Jared D. Freedline

GIS Portfolio

Public History MA (UCF) | GIS Graduate Certificate

Spatial Analysis · StoryMaps · Historical GIS · Transportation GIS · 3D GIS

Tools: ArcGIS Pro · ArcGIS Online · ArcGIS StoryMaps · Raster Analysis · 3D GIS

BIO

I am a Public History graduate student at the University of Central Florida with a Graduate Certificate in GIS. My work focuses on applying spatial analysis, cartographic design, digital storytelling, and historical GIS to real-world research and planning problems.

I have experience building ArcGIS StoryMaps, conducting spatial modeling, working with raster and vector data, performing least-cost path and transportation analysis, georectifying historical maps, and creating 3D GIS visualizations.

Technical Skills

GIS & Mapping: ArcGIS Pro, ArcGIS Online, ArcGIS StoryMaps, Feature layers, Spatial joins, Buffering, Geocoding, Least-cost path, Network analysis, Kernel density, Thiessen polygons

Raster & Terrain: DEM analysis, Slope analysis, Cost surfaces, Raster resampling, Georectification, Ground control points

3D GIS: 3D scenes, Raster-to-surface modeling, Vertical exaggeration

Data & Analysis: Excel (cleaning, pivot tables), Attribute tables, Data normalization

Visualization & Storytelling: Cartographic layout, Public-facing GIS, Digital storytelling, Historical GIS

Utilities Data improvement and verification

Crime Analyst

SOP Creation

Contact

Email: jfreedline@gmail.com

Phone: 717-873-3760

Project 1 — Final GIS Class Project

Title: Campus Safety & Accessibility GIS Analysis (UCF Blue Light Phones)

Description: As part of a Campus Safety and Accessibility GIS Analysis project, I examined the spatial distribution and coverage of emergency Blue Light Phones across the University of Central Florida campus using ArcGIS Pro. The project focused on assessing accessibility and identifying potential service gaps in the emergency phone network. Using point mapping, 50-meter buffer analysis, Thiessen polygons, and kernel density estimation, I created a series of maps that visualized phone distribution, service coverage areas, nearest-phone zones, and concentration patterns. The analysis revealed that Blue Light Phones were primarily clustered along major pedestrian corridors and high-traffic areas, while several peripheral sections of campus exhibited lower levels of coverage and accessibility. This project strengthened my skills in ArcGIS Pro, spatial analysis, buffering, Thiessen polygon generation, kernel density mapping, and communicating GIS findings through professional cartographic products.

Goal: Analyze the spatial distribution and coverage of campus emergency Blue Light Phones to assess accessibility and identify service gaps.

Methods: Point mapping, 50-meter buffer analysis, Thiessen polygons, Kernel density estimation

Outputs: Distribution map, Buffer map, Thiessen map, Kernel density map

Key Findings: Phones cluster along pedestrian corridors; service gaps exist in peripheral areas.

Skills: ArcGIS Pro, Buffering, Thiessen, Kernel Density

Final GIS Class Project — Visuals

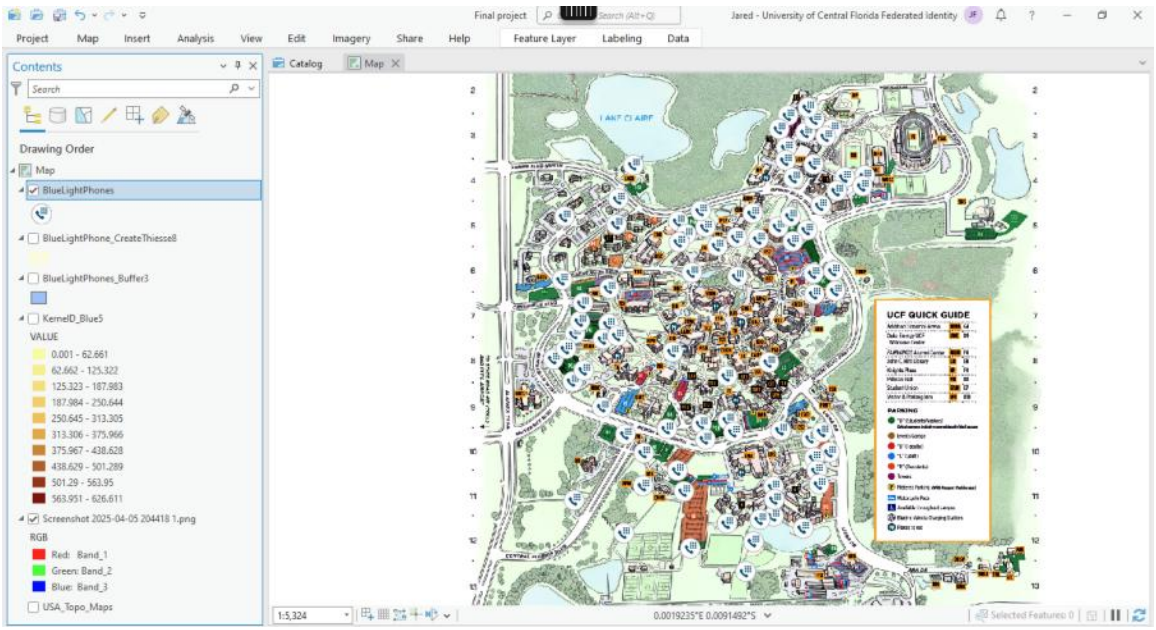


Figure: Blue Light Phone Distribution Map

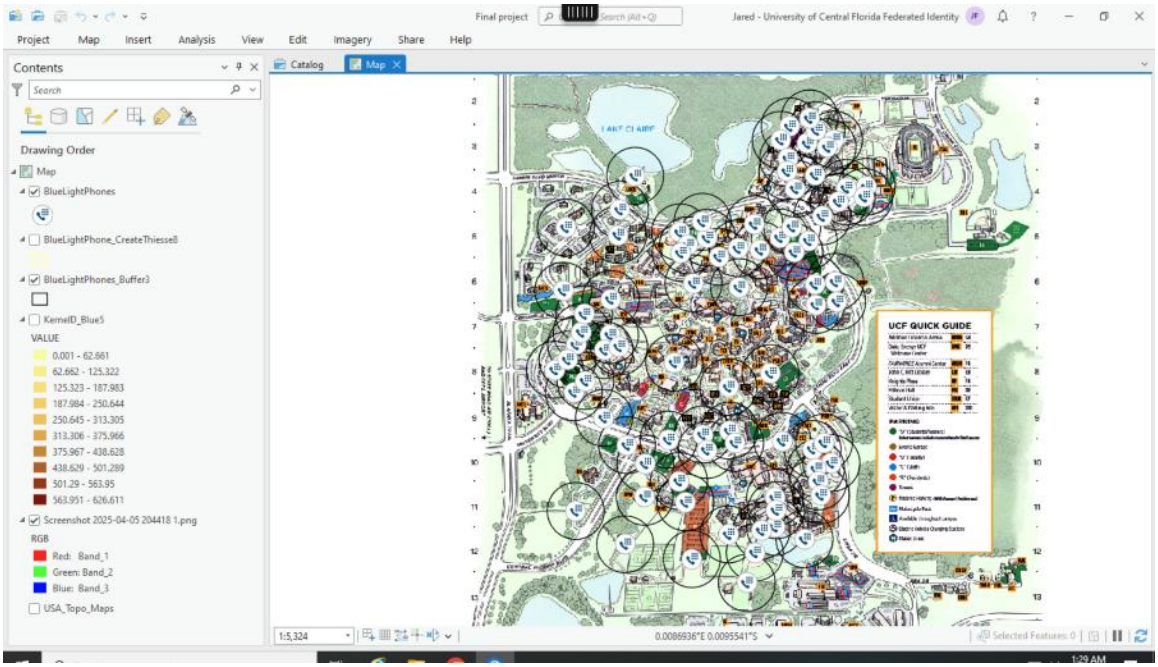


Figure: 50-Meter Buffer Coverage Map

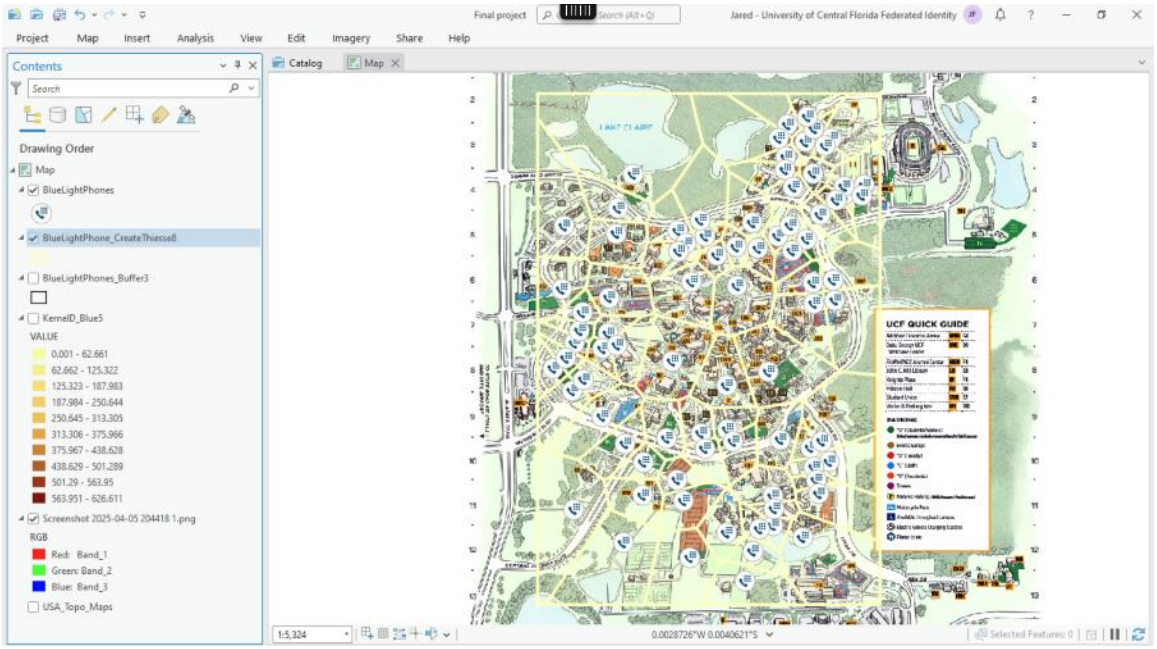


Figure: Thiessen Polygon Areas

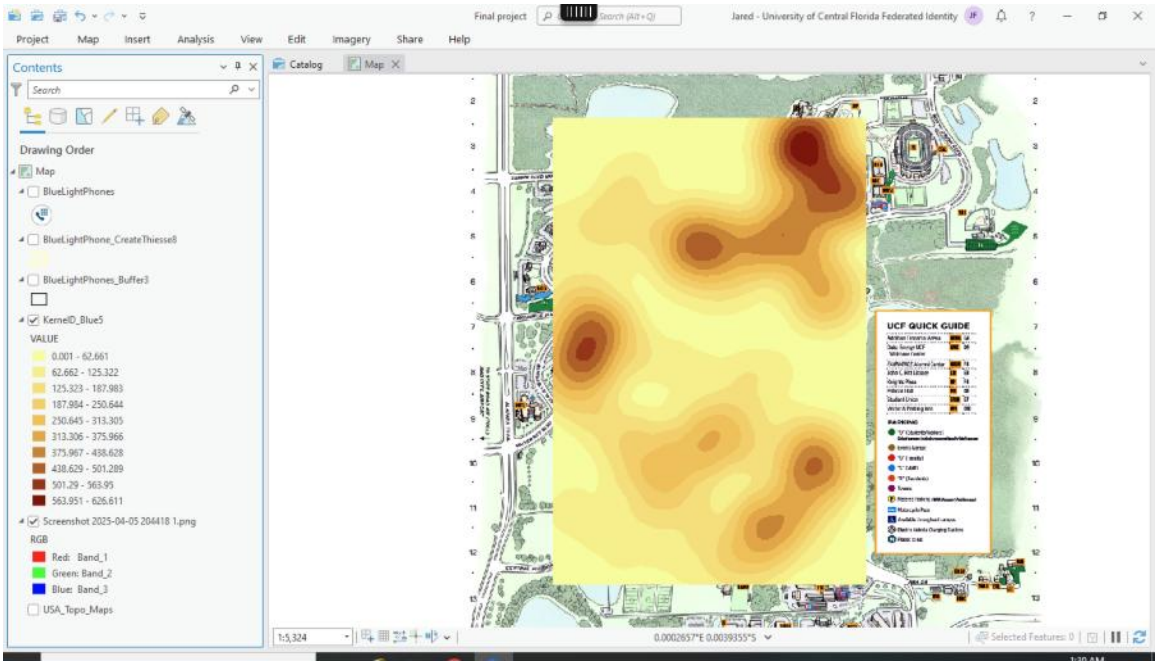


Figure: Kernel Density Heatmap

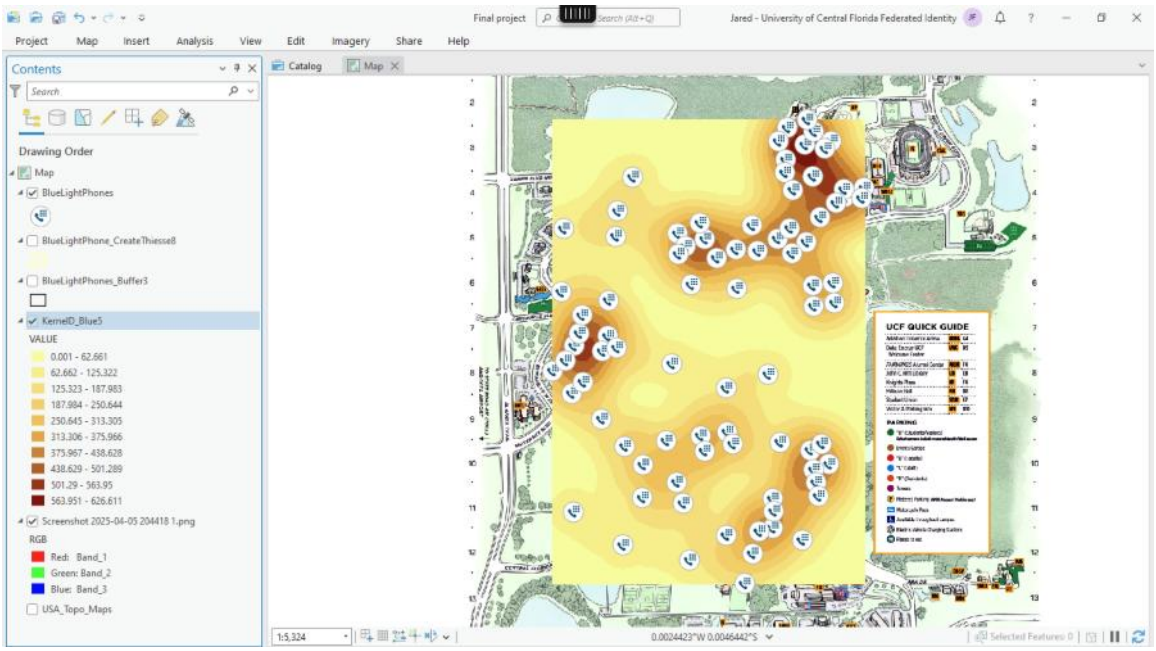


Figure: Kernel Density Heatmap with dots

Project 2 — ArcGIS StoryMap

Title: Mapping the Geography of the Second Seminole War

Description: As part of a Historical GIS project, I developed an interactive StoryMap examining the geography of the Second Seminole War in Florida from 1835 to 1842. The project combined historical research with geospatial analysis to explore the locations of forts, battles, military routes, and significant events throughout the conflict. Using ArcGIS StoryMaps, web maps, historical overlays, and guided tour features, I created an engaging digital narrative that allowed users to visualize how geography influenced military operations and settlement patterns during the war. The final product included interactive maps of forts and battle sites, providing historical context through text, images, and spatial data. This project strengthened my skills in ArcGIS StoryMaps, web mapping, historical GIS, spatial visualization, and digital storytelling while demonstrating the value of GIS as a tool for public history and historical interpretation.

Goal: Create an interactive GIS narrative exploring forts, battles, and the historical geography of Florida (1835–1842).

Methods: Feature layers, Web map design, Historical overlays, Guided tours

Outputs: Interactive StoryMap, Fort maps, Battle maps

Skills: ArcGIS StoryMaps, Web Mapping, Historical GIS, Digital Storytelling

Digital History Project — Visuals

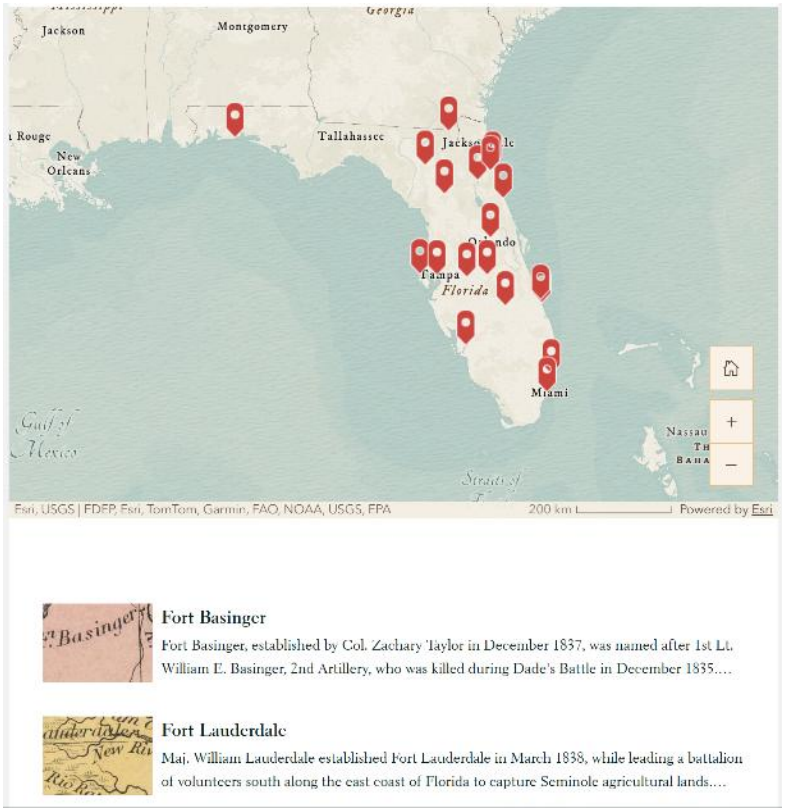


Figure: Spatial Distribution of Major Battles and Veterans from the Second Seminole War in Florida

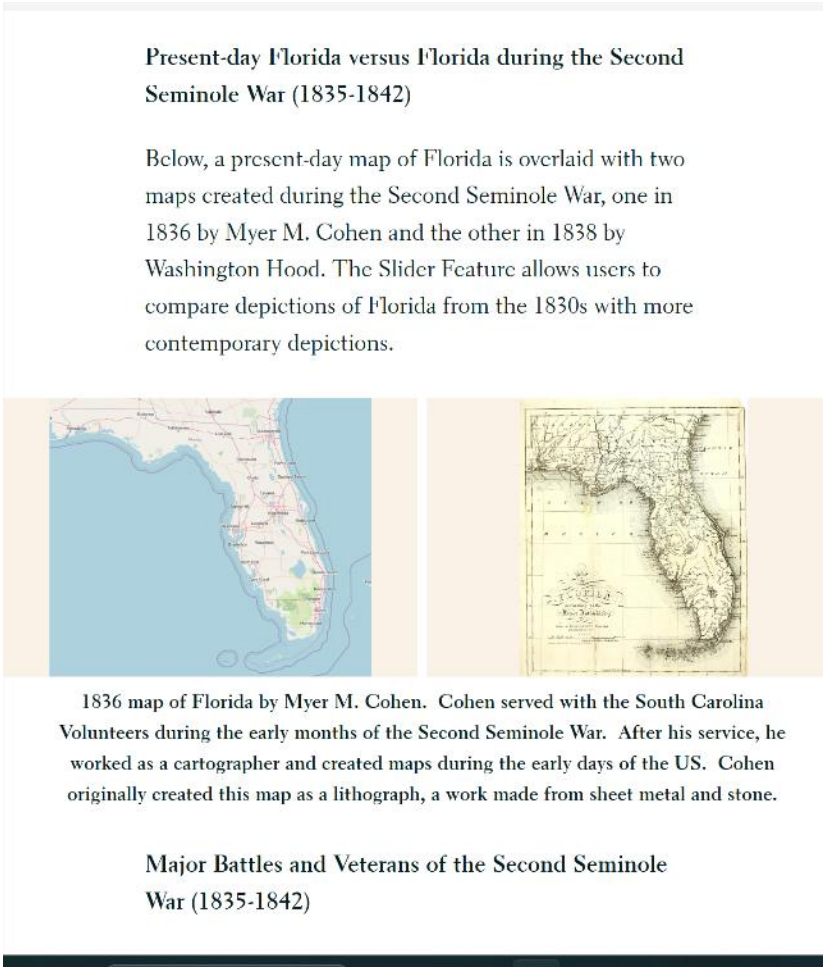


Figure: Overlay Comparison of Present-Day Florida and Historical Maps from the Second Seminole War Era (1835–1842)

Project 3 — Clio Digital History Project

Title: Florida Slave Plantation Interactive Tour

Description: As part of a Public History and GIS project, I developed an interactive digital tour documenting Florida slave plantations to increase public access to historical information and encourage place-based learning. Using historical research, geolocation, interpretive writing, and spatial storytelling techniques, I created a series of mapped plantation entries within the Clio platform that connected historical narratives to their geographic locations. The project combined archival sources, historical context, and geographic data to produce an engaging public-facing resource that allows users to explore plantation sites across Florida through interactive maps and mobile devices. In addition to the digital tour, I developed supporting content for printable guides and educational materials. This project strengthened my skills in public history GIS, narrative cartography, digital interpretation, historical research, and the creation of accessible digital humanities resources for diverse audiences.

Goal: Create a public-facing digital tour documenting Florida slave plantations.

Methods: Historical research, Geolocation, Interpretive writing, Spatial storytelling

Outputs: Interactive Clio tour, Plantation entries, Printable guide

Skills: Public History GIS, Narrative Cartography, Digital Interpretation

Clio Digital History Project — Visuals

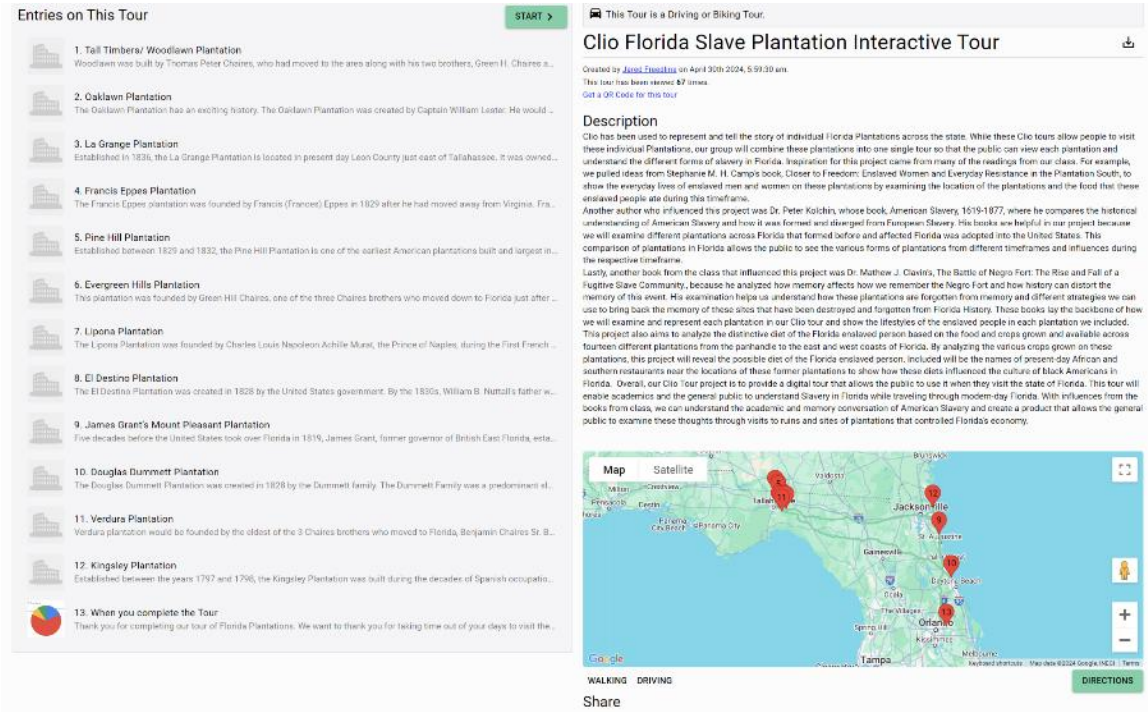


Figure: Interactive Tour Interface and Plantation Locations Map from the Clio Florida Slave Plantation Project

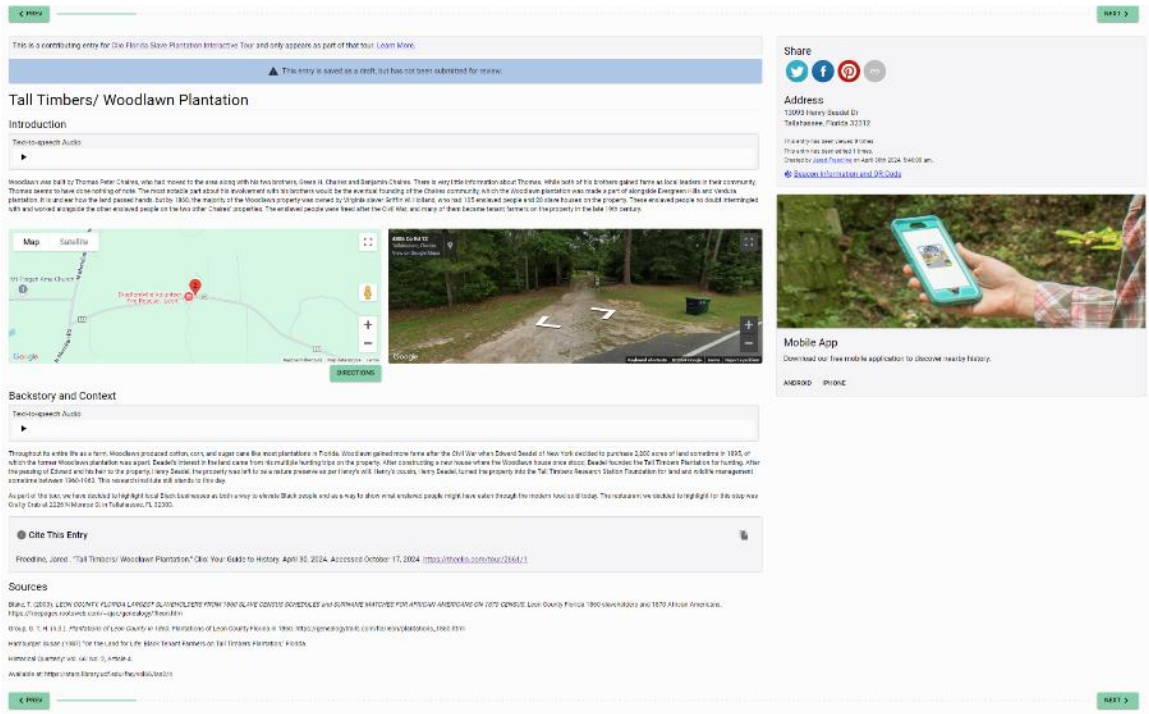


Figure: Clio Digital History Entry for Tall Timbers / Woodlawn Plantation, Florida

School Projects — Georectification Lab

Title: Rectifying the 1966 JNCA Anatolia Map

Goal: Align a historical navigation chart with modern satellite imagery.

Methods: Ground control points, Geometric transformation, Raster resampling, and clipping

Outputs: Georectified raster, Overlay comparison map

Skills: Raster Georectification, Historical GIS, Spatial Accuracy

Georectification Lab — Visual

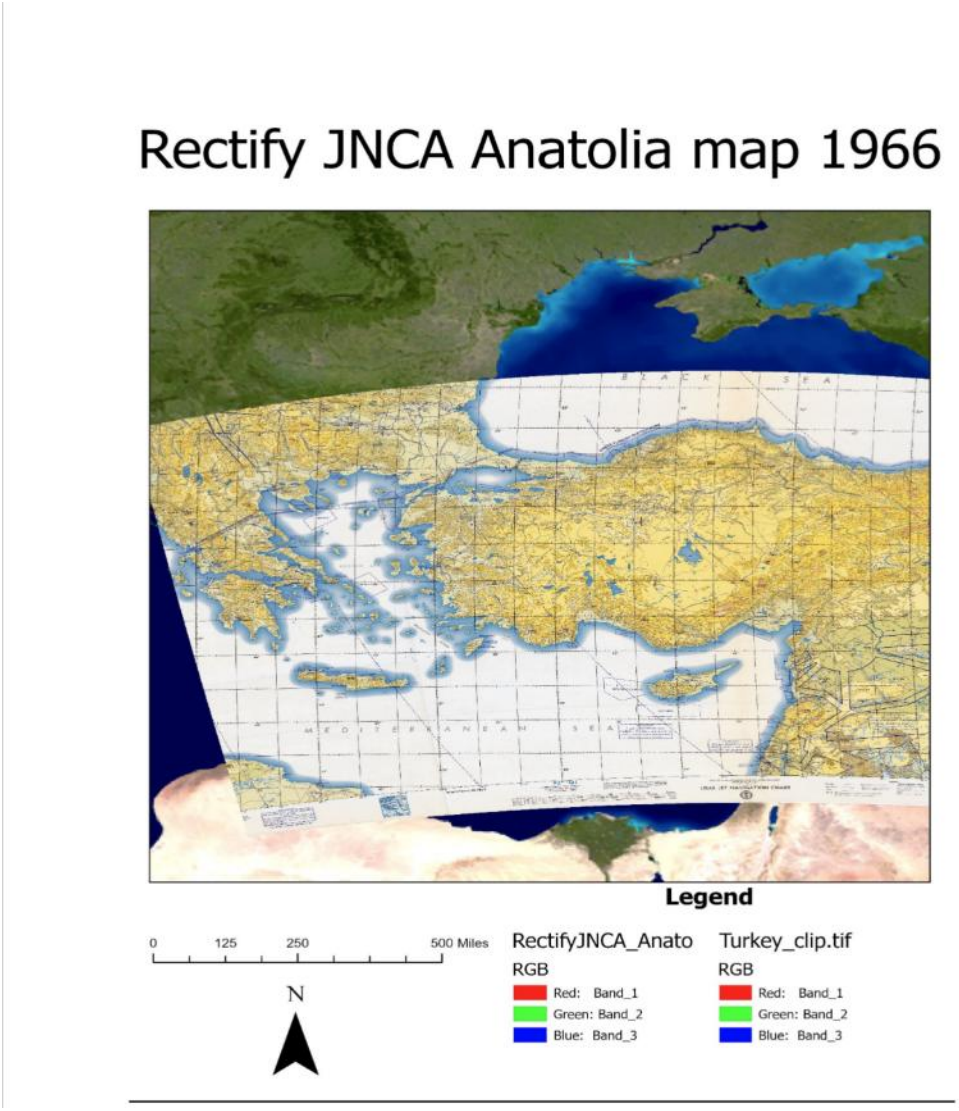


Figure: Georectified 1966 JNCA Anatolia Map

Project 5 — Transportation Lab

Title: Least-Cost Path Analysis at Kerkenes

Goal: Model terrain-based transportation routes using a DEM.

Methods: DEM analysis, Cost surface, Least-cost paths, Network modeling

Outputs: Six least-cost routes, Modeled road network

Skills: Transportation GIS, Cost Surfaces, Least-Cost Paths

Transportation Lab— Visual

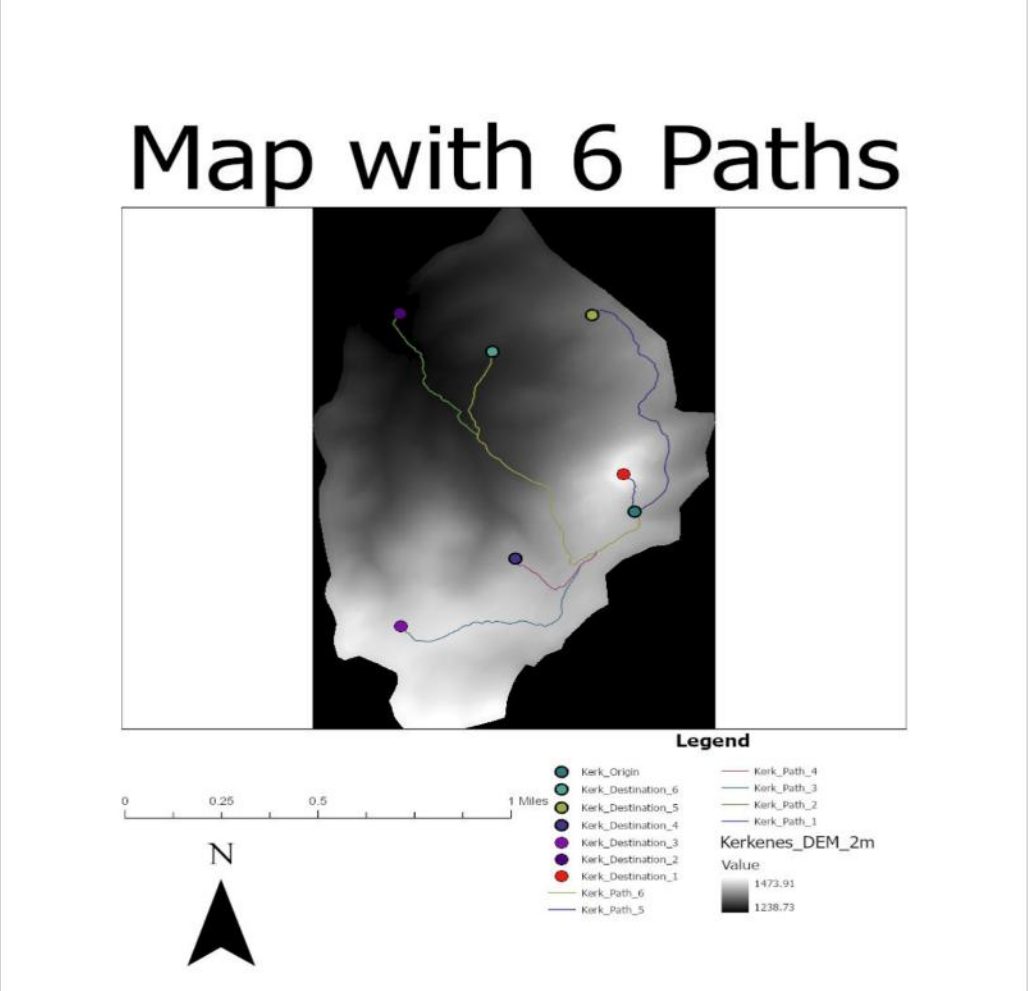


Figure: Least-Cost Path Map with Six Routes

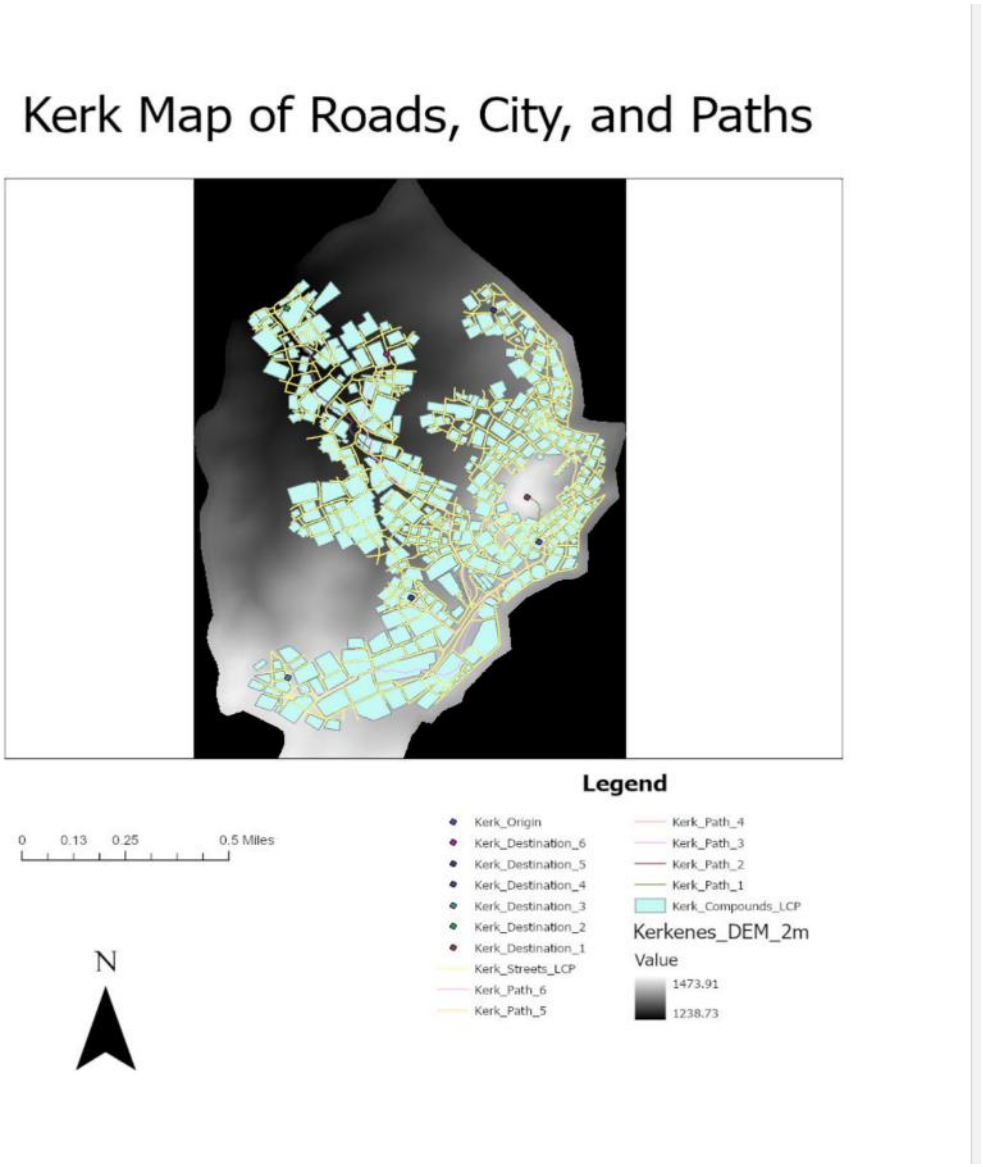


Figure: Kerkenes Map of Roads, City, and Paths

Project 6 — 3D GIS Modeling Lab

Title: Terrain Reconstruction from Raster Imagery

Goal: Convert a grayscale raster into a 3D terrain surface.

Methods: Raster-to-surface modeling, 3D scenes, Vertical exaggeration

Outputs: 3D surface model, Side-view map

Skills: 3D GIS, Raster Analysis, Terrain Modeling

3D GIS Modeling Lab — Visual

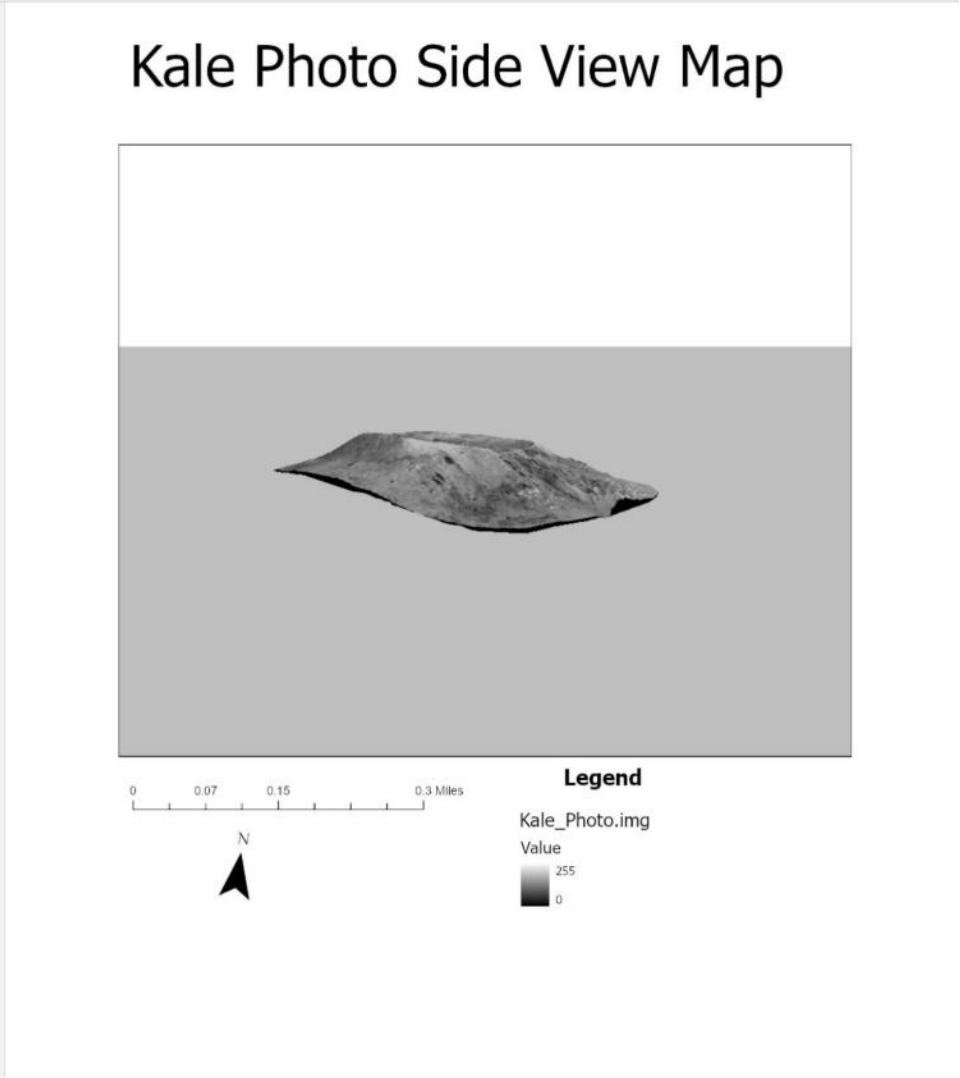


Figure: 3D Terrain Model Generated from Kale Photo Raster Data (Side View)

Project 5 — Crime Analyst GIS

Title: St. Louis Neighborhood Boundaries

Description: As part of a GIS and Crime Analysis project, I developed a detailed neighborhood boundary map of St. Louis to support spatial crime analysis and geographic data visualization. Using ArcGIS Pro, I integrated neighborhood boundary datasets with municipal geographic data to create a clear reference map for subsequent analyses. The project established the spatial framework for examining homicide patterns, park accessibility, and hotspot distributions throughout the city. The final map provided a comprehensive visualization of neighborhood divisions and strengthened my understanding of cartographic design, data management, and spatial organization within an urban environment.

Goal: Create a geographic reference map of St. Louis neighborhood boundaries for crime analysis.

Methods: Boundary mapping, Spatial data integration, Cartographic design, Geographic visualization

Outputs: Neighborhood boundary map, GIS reference layer

Skills: ArcGIS Pro, Cartography, Spatial Data Management, Geographic Visualization

Criminal Mapping — Visual

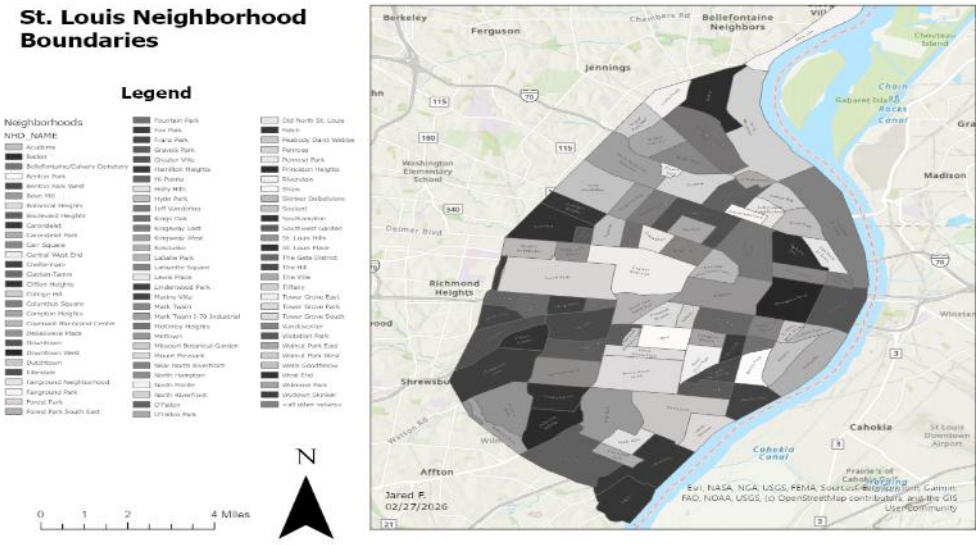


Figure: St. Louis Neighborhood Boundaries Map

Title: Homicide Hot Spot Analysis in St. Louis (2010–2014)

Description: As part of a GIS and Crime Analysis project, I conducted a hotspot analysis of homicide incidents in St. Louis from 2010 to 2014 using kernel density estimation and spatial clustering techniques. The project identified areas with persistent concentrations of homicide incidents and visualized the intensity of violent crime across the city. By comparing homicide density surfaces with neighborhood boundaries, I was able to identify core hotspot areas and evaluate patterns of crime concentration. The resulting maps provided valuable insights into geographic crime trends and strengthened my skills in spatial statistics, hotspot analysis, and crime intelligence mapping.

Goal: Identify and visualize homicide hotspots throughout St. Louis.

Methods: Kernel Density Estimation, Hotspot mapping, Spatial clustering, Density analysis

Outputs: Kernel density map, Homicide hotspot map, Crime concentration analysis

Skills: ArcGIS Pro, Kernel Density Analysis, Spatial Statistics, Crime Analysis

Criminal Mapping — Visual

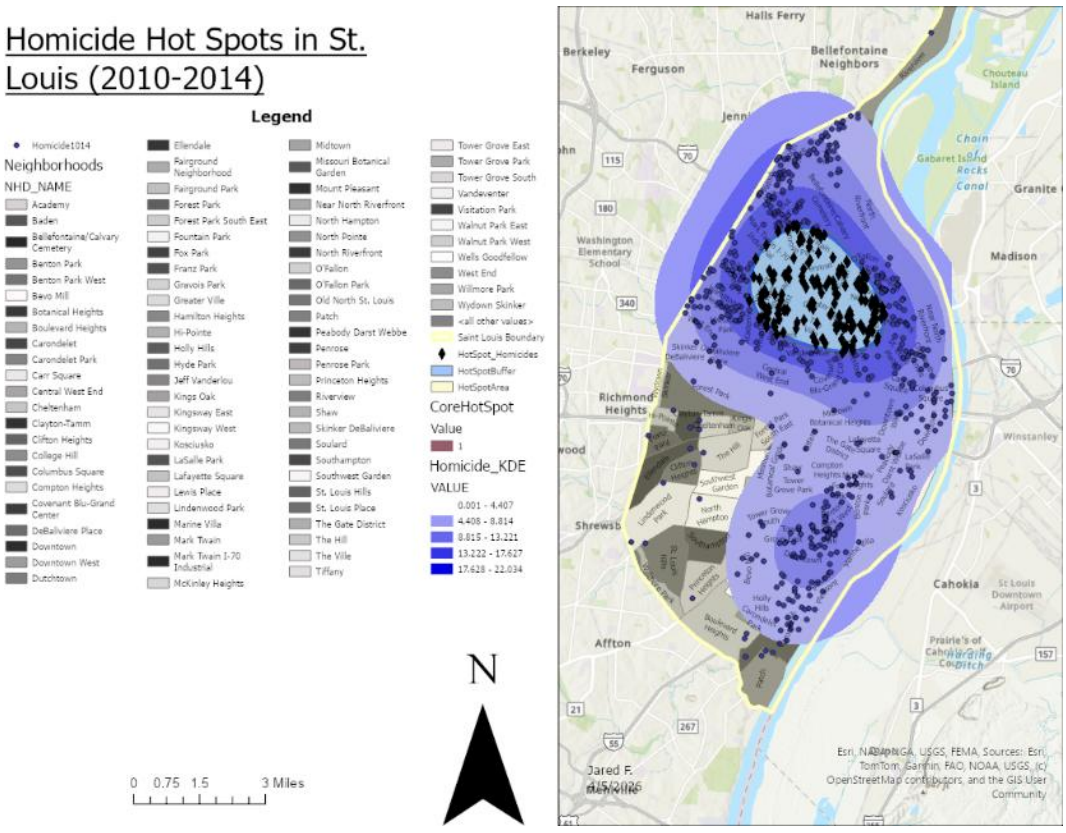


Figure: St. Louis Crime Hot Spot Map

Title: Homicide Proximity to Parks Analysis in St. Louis (2010–2014)

Description: As part of a GIS and Crime Analysis project, I evaluated the spatial relationship between homicide incidents and public parks in St. Louis from 2010 to 2014. Using ArcGIS Pro, I created 500-foot and 1,000-foot buffer zones around parks and analyzed homicide incidents occurring within these service areas. The analysis revealed that 138 homicide incidents occurred within 500 feet of parks and 299 incidents occurred within 1,000 feet, providing insight into the relationship between violent crime and public recreational spaces. This project strengthened my skills in buffer analysis, proximity analysis, spatial querying, and crime pattern interpretation.

Goal: Examine the relationship between homicide incidents and park locations in St. Louis.

Methods: Buffer analysis, Spatial querying, Proximity analysis, Crime mapping

Outputs: 500-foot buffer map, 1,000-foot buffer map, Proximity analysis results

Skills: ArcGIS Pro, Buffer Analysis, Spatial Querying, Crime Analysis

Criminal Mapping — Visual

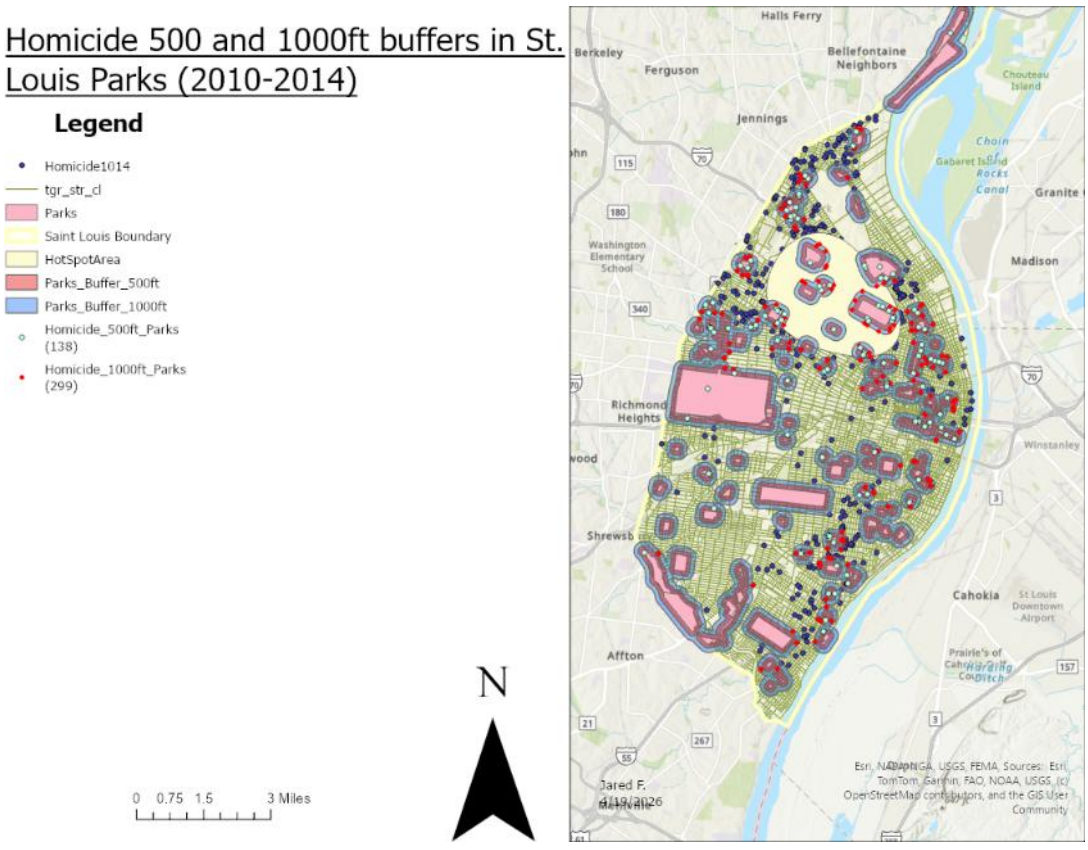


Figure: St. Louis Crime Hot Spot and Buffer Map

Title: St. Louis Crime and Urban Environment GIS Analysis

Description: As part of a comprehensive GIS and Crime Analysis project, I integrated homicide data, neighborhood boundaries, parks, streets, and parcel datasets to examine the relationship between crime and the urban environment in St. Louis. Using ArcGIS Pro, I managed and analyzed multiple spatial datasets to support crime pattern analysis, hotspot identification, and proximity studies. The project demonstrated how GIS can be used to identify geographic trends in crime and support data-driven decision-making for public safety and urban planning initiatives.

Goal: Analyze the relationship between homicide patterns and the urban landscape of St. Louis.

Methods: GIS database management, Spatial analysis, Crime mapping, Multi-layer geographic analysis

Outputs: Integrated GIS database, Crime analysis maps, Spatial analysis products

Skills: ArcGIS Pro, GIS Database Management, Crime Analysis, Spatial Data Integration

Criminal Mapping — Visual

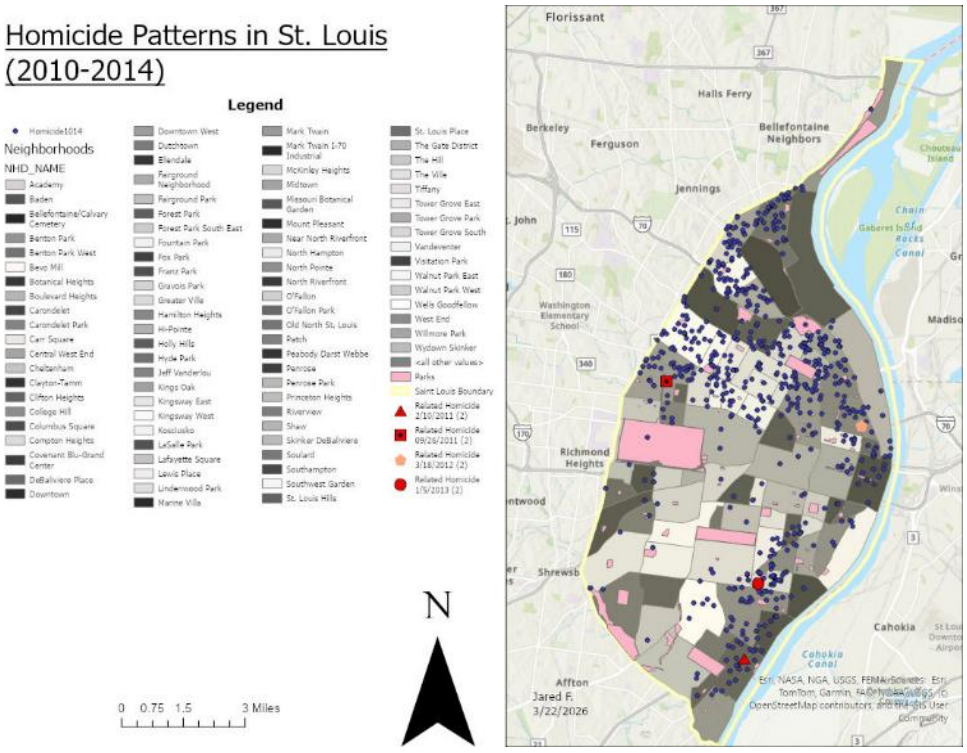


Figure: St. Louis Crime Crime location Map

City of Ocoee Utilities Maps: Gravity Mains Project

Title: Gravity Mains Data Verification and Asset Mapping – Batch 1

Description: As part of a municipal GIS infrastructure project with the City of Ocoee Utilities Department, I conducted a data verification and mapping analysis of sewer gravity mains, manholes, and lift stations within the Batch 1 service area. Using ArcGIS Pro, I reviewed utility asset locations, verified network connectivity, and created detailed infrastructure maps to support asset management and data quality improvement efforts. The project ensured that gravity mains, manholes, and lift stations were accurately represented within the GIS database, improving the reliability of utility records and supporting future maintenance planning.

Goal: Verify the accuracy and connectivity of sewer gravity mains, manholes, and lift stations within the Batch 1 service area.

Methods: Utility asset verification, Spatial data review, Network validation, GIS mapping

Outputs: Utility infrastructure map, Verified gravity main network, Asset inventory documentation

Skills: ArcGIS Pro, Utility GIS, Asset Management, Spatial Data Verification

Gravity Mains Project — Visual (Pre-approved for Public Use by the City of Ocoee Utilities Department)

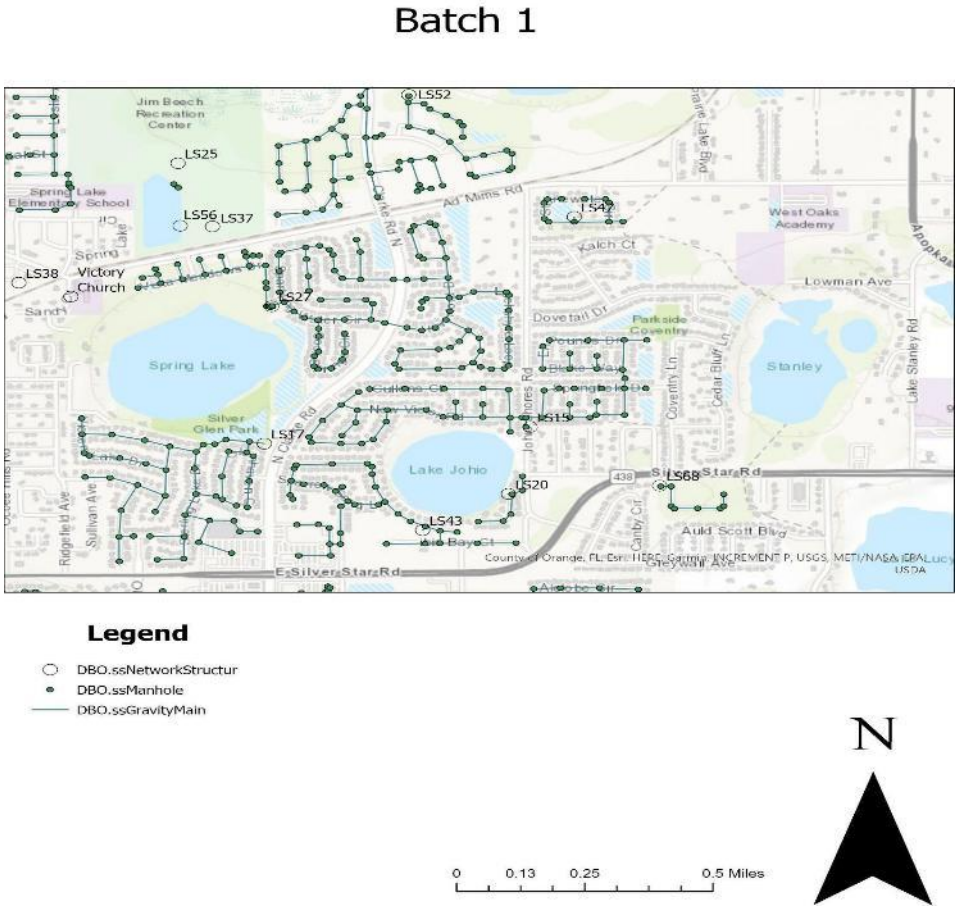


Figure: Batch 1 Map

Title: Gravity Mains Data Verification and Asset Mapping – Batch 2

Description: As part of an infrastructure GIS data quality initiative, I mapped and verified sewer gravity mains, lift stations, and manholes within the Batch 2 service area for the City of Ocoee. Using ArcGIS Pro, I reviewed asset locations, evaluated network continuity, and ensured utility features were accurately represented within the municipal GIS database. The project supported ongoing efforts to improve utility asset management and maintain reliable infrastructure records for operational planning and maintenance activities.

Goal: Validate sewer utility assets and improve the accuracy of GIS infrastructure records.

Methods: Spatial verification, Utility network review, GIS data validation, Asset mapping

Outputs: Verified sewer network map, updated utility asset records

Skills: ArcGIS Pro, Utility Mapping, Data Validation, Infrastructure GIS

Gravity Mains Project — Visual (Pre-approved for Public Use by the City of Ocoee Utilities Department)

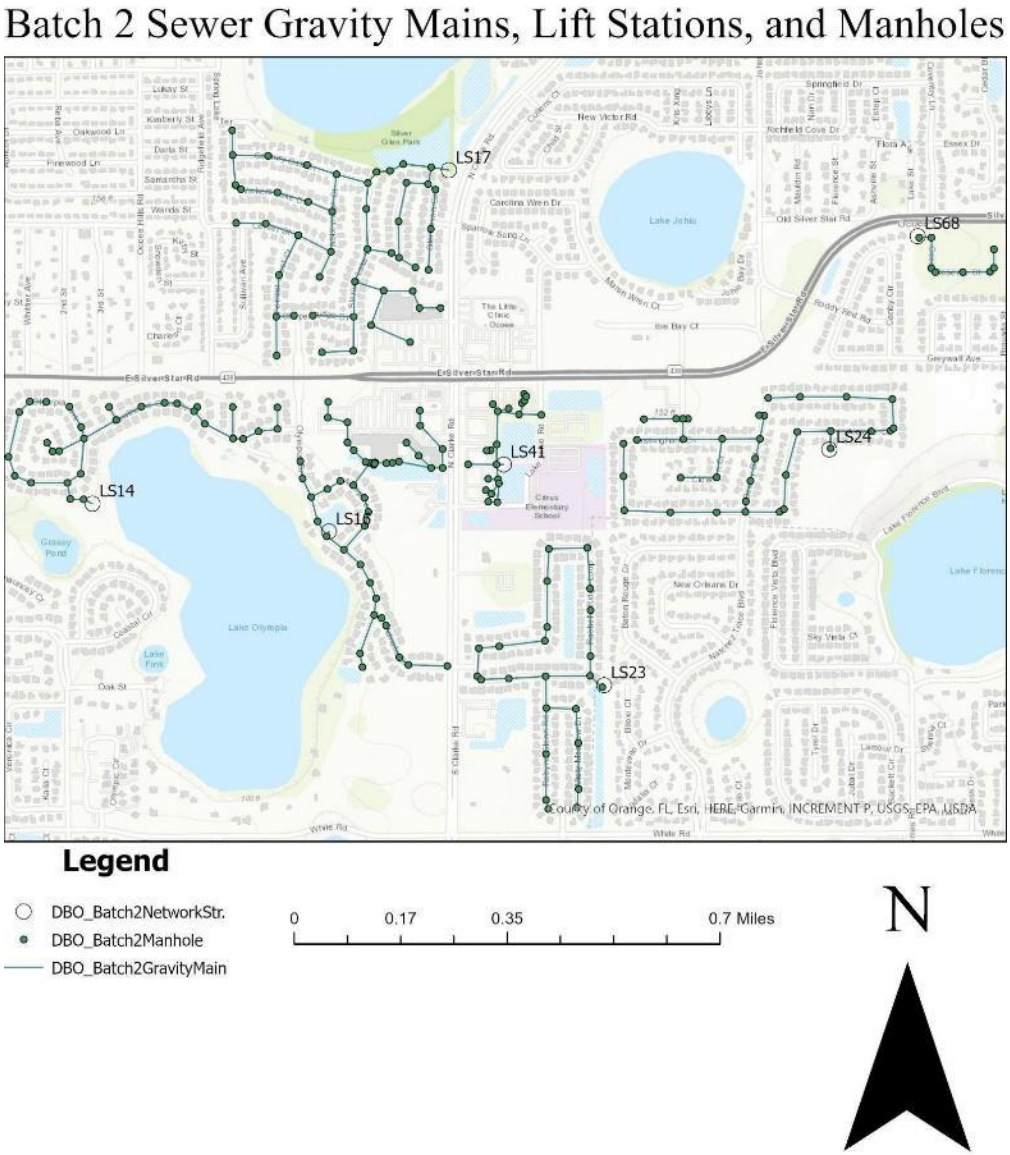


Figure: Batch 2Map

Title: Gravity Mains Data Verification and Asset Mapping – Batch 3

Description: As part of a utility infrastructure management project, I conducted a detailed review of gravity mains, manholes, and lift stations within the Batch 3 service area. Using ArcGIS Pro, I analyzed utility network data, verified asset placement, and created cartographic products that documented the configuration of the sewer system. The project contributed to improved spatial accuracy and supported the City of Ocoee's efforts to maintain a comprehensive and reliable utility GIS database.

Goal: Improve spatial accuracy and documentation of sewer infrastructure assets.

Methods: Utility network analysis, Asset verification, GIS database review, Cartographic mapping

Outputs: Sewer infrastructure map, Verified asset dataset, Utility network documentation

Skills: ArcGIS Pro, Utility Network Analysis, Cartography, GIS Data Management

Gravity Mains Project — Visual (Pre-approved for Public Use by the City of Ocoee Utilities Department)

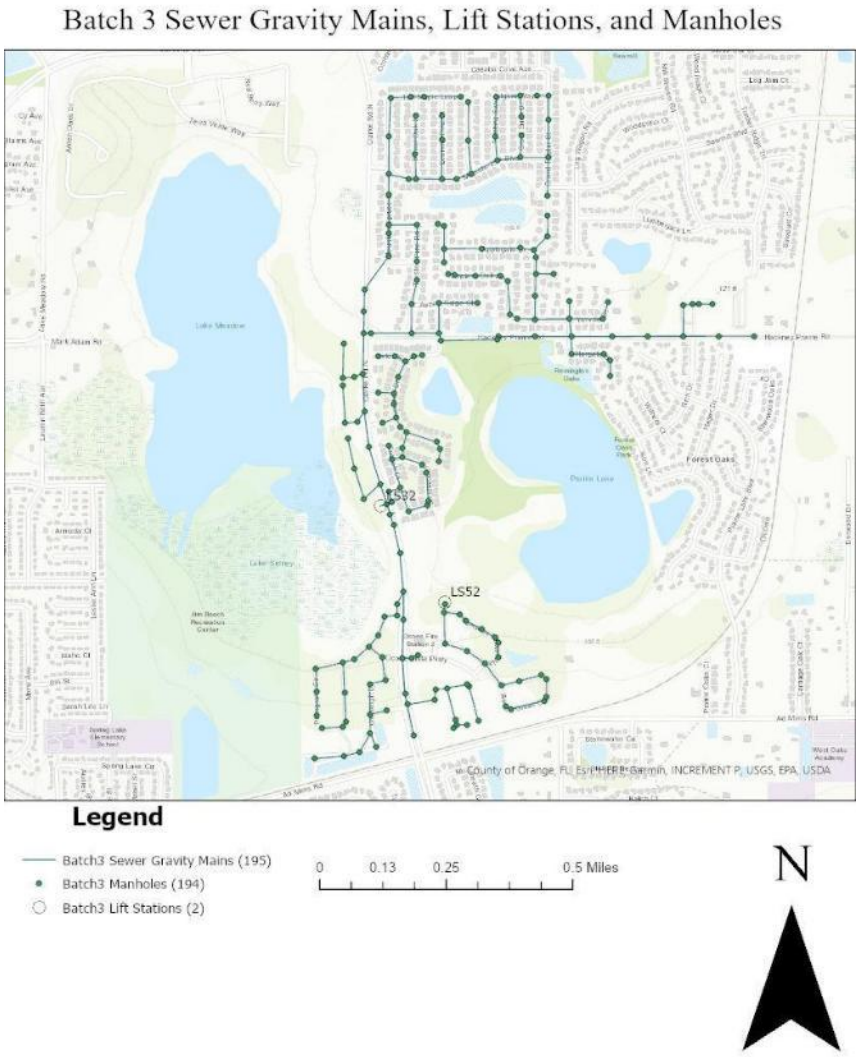


Figure: Batch 3 Map

Title: Gravity Mains Data Verification and Asset Mapping – Batch 4

Description: As part of a municipal utility GIS project, I mapped and verified sewer gravity mains, lift stations, and manholes within the Batch 4 service area. Using ArcGIS Pro, I reviewed infrastructure data for completeness and accuracy, validated network connectivity, and produced detailed maps to support utility operations and asset management initiatives. The project enhanced the quality of infrastructure records and provided a visual reference for future maintenance and planning activities.

Goal: Verify sewer infrastructure assets and support utility asset management.

Methods: GIS asset review, Network validation, Spatial verification, Utility mapping

Outputs: Infrastructure verification map, Sewer network inventory, Asset management support products

Skills: ArcGIS Pro, Utility GIS, Spatial Analysis, Asset Management

Gravity Mains Project — Visual (Pre-approved for Public Use by the City of Ocoee Utilities Department)

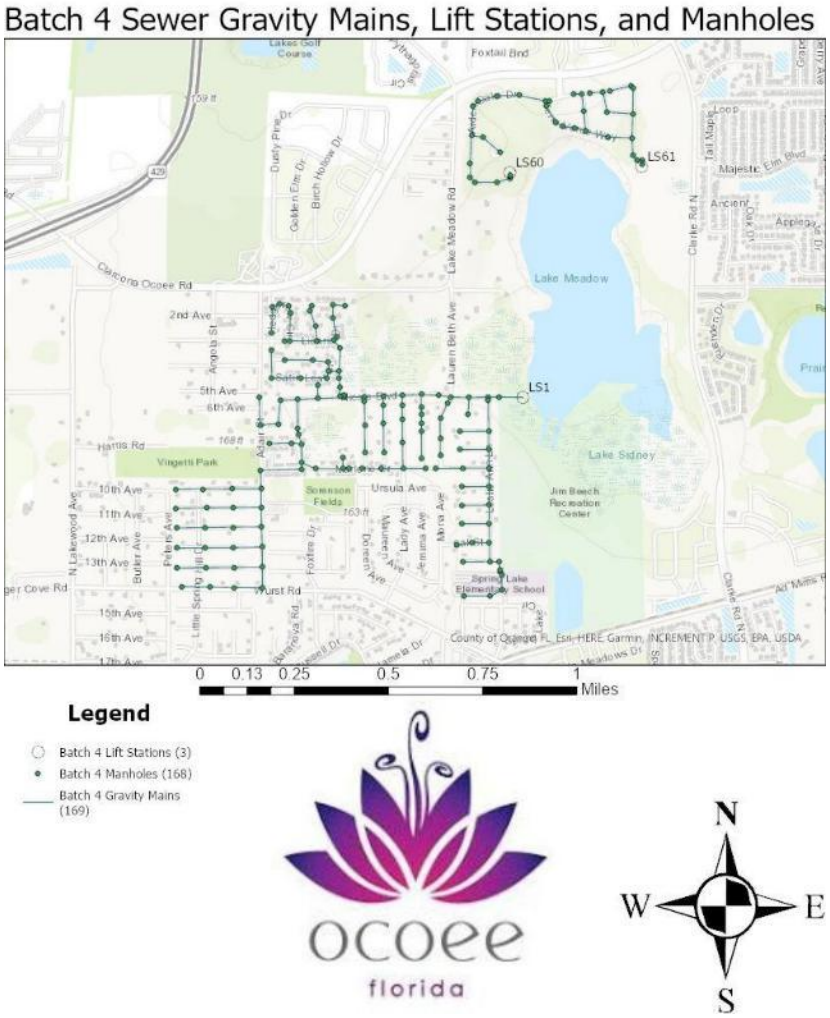


Figure: Batch 4 Map

Title: Gravity Mains Data Verification and Asset Mapping – Batch 5

Description: As part of a utility infrastructure data verification project with the City of Ocoee, I analyzed and mapped sewer gravity mains, manholes, and lift stations within the Batch 5 service area. Using ArcGIS Pro, I verified asset locations, evaluated network connectivity, and produced detailed cartographic products to support utility management and infrastructure planning. The project improved the accuracy of the utility GIS database and provided reliable spatial information for maintenance operations, future upgrades, and asset tracking initiatives.

Goal: Verify sewer gravity mains, manholes, and lift stations while improving utility GIS accuracy.

Methods: Asset verification, Utility network mapping, Spatial data validation, Cartographic analysis

Outputs: Utility infrastructure map, Verified sewer network dataset, Asset management documentation

Skills: ArcGIS Pro, Utility Asset Management, Infrastructure Mapping, GIS Data Verification

Gravity Mains Project — Visual (Pre-approved for Public Use by the City of Ocoee Utilities Department)

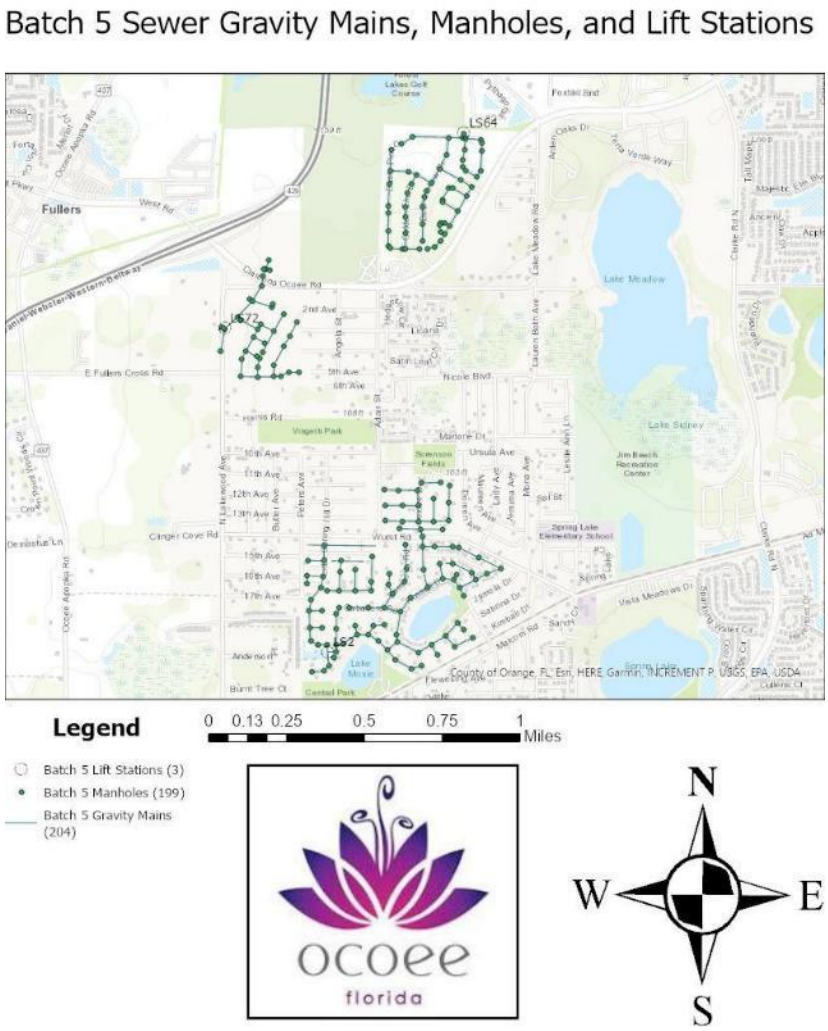


Figure: Batch 5 Map

Title: Gravity Mains Data Verification and Asset Mapping – Batch 9

Description: As part of a utility infrastructure data verification project with the City of Ocoee Utilities Department, I conducted a detailed analysis and mapping of sewer gravity mains, manholes, and lift stations within the Batch 6 service area. Using ArcGIS Pro, I reviewed utility asset records, verified feature locations, assessed network connectivity, and created standardized cartographic products to support infrastructure management and operational planning. The project focused on improving the accuracy and completeness of the utility GIS database by validating critical sewer system assets and ensuring consistency between mapped infrastructure and utility records. The resulting maps provided a reliable reference for maintenance activities, asset tracking, and future infrastructure improvements while supporting the City's ongoing GIS modernization efforts.

Goal: Verify and document sewer gravity mains, manholes, and lift stations while enhancing the accuracy of utility GIS records.

Methods: Asset verification, Utility network analysis, Spatial data validation, GIS database review, Cartographic mapping

Outputs: Utility infrastructure map, Verified sewer network dataset, Asset inventory documentation, Infrastructure planning support maps

Skills: ArcGIS Pro, Utility GIS, Asset Management, Infrastructure Mapping, Spatial Data Validation, Cartographic Design

Gravity Mains Project — Visual (Pre-approved for Public Use by the City of Ocoee Utilities Department)

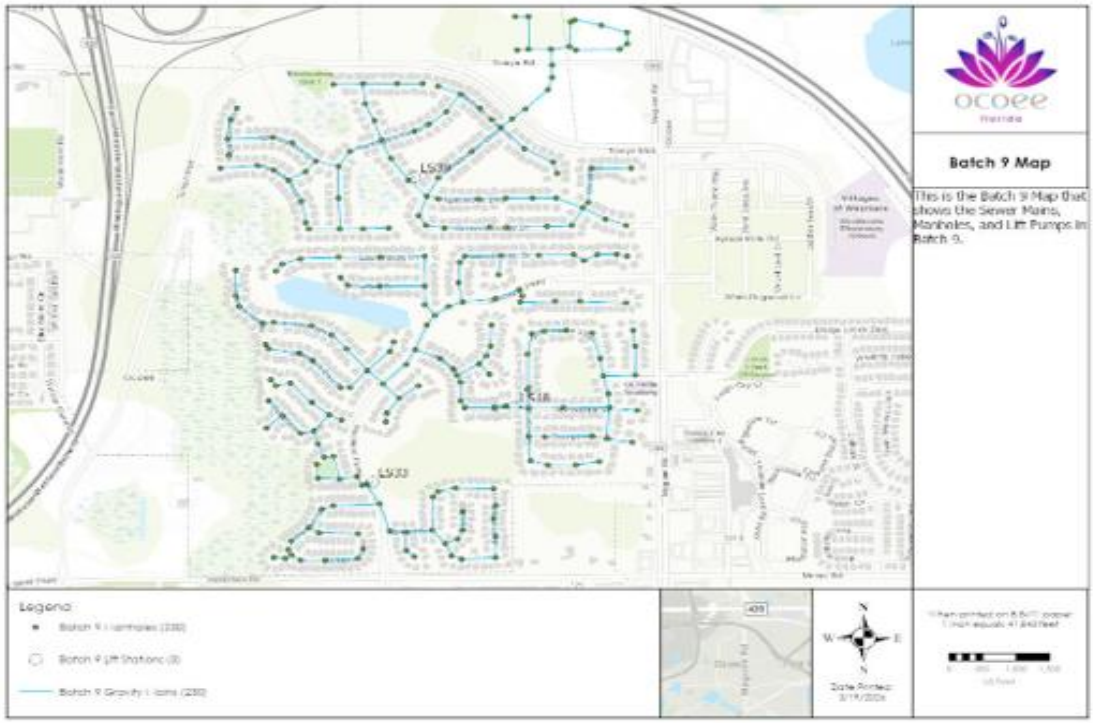


Figure: Batch 9 Map

City of Ocoee Utilities Maps: Boil Water Notice Project

Title: Boil Water Notice Mapping Standardization and SOP Development

Description: As part of a municipal GIS and utility operations project with the City of Ocoee Utilities Department, I standardized and improved the Boil Water Notice mapping process used during planned and unplanned water outages. Working from an existing map template, I redesigned the layout to create a more professional, consistent, and user-friendly product for field staff and public communication. I also developed a comprehensive Standard Operating Procedure (SOP) that documented the complete workflow for creating Boil Water Notice maps, from identifying affected parcels using Orange County Property Appraiser data through final map production and distribution. The standardized template incorporated consistent cartographic elements, project details, QR code resources, scale information, and utility branding to improve efficiency and ensure uniformity across all future notices. This project strengthened my skills in GIS workflow documentation, cartographic standardization, utility mapping, process improvement, and technical writing. The completed SOP provided a repeatable procedure that improved map accuracy, reduced production time, and supported effective communication during utility outages.
Goal: Standardize the City of Ocoee's Boil Water Notice mapping process and create a documented workflow for utility staff.

Methods: GIS workflow development, Cartographic redesign, Process documentation, Template standardization, and technical writing

Outputs: Standard Operating Procedure (SOP), Standardized Boil Water Notice map template, Utility outage communication maps, Workflow documentation

Skills: ArcGIS Pro, Cartographic Design, Technical Writing, Process Improvement, Utility GIS, Standard Operating Procedures (SOPs)

Boil Water Notice Project- Visual (Pre-approved for Public Use by the City of Ocoee Utilities Department)

Standard Operating Procedure:

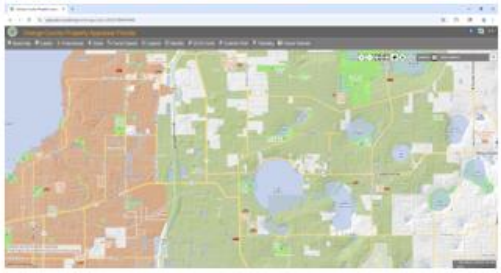
Boil Water Map

General Procedure: When a Potable Water planned outage is scheduled, a Boil Water Notice Map is created prior to the outage to visually identify the affected service area. The outage area is mapped using GIS based on information provided by Water Operations. The map is drafted, reviewed for accuracy, exported, and distributed to the field team for posting at the start of the planned work.

1. **For planned outage, the map of the affected area needs to be completed 2 days before the scheduled outage so that the map can be drafted, reviewed for accuracy, exported, and distributed to the field team for posting at the start of the planned work.**
2. **For Unplanned outages, the map of the affected area needs to be completed as soon as possible so that it can be distributed to the field team for posting at the start of the planned work.**

Process to create the Boil Water Notice Map:

1. **After receiving the location of the affected area from the field team:**
   a. **Go to the website Orange County Property Appraiser Florida Website: https://vgispublic.ocpafl.org/webmapjs/?pid=282207494400490**



2. **Go to the "Input Address" search bar on the top right of the website and type the address in the search bar and press the "Enter" key on your keyboard.**

Figure: Boil Water Notice Map SOP

Boil Water Notice Project- Visual (Pre-approved for Public Use by the City of Ocoee Utilities Department)

Original Map

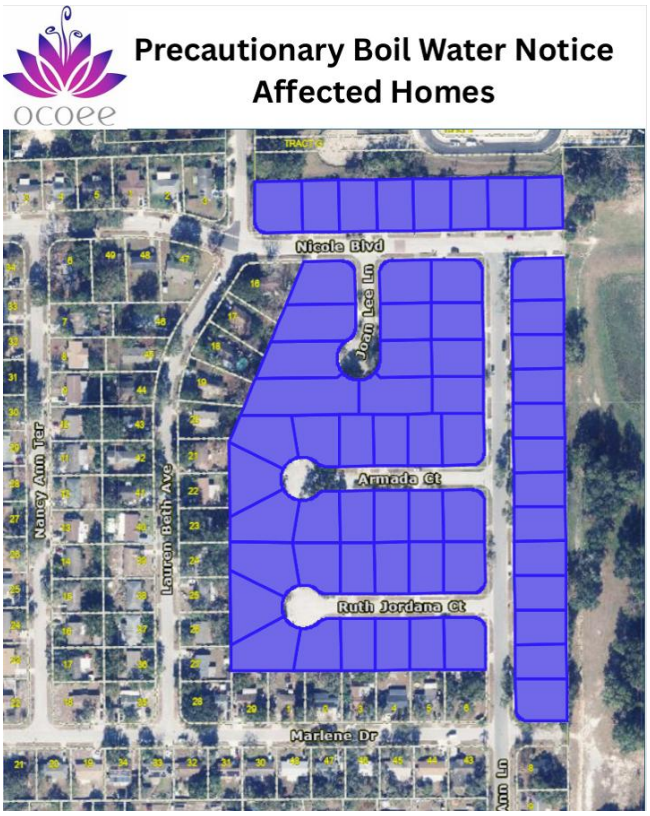


Figure: Original Boil Water Notice Map without SOP

Boil Water Notice Project- Visual (Pre-approved for Public Use by the City of Ocoee Utilities Department)

New Map with SOP

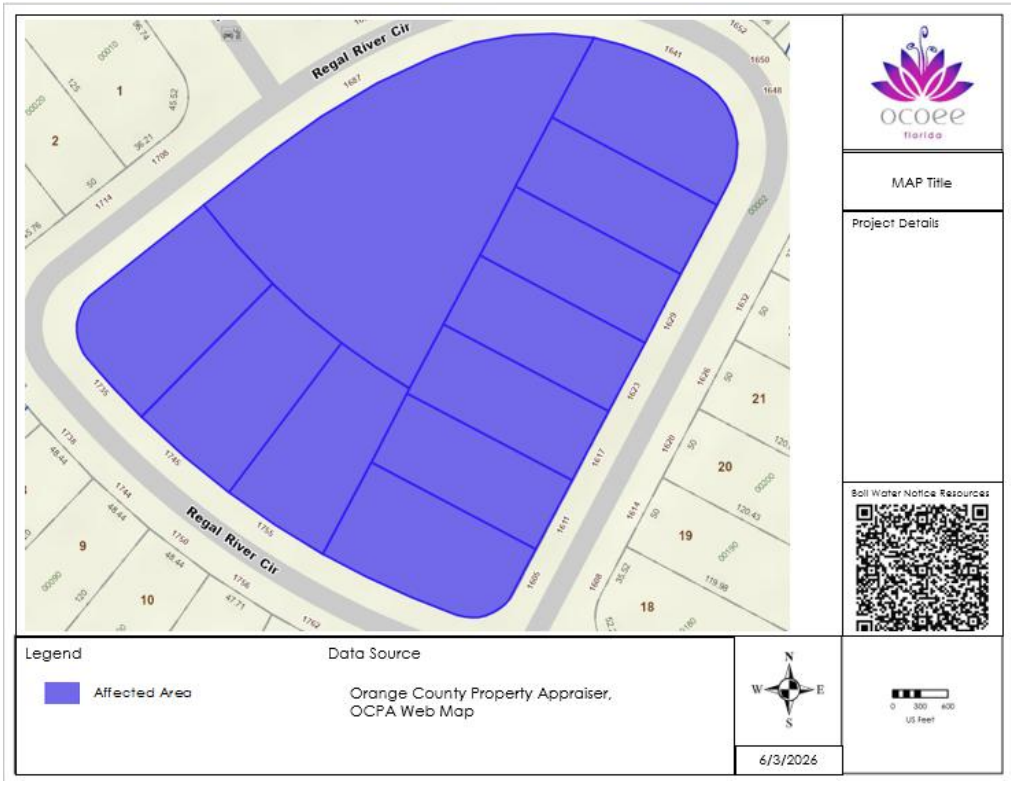


Figure: New Boil Water Notice Map with SOP

City of Ocoee Utilities Maps: Reclaimed Water Improvement Project

Title: Reclaimed Water Infrastructure Data Improvement and Asset Verification

Description: As part of a utility GIS data improvement initiative with the City of Ocoee Utilities Department, I conducted a comprehensive review and enhancement of reclaimed water infrastructure records, focusing on reclaimed water mains and system valves. Using ArcGIS Pro, I analyzed asset attributes, verified installation date information, standardized data fields, and corrected incomplete records throughout the reclaimed water network. The project included a before-and-after assessment that demonstrated significant improvements in data completeness and quality. Prior to the project, a substantial number of reclaimed water assets lacked installation date information, limiting the effectiveness of asset management and infrastructure planning. Following the data improvement process, missing records were substantially reduced and redistributed into documented installation decades, providing a more accurate representation of system age and infrastructure development. The completed analysis improved the reliability of the utility GIS database and provided valuable information for asset lifecycle management, maintenance planning, capital improvement projects, and long-term infrastructure decision-making.

Goal: Improve the accuracy, completeness, and usability of reclaimed water infrastructure data within the City of Ocoee GIS database.

Methods: Data verification, Attribute standardization, Asset inventory review, GIS database improvement, Infrastructure analysis, Quality control

Outputs: Reclaimed water infrastructure maps, Before-and-after data quality assessment, updated asset database, Infrastructure age analysis, Data improvement documentation

Skills: ArcGIS Pro, Utility GIS, Data Management, Asset Verification, Database Quality Control, Infrastructure Mapping, Spatial Data Analysis

Reclaimed Water Improvement Project- Visual (Pre-approved for Public Use by the City of Ocoee Utilities Department)

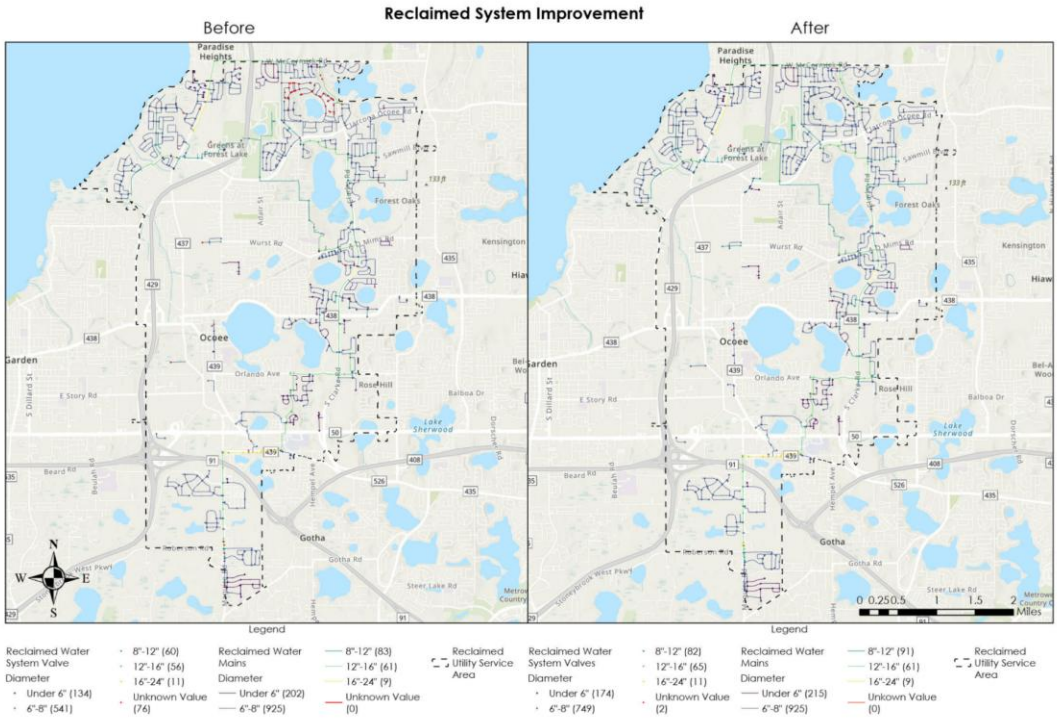


Figure: Reclaimed System Before and After Map

Reclaimed Water Improvement Project- Visual (Pre-approved for Public Use by the City of Ocoee Utilities Department)

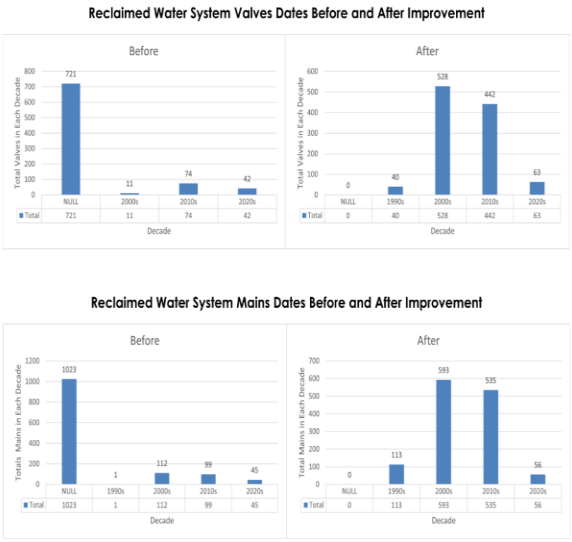


Figure: Reclaimed System Before and After Graphs

Custom Utility Map Requests

Title: Custom Utility Mapping and Public Service Requests

Description:
As part of my work with the City of Ocoee Utilities Department, I created customized GIS maps in response to requests from engineers, utility staff, municipal departments, and members of the public. Each map was tailored to meet a specific need, including property-specific utility information, potable and reclaimed water infrastructure, utility asset locations, and engineering support. Using ArcGIS Pro, I compiled and analyzed utility datasets, parcel information, aerial imagery, and property records to produce accurate, professional-quality maps. These mapping products supported infrastructure planning, engineering review, field operations, and customer service by providing clear, reliable geographic information. Working directly with internal staff and public requests strengthened my ability to communicate technical GIS information to both technical and non-technical audiences while maintaining high standards of cartographic quality and data accuracy.

Goal:
Create customized GIS maps that address requests from City staff and the public while providing accurate, easy-to-understand geographic information for planning, operations, and customer service.

Methods:
Customer request analysis, utility network mapping, parcel integration, aerial imagery interpretation, property queries, spatial editing, cartographic design, ArcGIS Pro.

Outputs:
Custom utility maps, property-specific maps, engineering support maps, public information maps, utility infrastructure maps, publication-quality map layouts.

Key Findings:
Delivered accurate, customer-focused GIS products that improved communication between the city and the public while supporting engineering, infrastructure management, and informed decision-making.

Skills:
ArcGIS Pro, Cartography, Customer Service, Public Communication, Utility GIS, Spatial Data Management, Parcel Mapping, Data Visualization, QA/QC, Professional Map Design.

Public Service Requests Visual (Pre-approved for Public Use by the City of Ocoee Utilities Department)

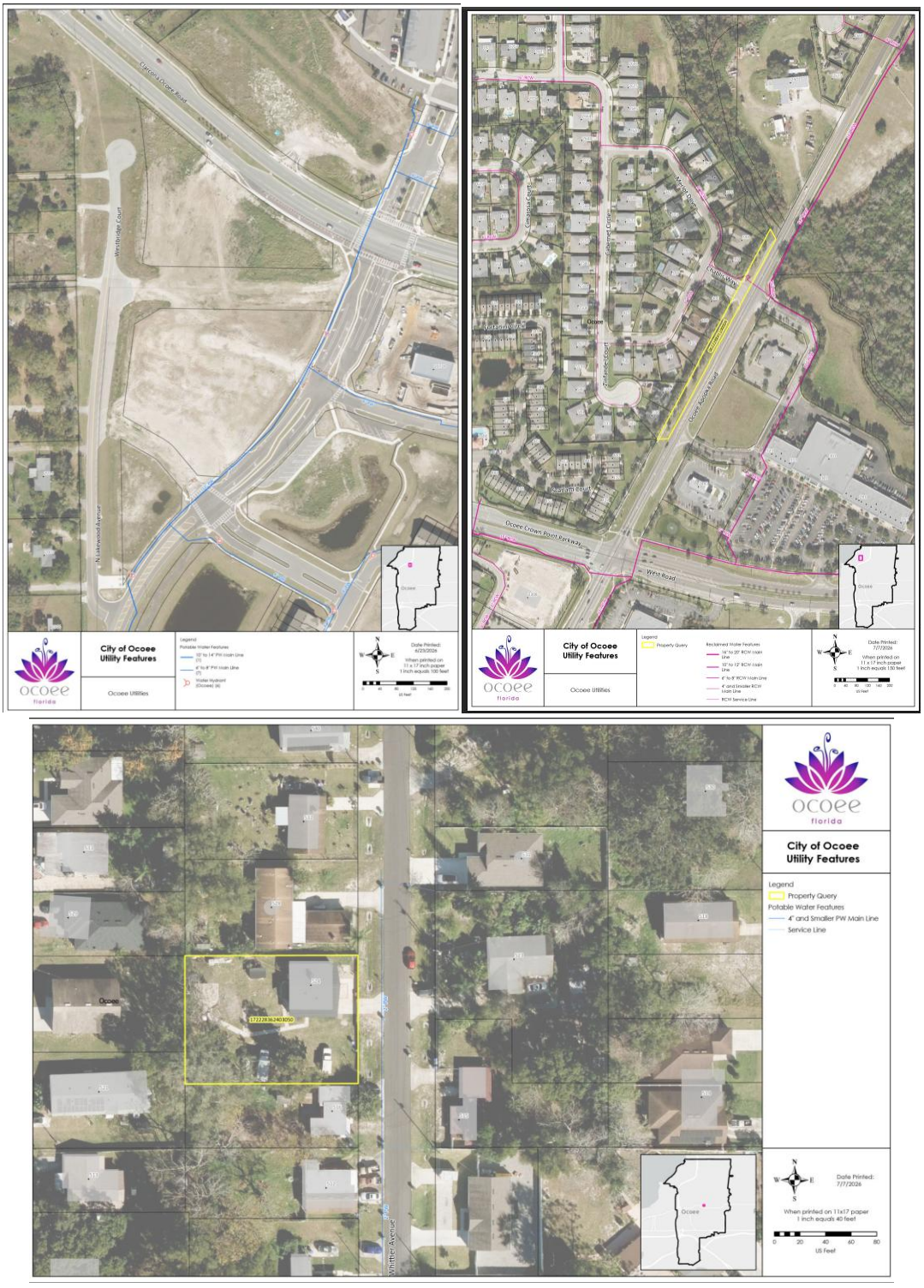


Figure: Three maps created from the Map Request from the Public and Companies working within the city.