed improvements had no adverse impacts on floodplain elevations. Additionally, a 2-D HEC-RAS model of the Peace River at SR 70 was utilized to determine the amount of excavation in the relief channel to maintain existing flood levels. **Figure 10** in **Appendix A** shows the estimated floodplain impact. It should be noted that the flow rate of Peace River at this location is almost 1.0 ac-ft per second during flooding events.

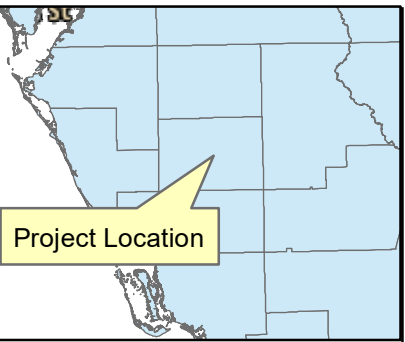
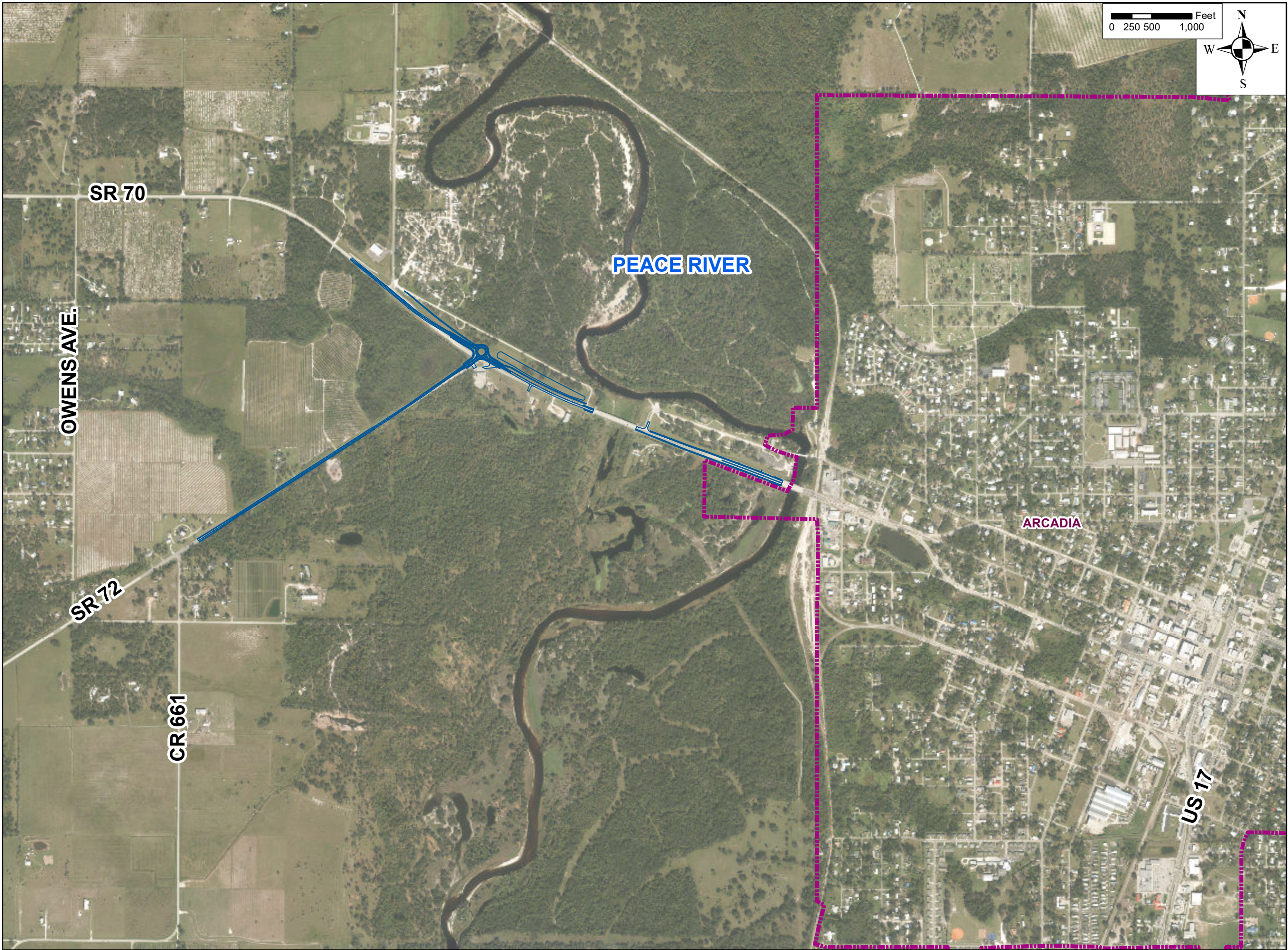
6. CONCLUSIONS

In summary, the conceptual drainage report provides the preliminary size for the proposed dry retention Pond 1. The capacity of Pond 1 allows for the required standard treatment volume and attenuation volume per SWFWMD criteria. Due to the depth to the existing water table and import of clean sand, recovery of the pond volume and treatment volume should be feasible and will be confirmed during design. Floodplain compensation will be demonstrated through no adverse impacts analysis.

7. REFERENCES

- 1) Federal Emergency Management Agency (November 2013). Effective Flood Insurance Rate Maps, DeSoto County, Florida and Incorporated Areas.
- 2) Florida Department of Transportation. (2023). Drainage Design Guide. Tallahassee: Office of Design, Drainage Section.
- 3) Florida Department of Transportation. (2023). Drainage Manual. Tallahassee: Office of Design, Drainage Section.
- 4) Southwest Florida Water Management District (2016). Environmental Resource Permit Applicant's Handbook Volume II.

Appendix A - Figures



Legend

- Proposed Project
- City Limits

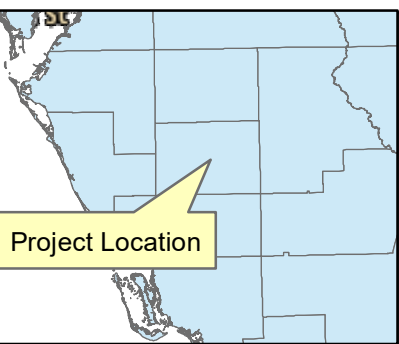
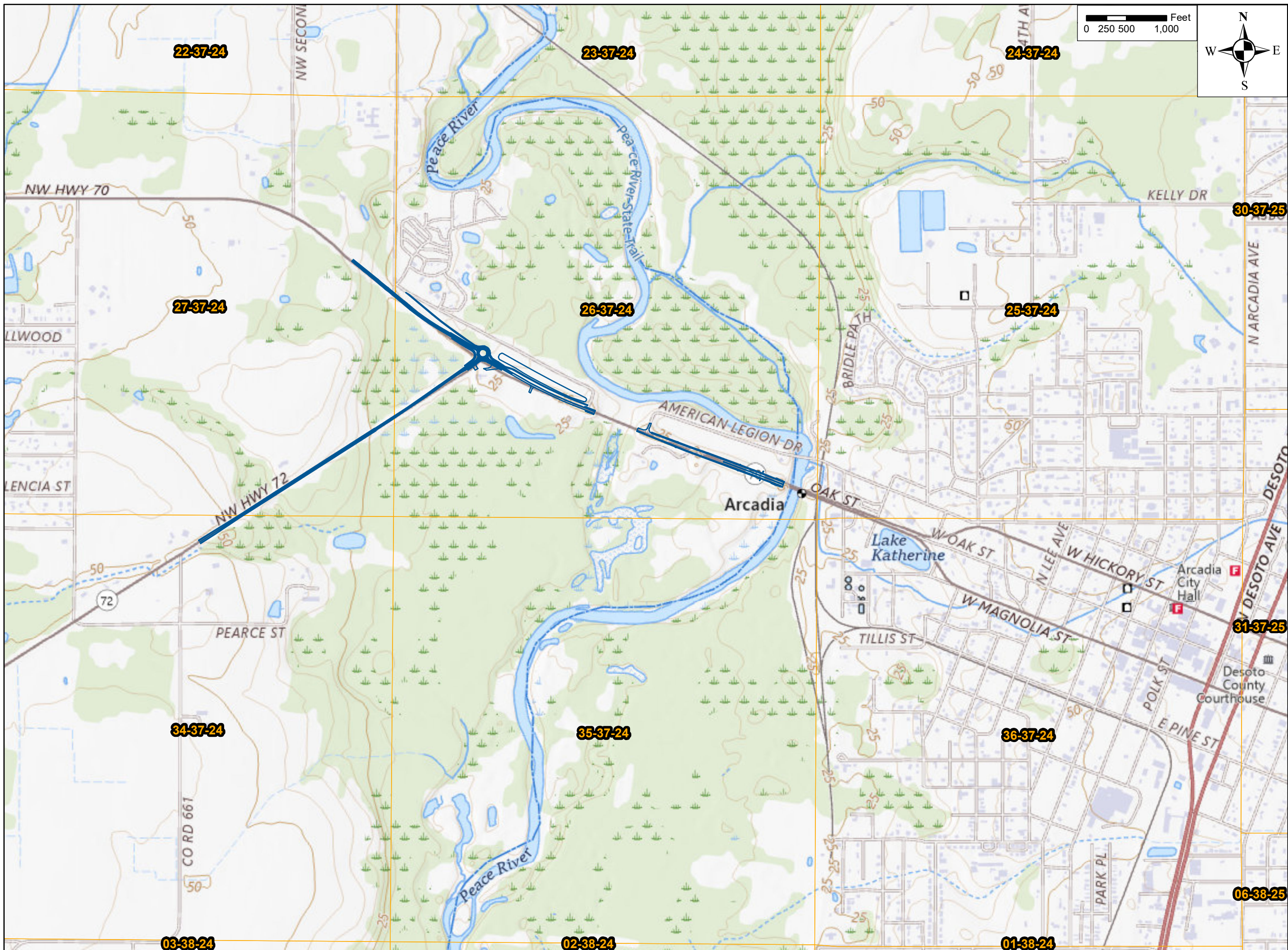
Sources:
Esri, DigitalGlobe, GeoEye,
Earthstar Geographics,
CNES/Airbus DS ,
USDA, USGS, AeroGRID,
IGN, and the GIS User Community

Figure 1
Location Map

FDOT

S.R. 72 from C.R. 661 to S.R. 70 &
S.R. 70 from C.R. 661 to the
Peace River Bridge
DeSoto County, Florida
443123-1-22-01

The Balmoral Group
200 W Welbourne Ave
Winter Park, FL 32789
Phone: (407) 629-2185
www.balmoralgroup.us



- Legend**
- Proposed Project
 - S-T-R
Section - Township - Range

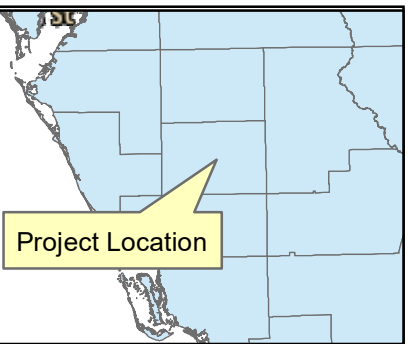
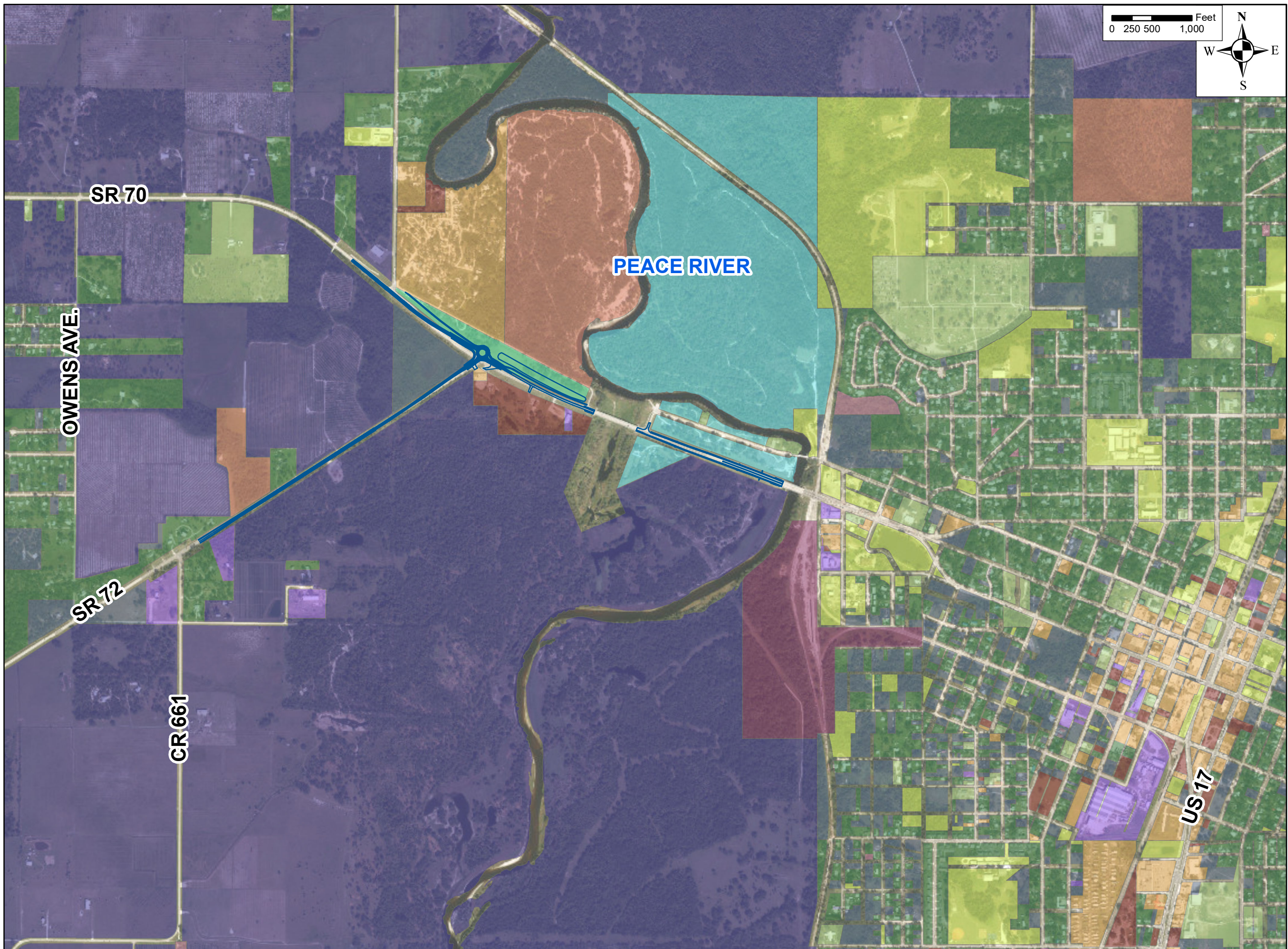
Sources:
Esri, DigitalGlobe, GeoEye,
Earthstar Geographics,
CNES/Airbus DS ,
USDA, USGS, AeroGRID,
IGN, and the GIS User Community

Figure 2
USGS Quadrangle Map

FDOT

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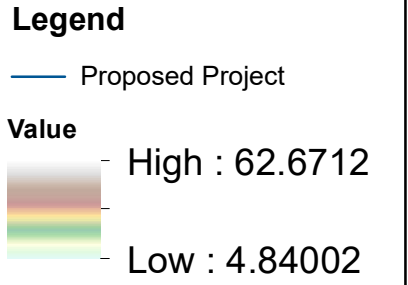
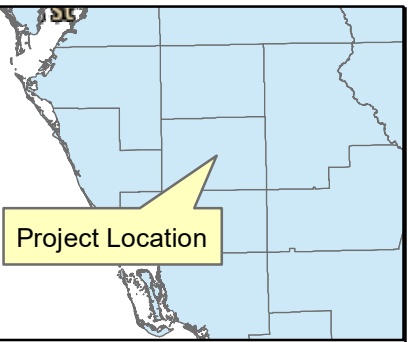
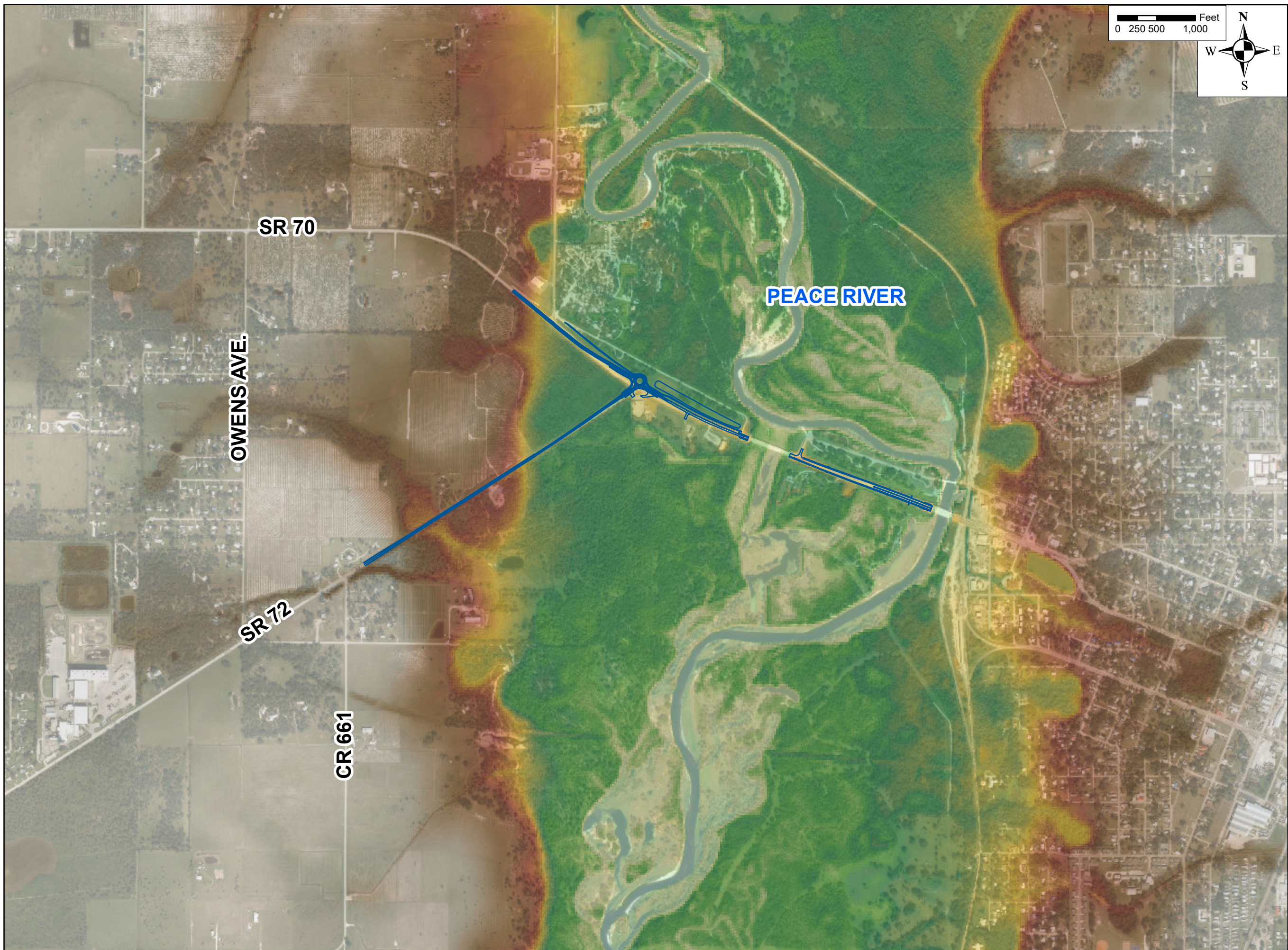
- Legend**
- Proposed Project
 - Existing Land Use Description**
 - ACREAGE NOT ZONED FOR AGRICULTURE
 - AGRICULTURAL
 - CENTRALLY
 - INDUSTRIAL
 - INSTITUTIONAL
 - MINING
 - NO DATA AVAILABLE
 - OTHER
 - PARCELS WITH NO VALUES
 - PUBLIC/SEMI-PUBLIC
 - RECREATION
 - RESIDENTIAL
 - RETAIL/OFFICE
 - ROW
 - VACANT NONRESIDENTIAL
 - VACANT RESIDENTIAL
 - WATER

Sources:
Land Use Data (2022) from Florida Department of Revenue, County Property Appraisers and the GeoPlan Center. www.fgdl.org

Figure 3
Existing Landuse Map

FDOT
S.R. 72 from C.R. 661 to S.R. 70 &
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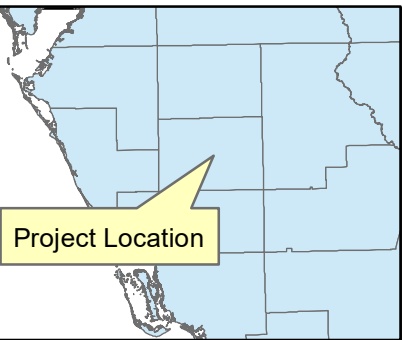
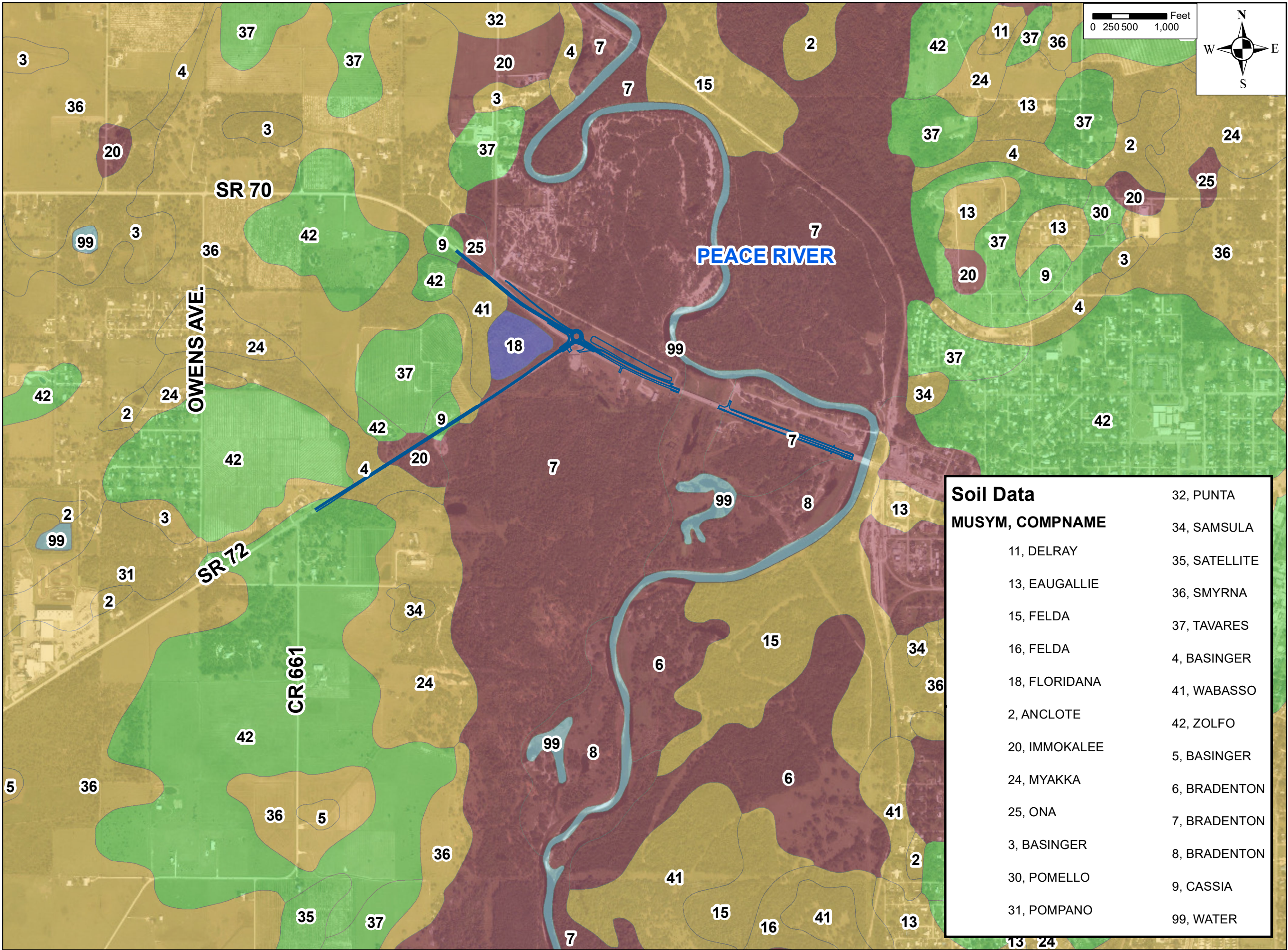
Sources:
LiDAR data from USGS
(Date Range 11/30/2018 to 1/10/2019)
<http://nationalmap.gov/viewer.html>

Figure 4
Topographic Data Map

FDOT

S.R. 72 from C.R. 661 to S.R. 70 &
S.R. 70 from C.R. 661 to the
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Legend

— Proposed Project

HYDRGRP

A

A/D

B/D

C/D

Soil Data

MUSYM, COMPNAME

11, DELRAY	32, PUNTA
13, EAUGALLIE	34, SAMSULA
15, FELDA	35, SATELLITE
16, FELDA	36, SMYRNA
18, FLORIDANA	37, TAVARES
2, ANCLOTE	4, BASINGER
20, IMMOKALEE	41, WABASSO
24, MYAKKA	42, ZOLFO
25, ONA	5, BASINGER
3, BASINGER	6, BRADENTON
30, POMELLO	7, BRADENTON
31, POMPANO	8, BRADENTON
	9, CASSIA
	99, WATER

Sources:
U.S. Department of Agriculture,
Natural Resources
Conservation Service
Soil Data
(Oct 2024)

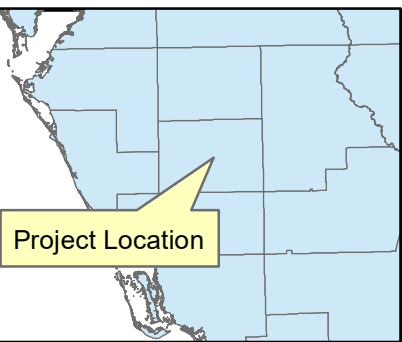
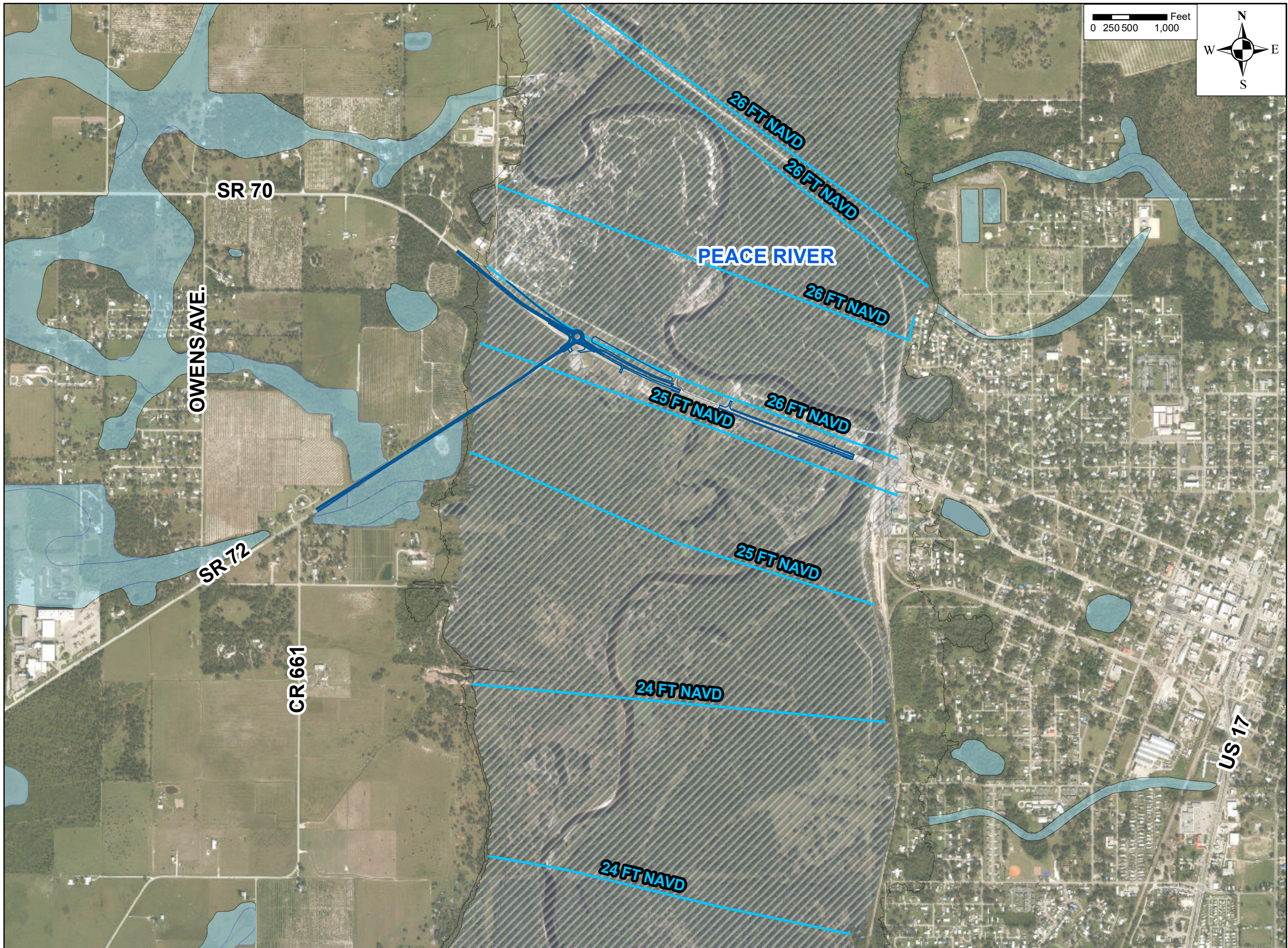
Figure 5

NRCS Soils Map



S.R. 72 from C.R. 661 to S.R. 70 &
S.R. 70 from C.R. 661 to the
Peace River Bridge
DeSoto County, Florida
443123-1-22-01

The Balmoral Group
200 W Welbourne Ave
Winter Park, FL 32789
Phone: (407) 629-2185
www.balmoralgroup.us



Legend

- Proposed Project
- dfirm_bfe_dec22

FLD_ZONE

- A
- AE
- X

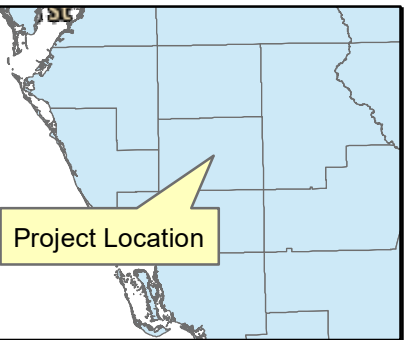
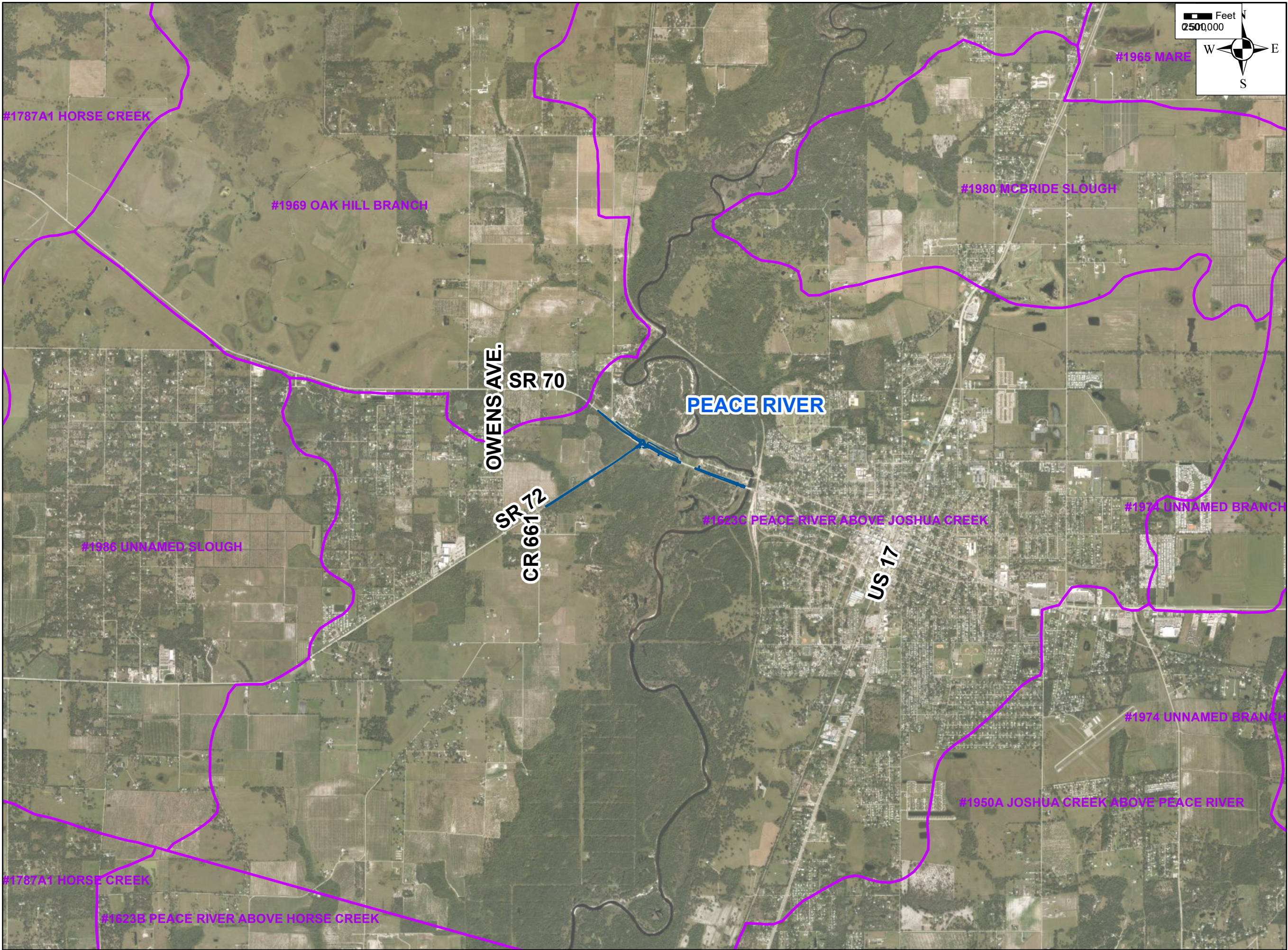
Sources:
FEMA Flood Hazard Zones
of the Digital Flood Insurance Rate
Map (DFIRM) in the state of Florida
December 2021

Figure 6
FEMA Flood Map



S.R. 72 from C.R. 661 to S.R. 70 &
S.R. 70 from C.R. 661 to the
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Legend

- Proposed Project
- Waterbody_IDs_(WBIDs)

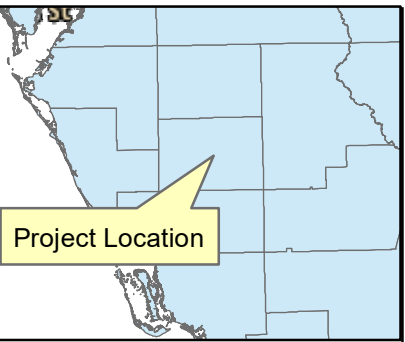
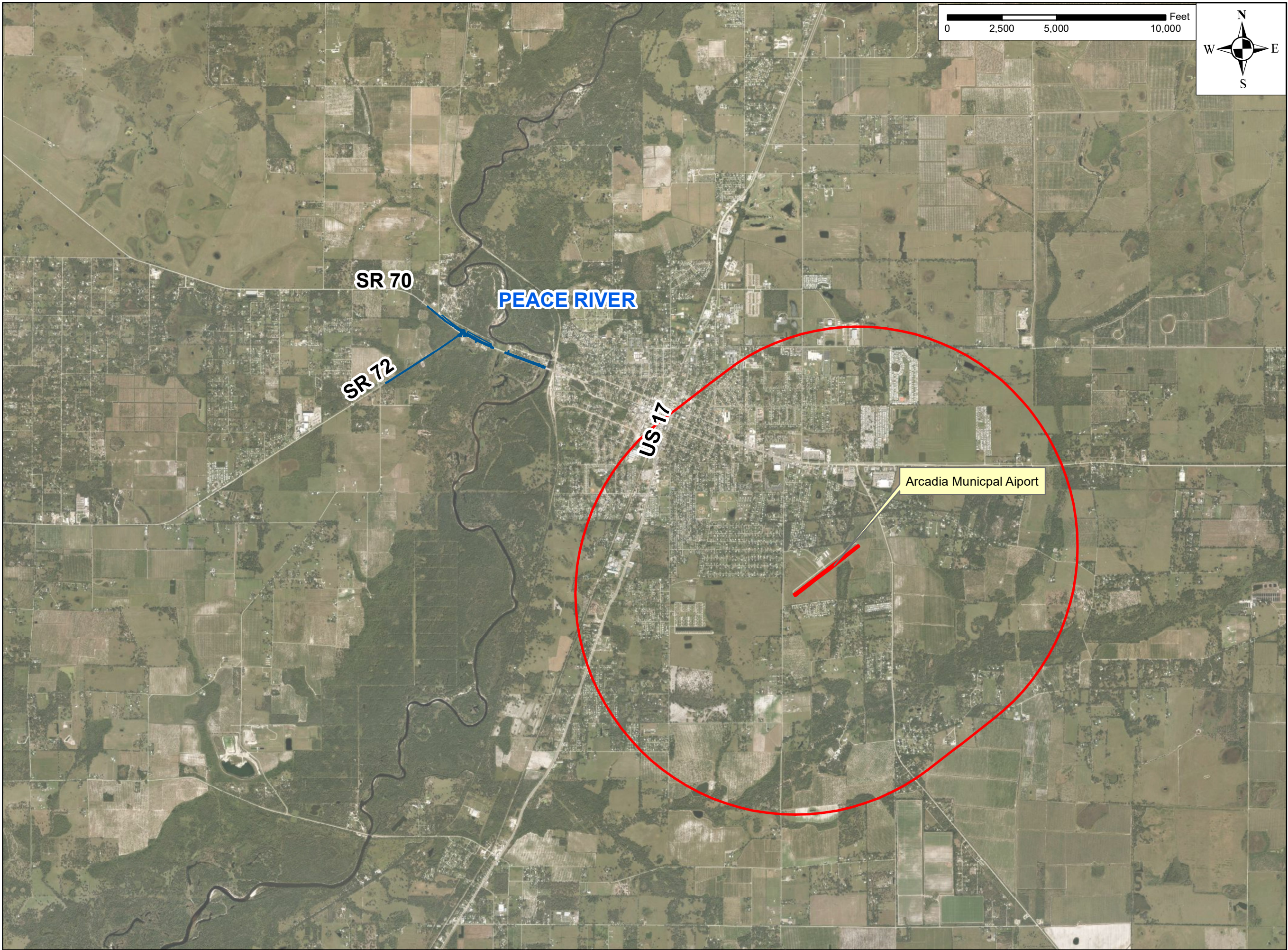
Sources:
FEMA Flood Hazard Zones
of the Digital Flood Insurance Rate
Map (DFIRM) in the State of Florida
December 2021

Figure 7
WBID Map

FDOT

S.R. 72 from C.R. 661 to S.R. 70 &
S.R. 70 from C.R. 661 to the
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DeSoto County, Florida
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- Legend**
- Proposed Project
 - Airport & 10,000 ft Buffer

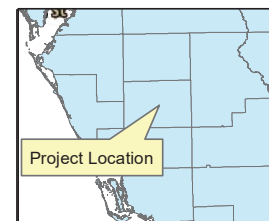
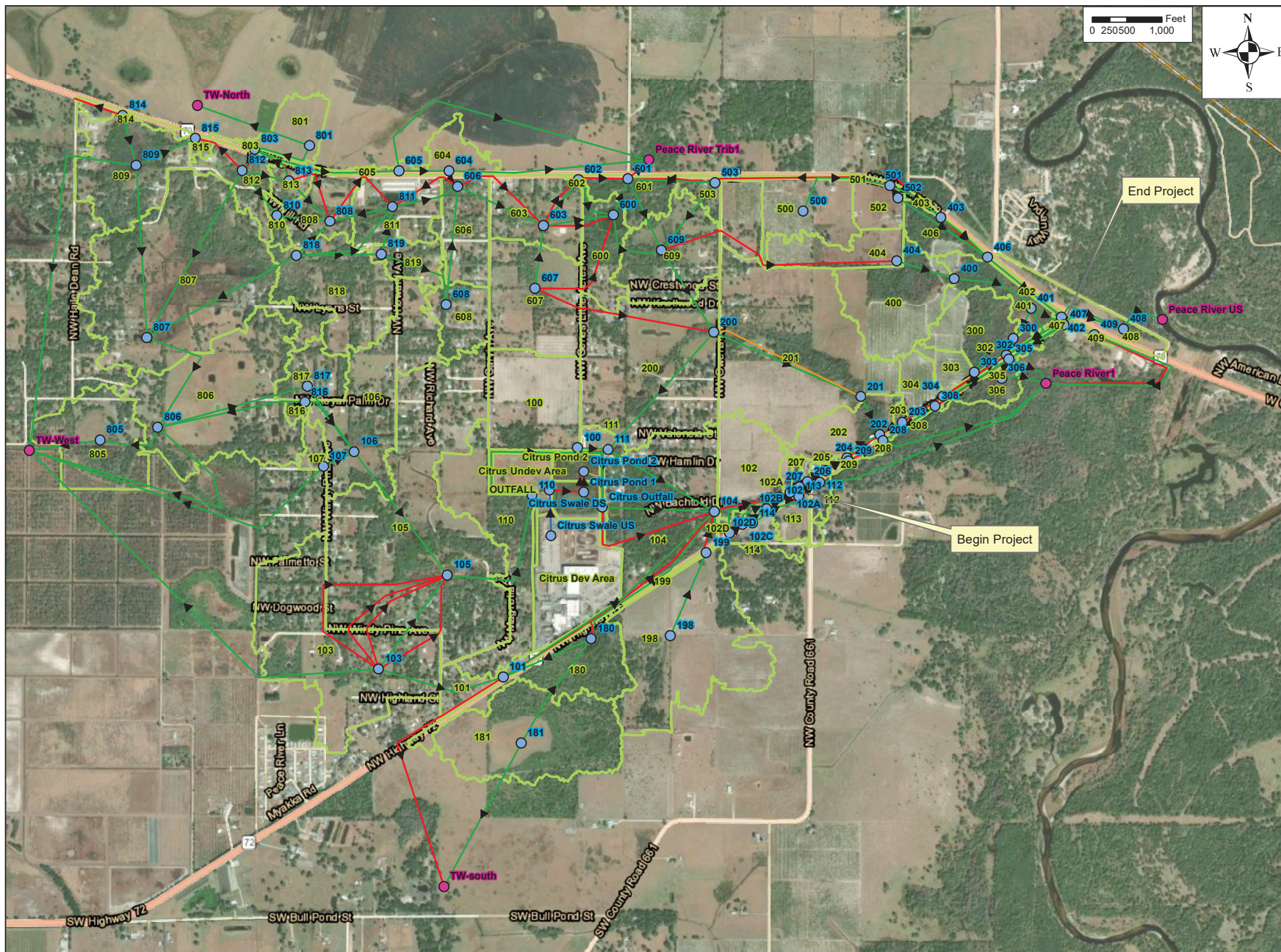
Sources:
FEMA Flood Hazard Zones
of the Digital Flood Insurance Rate
Map (DFIRM) in the State of Florida
December 2021

Figure 8
Airport Buffer Zones Map



S.R. 72 from C.R. 661 to S.R. 70 &
S.R. 70 from C.R. 661 to the
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DeSoto County, Florida
443123-1-22-01

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- Legend**
- Stage Area
 - Time Stage
 - Channel
 - Drop Structure
 - Pipe
 - Weir
 - Pre-Development Basin

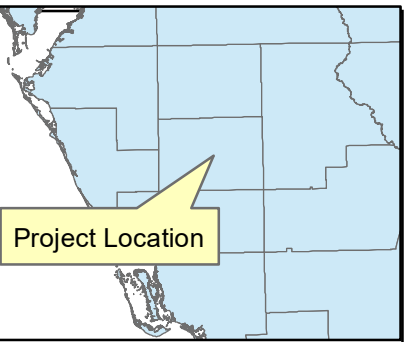
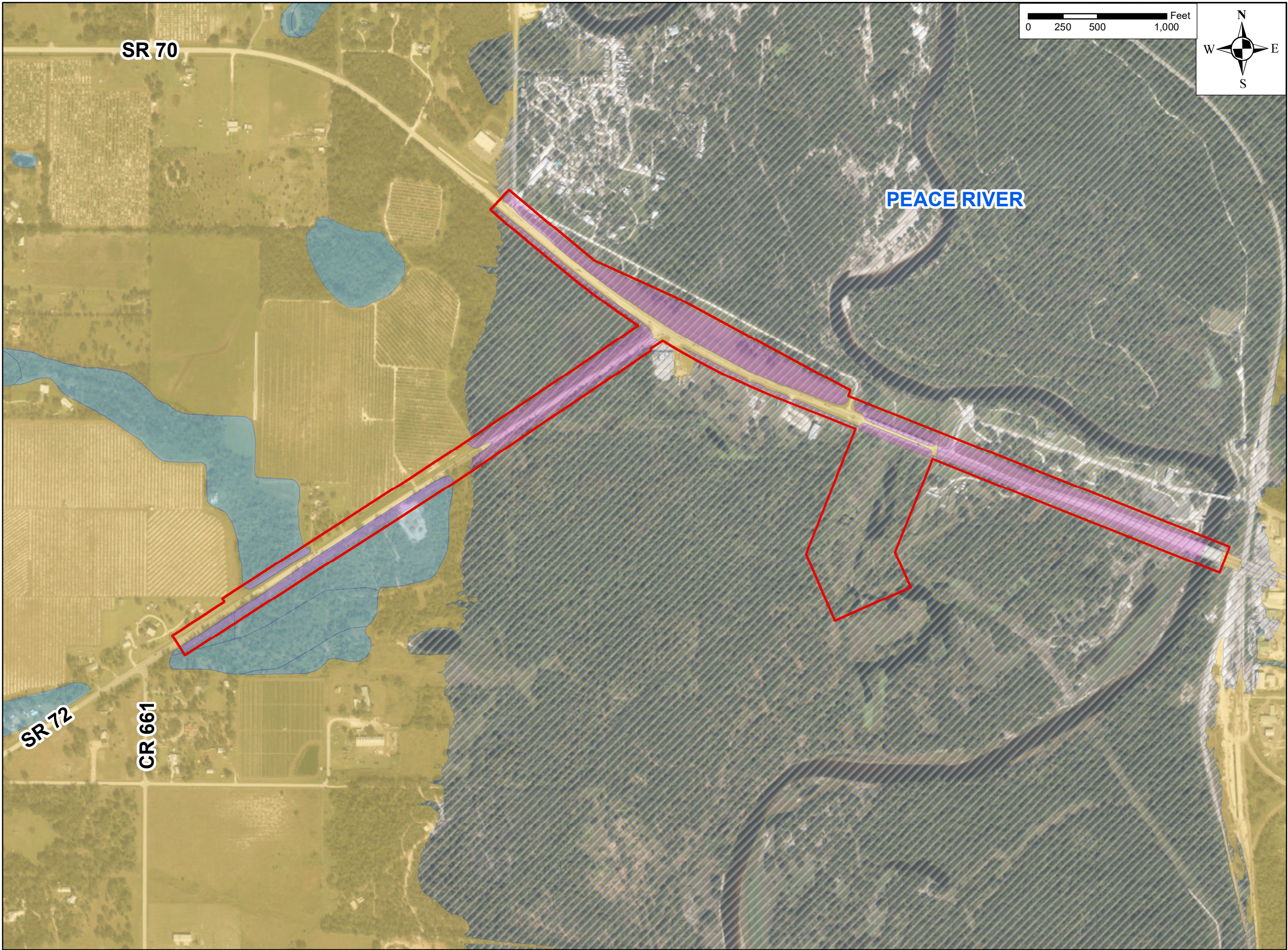
Sources:
Esri, DigitalGlobe, GeoEye,
Earthstar Geographics,
CNES/Airbus DS ,
USDA, USGS, AeroGRID,
IGN, and the GIS User Community

**Figure 9
Drainage Map**



SR 72 FROM CR 661 TO SR 70
(MP 9.856) TO (MP 10.991)
Desoto County, Florida
Financial Project ID 443123-1-52-01

The Balmoral Group
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www.balmoralgroup.us



Legend

 Floodplain Impacts

 Project Area

Flood Zone

 A

 AE

 X

Sources:
FEMA Flood Hazard Zones
of the Digital Flood Insurance Rate
Map (DFIRM) in the state of Florida
December 2021

Figure 10
Floodplain Impacts Map



S.R. 72 from C.R. 661 to S.R. 70 &
S.R. 70 from C.R. 661 to the
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443123-1-22-01

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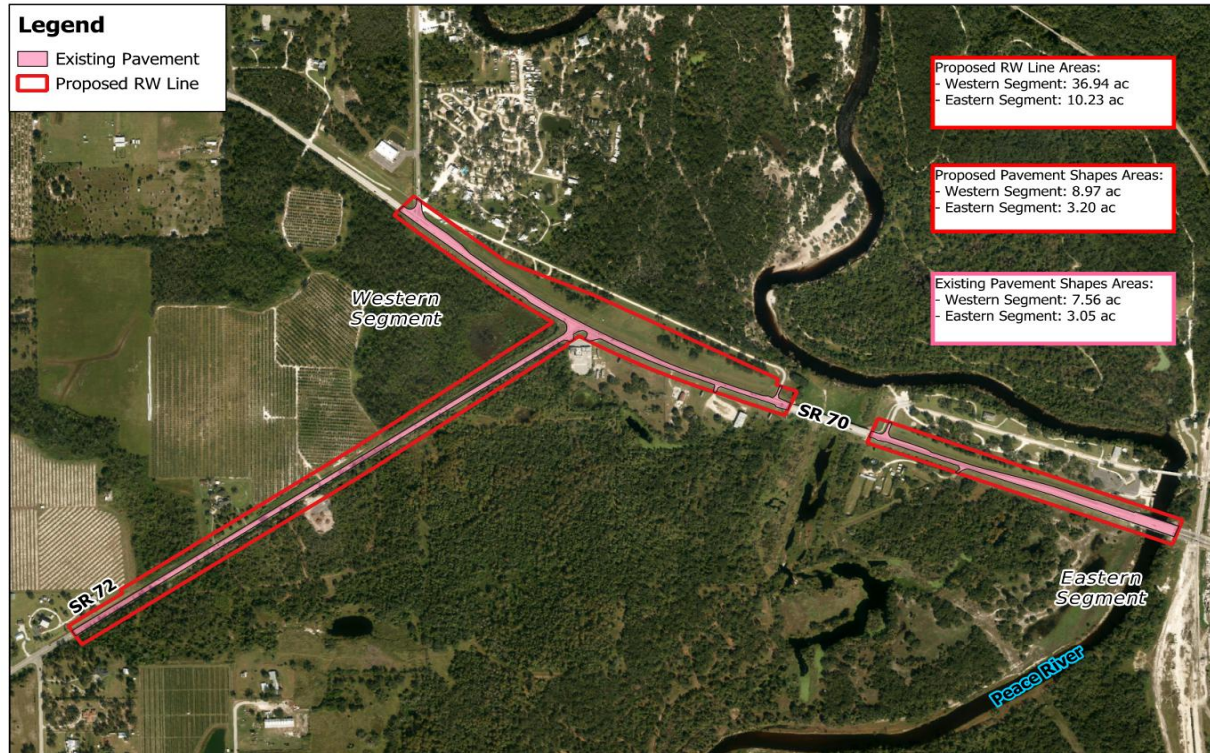
Appendix B – Pond Sizing Calculations



Treatment Volume Calculations for the Proposed Condition

Project: SR 72 from CR 661 to SR 70 & SR 70 from CR 661 to Peace River Bridge
FPID: 443123-1-22-01
County: Desoto County

Designer: GS
Reviewer: JN
Date: 2/20/2026
Checked: 2/24/2026



Total Impervious Area = 8.50 Ac
 Total Drainage area = 36.90 Ac

	Area (ac)	C
Impervious Area =	8.970	0.950
Pond Area =	1.600	1.000
Open Area, Flat (Slopes <2%) =	26.330	0.250
Composite C =		0.45

Treatment Volume Calculations

Runoff from 1.0" of rainfall over the contributing area = 1.39 Ac-ft

0.5" of runoff over the contributing area = 1.54 Ac-ft

Required Treatment Volume (T.V.) = 1.54 Ac-ft

Attenuation Volume Calculations for the Proposed Condition

Project: SR 72 from CR 661 to SR 70 & SR 70 from CR 661 to Peace River Bridge
FPID: 443123-1-22-01 **Designer:** GS **Date:** 2/20/2026
County: Desoto County **Reviewer:** JN **Checked:** 2/24/2026

Curve Number Calculations

Basin: Pre

Cover Description	Hydrologic Group	CN	Area (Acre)	CN x Area
Impervious ⁽¹⁾		98	2.07	202.47
Open Space - Good Condition	A	39	1.60	62.40
Open Space - Good Condition	D	80	33.23	2658.72
Totals =			36.90	2924

(1) Existing Impervious estimated by assuming 24-ft pavement for 3750 feet.

$$\text{CN (weighted)} = \frac{(\text{total product})}{(\text{total area})} = \frac{2,924}{36.90} = 79.3$$

Basin: Post

Cover Description	Hydrologic Group	CN	Area (Acre)	CN x Area
Impervious		98	8.50	833.31
Open Space - Good Condition	A	39	1.23	47.97
Open Space - Good Condition	D	80	28.40	2271.74
Totals =			36.90	3153

$$\text{CN (weighted)} = \frac{(\text{total product})}{(\text{total area})} = \frac{3,153}{36.90} = 85.5$$

Basin	Area (ac)	Existing					Proposed				
		Weighted CN	s	I _a	Runoff (Q) (in)	Runoff (Q) (ac-ft)	Weighted CN	s	I _a	Runoff (Q) (in)	Runoff (Q) (ac-ft)
Project	36.90	79.3	2.61	0.52	5.73	17.62	85.5	1.70	0.34	6.47	19.88

25-year/24-hour Rainfall = 8.2 inches

Required Attenuation Volume = 2.26 ac-ft

Formulas:

$$s = \frac{1000}{CN} - 10$$

$$I_a = 0.2 * S$$

$$Q = \frac{(P - I_a)^2}{(P + 0.8 * S)}$$

Pond Calculations for the Proposed Condition

Project: SR 72 from CR 661 to SR 70 & SR 70 from CR 661 to Peace River Bridge

FPID: 443123-1-22-01

County: Desoto County

Designer: GS

Date: 2/20/2026

Reviewer: JN

Checked: 2/24/2026

Storage Calculations: Pond 1

Elev	h	Area	Area	Inc. Volume	Cumulative Vol.	
---	ft	sf	ac	Ac-ft	Ac-ft	
28.00	1.0	75,000	1.72	1.65	5.69	Berm
27.00	1.0	68,825	1.58	1.50	4.04	
26.00	1.0	61,855	1.42	1.35	2.54	
25.00	1.0	55,321	1.27	1.20	1.20	
24.00	0.00	48,787	1.12	0.00	0.00	Bottom

Weir Elevation (Top of Treatment Volume):

Required T.V.	=	1.54	ac-ft	
Elev. = 25.29	=	1.54	ac-ft	Provided Treatment Volume
Provided T.V. Depth	=	1.29	ft	

Estimated DHW (stack 25-yr attenuation volume on top of T.V.)

Required Attenuation Volume	=	2.26	ac-ft	
Elev. = 26.93	=	3.80	ac-ft	Provided Capacity
Provided Storage Depth	=	2.93	ft	
Estimated Freeboard	=	1.07	ft	



Appendix C – Correspondence and Project Information



**SWFWMD Pre-Application Meeting #2 (Project Scope Change) Agenda
(Original Pre-App Feb 5, 2020)**

SR 72 from CRR 661 to SR 70 and SR 70 from CR 661 to Peace River

FPID 443123-1-32-01

Desoto County

Location: TEAMS Meeting hosted by District One, Bartow
Date: February 2, 2023
Time: 2:00 pm

The purpose of the meeting is to determine the appropriate permitting approach for the proposed changes required on SR 72 and SR 70 to bring the roadway into compliance with the level of services necessary for evacuation routes. The proposed SR 72 will be shifted to the north and right-of-way will be acquired on both sides of the alignment to maintain traffic and meet safety criteria. A roundabout is proposed at the relocated SR 72/SR 70 intersection. SR 72 is proposed to be raised approximately 6 feet with a low centerline elevation of 29.0 ft NAVD. The SR 70 profile is proposed to be raised to 29.0 feet NAVD at the centerline from west of the new intersection to the main channel bridge of the Peace River. There are no changes proposed to the existing relief bridge, the main channel bridge or east of the Peace River. There are no additional travel lanes proposed.

1. Introductions –
2. Project Description and Need
 - a. SR 72 from CRR 661 to SR 70 and SR 70 from CR 661 to Peace River Bridge
 - b. To accommodate emergency services and reduce the risk of flooding by preventing overtopping of the roadway due to peak stages from the Peace River
3. Stormwater Management –
 - a. Pre-Dev Impervious Area = 2.31 ac
 - b. Post-Dev Impervious Area (includes roundabout, SR 70 pavement not included since no change to typical or alignment) = 3.67 ac
 - c. Net New Impervious Area = 1.36 ac

Greg Seidel inquired about the appropriate area of pavement that should be treated at this time for the PD&E pending the implementation of the new stormwater rule. Per discussion, it was agreed that at a minimum, the pavement in the areas of re-alignment should receive full treatment and that the exemptions that exist for the raised areas of pavement should still be included in the new stormwater rule.

4. Original Expected Wetland Impacts (will change with new alignment) –
 - a. Wetland Impacts – 0.918 Ac
 - b. Surface Water Impacts – 0.374 Ac
 - c. Total Impacts – 1.292 Ac

Greg Seidel noted that the wetland impact areas have not been updated at this time and are expected to increase with the new project footprint.

5. Review of expected floodplain impacts
 - a. Estimated at 5 Acre Feet

b. Based on Peace River Floodplain

Greg Seidel noted that the flow rate in the Peace River is close to 1 acre-foot per second at this location and a 5 acre-foot floodplain compensation area would fill up in 5 seconds. Brent Setchell noted the relief bridge that existed today could have its channel improved by either deepening or improving its Manning's coefficient to demonstrate floodplain compensation which will be analyzed as part of the modeling.

6. Discussion of mitigation approach for floodplain impacts.
 - a. Previously approved modeling for SR 72 impacts.
 - b. FDOT Preparing 2D Bridge Hydraulics Model to SR 70 changes.
 - c. Discuss definition of adverse impacts

As, with the 2020 pre-application meeting SWFWMD confirmed that modeling may be used in lieu of Cup for Cup compensation to demonstrate no adverse impacts to the existing floodplain. The modeling will need to include the Mean Annual, 10yr, 25yr and 100yr storm events. Minor increases in stages between the pre- and post-development modeling will be reviewed on a case by case basis and will need to be properly justified to gain approval from SWFWMD with risk being one of the determining factors.

A 2D model of the Peace River evaluating the impacts of the increase profile for SR 70 between the bridges will be developed by FDOT. The specific design storm evaluations should match the same as above with regard to confirming no adverse impacts from the additional floodplain fill material. Balmoral Group will investigate the current FEMA modeling and provide Brent Setchell with a memorandum on the proposed flow rates and corresponding design storms to used for the 2D model analysis.

7. Open Discussion

There was no additional discussion.

SIGN IN SHEET

**SWFWMD Pre-Application Meeting Agenda
SR 72 from CRR 661 to SR 70
FPID 443123-1-32-01
Desoto County**

Location: TEAMS Meeting held from District One, Bartow
Date: February 2, 2023
Time: 2:00 pm

NAME	FIRM/AGENCY	OFFICE / RESPONSIBILITY	EMAIL ADDRESS	Initials
Brent Setchell	FDOT	Drainage/Permitting	Brent.Setchell@dot.state.fl.us	
Sergio Figueroa	FDOT	Drainage/Permitting	Sergio.Figueroa2@dot.state.fl.us	
Dave Kramer	SWFWMD	ERP Bureau Chief	dave.kramer@swfwmd.state.fl.us	
Albert Gagne	SWFWMD	Coordinator – ERP Bureau	Albert.Gagne@swfwmd.state.fl.us	
Gregory Seidel	Balmoral Group	Consultant PM	gseidel@balmoralgroup.us	