Natural Resources

SECTION 4 – NATURAL RESOURCES

Introduction

Maintaining natural resources is a necessity for the enhancement of quality of life, higher property values, increased economic development, and beneficial growth in tourism. The City of Navasota has many available natural resources that can be utilized to benefit the City. Residents should seek to protect the environment by acknowledging the need to balance competing interests. The practice of conservation promotes the wise use of resources combined with their protection.

Elevation & Topography

The topography of the Navasota area can be defined as gently rolling to sloping terrain throughout the majority of the City. The eastern sections of the City consist of a greater range of elevations than the west. There are more differences in the eastern terrain compared to the west and the areas surrounding bodies of water. The northwest reaches 415 feet above sea level. However, the elevations of the land along the rivers and streams are almost level to slightly sloping at 193 feet of elevation. The elevation of the city is displayed in Map 4.1.

Climate

The climate of the Navasota area is identified as subtropical humid due to the hot summers and mild winters. There is an average of 107 days when the temperature exceeds 90°F and an average number of 25 days per year when the temperature is less than 32°F Over the past years the record high and low temperatures have been collected and are identified in Table 4.1 and Figure 4.1. The overall record high for the area was measured in 1998 at the temperature of 110°F in the month of August. The record low temperature is 3°F observed in 1989 during the month of December.

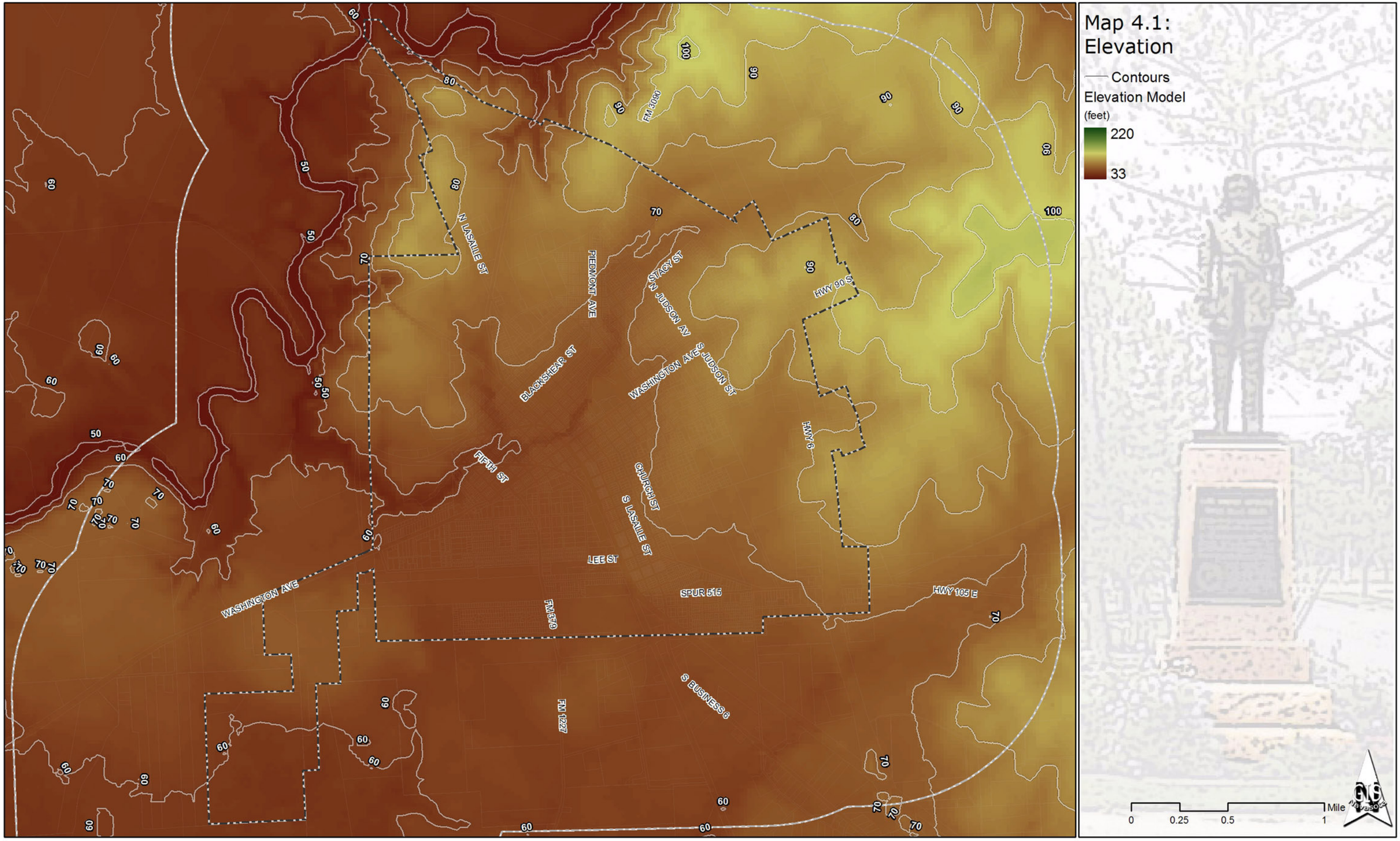
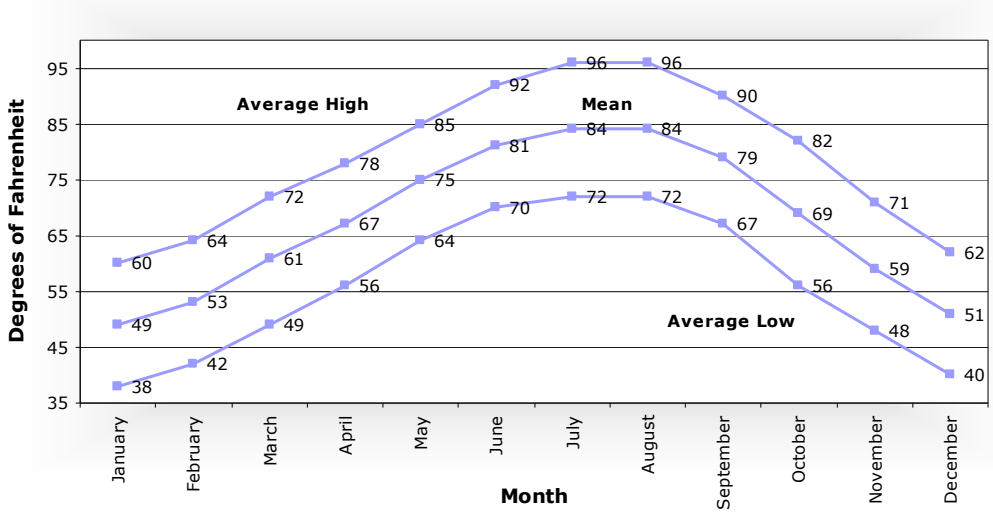

Map 4.1:
Elevation
Contours
Elevation Model
(feet)
220
33
N LASALLE ST
PIEDMONT AVE
N STACY ST
JUDSON AV
HWY 90 W
BLACKSHEAR ST
WASHINGTON AVE
S JUDSON ST
FIFTH ST
CHURCH ST
S LASALLE ST
HWY 6
LEE ST
SPUR 515
HWY 105 E
WASHINGTON AVE
FM 379
FM 1227
S BUSINESS 6
RM 3090
0
0.25
0.5
1
Mile

Table 4.1: Monthly Temperature Averages for Navasota

Month	Average High (°F)	Average Low (°F)	Mean (°F)	Average Precipitation (inches)
January	60	38	49	3.54
February	64	42	53	2.74
March	72	49	61	3.13
April	78	56	67	2.98
May	85	64	75	4.42
June	92	70	81	4.42
July	96	72	84	2.18
August	96	72	84	2.83
September	90	67	79	4.03
October	82	56	69	4.38
November	71	48	59	3.68
December	62	40	51	3.30

Adapted from: www.weather.com

Figure 4.1: Monthly Temperature Averages for Navasota



Average precipitation for Navasota is 45.51 inches per year with the record occurring in 1919 at 65.49 inches. Mean relative humidity at 6 a.m. is 87%, at 12 noon 58%, and at 6 p.m. 60%. Colder periods during winter usually occur at 2 to 3 day intervals with rare snowfalls. Summer daytime temperatures tend to be high, often topping 100°F. Spring is generally characterized by short-lived warm and cool spells, while fall provides longer periods of mild, fair days. Winds within the area usually originate from the south, being the strongest in March and April. The growing season averages 278 days from March 1 to December 4.

Surface Water

The Navasota and Brazos River systems drain to the west and northwest of the county, while the eastern portion of the county uses the San Jacinto and Trinity River systems. The drainage basin inside Navasota's Extraterritorial Jurisdiction (ETJ) includes:

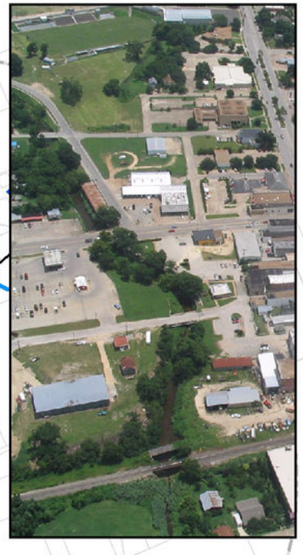
Cedar Creek

- Cedar Creek – which rises two miles northeast of Navasota in southwestern Grimes County and runs southwest six miles to its mouth on the Navasota River.
- Sandy Creek – which rises in southwest Grimes County three miles east of Navasota.

These rivers and creeks are displayed on Map 4.2.

Groundwater

Groundwater is found in the southwest portion of Grimes County in the Catahoula/Jackson Group Formation. The formation consists of sandstone and clay as well as some volcanic tuff beds (debris from volcanic eruptions consisting of dust particles and pebbles) and lignite beds. Furthermore, the City of Navasota also obtains water from the Carrizo-Wilcox Aquifer, which is located directly beneath



Navasota River
Cedar Creek
Sandy Creek
Cedar Creek
HWY 6
FM 3090
N LASALLE ST
PIEDMONT AVE
STACY ST
N JUDSON AV
S JUDSON ST
HWY 90 E
BLACKSHEAR ST
WASHINGTON AVE
FIFTH ST
CHURCH ST
S LASALLE ST
LEE ST
WASHINGTON AVE
SPUR 515
HWY 105 E
FM 379
FM 1227
S BUSINESS 6

Map 4.2: Water Features

Streams & Rivers
- river
- stream

Surface Water
- pond
- swampy area

0 0.25 0.5 1 Mile

This surface water map was compiled from multiple sources including but not limited to digitization from aerial photography and plats. Some water features such as those found on golf courses and seasonally dry creek beds were not included.

Hearne in Robertson County. Due to the current state of the aquifer, Navasota will have an adequate supply of water through the year 2050 if the current level of water consumption and acquisition remains constant.

Soils and Mineralogy

Soil conditions should be considered in the planning and development process for several reasons. One reason for soil conservation is to ensure that buildings and structures are adequately supported. Minimizing soil erosion is also important to reduce sediment deposits into surface water and to control airborne dust. In addition, soil depths must be adequate for water to infiltrate into the ground and maintain groundwater levels.

The City of Navasota's soil contains a mixture of clay, sand, and organic materials, which are called gray sandy loam soil. The gray sandy loam lies over clayey subsoils that are found in the upland areas and throughout most of the region. The soil found in the floodplains is made up of dark, loamy to clayey soil and a fine-grained soil called alluvial soil. The southern portion of Grimes County contains prairie land made up of clay blackland soils. This soil is most useful for farming. However, the soil contains high levels of clay thus resulting in shrinking and swelling. This characteristic has the potential to result in bumpy roads and cracks within poorly laid concrete foundations. The soils in Navasota are shown on Map 4.3. The soil map offers more details concerning the different types of soil in the area. In addition to the varied types of soil in Navasota, there are also several different mineral resources. Among these limited mineral resources are low reserves of petroleum, natural gas, and lignite coal.

Map 4.3: Soil Type

- AxC, AXTELL FINE SANDY LOAM, 1 TO 5 % SLOPE
- AxC2, AXTELL FINE SANDY LOAM, 1 TO 5 % SLOPE
- BcB, BLEIBLERVILLE CLAY, 1 TO 3 % SLOPE
- BoB, BRAZORIA CLAY, 1 TO 3 % SLOPE
- BrD, BRENHAM CLAY LOAM, 3 TO 8 % SLOPE
- BsA, BURLESON CLAY, 0 TO 1 % SLOPE
- CaC, CARBENGLE CLAY LOAM, 1 TO 5 % SLOPE
- ChC, CHAZOS LOAMY FINE SAND, 1 TO 5 % SLOPE
- ChD, CHAZOS LOAMY FINE SAND, 5 TO 8 % SLOPE
- CrC, CROCKETT FINE SANDY LOAM, 1 TO 5 % SLOPE
- CrC2, CROCKETT FINE SANDY LOAM, 1 TO 5 % SLOPE
- CrD, CROCKETT FINE SANDY LOAM, 5 TO 8 % SLOPE
- CuC, CUERO CLAY LOAM, 1 TO 5 % SLOPE
- FrC, FRELSBURG CLAY, 1 TO 5 % SLOPE
- Go, GOWKER LOAM, FREQUENTLY FLOODED
- LtD, LATIUM CLAY, 5 TO 8 % SLOPE
- LtD3, LATIUM CLAY, 4 TO 12 % SLOPES
- MaA, MABANK FINE SANDY LOAM, 0 TO 1 % SLOPE
- MaB, MABANK FINE SANDY LOAM, 1 TO 3 % SLOPE
- PaD, PADINA LOAMY FINE SAND, 1 TO 8 % SLOPE
- RaA, RADER FINE SANDY LOAM, 0 TO 1 % SLOPE
- RaB, RADER FINE SANDY LOAM, 1 TO 3 % SLOPE
- ReF, RENISH-ROCK OUTCROP COMPLEX, 8 TO 20 % SLOPE
- TaC, TABOR FINE SANDY LOAM, 1 TO 5 % SLOPE
- Tn, TINN CLAY, FREQUENTLY FLOODED
- W, WATER
- WlA, WILSON CLAY LOAM, 0 TO 1 % SLOPE
- WlB, WILSON CLAY LOAM, 1 TO 3 % SLOPE

0 0.25 0.5 1 Mile

Vegetation

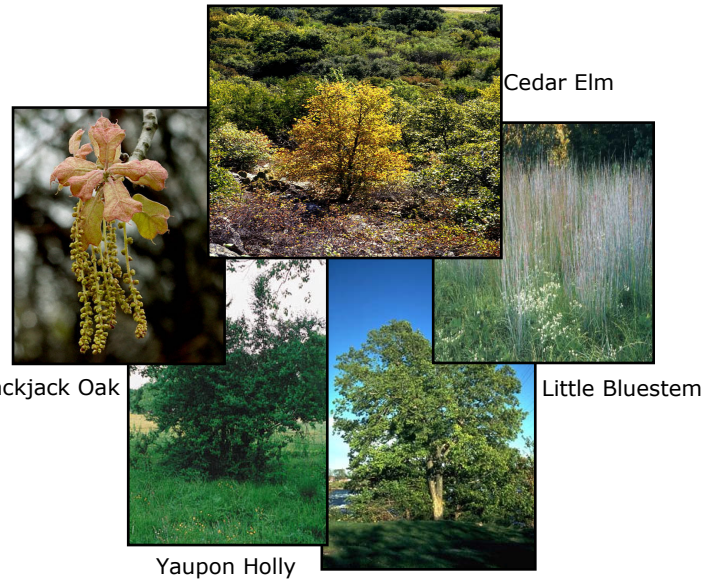
Wooded Area of Navasota

The City of Navasota is located in between several different vegetation zones. The northern and western area of the county is within the post oak savannah region. The southern and eastern portions of the county are located in a forest and prairie region. Therefore, the City is situated in an intermediary vegetation zone, which contains a mix of these three regions. The area supports many different types of flora including the species listed in Table 4.2.

Table 4.2: Navasota Plants & Trees

Plants & Trees

- Black Hickory
- Blackjack Oak
- Bluebonnets
- Cedar Elm
- Hackberry
- Hawthorn
- Indian Paint Brushes
- Little Bluestem
- Maple
- Mesquite
- Native Wildflowers
- Navasota Ladies-tresses
- Pecan Trees
- Post Oak
- Silver Bluestem
- Winged Elm
- Yaupon



Endangered Species

The Navasota Ladies'-Tresses (*Spiranthes parksii*) is an endangered orchid that can be found in the Navasota River area. The flower was listed as an endangered species in 1982 at the state and federal levels. The orchid displays tiny white flowers and can range from 5 to 15 inches in height depending on the habitat. The Navasota Ladies'-Tresses are found throughout the Brazos Valley Region including an inactive strip-mining plant in Grimes County.

Navasota Ladies'-Tresses

Trees

The area supports several different species of elm, holly, as well as other types of trees. Other hardwoods such as post oaks, hickory, and maple can also be found in Navasota. These trees are located in both the rural and urban areas of the City. The old, beautiful trees established within the City play a large role in the identity of Navasota.

Grasses & Wildflowers

Grimes County is also home to many different types of grasses and native wildflowers. This plant life includes Bluebonnets, Indian Paint Brushes, Little Bluestem, and many more.

Wildlife

There are many different species of wildlife found in the area. Animals such as white-tailed deer, rabbits, raccoons, possums, bobwhite quail, and other wild birds live in the Navasota area.

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