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# Hill Country Associates Progress Report
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# Overview

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# Purpose
The purpose of this project for Hill Country Associates is to create a future LU/LC map of the Pedernales Watershed for the Hill Country Alliance.
With the LU/LC model we create, we will be to analyze the indicators of water quality and quantity, land fragmentation, development and population trends, along with other indicators of change in the Pedernales River Basin area.
 This model will project a future outlook based on population growth trends to illustrate the past, present, and future of the Pedernales River Basin.

![](ContentPlaceholder2.jpg)

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# Task 1: LULC Change shapefile creation

Completed:
Created a set of shapefiles for the Pedernales illustrating land use throughout each year.
Used cell statistics to create a change detection shape files for 2001-2006, and 2006-2011.
Created tables and pie charts illustrating land use percentage based on the data from the Multi-Resolution Land Characteristics Consortium (MRLC)
Currently Working on:
Retrofitting the 1992 data with the data from the other years in order to create a uniform classification legend.
Creation of a change detection map between the years 1992 and 2001.
     Future work:
Provide detailed analysis on LULC change in the area over time.
Convert to and provide kmz files in order to make compatible with current Hill Country Alliance mapping.

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# Maps

### Chart: 1992 LU/LC Percentages

| Category |  |
|---|---|
| Open Water | 0.006489118712151994 |
| Low Intensity Residential | 0.0035910872752458593 |
| High Intensity Residential | 0.0014452370304313307 |
| Commercial/Industrial/Transportation | 0.005596903787490142 |
| Bare Rock/Sand/Clay | 0.006949229547739945 |
| Quarries/Strip Mines/Gravel Pits | 0.00022805493590011462 |
| Deciduous Forest | 0.07791387969902083 |
| Evergreen Forest | 0.04755723378698335 |
| Mixed Forest | 2.2227576598451716e-06 |
| Shrubland | 0.4156601279063668 |
| Orchards/Vineyard/Other | 4.356605013296536e-05 |
| Grasslands/Herbaceous | 0.3237544332901526 |
| Pasture/Hay | 0.02701450749469428 |
| Row Crops | 0.03920900056813686 |
| Small Grains | 0.04379899513571714 |
| Urban/Recreational Grasses | 0.0005796951976876208 |
| Woody Wetlands | 0.00016670682448838788 |

### Chart: 2001 LULC Percentages

| Category |  |
|---|---|
| Open Water | 0.005181681157246032 |
| Developed, Open Space | 0.06151034109315774 |
| Developed, Low Intensity | 0.005635268718398308 |
| Developed, Medium Intensity | 0.0018073178793199234 |
| Developed High Intensity | 0.0006159179932442411 |
| Barren Land (Rock/Sand/Clay) | 0.0001289266969683473 |
| Deciduous Forest | 0.12615125680088327 |
| Evergreen Forest | 0.38754544666068136 |
| Mixed Forest | 0.0002801225506857728 |
| Shrub/Scrub | 0.09759985372680198 |
| Grassland/Herbaceous | 0.25715543168174326 |
| Pasture/Hay | 0.014272771384836814 |
| Cultivated Crops | 0.04203010321168123 |
| Woody Wetlands | 8.556044435172141e-05 |

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### Chart: 2011 LULC Percentages

| Category |  |
|---|---|
| Open Water | 0.005460656207140812 |
| Developed, Open Space | 0.06303868818857289 |
| Developed, Low Intensity | 0.006346249491341502 |
| Developed, Medium Intensity | 0.0027267109764736023 |
| Developed, High Intensity | 0.000943467317749544 |
| Barren Land (Rock/Sand/Clay) | 0.0007167940196831999 |
| Deciduous Forest | 0.11598800319512893 |
| Evergreen Forest | 0.36274479661195763 |
| Mixed Forest | 0.0002827387680667963 |
| Shrub/Scrub | 0.10368012539373936 |
| Grassland/Herbaceous | 0.2768193395728776 |
| Pasture/Hay | 0.014312369067534777 |
| Cultivated Crops | 0.046010459525854926 |
| Woody Wetlands | 0.0009296016638784645 |

### Chart: 2006 LULC Percentages

| Category |  |
|---|---|
| Open Water | 0.005377761595667658 |
| Developed, Open Space | 0.06269232447841093 |
| Developed, Low Intensity | 0.00599475436573203 |
| Developed, Medium Intensity | 0.002233609485426834 |
| Developed, High Intensity | 0.0007927639661873614 |
| Barren Land (Rock/Sand/Clay) | 0.0005578045101454058 |
| Deciduous Forest | 0.11898693613467183 |
| Evergreen Forest | 0.37222599871220696 |
| Mixed Forest | 0.00028039690810095964 |
| Shrub/Scrub | 0.10190125843806368 |
| Grassland/Herbaceous | 0.2692629387628697 |
| Pasture/Hay | 0.014106535280686871 |
| Cultivated Crops | 0.04466501537400105 |
| Woody Wetlands | 0.0009219019878287415 |

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# Task 2: Population Analysis
 Completed:
Collected population data from eight counties for the years of 1992, 2001, 2006, 2011
Created maps to visualize the data

Currently Working on:
Display data in ESRI ArcGIS in order to view trends
Formatting of Census data for thematic mapping
Future work:
Analyzing data collected from the Land Use/Land Cover
Future predictions of population growth

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# Task 3: Provide an evaluation and update of the 2011 National Land Cover Dataset
Currently Working on:
Formatting obtained aerial images in ERDAS Imagine
Creation of class samples for an supervised classification
Future work:
Creation of classification
Convert to and provide kmz files in order to make compatible with current Hill Country Alliance mapping.

Completed:
Obtained data and prepared it for use in ESRI and ERDAS
Wrote Metadata on collected data and procedures used

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![](Picture3.jpg)
# Timeline

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# Challenges
We have had some issues putting data together for the 2014 land use map.
We had to download raw satellite images from LANDSAT 8 and put them together in ERDAS.
We will be running a classification on the maps, in order to analyze the different land use patterns in the basin.
We gathered images from winter and late spring in order to better identify land use patterns.

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# Conclusion
Final result will be a document detailing the findings of our analysis of changes in population and Land use and Land Cover of the Pedernales River
help our client make informed decisions on areas of increased resource strain.
We haven’t encountered any delays thus far.
Our time table is up to date.
Currently we are gathering the last of our data and are on our way to compile our final product.