

Hardee County CVA – AAA Project

Identification and Ranking of Adaptation Action Areas

Prepared for:

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ABBREVIATIONS

100Y24H	100-Year, 24-Hour
500Y24H	500-Year, 24-Hour
AAA	Adaptation Action Area
CFRPC	Central Florida Regional Planning Council
CHNEP	Coastal and Heartland National Estuary Partnership
F.S.	Florida Statute
FDEP	Florida Department of Environmental Protection
FEMA	Federal Emergency Management Agency
VA	Vulnerability Assessment

INTRODUCTION

This report details the methodology that was used to delineate Adaptation Action Areas (AAA) within Hardee County. The results are based on the exposure and sensitivity analyses completed in Hardee County Vulnerability Assessment (VA), as well as input from the County. The methodology used to complete the Hardee County VA can be found in **APPENDIX A**.

BACKGROUND

Hardee County is located in the central Florida region, southeast of Tampa, and directly south of Polk County. The County is 638 square miles of predominantly agricultural and mining land. The most populous areas in the County include Wauchula, Zolfo Springs, and Bowling Green. US-17 bisects the County and intersects FL-64 in Zolfo Springs. A location map outlining the project study area is provided in **Figure 1**.

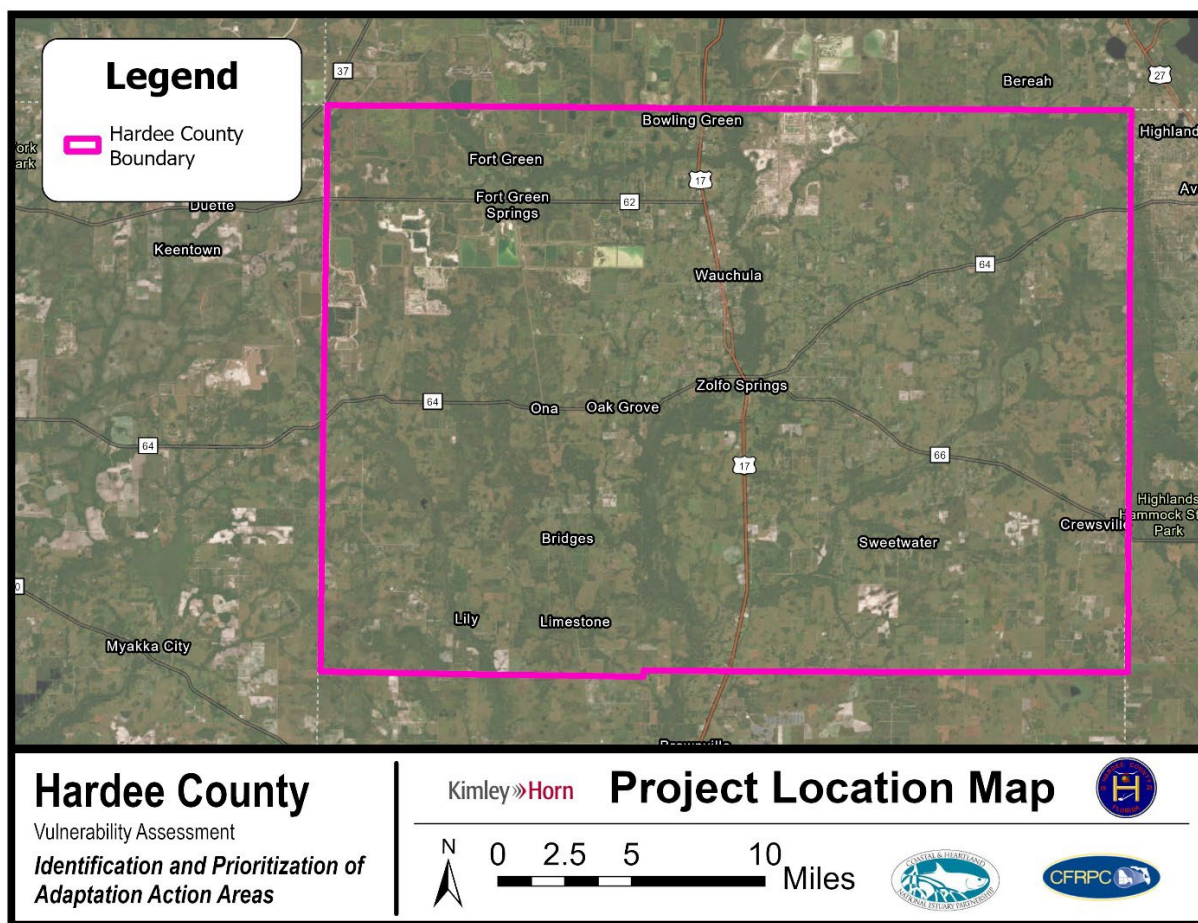


Figure 1: Hardee County Project Study Area

METHODOLOGY

AAAs were geographically defined using ArcGIS based on flood extents, critical asset distribution, and municipal and parcel boundaries. AAAs were delineated to incorporate all point, evacuation route, bridge, and culvert assets.

After the AAAs were delineated, a weighted score was calculated to rank each AAA based on the methodology outlined in the following sections.

RANKING ADAPTATION ACTION AREAS

Using the data provided by the CFRPC and the Hardee County VA, Kimley-Horn composed a multi-criterion weighted matrix evaluation to rank the identified AAAs. The methodology used by CFRPC to perform the Exposure and Sensitivity Analysis in the DeSoto County VA can be found in **APPENDIX A**.

In the monthly project meetings conducted on November 24, 2025 and February 27, 2026, CHNEP, CFRPC, and Kimley-Horn discussed the development of the ranking methodology and how the criteria were weighed. Feedback from this meeting has been incorporated into the criteria outlined below. **Table 1** shows the criteria that were used to assess AAAs, the attribute field name as shown in the provided data, and the assessment level of the criteria.

Table 1: Criteria Assessment Level

Criteria	Attribute Field Name	Assessment Level
Exposure Analysis (100-Year)	Rainfall-Depth - 100 Yr - 2040	Asset Points
Exposure Analysis (500-Year)	Rainfall-Depth - 500 Yr - 2040	Asset Points
Sensitivity Analysis	Sensitivity	Asset Points
Asset Ownership	Public / Private	Asset Points
Asset Relevancy	Asset Relevancy	Asset Points
Asset Group	Asset Group	Asset Points
Length of Inundated Roadway	Evacuation Corridor	AAA
Length of Inundated Bridges/Culverts	Shape_Length	AAA
Quantity of Public Comments	N/A	AAA

Following the criteria scoring process, weights were applied to each score based on relevance of the criteria. It should be noted that the weights assigned in the matrix are subjective to engineering judgement and were based on the intent of use for this study. The criteria for weight distributions are outlined in **Table 2**.

Table 2: Criteria Weight

Criteria	Weight
Exposure Analysis (100-Year)	25%
Exposure Analysis (500-Year)	20%
Sensitivity Analysis	20%
Asset Ownership	10%
Asset Relevancy	5%
Asset Group	5%
Length of Inundated Evacuation Routes	5%
Length of Inundated Polyline	5%
Quantity of Public Comments	5%
Total	100%

Scores for all criteria were assigned on a scale of 1 to 10, with 10 representing the highest ranking and 1 representing the lowest. For criteria evaluated at the asset level other than Exposure Analysis, individual scores were assigned to each critical asset and averaged across all assets within an AAA to produce an average criterion score for that AAA. For Exposure Analysis, scores were summed across all assets within the AAA rather than averaged to ensure that AAAs with a greater number of exposed assets receive higher priority. All criteria scores were then summed according to the weights shown in Table 2 to produce a final score for each AAA.

The following subsections describe the evaluation process for these criteria and the scoring schema that were used to calculate final scores assigned to each AAA.

EXPOSURE ANALYSIS

Based on methodology provided by the CFRPC, the exposure of assets was evaluated based on the 100-Year and 500-Year rainfall event flood scenarios, point assets were scored based on the 2040 depth of flooding modeling results. Asset flood depth values were categorized as “Not Vulnerable”, “Shallow”, “Medium”, or “Deep”, with “Not Vulnerable” representing no exposure and “Deep” representing high exposure. For this criterion only point assets were included. The polyline results are included in separate criteria.

For AAA ranking purposes, the 100-year criterion was assigned a weight of 25%, while the 500-year criterion was assigned a weight of 20%, as asset exposure is one of the greatest indicators that the asset is at risk. Scoring criteria for the exposure analysis can be found in **Table 3**.

Table 3: Exposure Analysis Criteria

Exposure Analysis Criteria	Score
Deep	10
Medium	7
Shallow	3
Not Vulnerable	0

SENSITIVITY ANALYSIS

Based on methodology provided by the CFRPC, the sensitivity of assets was evaluated based on the percent-by-area flooding from FEMA floodplains, population, and natural waterbodies within the vicinity of the asset. The values in the “CFRPC Sens. Score” field range from 0-11, with 0 representing low sensitivity and 11 representing high sensitivity. For this criterion only point assets were included.

This criterion was assigned a weight of 20% for AAA ranking purposes, as asset sensitivity is one of the greatest indicators that the asset is at risk. The scoring criteria for the sensitivity analysis is outlined in **Table 4**.

Table 4: Sensitivity Analysis Criteria

Sensitivity Analysis Criteria	Score
Values 10 or greater	10
Values 1-9	1 - 9

ASSET OWNERSHIP

Data provided by the CFRPC from the Hardee County VA project indicated ownership of each asset as either public or private. Because the intent of this project is to identify AAAs for the County to use in identifying implementation projects, publicly owned assets were given a higher ranking, as shown in **Table 5**. For this criteria only point assets were included.

Table 5: Asset Ownership Criteria

Asset Ownership Criteria	Score
Public Owner	10
Private Owner	4

ASSET RELEVANCY

Critical assets in Hardee County VA were assigned an asset relevancy as defined in the FDEP GIS Standards for Planning Grants documentation¹. This information indicates the significance of the assets to either the local area (locally significant) or the greater County (regionally significant). Regionally significant assets primarily include assets classified as “Critical Infrastructure” or “Critical Community and Emergency Facilities”. For this criterion only point assets were included. Scoring of the asset relevancy criteria is outlined in **Table 6**.

Table 6: Asset Relevancy Criteria

Asset Relevancy Criteria	Score
Regionally Significant	10
Locally Significant	4

ASSET GROUP

In the Hardee County VA project, assets were classified based on the statutory guidance outlined in s.380.093, F.S.². The scoring is based on the significance of different asset groups used for supporting

¹https://floridadep.gov/sites/default/files/GIS%20Standards%20for%20Planning%20Grants_0.pdf

²https://www.leg.state.fl.us/statutes/index.cfm?App_mode=Display_Statute&Search_String=&URL=0300-0399/0380/Sections/0380.093.html

public health and safety in emergency situations. For this criterion, only point assets were included. Scoring of the asset group criteria is shown in **Table 7**.

Table 7: Asset Group Criteria

Asset Group Criteria	Score
Critical Infrastructure	10
Critical Community and Emergency Facilities	7
Transportation and Evacuation Routes	6
Natural, Cultural, and Historical Assets	2

LENGTH OF INUNDATED EVACUATION ROUTES

For the length of inundated evacuation routes criteria, AAAs with a greater length of inundated evacuation routes were given higher scores. A percent inundation was provided for each transportation polyline based on the results of the exposure analysis. To determine the total length that is flooded within the AAA, the percent inundation of each transportation polyline was multiplied with the transportation polyline's total length to calculate the flooded length along each transportation polyline. The scoring criteria can be found in **Table 8**.

Table 8: Length of Inundated Evacuation Routes in AAA Criteria

Length of Inundated Evacuation Routes in AAA Criteria	Score
Greater than 300 feet	10
Between 200 and 299 feet	8
Between 100 and 199 feet	6
Between 50 and 99 feet	4
Less than 50 feet	2
No inundated evacuation routes	0

LENGTH OF INUNDATED BRIDGES/CULVERTS

For the length of inundated polyline criteria, AAAs with a greater length of inundated bridges or culverts were given higher scores. A percent inundation was provided for each polyline based on the results of the exposure analysis. To determine the total length that is flooded within the AAA, the percent inundation of each polyline was multiplied with the polyline's total length to calculate the flooded length along each polyline. For this criterion only non-transportation polyline assets (bridges and culverts) were included. The scoring criteria can be found in **Table 9**.

Table 9: Length of Inundated Polygons in AAA Criteria

Length of Inundated Bridges/Culverts in AAA Criteria	Score
Greater than 500 feet	10
Between 300 and 500 feet	8
Between 100 and 299 feet	6
Between 50 and 99 feet	4
Less than 49 feet	2
No inundated polygons	0

QUANTITY OF PUBLIC INPUT

The public input criteria incorporated feedback from several public outreach efforts. A Public Outreach meeting was conducted on January 9, 2025, in which the project gathered comments from the public (included in **APPENDIX B**) about locations that have experienced flooding or are at risk of flooding. Additional insights were drawn from meetings conducted on December 18, 2024, and on January 6, 2025, with County/municipal staff and community organizations, respectively. These discussions highlighted specific flooding vulnerabilities, challenges in disaster recovery, and community priorities, including transportation, access to resources, and upcoming infrastructure projects. As these comments were not tied to specific assets, the scoring of this criterion was based on the location of the comments relative to the AAAs. For each comment within a given AAA, the AAA will receive 2 points per comment, up to a maximum of 10 points. The scoring criteria for quantity of public input can be found in **Table 10**.

Table 10: Public Input in AAA Criteria

Public Input Criteria	Score
Area of concern was identified inside of AAA	2 (per comment in AAA) up to 10
No comments	0

IDENTIFIED ADAPTATION ACTION AREAS

Three AAAs were identified in Hardee County based on the locations of critical assets and flood risk within the study area. The names and number of assets within each AAA area are shown in **Table 11**.

Table 11: Adaptation Action Area Characteristics

Adaptation Action Area	Point Assets	Bridges/Culverts	Evacuation Routes
Bowling Green	1	2	1
Wauchula	3	2	0
Zolfo Springs	2	0	4

A map showing all identified Hardee County AAAs and critical assets can be found in **Figure 2**.

The AAAs were evaluated based on the criteria described in the prior section using the “Hardee_Ranking_Matrix” Excel tool. The following section will provide an explanation of how the tool is organized and operates, including descriptions of the different sheets and how the ranking calculations were performed. The tool is organized into four color-coded tab sections: blue, gray, green, and red.

Blue

There are three blue sheets, each containing one format of the provided raw GIS data (point, evacuation route polylines, and bridge/culvert polylines). Each of the sheets includes all the assets of that form and all attribute fields that were found in the layer. The blue sheets contain no calculations and are used as a reference source for the following color tabs.

Gray

There is a gray sheet for each of the AAAs that summarizes all critical assets within the AAA boundary. These sheets contain relevant data, referenced from the blue tabs, used in the ranking analysis for each of the data formats (point, evacuation route polylines, and bridge/culvert polylines). The gray sheets display the individual asset data and are categorized by data format. They do not include any calculations and are only used for the organization of the AAAs.

Green

The green sheets contain the bulk of the calculations and are used to score the critical assets. There are three green sheets organized by data format that contain all assets within the boundaries of the AAAs. The assets use the “GlobalID” field to reference source data stored in the blue tabs. Each asset is identified by its associated AAA in the “AAA” field. This is used to organize the assets to calculate average scores in the ranking process.

Asset data is referenced from the blue tab in each of the three sheets, such as “Asset Name” or “Source Asset ID”. On the “Point Scoring” sheet, data is referenced from the 100 and 500-Year Exposure Analyses, Sensitivity Analysis, Ownership, Relevancy, and Asset Group. Each asset is then scored for each of those fields based on the criteria described in the Methodology section of this report.

The remaining two green sheets (Evacuation Route Scoring and Bridge and Culvert Scoring) reference the percent inundation of the polyline assets and the length of the asset. The length and percent inundation values are multiplied together to calculate the length of the assets that are inundated. The inundated asset lengths within the same AAA are then added together to determine the total inundated length of polyline assets within the AAA. These values are then scored based on the criteria described in the Methodology section of this report.

Red

The red sheet is used to calculate the final rank of each AAA based on the individual scores calculated in the green tabs. The main table of this sheet includes a column for each of the criteria used in this analysis and the secondary table contains the assigned weights used to calculate the final scores. The criteria column headers across the main table calculate an average score for each AAA using the individual scores in the green tabs for the criteria with an assessment level of “Asset Points”, as previously shown in **Table 1** (Sensitivity Analysis, Ownership, Relevancy, and Asset Group criteria). For the Exposure Analysis criteria (100- and 500-Year Exposure), scores are summed across assets rather than averaged. The resulting criteria scores are then multiplied by the respective weighted factors to determine a final score for each criterion. The final criteria scores are added together to calculate a total score, which is used to rank the AAA. The total scores are reflected in the “Total” column. AAAs with higher total scores received higher ranks.

Modifications to the percentages in the criteria weight table will automatically update the total scores of the AAAs. This can provide insight into how prioritizing different criteria could change the ranks of the AAAs, and what specific criteria most affect each of the AAAs. The percentage “Weight” column contains the only cells in the Excel tool designed to be altered; everything else in the Excel tool uses references to update automatically.

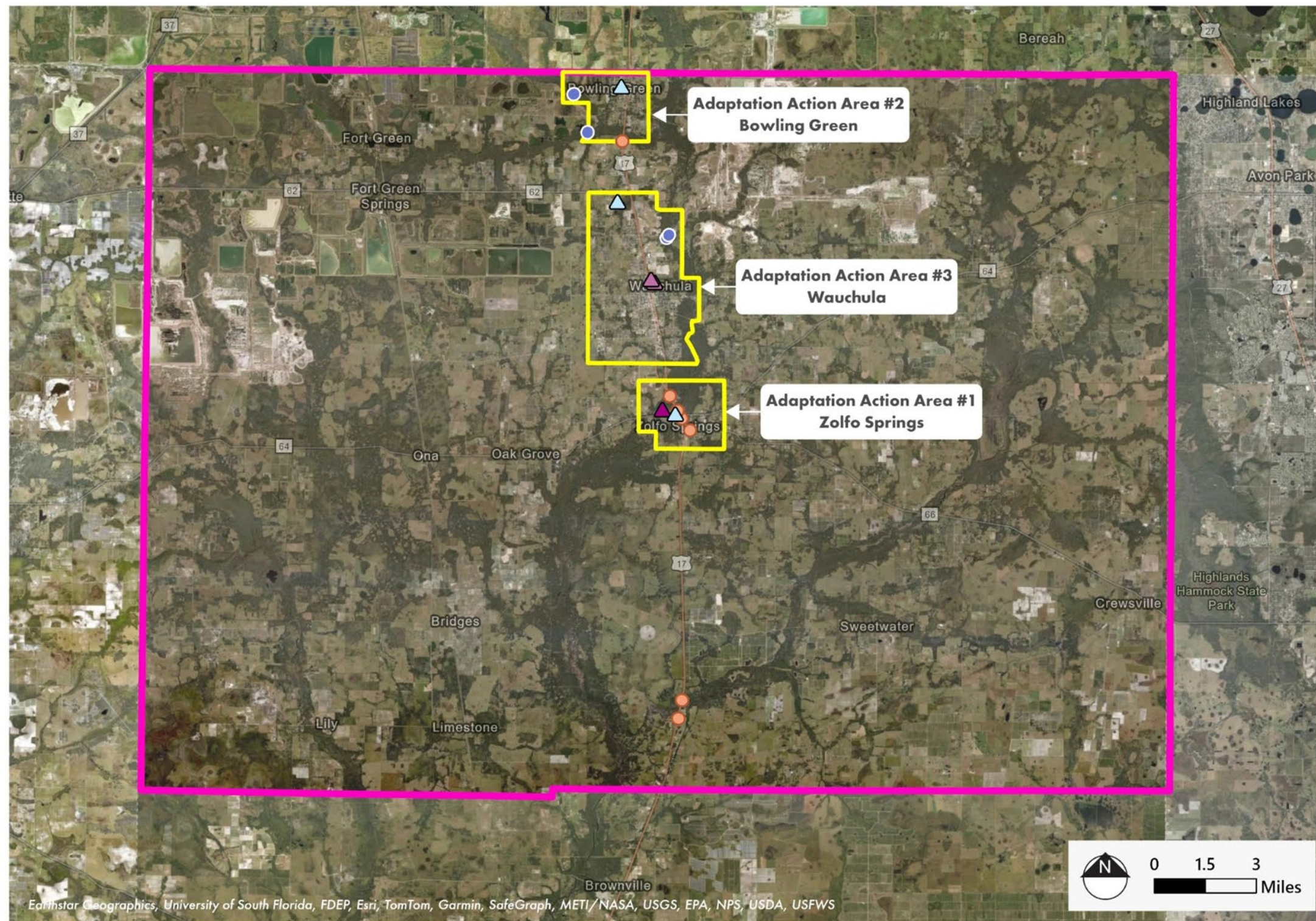
A summary of the results from the “Hardee_Ranking_Matrix” Excel tool including the individual weighted factor scores as well as the total final scores used to rank the AAAs are shown in **Table 12**.

Table 12: Adaptation Action Areas Ranking

AAA Ranking	Name	Total Score	Exposure Analysis (100-Year)	Exposure Analysis (500-Year)	Sensitivity Analysis	Asset Ownership	Asset Relevancy	Asset Group	Length of Inundated Evacuation Routes	Length of Inundated Bridges/Culverts	Quantity of Public Comments
#1	Zolfo Springs	8.53	2.50	2.00	1.40	1.00	0.50	0.43	0.20	0	0.50
#2	Bowling Green	5.95	0.75	0.60	1.80	1.00	0.50	0.50	0	0.30	0.50
#3	Wauchula	4.60	0	0.60	1.40	1.00	0.30	0.50	0	0.30	0.50

A final map of all three Adaptation Action Areas and their rankings is shown in **Figure 2**. Exhibits of individual Adaptation Action Area are included in **Figures 3 - 7**.

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Legend

Adaptation Action Areas

Hardee County Study Area

Point Assets

Disaster Recovery Centers

Drinking Water Facilities

Solid and Hazardous Waste Facilities

Polyline Assets

Evacuation Routes

Other Polyline Assets



HARDEE COUNTY REFINED ASSET MAP
MARCH 2026

HARDEE COUNTY
FLORIDA

Kimley»Horn
Expect More. Experience Better.

Figure 2: Hardee County AAA Ranking Map

ZOLFO SPRINGS

The Zolfo Springs AAA is located in the center of Hardee County and is bisected by U.S. Highway 17 S. The AAA contains the small town of Zolfo Springs which has an approximate population of 1,750 people, and is known for its agriculture, phosphate mining, and location along the Peace River.

The AAA includes two point assets, the Hardee-Recreation Hall (Disaster Recovery Center), and the Zolfo Springs Water Treatment Plant (Drinking Water Facility). The AAA includes four evacuation route polyline assets and no bridge or culvert polyline assets. Additionally, 13 flood risk comments were received from public outreach meetings for locations within the AAA. A map of the Zolfo Springs AAA and the assets it contains is shown in **Figure 3**.

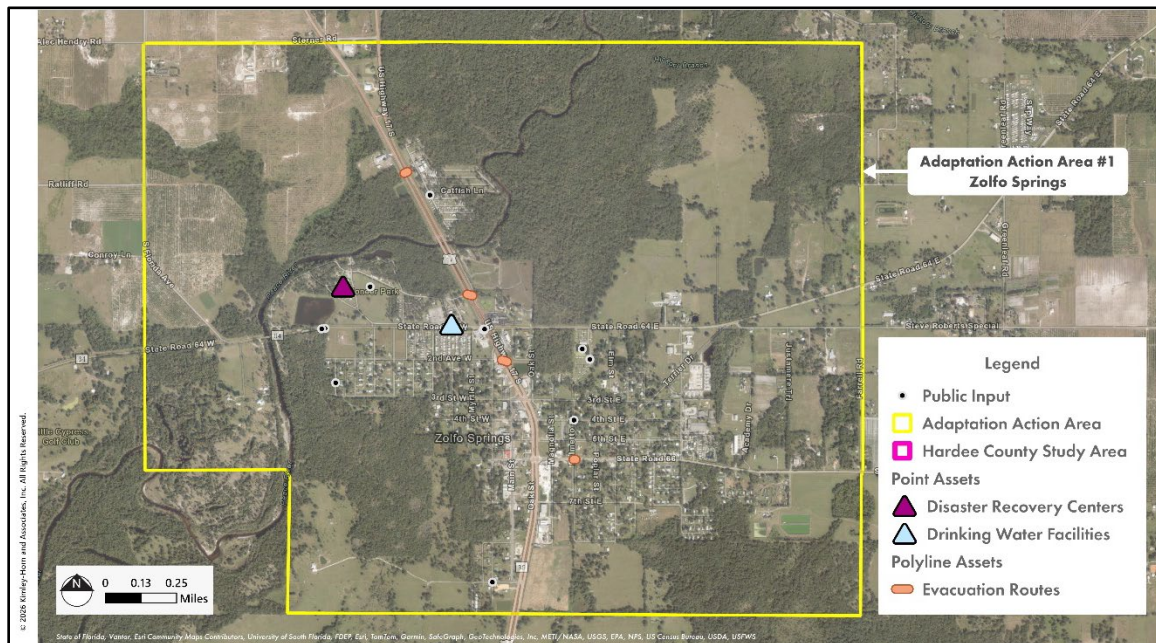


Figure 3: Zolfo Springs AAA Map

Zolfo Springs received the highest Total Score of 8.53 and ranked first. Although the Drinking Water Facility was not exposed to flooding in the 2040, 100-Year and 500-Year Exposure Analysis, the Disaster Recovery Center was categorized as “Deep” based on the results of the same Exposure Analysis.

BOWLING GREEN

The Bowling Green AAA is located on the northern border of Hardee County and is bisected by U.S. Highway 17 N. The AAA includes the City of Bowling Green, which has an approximate population of 2,500 people and is primarily residential.

The AAA includes one point asset, the City of Bowling Green Public Water System Plant. The AAA includes one evacuation route polyline asset and two bridge polyline assets. Additionally, 22 flood

risk comments were received from public outreach meetings for locations within the AAA. A map of the Bowling Green AAA and the assets it contains is shown in **Figure 5**.

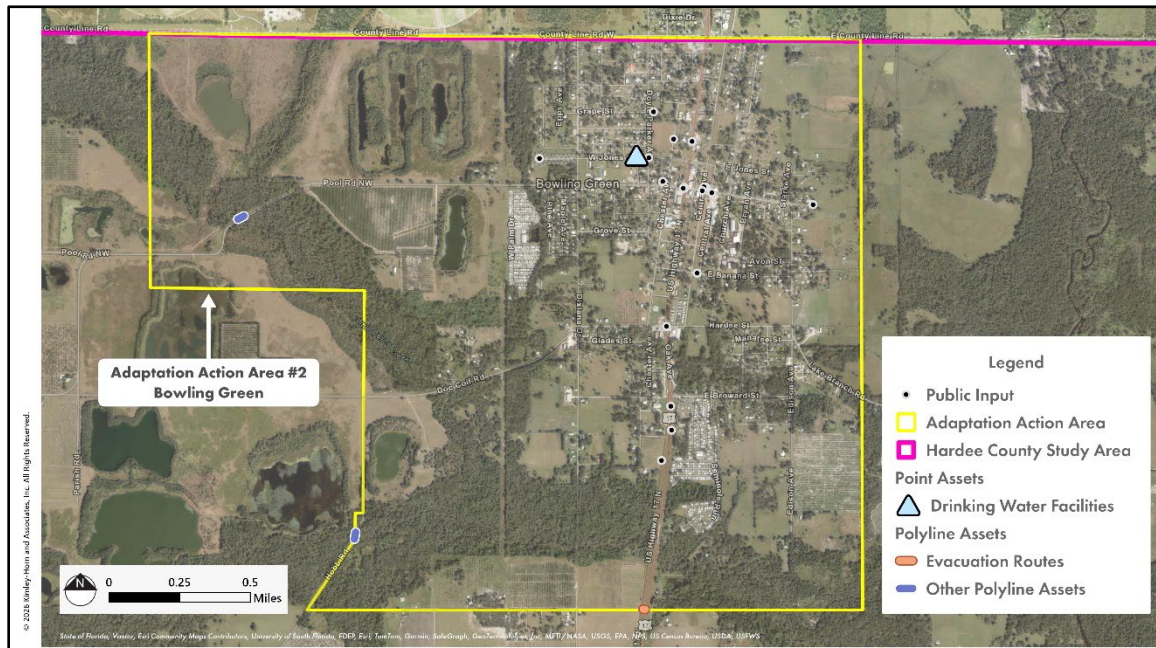


Figure 4: Bowling Green AAA Map

Bowling Green was ranked second with a Total Score of 5.95. The Drinking Water Facility was categorized as “Shallow” based on the results of the 2040, 100-Year, and 500-Year Exposure Analysis. Furthermore, the Drinking Water Facility received a high Sensitivity Analysis score of 9. This AAA also had the second greatest length of inundated bridges/culverts with 259.9 feet.

WAUCHULA

The Wauchula AAA is located south of the Bowling Green AAA and north of the Zolfo Springs AAA. The AAA includes the City of Wauchula with an approximate population of 5,000 and the unincorporated area of Wauchula Hills, a rural, residential area.

The AAA includes three point assets, the Wauchula Hills Well Drinking Water Facility, and two Solid and Hazardous Waste Facility point assets that are generators for the Hardee County Fire Rescue Administration and the Hardee County Health Department. The AAA includes two bridge and culvert polyline assets and no evacuation route polyline assets. Additionally, 18 flood risk comments were received from public outreach meetings at a location within the AAA. A map of the Wauchula AAA and the assets it contains is shown in **Figure 4**.

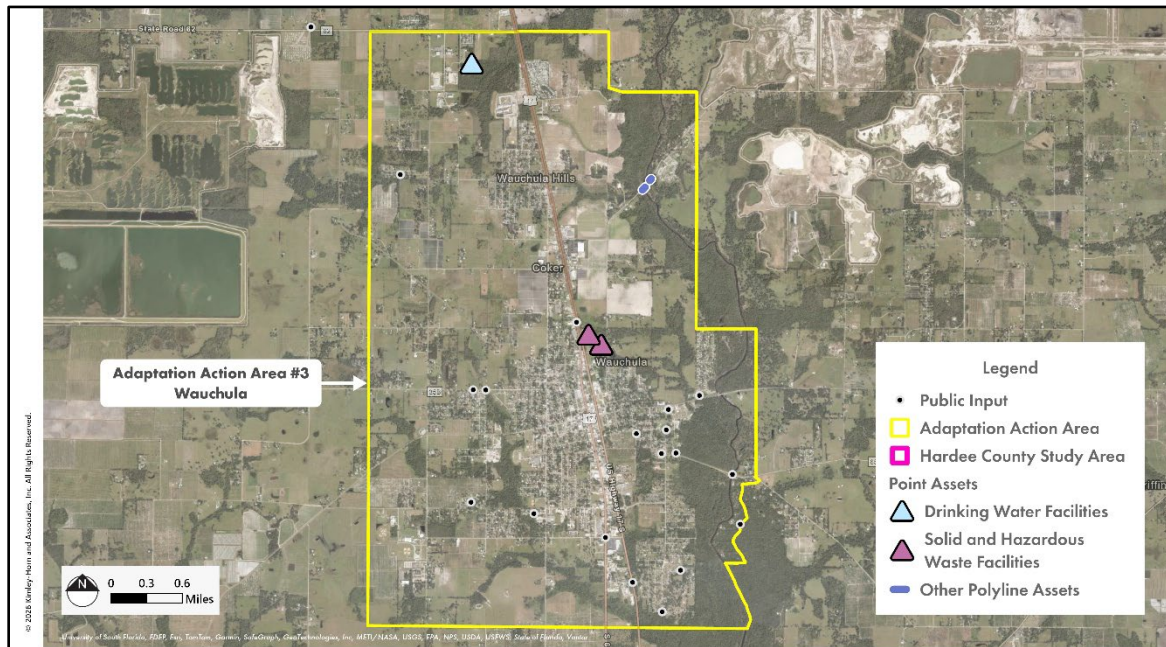


Figure 5: Wauchula AAA Map

Wauchula was ranked third (last) with a Total Score of 4.60. The Drinking Water Facility was categorized as “Shallow” based on the results of the 2040, 500-Year Exposure Analysis. The Solid and Hazardous Waste Facilities received lower scores in the Sensitivity Analysis of 5 and 7, while the Drinking Water Facility received a high score of 9. This AAA also had the greatest length of inundated bridges/culverts with 282.5 feet.

A separate Vulnerability Assessment was previously completed for the City of Wauchula, which is being used to apply for funding to resolve identified flood risks.

APPENDIX A

VULNERABILITY ANALYSIS METHODOLOGY



Adaptation Action Areas Project
Supplement to the **Hardee County** Comprehensive Vulnerability Assessment

TASK 3: IDENTIFICATION AND PRIORITIZATION OF ADAPTATION ACTION AREAS

Methodology Exposure and Sensitivity Analyses

AND

Refinement of Critical Assets

March 2, 2026

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- I. Task 3 Overview
- II. Exposure and Sensitivity Methodology
- III. Asset Refinement Methodology
- IV. Spreadsheet by Asset Type

I. Task 3 Overview: Identification and Prioritization of Adaptation Action Areas

Task 3 Description: Adaptation Action Areas (AAAs) will be identified and prioritized based on critical assets, exposure and sensitivity analysis and on each flood scenario from the Hardee County Comprehensive Vulnerability Assessment (CVA) flood modeling, as well as input from community workshops, and local government feedback including from Hardee County, and the municipalities of Bowling Green, Wauchula, and Zolfo Springs within the county. This task also includes identifying, mapping (GIS shapefile layer) and PDF of a GIS map, and prioritizing the AAAs in order of highest priority where the most critical assets are most severely impacted to least priority where the least amount of critical assets are clustered and impacted.

Deliverable: The deliverable for Task 3 is an AAAs Technical Memorandum summarizing:

- Detailed description of the methodology for identifying AAAs as well as the methodology prioritizing AAAs justification for choosing each AAA.
- Map illustrates where the AAAs are located within the County; illustrating the location of each adaptation area compared to the locate of all critical assets within the geographic extent of the study.
- Tables listing each AAA with any critical assets that are contained therein.
- GIS files and associated metadata used in completing this task, including GIS shapefile boundaries of the identified adaptation areas and the critical assets therein.

II. Hardee County Exposure and Sensitivity Methodology

A.) Overall Approach

This section presents a combined Exposure and Sensitivity Analysis Methodology applied consistently to all critical assets in Hardee County, Florida. The intent is to provide a single, technical reference describing how rainfall-driven flood exposure and regional sensitivity were evaluated and integrated into planning, prioritization, and decision-making. Together, these analyses ensure that the critical assets included are evaluated for physical exposure to rainfall-driven flooding as well as the social, environmental (hydrological), and hazard sensitivity context. This approach is foundational for the baseline components for the Adaptation Action Areas (AAA) project. Discussion regarding the refinement of critical assets needed for the AAA project is provided in Section III.

Exposure Analysis:

The exposure analysis quantifies modeled flood depths and the spatial extent of inundation at the asset level using depth, ponding, and drain flow rasters for multiple rainfall return periods and planning horizons.

Sensitivity Analysis:

The sensitivity analysis characterizes relative regional sensitivity using a framework incorporating social vulnerability (SOVI), population distribution, FEMA flood hazard extent, and natural environmental (hydrological - canals, ditches, stormwater facilities, lakes, rivers, and streams) features, and exposure inundation.

B.) Critical Assets

GIS data containing critical assets as defined in 380.093, F.S. was downloaded from the Florida Department of Environmental Protection Geospatial Open Data portal. Hardee County, City of Bowling Green, City of Wauchula, and Town of Zolfo Springs provided additional data used to verify and update the statewide dataset. This data includes four asset groups and their associated subtypes.

1. Transportation Assets and Evacuation Routes Asset Group

- **Subtypes:** Airports, bridges, bus terminals, ports (not applicable in Hardee County which is an inland county), major roadways, marinas, rail facilities, and railroad bridges.

2. Critical Infrastructure Asset Group

- **Subtypes:** Wastewater treatment facilities, lift stations, stormwater treatment facilities, pump stations, drinking water facilities, water utility conveyance systems, electric production and supply facilities, solid and hazardous waste facilities, military installations, communications facilities, and disaster debris management sites.

3. Critical Community and Emergency Facilities Asset Group

- **Subtypes:** Schools, colleges, universities, community centers, correctional facilities, disaster recovery centers, emergency medical service facilities, emergency operation centers, fire stations, health care facilities, hospitals, law enforcement facilities, local government facilities, logistical staging areas, affordable public housing, risk shelter inventory, and state government facilities.

4. Natural, Cultural, and Historical Resources Asset Group

- **Subtypes:** Conservation lands, parks, shorelines, surface waters, wetlands, and historical and cultural assets.

C.) Data Inputs

1. Critical Asset Datasets

All asset classes share a common unique identifier: CFRPC_ID. This is a unique number for each critical asset and is the primary tool used for all joins, summaries, and cross-dataset relationships. Critical assets are organized into the following feature classes:

a. Point Assets which are identified as:

CFRPC_PT: critical assets: points. Point assets include: critical infrastructure -

Wastewater treatment facilities; lift stations; stormwater treatment facilities; pump stations; drinking water facilities; water utility conveyance systems; electric production and supply facilities; solid and hazardous waste facilities; military installations (none in Hardee County); communications facilities; disaster debris management sites; critical community and emergency facilities - schools, colleges, universities, community centers, correctional facilities, disaster recovery centers, emergency medical service facilities, emergency operation centers, fire stations, health care facilities, hospitals, law enforcement facilities, local government facilities, logistical staging areas, affordable public housing, risk shelter inventory, and state government facilities; and Natural, Cultural, and Historical Resources - Conservation lands, parks, shorelines, surface waters, wetlands, and historical and cultural assets.

b. Polyline Assets which are identified as:

CFRPC_PL- critical assets: general linear assets. Polyline include: electric production and supply facilities; stormwater treatment facilities and pump stations; historical and cultural assets; shorelines; and surface waters.

c. Transportation Polyline Assets which are identified as:

CFRPC_PL_TRANS_critical assets: transportation linear assets. These assets include: bridges; major roadways; and rail facilities.

d. Polygon Assets which are identified as:

CFRPC_PG: critical assets: polygon areas. Polygons include: stormwater treatment facilities and pump stations; conservation lands; historical and cultural assets; parks; surface waters; and wetlands.

2. Rainfall Induced Flooding Rasters

These rasters represent rainfall-driven flooding based on modeling exclusively created for the 100-, 200-, and 500-year events for the current year, 2040, and 2070 forecast year's exposure analysis by HighTide (subcontractor for the CFRPC).

All raster datasets were synced to a common coordinate system, resolution, and vertical unit (feet, Foot_US) prior to analysis.

- **100-Year Rainfall Events (Current, 2040, 2070):** For the 100-year rainfall event, the analysis relies on the modeling completed by HighTide developed for the 100-year rainfall event surfaces for:
 - Current-year conditions
 - 2040 forecast conditions
 - 2070 forecast conditions
- **200-Year Rainfall Events (Current, 2040, 2070):** For the 200-year rainfall event, the analysis relies on the modeling completed by HighTide developed for the 200-year rainfall event surfaces for:

- Current-year conditions
 - 2040 forecast conditions
 - 2070 forecast conditions
- **500-Year Rainfall Events (Current, 2040, 2070):** For the 500-year rainfall event, the analysis relies on the modeling completed by HighTide developed for the 500-year rainfall event surfaces for:
 - Current-year conditions
 - 2040 forecast conditions
 - 2070 forecast conditions

D.) Exposure Analysis

Critical assets exposure analysis within Hardee County uses four primary geometry types (Points, Polyline, Transportation Polyline, and Polygon) to quantify modeled flood depths and spatial extent of inundation at the asset level using depth, ponding, and drain flow rasters for multiple rainfall return periods and planning horizons. Each geometry type was handled in a consistent and intentional manner to support the exposure analysis.

- **Point Assets**
Point features represent assets with a discrete geographic location (e.g. facilities or site-specific infrastructure). These point locations were used directly for both exposure analysis. Flood exposure values were extracted at the point location.
- **Polyline Assets**
General polyline features represent linear assets such as utilities, irrigation canals, ditches, trails, etc. For exposure purposes, a single representative point was generated at the midpoint of each polyline feature. This midpoint was used to obtain the modeled flood exposure values.

Exposure Analysis Specific Fields include:

- 100-Year
 - RF_100YR_2025 (Rain flow 100-Year 2025 Scenario)
 - RF_100YR_2040 (Rain flow 100-Year 2040 Scenario)
 - RF_100YR_2070 (Rain flow 100-Year 2070 Scenario)
- 200-Year
 - RF_200YR_2025 (Rain flow 200-Year 2025 Scenario)
 - RF_200YR_2040 (Rain flow 200-Year 2040 Scenario)
 - RF_200YR_2070 (Rain flow 200-Year 2070 Scenario)
 -
- 500-Year

- RF_500YR_2025 (Rain flow 500-Year 2025 Scenario)
- RF_500YR_2040 (Rain flow 500-Year 2040 Scenario)
- RF_500YR_2070 (Rain flow 500-Year 2070 Scenario)

○ **Transportation Polyline Assets**

Transportation features were treated consistently with other linear assets. A midpoint was generated for each transportation polyline, and that midpoint served as the representative location for flood exposure extraction values. This approach ensures uniform treatment across linear asset classes while maintaining a clear spatial reference.

Exposure Analysis Specific Fields include:

- 100-Year
 - RF_100YR_2025 (Rain flow 100-Year 2025 Scenario)
 - RF_100YR_2040 (Rain flow 100-Year 2040 Scenario)
 - RF_100YR_2070 (Rain flow 100-Year 2070 Scenario)
- 200-Year
 - RF_200YR_2025 (Rain flow 200-Year 2025 Scenario)
 - RF_200YR_2040 (Rain flow 200-Year 2040 Scenario)
 - RF_200YR_2070 (Rain flow 200-Year 2070 Scenario)
 -
- 500-Year
 - RF_500YR_2025 (Rain flow 500-Year 2025 Scenario)
 - RF_500YR_2040 (Rain flow 500-Year 2040 Scenario)
 - RF_500YR_2070 (Rain flow 500-Year 2070 Scenario)

○ **Polygon Assets**

Polygon features represent areal assets such as facilities, campuses, or other spatially extensive features. For exposure analysis, a centroid was calculated for each polygon. The centroid location was used to extract flood exposure values.

Exposure Analysis Specific Fields include:

- 100-Year
 - RF_100YR_2025 (Rain flow 100-Year 2025 Scenario)
 - RF_100YR_2040 (Rain flow 100-Year 2040 Scenario)
 - RF_100YR_2070 (Rain flow 100-Year 2070 Scenario)
- 200-Year
 - RF_200YR_2025 (Rain flow 200-Year 2025 Scenario)
 - RF_200YR_2040 (Rain flow 200-Year 2040 Scenario)
 - RF_200YR_2070 (Rain flow 200-Year 2070 Scenario)

-
- 500-Year
 - RF_500YR_2025 (Rain flow 500-Year 2025 Scenario)
 - RF_500YR_2040 (Rain flow 500-Year 2040 Scenario)
 - RF_500YR_2070 (Rain flow 500-Year 2070 Scenario)

Single Point Rationale: Using a single representative point for each asset ensures methodological consistency across asset types, simplifies exposure results, and supports clear interpretation at the planning scale. This approach allows every asset, regardless of geometry, to be evaluated uniformly within the flood exposure modeling framework.

E.) Sensitivity Analysis

The sensitivity analysis provides a context for interpreting exposure results by identifying areas of social vulnerability (SOVI), population distribution, FEMA flood hazard extent, natural environmental features (hydrological – canals, ditches, stormwater facilities, lakes, rivers, and streams), and exposure inundation. The methodology was applied across Hardee County and results are applicable to all critical assets that were evaluated.

The sensitivity analysis applies to a standardized framework where the inputs are used to derive a relative sensitivity index representing baseline conditions for each exposure rainfall event and forecast year. The inputs needed to determine the Sensitivity Analysis include the following inputs:

1. Social Vulnerability (SOVI)
2. Population Distribution
3. FEMA Flood Hazard Extent
4. Natural Environmental features (hydrological – canals, ditches, stormwater facilities, lakes, rivers, and streams)
5. Exposure Inundation

Inputs 1 through 4 used hexagon grid frameworks to ensure uniform comparison across the County. Hexagons intersecting the regional boundary were retained while open-water areas (lakes, reservoirs) were removed. Wetlands were also retained. Each hexagon serves as a container for aggregated scores derived from multiple assets. Input 5 was developed by computing inundation exposure percentages.

1. Social Vulnerability (SOVI)

SOVI data at the Census tract level were spatially joined to a hexagon grid. Each hexagon was assigned a SOVI score based on a five-class system from low to high.

Table 1: SOVI Scoring

SOVI Class	Score
Low	1

Medium Low	2
Medium	3
Medium High	4
High	5

2. Population Distribution

Population was estimated using Census block data and redistributed into hexagons through a weighted point-based approach. Hexagon population totals were then classified into a five-tier score reflecting relative population concentration.

Table 2: Population Scoring

Score	Population
1	0 to 100
2	101 - 400
3	401 - 700
4	701 – 1,000
5	1,001 – 4,100

3. FEMA Flood Hazard Extent

FEMA 100-year and 500-year flood zones were combined and summarized within each hexagon after removing open-water areas. The percentage of each hexagon intersecting flood hazard zones was calculated and translated into five-class flood sensitivity scores. The scores are reflected in Table 3.

Table 3: FEMA Scoring

Score	Percentage Flood Zone
1	0 - 1%
2	1.01 - 25%
3	25.01 – 49.99%
4	50 – 74.99%
5	75 – 100%

4. Natural Environmental (Hydrology) Factors

Environmental sensitivity was captured by incremental scoring hexagons intersecting natural environmental hydrological features including wetlands, lakes, and rivers. Coastal boundaries and coastal erosion/critical erosion zones are not applicable as Hardee County is an inland county.

Table 4: Intersecting Natural Hydrology Scoring

Boundary Touching	Score	<i>Coastal</i>
Every Hexagon	1	-
Lakes and Wetlands	2	-
River	3	-
Ocean and Lagoons	4	<i>Not applicable</i>
Coastline	5	<i>Not applicable</i>

5. Exposure Inundation

Inundation Hazard Inputs (Rainfall-Based Surfaces Only)

Flood exposure is derived from modeled rainfall depth rasters as discussed earlier representing storm intensity and projected climate conditions. Surfaces were generated for the following:

Storm Recurrence Intervals (provided for each planning horizon)

- 100-year
- 200-year
- 500-year

Planning Horizons

- Current
- 2040
- 2070

The rasters represent expected rainfall depth and intensity under present and future climate scenarios. They serve as the foundation hazard layer for inundation analysis.

a. Percent Inundation Computation (Raster-to-Polygon Method)

To compute inundation percentages, rainfall depth rasters were first converted into area polygon surfaces. This provides for area-based spatial intersection with critical asset geometries. The process is described as follows. The asset polygons are separated from various area polygon surfaces used for analysis. Different analyses were run on the four asset groups utilizing various geoprocesses, scripts, tools, temporary features, and tables. Ultimately, the analyses and results are always ascribed and populated back to the primary four asset features. Any working and temporary tables or asset features (like the area polygon surfaces) used during analysis processes are temporary and simply are referenced to clarify the process used. The geometries refer to the Point Assets (PT), Polyline Assets (PL), Transportation Polyline (PLT), and Polygon Assets (PG).

Process Overview

- Rainfall depth rasters were converted to polygon flood extent layers.

- Each asset geometry was spatially intersected with the inundation polygons.
- The area of inundated portions was calculated.
- Percent inundation was computed as:

$$\text{Percent Inundated} = \frac{\text{Area of Asset Intersecting Flood Polygon}}{\text{Total Asset Area}} \times 100$$

Advantages to this Approach

This method produces proportional inundation, avoiding sampling bias and ensuring percentage exposure values which are important for large polygons and complex asset footprints.

Scenario-Specific Fields include:

- 100-Year
 - PCT_100_C (Percent 100-Year Current Scenario)
 - PCT_100_40 (Percent 100-Year 2040 Scenario)
 - PCT_100_70 (Percent 100-Year 2070 Scenario)
- 200-Year
 - PCT_200_C (Percent 200-Year Current Scenario)
 - PCT_100_40 (Percent 200-Year 2040 Scenario)
 - PCT_100_70 (Percent 200-Year 2070 Scenario)
- 500-Year
 - PCT_500_C (Percent 500-Year Current Scenario)
 - PCT_100_40 (Percent 500-Year 2040 Scenario)
 - PCT_100_70 (Percent 500-Year 2070 Scenario)

b. Risk-Sensitive Exposure Scoring (0-5 Scale)

Percent inundation values are translated into a non-linear risk-sensitive exposure score, indicating that higher flood coverage increases risk at an accelerated rate. The scale in Table 5 ensures partial flooding does not over inflate risk, while near-total inundation is prioritized.

Table 5: Percent Inundated Exposure Score Interpretation

Percentage %	Score	Level of Exposure
0%	0	None
>0 – 10%	1	Minimal
>10 – 30%	2	Low
>30 – 60%	3	Moderate
>60 – 90%	4	High
>90 – 100%	5	Severe

c. Sensitivity Calculation

The final sensitivity score integrates: Social Vulnerability (1-5), Population Distribution (1-5), FEMA Flood Hazard Extent (1-5), Natural Environmental (Hydrology) features (1-5), and exposure Inundation (0-5).

Formula

Sensitivity = Social Vulnerability (1-5) + Population Distribution (1-5) + FEMA Flood Hazard Extent (1-5) + Natural Environmental (Hydrology) features (1-5) + and exposure Inundation (0-5).

Table 6: Sensitivity Scoring

Factor	Scoring
SOVI	1-5
Population Distribution	1-5
FEMA Flood Hazard Extent	1-5
Natural Environmental (Hydrology) Features	1-5
Exposure Inundation	0-5
Total Possible Sensitivity Score	Up to 25

Scenario-specific total score fields include:

- 100-Year
 - STOT_100_C (Sensitivity Total 100-Year Current Scenario)
 - STOT_100_40 (Sensitivity Total 100-Year 2040 Scenario)
 - STOT_100_70 (Sensitivity Total 100-Year 2070 Scenario)
- 200-Year
 - STOT_200_C (Sensitivity Total 200-Year Current Scenario)
 - STOT_100_40 (Sensitivity Total 200-Year 2040 Scenario)
 - STOT_100_70 (Sensitivity Total 200-Year 2070 Scenario)
- 500-Year
 - STOT_500_C (Sensitivity Total 500-Year Current Scenario)
 - STOT_100_40 (Sensitivity Total 500-Year 2040 Scenario)
 - STOT_100_70 (Sensitivity Total 500-Year 2070 Scenario)

This provides that:

- Highly sensitive assets escalate in priority.
- Moderate flood exposure can yield high overall risk.
- Final rankings reflect both hazard magnitude and asset consequences.

F.) Exposure-Sensitivity Summary

Table 7 summaries how exposure metrics and sensitivity are used together. Assets inherit the sensitivity score of the hexagon in which they are located, allowing asset-level exposure to be interpreted within a broader regional context.

Table 7: Exposure-Sensitivity Crosswalk Table

Component	Spatial Unit	Primary Metrics	Purpose
Exposure Analysis	Asset (point, line, polygon)	Depth (MIN / MEAN / MAX), % Exposed	Quantifies physical flood impact
Sensitivity Analysis	Hexagon	Composite sensitivity score (1–5)	Provides regional vulnerability context
Integrated Review	Asset + Hexagon	Exposure metrics + Sensitivity score	Supports prioritization and decision-making

1. Consultant Attribution and Data Sources

All datasets were reviewed, standardized, and integrated by CFRPC staff using ArcGIS Pro-based workflows.

2. Considerations and Appropriate Use

This methodology is subject to the following considerations.

- Modeled flood depths represent scenario-based conditions, not observed events.
- Sensitivity scores are relative, dependent on classification thresholds and input data resolution.
- SOVI represents baseline social conditions and does not reflect future demographic change.
- Results should be interpreted as planning-level indicators, not site-specific engineering determinations.

The sensitivity analysis produces a relative index. This is designed to support comparative planning, prioritization, and contextual interpretation. When paired with asset-level exposure results, the sensitivity analysis provides where exposure intersects with social, environmental, and hazard-related vulnerabilities, supporting more informed mitigation and investment strategies.

3. Integrating Exposure and Sensitivity Analyses for Planning Decisions

Exposure and Sensitivity serve distinct, but complimentary roles within the modeling framework.

Exposure analysis identifies how much flooding a critical asset could potentially experience under a given rainfall scenario.

Sensitivity analysis identifies how sensitive the surrounding area is to flooding impacts based on social vulnerability (SOVI), population distribution, FEMA flood hazard extent, natural environmental features (hydrological – canals, ditches, stormwater facilities, lakes, rivers, and streams), and exposure inundation.

By evaluating exposure and sensitivity together, critical assets may be prioritized not solely on modeled depth, but on contextual importance and potential impacts. Example applications include:

- Prioritizing mitigation for assets with high exposure located within high-sensitivity hexagons.
- Identifying critical assets with moderate exposure but elevated social or environmental (hydrological) sensitivity.
- Supporting funding, phasing, and project justification decision.

III. Asset Refinement Methodology

A. Background

Section II outlined the overall methodology for exposure and sensitivity analyses, which included information regarding all critical assets. This section addresses the refinement of assets by asset features. The refinement of assets was completed due to the following:

- Mindful of budget for project design plan development with cost estimates, it is likely that only priority assets will be included in the design plans which are those critical to protect public health and safety, for example water quality components because bacteria in the water can impact public health and safety.
- It was determined that it is better to narrow down to priority critical flooded assets that are important for the community at this stage and create a refined dataset rather than try to separate this out later in the project.

Appendices A and B provide the **detailed spreadsheets** outlining all critical assets by asset features including Asset Points, Asset Polygons, Asset Transportation Polygons, and Asset Polygons. This refinement has been completed through an iterative process to help identify and prioritize the Adaptation Action Areas (AAAs). For the methodology to yield the best results, there is a need to refine critical asset data gathered for the vulnerability assessment (which casts a broad net to gather all information available) down to a subset that will meet the project objectives for the AAAs.

Appendix A provides the master Excel workbook containing asset feature spreadsheets with colors indicating levels of refinement. There is also a “NOTES” column in the spreadsheet indicating determinations made by the local government or CFRPC for inclusion or removal to the final AAA assets.

Appendix B provides the refined asset Excel workbook containing asset feature spreadsheets. These spreadsheets are the remaining critical assets following the refinement process.

AAA boundaries may be drawn based on the critical assets remaining based on this refinement.

The Baseline Critical Asset dataset, which was identified in Section II of this methodology include four asset groups and their associated subtypes.

1. Transportation Assets and Evacuation Routes Asset Group

- **Subtypes:** Airports, bridges, bus terminals, ports (not applicable in Hardee County which is an inland county), major roadways, marinas, rail facilities, and railroad bridges.

2. Critical Infrastructure Asset Group

- **Subtypes:** Wastewater treatment facilities, lift stations, stormwater treatment facilities, pump stations, drinking water facilities, water utility conveyance systems, electric production and supply facilities, solid and hazardous waste facilities, military installations, communications facilities, and disaster debris management sites.

3. Critical Community and Emergency Facilities Asset Group

- **Subtypes:** Schools, colleges, universities, community centers, correctional facilities, disaster recovery centers, emergency medical service facilities, emergency operation centers, fire stations, health care facilities, hospitals, law enforcement facilities, local government facilities, logistical staging areas, affordable public housing, risk shelter inventory, and state government facilities.

4. Natural, Cultural, and Historical Resources Asset Group

- **Subtypes:** Conservation lands, parks, shorelines, surface waters, wetlands, and historical and cultural assets.

B. Refining Critical Assets

An overview of the list for refining critical asset data (points, polylines, transportation polylines, and polygons) is provided after this section. Details by asset features are provided after this section.

1. Remove non-flooded assets. Keep if Exposure is greater than zero (>0), remove all assets where Exposure = 0. This was determined for the 500-year 2040 scenario.
2. Ground truth remaining assets on a case-by-case basis to identify what should be grouped or removed based on decisions and expertise and local knowledge from Hardee County, its municipalities, and the CFRPC.
3. The following actions were taken to refine the critical assets.
 - a. If the asset is a private well which only serves one business, then remove.
 - b. If there are multiple components of the same asset, they are grouped into one asset.

- c. Remove assets where the County does not have authority to make improvements, so assets don't artificially weigh areas with projects that are not appropriate to be included in Task 4 (i.e., regional rail, private communication towers).
- d. Removal of natural, cultural, and historic sites apply on a case-by-case judgement. Consultation with the County and its municipalities was conducted to decide if this is an asset where they would be likely to develop a project to protect assets from flooding.

Asset Features

Refinement by asset feature is provided below. Asset features are: 1) Point Assets; 2) Polyline Assets; 3) Transportation Polyline Assets and 4) Polygon Assets. Each are described below along with the methodology for refinement for each.

1. **Point Assets** which are identified as: CFRPC_PT: critical assets: points. Point assets include: critical infrastructure - Wastewater treatment facilities; lift stations; stormwater treatment facilities; pump stations; drinking water facilities; water utility conveyance systems; electric production and supply facilities; solid and hazardous waste facilities; military installations (none in Hardee County); communications facilities; disaster debris management sites; critical community and emergency facilities - schools, colleges, universities, community centers, correctional facilities, disaster recovery centers, emergency medical service facilities, emergency operation centers, fire stations, health care facilities, hospitals, law enforcement facilities, local government facilities, logistical staging areas, affordable public housing, risk shelter inventory, and state government facilities; and Natural, Cultural, and Historical Resources - Conservation lands, parks, shorelines, surface waters, wetlands, and historical and cultural assets.

POINT ASSET REFINEMENT:

Appendix A provides the master Excel workbook containing asset feature spreadsheets with colors indicating levels of refinement. There is also a "NOTES" column in the spreadsheet indicating determinations made by the local government or CFRPC for inclusion or removal to the final AAA assets.

Appendix B provides the refined asset Excel workbook containing asset feature spreadsheets. These spreadsheets are the remaining critical assets following the refinement process.

The guide for color coding for Appendix A is provided below.

Yellow Highlighting:

All assets that have no exposure in the scenario of the 500 year flood in the year 2040. Remove non-flooded assets. Keep if Exposure is greater than zero (>0), remove all assets where Exposure = 0. This was determined for the 500-year 2040 scenario. This is reflected in the "RF_500YR_2040" field in Appendix A.

Pink Highlighting:

Private flooded assets including: private wells that serve RV parks, single businesses, mobile home parks, private business, private communication towers, residences, and other assets. Removal of rail facilities that are not county-owned.

Purple Highlighting:

Public assets removed because of minimal impact to public safety and health at time of flood. These assets include communication towers (where design solutions exists), private residences (now owned by public entities), community centers, law enforcement, local govt facility, post office, public school, public water system (PWS + Plant), tank (PWS), wastewater facility, well (PWS), debris staging areas, Peace River Heights water and wastewater, Moose Lodge, Zolfo Springs Post Office, bail bonds for Hardee County, small quantity generator disposal sites, boat ramps, warehouses, and CRA commercial properties.

Green Highlighting:

Removed public wells and wastewater facilities that have plans to prevent flooding, public water systems (PWS-Plant), small quantity generators, schools, disaster recovery center, tanks (PWS) that are already represented by other parcels, and the Payne Creek Historic Site. This also includes assets owned by the State or other government entities that are not county or municipal.

2. **Polyline Assets** which are identified as: CFRPC_PL- critical assets: general linear assets. Polyline include: electric production and supply facilities; stormwater treatment facilities and pump stations; historical and cultural assets; shorelines; and surface waters.

POLYLINE ASSET REFINEMENT:

Appendix A provides the master Excel workbook containing asset feature spreadsheets with colors indicating levels of refinement. There is also a “NOTES” column in the spreadsheet indicating determinations made by the local government or CFRPC for inclusion or removal to the final AAA assets.

Appendix B provides the refined asset Excel workbook containing asset feature spreadsheets. These spreadsheets are the remaining critical assets following the refinement process.

The guide for color coding for Appendix A is provided below.

Yellow Highlighting:

All assets that have no exposure in the scenario of the 500 year flood in the year 2040. Remove non-flooded assets. Keep if Exposure is greater than zero (>0), remove all assets

where Exposure = 0. This was determined for the 500-year 2040 scenario. This is reflected in the "RF_500YR_2040" field in Appendix A.

Purple Highlighting:

Private assets removed because of impacts to assets the County cannot control. These include: electric production and supply facilities; stormwater facilities; historical and cultural assets including bridges; shorelines; and surface waters.

3. **Transportation Polyline Assets which are identified as:** CFRPC_PL_TRANS_critical assets: transportation linear assets. These assets include: bridges; major roadways; and rail facilities.

TRANSPORTATION POLYLINE ASSET REFINEMENT:

Appendix A provides the master Excel workbook containing asset feature spreadsheets with colors indicating levels of refinement. There is also a "NOTES" column in the spreadsheet indicating determinations made by the local government or CFRPC for inclusion or removal to the final AAA assets.

Appendix B provides the refined asset Excel workbook containing asset feature spreadsheets. These spreadsheets are the remaining critical assets following the refinement process.

The guide for color coding for Appendix A is provided below.

Yellow Highlighting:

All assets that have no exposure in the scenario of the 500 year flood in the year 2040. Remove non-flooded assets. Keep if Exposure is greater than zero (>0), remove all assets where Exposure = 0. This was determined for the 500-year 2040 scenario. This is reflected in the "RF_500YR_2040" field in Appendix A.

Purple Highlighting:

Roadways owned by FDOT have been removed as the local governments have no control over these roads.

Green Highlighting:

Public/Private roadways that are flooded but not identified as Evac nor Evac-SIS were removed.

4. **Polygon Assets which are identified as:** CFRPC_PG: critical assets: polygon areas. Polygons include: stormwater treatment facilities and pump stations; conservation lands; historical and cultural assets; parks; surface waters; and wetlands.

POLYGON ASSET REFINEMENT:

Appendix A provides the master Excel workbook containing asset feature spreadsheets with colors indicating levels of refinement. There is also a “NOTES” column in the spreadsheet indicating determinations made by the local government or CFRPC for inclusion or removal to the final AAA assets.

Appendix B provides the refined asset Excel workbook containing asset feature spreadsheets. These spreadsheets are the remaining critical assets following the refinement process.

The guide for color coding for Appendix A is provided below.

Yellow Highlighting:

All assets that have no exposure in the scenario of the 500 year flood in the year 2040. Remove non-flooded assets. Keep if Exposure is greater than zero (>0), remove all assets where Exposure = 0. This was determined for the 500-year 2040 scenario. This is reflected in the “RF_500YR_2040” field in Appendix A.

In the case of polygons, all polygons are being removed. They consist of biological stations, canals/ditches, stormwater ponds; cemeteries; conservation lands; historical and cultural assets; parks; surface waters; wetlands, and linear resources such as roads, railroads, levees, ditches, and canals.

APPENDIX B

PUBLIC INPUT



Category	Comment
Comments from meeting with County and Municipal Staff (December 18, 2024)	
Flooding	Cracker Lake RV Park experiences regular flooding.
Flooding	Peace River trailers along Parkview, South of 64, flooded in Ian and have experienced issues since then.
Flooding	Duplexes along Suwanee and 9th Street experience flooding issues.
Flooding	4th and palmetto floods with heavy rain
Flooding	Pioneer Park at Wildlife Refuge Area- Flooding occurs at this location during a major storm event since it's a low-lying area.
Flooding	River Road is in a wetland area
Infrastructure	SR 64 Overflow Bridge, South of Pioneer Park- Berm at Pioneer Park needs to be repaired to protect the SR 64 Overflow Bridge. It also provides water quality treatment before it discharges to Peace River. Hurricane Ian funding opportunities
Comments from meeting with Community Organizations (January 6, 2025)	
Community Engagement	Communication is very difficult. Any type of communication or messaging - newspaper only runs once per week. Tend to rely on social media (Facebook) - always find messaging that needs to go out to the whole population (Spanish, English, and Creole) challenging across the board in a timely manner.
Community Engagement	Residents by and large reported that they know where to go for help - they know how to access food - but they are not able to choose what is culturally or nutritionally appropriate
Transportation	Carrying their meals home is difficult so they need to go multiple times per week.
Transportation	Migrant/labor buses are the only transportation options they have unless they have a friend. Run through a specific program and only open to those people. People complain about the number of them going to Walmart - the food they eat is often out of stock
Comments from Public Outreach Meeting (January 9, 2025)	
Flooding	Cracker Lake floods during major storm events.
Response & Rehabilitation	Pioneer Park has a damaged berm near the bridge. Hurricane Ian made the river overflow with sinkholes at the wildlife refuge and barreled through the berm and took a month to rebuild the bridge. The berm has yet to be rebuilt.

Category	Comment
Comments from meeting with County and Municipal Staff (December 18, 2024)	
Flooding	The ditches west of US-17 flood easily, even during summer afternoon thunderstorms. Maintained by three employees in zones.
Flooding	Train Depot at Main Street and Central Avenue (near the downtown master plan boundary) floods and holds water with any rain event.
Flooding	The median on US-17 by Crews Bank experiences flooding.
Flooding	Chester Avenue was washed out in Hurricane Ian, and has since been fixed but experiences flooding behind Crews Bank. New homes are anticipated here.
Flooding	Jones Street, Doyle Parker Avenue, and Main Street experience flooding. New homes are anticipated here.
Flooding	Flooding issues at Central Avenue and Main Street. The culvert fills up with sand and needs to be vacuumed out. Water comes overflows out to the centerline of the street for days following a heavy rain event.
Flooding	Where Main Street dead-ends at its westernmost point (713 E. Main Street) a private drainage system was installed to drain to the roadway into the private agricultural land. Currently the City is dumping into it without a written agreement. During Hurricane Ian the water only stood for a couple of hours, but Hurricane Milton and others have caused more flooding in the past. Dirt and sand are clogging the ditch system and impairing its efficiency.
Flooding	US 17 become problematic with even one-half inch of rain. It is currently being widened by FDOT and the underground stormwater system is not being improved. FDOT is utilizing ditches on the side of the road to accommodate for the widening, but these are not regularly maintained by the state or the county and are therefore back up with trash and plantings, and become eroded.
Infrastructure	The City of Bowling Green has requested a stoplight at the intersection of US 17 and Hardee Street due to three pedestrian fatalities. FDOT has declined the request. A feedback sign has been added in the interim, yet due to comments from Hardee County Sheriff's office at the community meeting, this feedback sign was placed for the duration of the detour onto County Line Rd and not in response to the pedestrian fatalities.
Comments from meeting with Community Organizations (January 6, 2025)	
Community Engagement	Farm Worker Housing - CFRPC did a study on the registered programs and we should review it. (likely through 2020)
Economic and Policy	Hardee County population is not growing per the Census data (seasonal migrant farm workers are moving to this area and are not being counted within the census data)
Economic and Policy	No traditional grocery stores within the City of Bowling Green, creating a food desert.
Land Use and Urban Design	School Zone was relocated to Banana Street in attempt to protect the students and make it more safe. The relocation was also moved closer to future residential/infill projects anticipating new students. Speeding through the school zone is still an active issue.
Land Use and Urban Design	Infill and residential developments are coming in within Bowling Green (through 2020) Denise Grimsley with The Development Group can provide additional insights into rezoning/permitting/growth areas in Bowling Green.

Category	Comment
Transportation	Transportation challenges us greatly.
Transportation	United Way Needs Assessment identified that 73% of the sample size agreed that they would be willing to fund more transportation options.
Transportation	Bowling Green only has one doctors office. Difficult to obtain transportation from family/friend/strangers to Wauchula to get to the doctor.
Comments from Public Outreach Meeting (January 9, 2025)	
Infrastructure	Many county roads have stormwater, but it is not maintained.
Infrastructure	The Train depot drain needs to be cleaned out, as it causes flooding onto CR-17
Additional Comments	
Flooding	The area floods new houses on it
Infrastructure	Storm drain issues end of Pleasant Way
Infrastructure	Central & Main storm drain clogged

Category	Comment
Comments from meeting with County and Municipal Staff (December 18, 2024)	
Flooding	Culvert for the tributary running down the west side of town washed out where it crosses Louisiana Avenue, flooding the houses in Sunset Park. Some of these homes are being reconstructed due to flooding, and should be elevated.
Flooding	The City's maintenance shop, yard, WWTP Griffen Rd, Bay and Green Streets all flooded impacting houses and city infrastructure (not warehouses)
Flooding	Wauchula Hills experiences major flooding. This area experiences flooding from Hog Branch Creek that runs into Peace River due to drainage issues which causes wash outs on roads and issues with the operations of the Lift Station from Lost Acres to Wauchula Hills Subdivision. Residential area population is in an underlying community serving approx 2,000 residents.
Flooding	Griffin Road- tributary creek that leads to Peace River overtopped that causes flooding to this community
Flooding	Cross Creek Lane- Drainage Issue
Flooding	Circle Drive- Road Flooding not major
Infrastructure	East side of town between the unincorporated areas along S. 1st Ave to where the road is labeled "private" has a large culvert that was washed out, limiting access to the couple of residential properties in that area. The dirt road has since been fixed, but remains a concern as the fix took a long time.
Infrastructure	Magnolia Manor experiences flooding due to culverts and ditches that need to be upgraded and installed. No proper drainage locations in this area and is being surrounded by wetlands that run into the Peace River. FDOT currently utilizes this area to convey water flow from US 17 that contributes to increased flooding.
Response & Rehabilitation	Homes in Sunset Park are not being reconstructed. They were mucked and gutted but not to where they could be elevated at this time.
Comments from meeting with Community Organizations (January 6, 2025)	
Flooding	Dip in the road on MLK Ave at Bay street floods in any rain events.
Flooding	Flooding all over the County - both daughters living in Riverview Heights Subdivision and the Peace River (Diane)
Infrastructure	Street lighting is lacking in many areas - sidewalks needed along MLK Avenue from Baker Street to Bay Street. Many have witnessed pushing strollers at night in the roadway as the grass on either side of the road is overgrown and not maintained.
Transportation	New traffic circle in front of Winn Dixie has no pedestrian crossing or consideration for pedestrian access.
Comments from Public Outreach Meeting (January 9, 2025)	
Flooding	Ditches flood during regular thunderstorms on Griffin Road.
Flooding	Flooding around the Sheriff's Department during regular thunderstorms.
Flooding	The rerouted drains by the old baseball fields on Hawaiian Drive and Citrus Valley flood during regular thunderstorms. The flow is so fast that it washes out the land and clogs ditches.
Flooding	Flooding on US 17 Northbound near Will Duke Rd. The water just sits after a storm even instead of draining away.
Additional Comments	
Flooding	US 17 around Ford Dealership floods often

Category	Comment	Approximate Location of the Concern
Comments from meeting with County and Municipal Staff (December 18, 2024)		
Community Engagement	Communication strategies to disseminating information to the public include: local newspaper, Facebook pages, County Community Development Office, door-to-door engagement (especially in Zolfo Springs), printed information on back of utility bills, text messages to the whole municipality.	All
Economic and Policy	Open to regulations to require elevated housing types.	All
Response & Rehabilitation	Need identified funding sources for both the Cities/Counties to access to address municipally owned properties as well as for homeowners to tap into for damages from flooding.	All
Infrastructure	Direct drainage ditch from US 17 on its way to the Peace River crosses Edison Avenue adjacent to the Wastewater Treatment plant at 596 Lake Branch Road and continues through the property south of the treatment plant to the east.	Bowling Green
Flooding	Limestone area experiences flooding due to the major creeks surrounding this community	Unincorporated
Flooding	Bronco Drive experiences major flooding as it is in a wetland and low-lying area	Unincorporated
Flooding	Murphy Road- Road Flooding not major	Unincorporated
Flooding	Jim Williams- Road Flooding not major	Unincorporated
Flooding	CR 665- Road Flooding not major	Unincorporated
Flooding	Pine Level Road- Road Flooding not major	Unincorporated
Flooding	Goose Pond- Road Flooding not major	Unincorporated
Flooding	Center Hill- Road Flooding not major	Unincorporated
Flooding	Tolbert Stephens- Road Flooding not major	Unincorporated
Flooding	Fish Branch- Road Flooding not major	Unincorporated
Flooding	Crewsville Road- Road Flooding not major	Unincorporated
Flooding	Ten-Mile Grade- Road Flooding not major	Unincorporated
Flooding	Sweetwater Road- Road Flooding not major	Unincorporated
Flooding	Old Town Creek- Road Flooding not major	Unincorporated
Flooding	Locklar Road- Road Flooding not major	Unincorporated
Flooding	John Carlton- Road Flooding not major	Unincorporated
Flooding	Van Simmons- Road Flooding not major	Unincorporated
Flooding	Gordon Road- Road Flooding not major	Unincorporated
Flooding	Parnell Road- Road Flooding not major	Unincorporated
Flooding	Steve Roberts and Kelly Roberts- Road Flooding not major	Unincorporated
Flooding	Clifton Bryan Road- Road Flooding not major	Unincorporated
Flooding	Gillete- Road Flooding not major	Unincorporated
Flooding	S. Barlow Hanchey- Road Flooding not major	Unincorporated
Flooding	Maude Road- Road Flooding not major	Unincorporated
Flooding	Resthaven- Road Flooding not major	Unincorporated

Category	Comment	Approximate Location of the Concern
Comments from meeting with Community Organizations (January 6, 2025)		
Transportation	Transportation and Access are issues throughout the County.	Unincorporated
Transportation	Transportation is the key - if people need to get to Hardee County Crisis Center, how are they going to do so? Everywhere in Hardee County there is a need. I wish there was a trolley to run from Dollar General in Zolfo to Dollar General in Bowling Green.	Unincorporated
Comments from Public Outreach Meeting (January 9, 2025)		
Infrastructure	25 bridges were overtaken by the river in the whole county.	All
Infrastructure	Stormwater in city centers collects along roads with curbing and gutters.	All
Response & Rehabilitation	Hurricane Ian affected 200 homes, and 10 families are still displaced to hotels.	All
Transportation	Entire County faces transportation challenges to access their needs, often relying on family, friends, or walking.	All
Additional Notes	Homeless coalition has funds (RUSH funds) to house people who have been displaced.	Unincorporated
Additional Notes	The Mennonites are here building houses	Unincorporated
Additional Notes	The County is in the process of applying for grants for a stormwater master plan, since they do not currently have one.	Unincorporated
Additional Notes	Flood mitigation assistance and BRIC program are open for funding,. The CHNEP website has resources related to federal and state funding sources.	Unincorporated
Additional Notes	MTM is the County transportation system for the disadvantaged.	Unincorporated
Additional Notes	CR-17 was widened because of hurricane evacuations. Police are used to help with evacuations.	Unincorporated
Additional Notes	Food Banks in the County include: a.Cutting edge b.Hardee Help Center c.Alpha and Omega Freedom d.First Methodist church of Wauchula.	Unincorporated
Additional Notes	South Florida college is used as a special needs shelter	Unincorporated
Flooding	Bronco Drive experiences flooding.	Zolfo Springs
Additional Comments		
Flooding	Flooding issues stop grocery store access	
Flooding	Flooding on Hobbs RD	
Flooding	Bronco Drive flood-prone	
Additional Notes	DeSoto Peace clean snagged but Hardee not	