Slaton McCauley Hannah Rogers Lauren Bain Michelle Couden

To: Kirk Scanlon
Senior Economic Development Director
Lower Colorado River Authority

CC: Jeff Caldwell
City Administrator
City of Martindale

From: GeoCats Solutions
Texas State University – Geography Department

Date: April 5, 2010

Subject: Progress report for the City of Martindale, Asset Inventory and GIS Database Development

Dear Messrs. Scanlon and Caldwell:

This report outlines the progress and current status of the City of Martindale: Asset Inventory and GIS Database Development proposal made by GeoCats Solutions, in association with the Lower Colorado River Authority (LCRA) for the City of Martindale. Work completed, work currently in progress, work planned for the future, and related challenges are all covered in detail to provide a clear view of what has been completed, as well as what is to be expected upon completion of this project.

Sincerely,

GeoCats Solutions
Texas State University – Geography Department

City of Martindale:
Asset Inventory and GIS Database Development

Introduction

Purpose

The purpose of the City of Martindale: Asset Inventory and GIS Database Development project is to provide a Geographic Information System (GIS) database containing vital geographic information on land use, housing, thoroughfares and street networks, and storm water drainage. This information can then be used to aid the city in making informed decisions about these assets during the development of the City of Martindale's Comprehensive Plan. The data provided from this project will supply city officials tools for visualizing these assets in the planning of expanded infrastructure to accommodate future growth within the community.

Background

In late February 2010, GeoCats Solutions, in association with Kirk Scanlon of the Lower Colorado River Authority (LCRA), proposed the City of Martindale: Asset Inventory and GIS Database Development project to Jeff Caldwell, Martindale's City Administrator, as a solution to current and anticipated challenges facing the city in their efforts to complete the development of a Comprehensive Master Plan.

Scope

The geographic extent of this project includes Martindale's city limits, as well as both their Statutory and Voluntary Extra Territorial Jurisdictions (ETJs). The Statutory ETJ forms a half-mile buffer around the city limits, and an additional twenty square miles around the city forms the Voluntary ETJ.

Project Objectives

1. Provide asset inventory of land use, housing, thoroughfares and street networks, and storm water drainage encompassing the study area.

2. Perform analysis of land use, which includes reviewing current land use and determining and mapping possible alternatives for future land use.
3. Perform analysis of housing, which includes examining housing characteristics and determining and mapping areas most in need of housing improvements.
4. Perform analysis of thoroughfares and street networks, which includes reviewing current thoroughfares and street networks and mapping the hierarchy of current road systems.
5. Perform analysis of storm water drainage, which includes reviewing current storm water infrastructure, mapping flood plains, contours, and identified problem drainage areas.
6. Develop a GIS database, or geodatabase, of all four assets inventoried.
7. Convert GIS database to a format compatible with the Google Earth application.

Progress Report

Land Use

- **Work Finished**

  Asset inventory of land use has been completed within the city limits and both ETJs of the City of Martindale.

- **Work In-Progress**

  Currently, quality assurance for the land use inventory dataset is in progress to guarantee a high level of accuracy in questionable areas. The land use inventory dataset is near completion, and input is ongoing throughout the process of quality assurance.

- **Future Work**

  When quality assurance is complete, the dataset will be used to illustrate existing land use patterns and provide an analysis of the total acres and percentages of each land use within the study area. Finally, after reviewing and analyzing the land use dataset, maps illustrating the city's land use and the analysis performed will be created.

- **Challenges**

  The main challenge encountered while developing the land use inventory has been distinguishing land parcels that have questionable mixed uses. Also, although there has

been extensive ground observation, certain parcels of land throughout the study area are difficult, if not impossible, to access.

Housing

- **Work Finished**

  Asset inventory for housing has been completed both within the Martindale city limits and the Statutory ETJ. The dataset depicting the housing inventory has been developed; housing has been digitized within the city limits and both the statutory and voluntary ETJs (see Figure 1).

- **Work In-Progress**

  Quality assurance on the housing inventory dataset is underway. This consists of additional field observation for the purpose of reviewing areas of question within the housing dataset.

- **Future Work**

  Analysis and interpretation of the developed housing dataset, including examining housing characteristics as well as determining and mapping areas in need of improvement is scheduled to begin the week of April 12, 2010.

- **Challenges**

  There has been difficulty encountered in distinguishing between buildings of residential use and those of other use in both on-the-ground observation and analysis of aerial imagery. Determining the condition of housing located on private roadways or driveways, especially in the voluntary ETJ, has also been a difficulty experienced in the overall housing data collection process.

Street Network

- **Work Finished**

  The inventory regarding private and public streets is complete, including the labeling and addressing of all names of streets and thoroughfares. Aerial images have been gathered to compare with the completed street network. The windshield survey, which

is used to categorize the streets based on the LCRA scale of quality, is ninety-five percent complete.

- **Work In-Progress**

  Currently, a survey of street quality within the portion of the city that lies east of FM 1292 is underway.

- **Future Work**

  The categorization of streets in ArcMap, using the same quality list used in the field, is scheduled to begin the week of April 12, 2010. Streets will then be symbolized with such quality codes.

- **Challenges**

  There have been difficulties in the amount of time to collect data in the field. Also, the original status of collecting data in the voluntary ETJ was found to be unnecessary for the streets and thoroughfares because there is no development at this time.

Storm Water Drainage

- **Work Finished**

  Asset inventory for storm water drainage has been completed both within Martindale's city limits and the Statutory ETJ. A map depicting slope, contours, and locations of culverts and bridges has been created (see Figure 2). Flood plains have also been determined and mapped (see Figure 3), in correlation with the existing mapped flood plain areas obtained from the Federal Emergency Management Agency (FEMA).

- **Work In-Progress**

  The input of data to create a dataset depicting the drainage inventory is ongoing. A combination of reviewing aerial imagery and comparing it to data obtained in the field is occurring to ensure accuracy. The creation of a map to depict ditches, channels, barrow ditches, and flow direction is underway. Construction of an attribute table has begun, which will include the description of corrugated metal piping.

- **Future Work**

The creation of a map to depict problem areas is scheduled to begin the week of April 12, 2010. Analysis and interpretation of the developed storm water drainage dataset, including examination of flow direction, problem areas, and possible future improvement will then occur.

- **Challenges**

  Difficulties have been encountered in the data collection process involving the amount of time necessary to complete field work. Correctly locating culverts and assessing the percentage of clogging has also been troublesome due to grass cover on a majority of the piping. Storm water drainage is only being inventoried in the statutory ETJ due to it being sparse in the voluntary ETJ and exceeding the scope of the City of Martindale's Comprehensive Plan.

GIS Database Development

- **Work Finished**

  A preliminary geodatabase has been developed and currently only contains a version of the housing dataset.

- **Future Work**

  Determining the best design for the geodatabase and incorporating all asset datasets is ongoing.

- **Challenges**

  Difficulty has been encountered in securing shared server space to house the geodatabase for use by both the client and the GeoCats Solutions team.

Conclusion

Although challenges have been encountered during the data collection process, we are pleased with the progress made on the City of Martindale: Asset Inventory and GIS Database Development project. We look forward to presenting the final deliverables on May 5, 2010.

Figure 1.


Martindale Housing Inventory
Spring River
River Park Dr
Meadow
Spring River
Firefighter Rd
Nelle
Nelle
Martindale Housing
Martindale Voluntary ETJ
0
175
350
700 Feet

Figure 2.

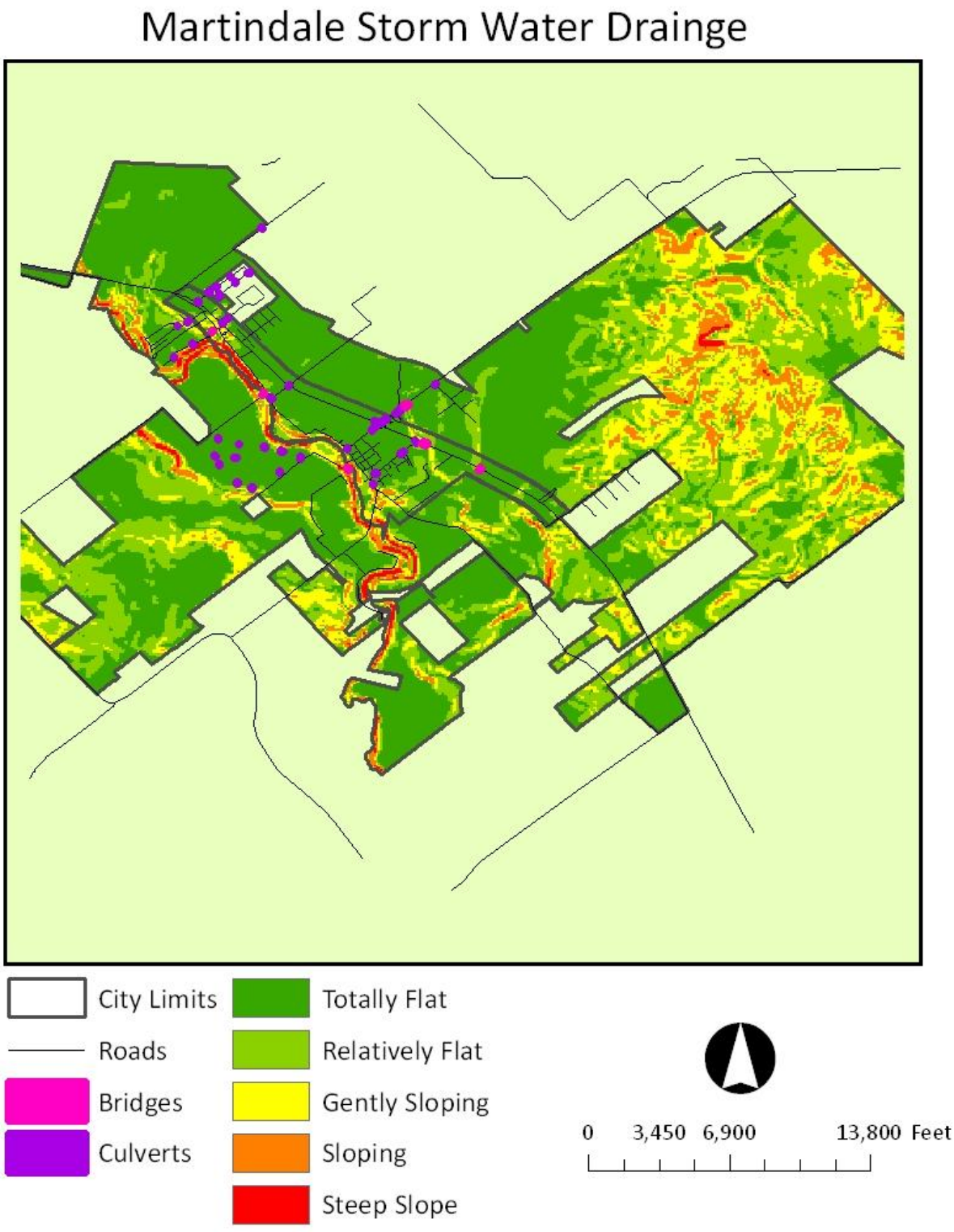
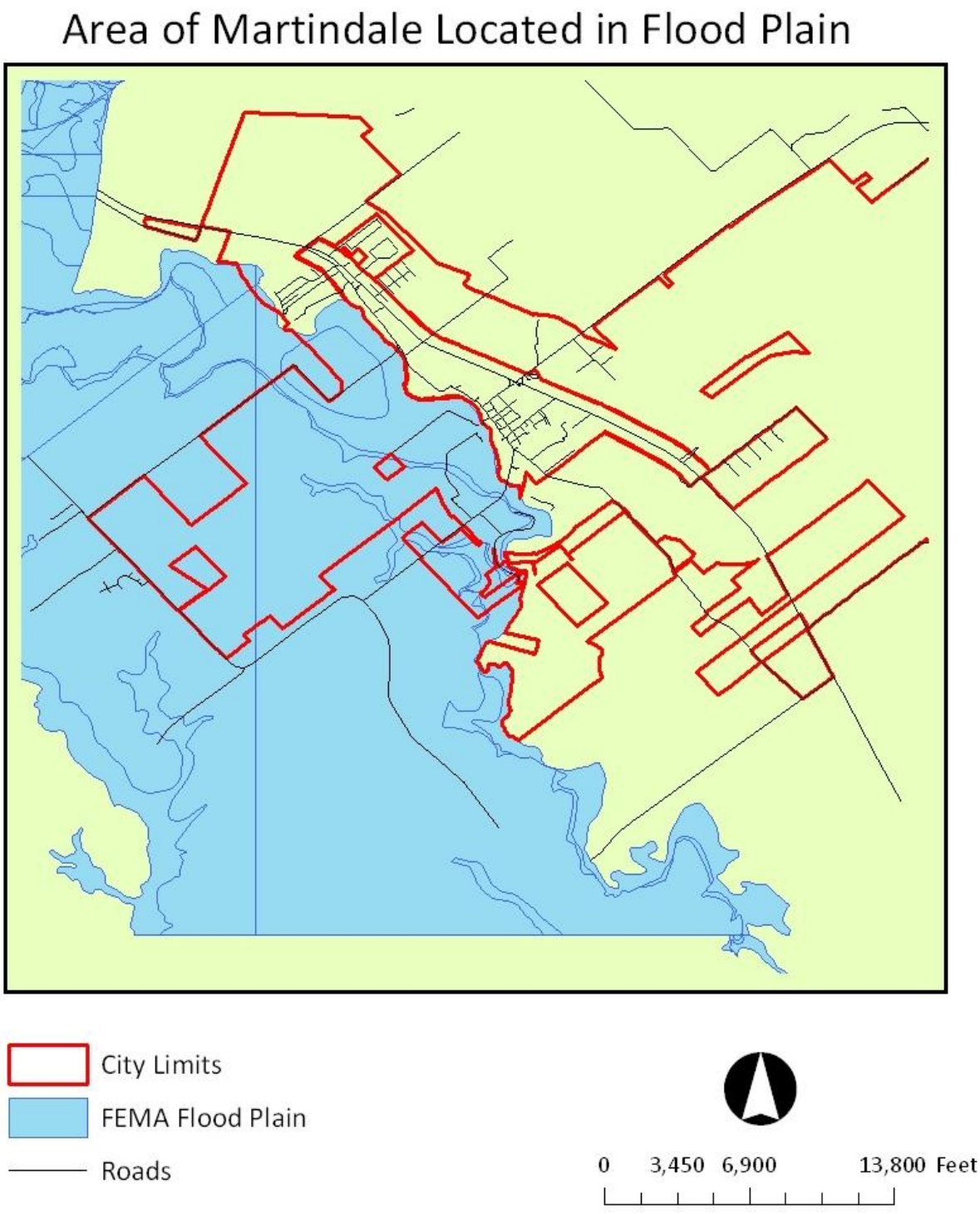

Martindale Storm Water Drainge
City Limits
Roads
Bridges
Culverts
Totally Flat
Relatively Flat
Gently Sloping
Sloping
Steep Slope
0
3,450
6,900
13,800 Feet

Figure 3.


Area of Martindale Located in Flood Plain
City Limits
FEMA Flood Plain
Roads
0
3,450
6,900
13,800 Feet