

January 2, 2008

**SCOPE OF SERVICES FOR
STORMWATER DATA CONVERSION
FOR THE
CITY OF GAINESVILLE
PUBLIC WORKS DEPARTMENT**

The following Scope of Work outlines the procedures required to convert a backlog of stormwater infrastructure data into an existing target geodatabase. The data to be converted are tagged image file format (TIFF) of Plan Sheet and As-Built drawings (Plans). All stormwater infrastructure information contained within these documents that are being maintained within the City's GIS will be converted into features that comply with the schema of the target geodatabase.

Assign Spatial Reference

Data for feature extraction are required to reference their correct space within the State Plane North (Florida) NAD 83 projection. The assignment of spatial references will occur only to the provided Alachua County orthophotography.

TIFF – these documents will be georeferenced in ArcMap using a 2nd order polynomial transformation requiring no less than 7 ground control points (GCP). The average root mean square error (RMSE) for all GCPs used for the transformation of the TIFF will be no greater than (+/-) 5 feet.

At the City's discretion, upon completion of the assignment of a spatial reference, Jones Edmunds will deliver the results (spatially adjusted TIFFs and RMS error log) to the City for review of the adjustment process. The City will have 7 days to review the spatially referenced documents and accept or reject the data prior to the digitizing task.

Digitize Stormwater Infrastructure

Stormwater infrastructure will be extracted from the adjusted documents within each document's assigned spatial reference. Infrastructure extraction from the plan sheets and As-Built documents will occur at a relative scale not to exceed 1:1200 in a heads-up digitizing procedure. Facility infrastructure will be placed in the exact location as indicated by the spatially referenced documents. Additional adjustment to these features will not occur as part of this scope of services.

Infrastructure to be extracted will conform to the geodatabase schema provided by the City. The following list of infrastructure types will be extracted because they are known to conform to the current City stormwater data standards.

Stormwater Network

Line Features (Stormwater gravity and pressurized mains)

- Culverts
- Pipes
 - Attributes:
 - diameter
 - material
 - length
 - inverts
- Ditches
- Swales
- Creeks & Streams
- “Virtual” gravity mains will be developed as Gravity Main (subtype OutFall) line features. These main lines will function as part of the network and will possess identical dimensions as the mains from which they stem. These “Virtual” mains will be developed to:
 - Connect outfalls to creeks and other open channel centerlines
 - Connect “outfall” points (ssDischargePoints) to Basin Centroid points (also ssDischargePoints) and from this centroid point to the ssNetworkStructure (subtype “Outlet Control Structure”) feature where flow would leave the Basin.

Point Features

- Catch Basins & Manholes
 - Attributes:
 - Rim elevation
 - Throat elevation
 - Highest pipe elevation
 - Pipe invert elevation
 - Florida DOT type
 - Valid values include P4, P, 4, V
- Storm lift stations
- Outfall points – points at one end of a pipe feature that includes another valid point feature, i.e. Inlet or Manhole, in the same location
- Unknown features – Jones Edmunds will work with the City to determine the best location to place these in the geodatabase.

Polygon Features

- Manmade & Natural Ponds
 - Attributes:
 - Top elevation
 - Bottom elevation
 - Side slope
 - Effective storage

- 100yr flood elevations

Any elevation attributes that are missing will be attributed as “NULL”. The direction of flow for line features will be correctly established in the geodatabase to the best of our ability based on the provided source data. The information available on each document pertaining to a type of infrastructure will be captured and stored with the feature. Jones Edmunds will not interpolate, extrapolate or analyze existing information to determine appropriate attribution for an infrastructure feature that is not clearly labeled in the provided documents. All data will be digitized directly into a multi-user enterprise version of the City’s geodatabase maintained on Jones Edmunds’ ArcSDE server during the project.

Quality Assurance

The City will have the option to verify and accept the assignment of a spatial reference of each of the rectified TIFF documents. A visual survey will be conducted by Jones Edmunds upon completion of the feature extraction to verify that all facility infrastructures are represented in the geodatabase before delivery. Each infrastructure feature will be clearly labeled and displayed during the visual survey.

Jones Edmunds will establish a geometric network in the geodatabase and network tracing will be used to ensure that there are no gaps in connectivity. To the extent possible, with the provided source documents, Jones Edmunds will validate the existence of the required attributes for stormwater facility infrastructure. Automated routines will check for missing attribution and/or null values. Attribution errors will be corrected to match source documents.

Deliverables & Rollout

Jones Edmunds will deliver the extracted and attributed facility infrastructure for each delivery area as defined by the City as they are completed. It is the responsibility of the City to review and comment on each delivery within seven (7) days of each subsequent delivery. During the review process, Jones Edmunds will move onto another delivery area that has not yet been extracted and attributed.

Provisions, Conditions and Exceptions

The City will provide Jones Edmunds with the most up-to-date orthophotography of their service area.

The City will provide Jones Edmunds with the most current land base data in a GIS format. Land base data is to include parcels & subdivisions.

The City will provide all documents to Jones Edmunds in a digital format. No scanning of documents or any other conversion of file format will take place. Each of the TIFFs supplied to Jones Edmunds will have been scanned at no less than 300 dpi.

The City will provide Jones Edmunds with all documents for conversion prior to the commencement of any tasks.

The City will provide Jones Edmunds with a data table that inventories all document submitted for conversion and provides the name and date of the document.

All estimates concerning this scope of services has been made with the understanding that no more than 3,000 as-built documents will require spatial adjustment and digitizing.

The City will provide Jones Edmunds a finalized stormwater GDB schema by 02/01/2008.

It is understood that the conversion process outlined by this scope of services is a conversion of the facility infrastructure indicated by the provided documents. Each document will be assigned a spatial reference based solely upon the orthophotography provided by the City. Feature extraction will occur as an exact representation of what is displayed by the document. Attribution of the extracted features will not extend beyond what is indicated by the document.

Project Fee and Schedule:

Assign Spatial Reference (Georeferencing)		
Fee:		\$ 55,325
Schedule:	04/15/08	
Digitize Stormwater Infrastructure:		
Fee:		\$ 72,675
Schedule:	06/30/08	
Total:		\$128,000