

Comprehensive City Plan 2018

City of Rockdale, Texas

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City of Rockdale, Texas

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Section 1: Introduction

1.0 INTRODUCTION

1.1 INTENT

A city's comprehensive master plan can be defined as a long-range planning tool that is intended to be used by City staff, decision-makers and citizens to direct the growth and physical development of a community for ten years, or an even longer period of time. It is a vision of what the community can become and is a long-range statement of public policy.

The primary objectives of a comprehensive master plan are to:

- Ensure efficient delivery of public services
- Coordinate public and private investment
- Minimize conflict between land uses
- Manage growth in an orderly manner
- Increase the cost-effectiveness of public investments
- Provide a rational and reasonable basis for making decisions about the community

As a vision of the City's future physical form, the Comprehensive Master Plan sets forth a generalized pattern of land use areas and transportation corridors. It represents a long-range statement of public policy with respect to how the community should grow, develop and mature over time. It includes policies and recommendations relative to the development of various physical elements within the community such as transportation, land use, housing, parks and recreation, and urban design (e.g., development guidelines for the downtown area, etc.). It provides for the distribution and interrelationships of various land uses, as well as a basis for future development recommendations. These aspects of the Plan are supported by a set of goals and objectives drawn from the desire and aspirations of citizens and business leaders, and are intended to help the City create an attractive living and working environment.

1.2 PLAN CONTENT AND ORGANIZATION

The Comprehensive Master Plan is divided into ten major sections. Each section is designed to accomplish specific objectives within the planning process. Specifically, this Introduction Section is followed by a Goals and Objectives Section and eight Sections which address the many issues facing the city. Charts and Graphs are included when applicable to help explain

various concepts. Although each of the sections serves a separate and specific purpose, the various sections are all interrelated in some manner and are intended to collectively comprise the Comprehensive Master Plan.

Section 2: Goals and Objectives

2.0 GOALS AND OBJECTIVES

2.1 INTRODUCTION

The goals and objectives of this Comprehensive Master Plan are the basis for growth and development decisions and serve as the foundation to protect, maintain and enhance the existing quality of life in the City.

Specifically, goals are defined as general statements of the community's desired ultimate physical, social and/or economic environment. Goals set the tone for development decisions in terms of the community's desired quality of life. Objectives are defined as the approaches toward achieving the type of quality living environment expressed by the community's goals. City or community related entities are encouraged to develop their own specific Strategic Plans that may be incorporated into the Comprehensive Master Plan. These have been developed and are listed in no priority order, for the following:

1. Quality of Life
2. Economic Development
3. Future Land Use
4. Residential Development
5. Nonresidential Development
6. Infrastructure and Utilities
7. Transportation
8. City Services

2.2 GOALS AND OBJECTIVES

QUALITY OF LIFE (SECTION 3)

GOAL 1: Enhance the quality of life provided in the City by expanding and preserving the recreational, cultural, educational, economic, natural and aesthetic resources of the community.

Objective 1.1: Preserve, protect and enhance the values of commercial areas and residential neighborhoods through establishment, implementation, and enforcement of effective ordinances, codes, and zoning.

Objective 1.2: Promote cultural activities and the arts locally.

Objective 1.3: Promote a continuing program of civic beautification, maintenance of homes and businesses, and other measures that will contribute to an aesthetically desirable environment.

Objective 1.4: Protect the environmental quality of the City's urban environment by acquiring, improving and protecting flood prone areas.

Objective 1.5: Control impact of development improving on the environment through appropriate regulation of landscaping, plant removal and lot excavation.

Objective 1.6: Promote medical facilities that provide patient care that is developmentally age appropriate, compassionate and effective for the treatment of health problems and the promotion of health.

Objective 1.7: Promote and advocate public education that is exemplary and well funded, provides primary, secondary, technical and higher educational opportunities, and whose reputation extends outside the community.

ECONOMIC DEVELOPMENT (SECTION 4)

GOAL 2: Promote, formulate and guide development initiatives that contribute to expanding the local tax base and providing a diversified economy, while enhancing the quality of life in the City.

Objective 2.1: Provide economic initiatives that will encourage the improvement of existing businesses and the establishment of new businesses that would benefit the community.

Objective 2.2: Provide consistency and stability for nonresidential development in order to strengthen the economic base of the City.

Objective 2.3: Promote the City as a desirable location for new and existing businesses and development.

Objective 2.4: Endeavor to make local taxes and services regionally competitive.

Objective 2.5: Increase the City tax base and provide new jobs by implementing programs that encourage business development.

Objective 2.6: Provide the necessary studies required to help identify and attract the types of businesses the City needs.

Objective 2.7: Provide the necessary studies required to help identify and attract the types of nonresidential development that takes advantage of existing commercial / recreational facilities.

FUTURE LAND USE (SECTION 5)

GOAL 3: Ensure that all new development (both residential and nonresidential) is consistent with demographic projections and enhances the quality of life.

Objective 3.1: Model the existing population, the work force demographic and regional growth rates on a periodic basis to develop an accurate planning tool.

Objective 3.2: Ensure enough land to accommodate multiple land uses and housing for residents of varying income levels.

Objective 3.3: Direct future land use so that it occurs as a consistent extension of the existing community.

Objective 3.4: Revise update, establish and enforce ordinances and codes to provide uniform requirements for all future development.

Objective 3.5: Ensure that land uses and their respective aesthetic value within the City make a positive contribution to the area and to the City as a whole.

Objective 3.6: Promote the development of a nonresidential district characterized by shops, restaurants, professional offices and open space/parks.

RESIDENTIAL DEVELOPMENT (SECTION 6)

GOAL 4: Develop high quality residential neighborhoods that promote public health, safety and welfare, and meet the various housing market needs of the community.

Objective 4.1: Promote the development of quiet, safe neighborhoods.

Objective 4.2: Update building codes and zoning standards with respect to current residential construction technologies. These standards should preserve the economic and historic value and amenity of existing neighbors' property.

Objective 4.3: Develop programs that encourage and provide incentives for the construction or updating of residences to be more energy efficient.

Objective 4.4: Encourage residential development within areas that have adequate or easily accessible City services, including, but not limited to, roads and streets, emergency response, sewage disposal, water supply and pressure, electricity, and current technological communication services.

Objective 4.5: Investigate providing City utilities to predetermined underdeveloped areas within the City as a development stimulus.

Objective 4.6: Encourage the protection of single-family residential areas from traffic congestion and through-traffic, including traffic generated by nonresidential and high density residential land uses.

Objective 4.7: A mixture of land uses and densities should be encouraged wherever possible, which would be beneficial for the neighborhood.

Objective 4.8: Enforce standards and master planning criteria for new subdivisions and other major residential developments.

Objective 4.9: Ensure that new development and the related development review processes achieve, maintain, and improve the quality of life.

Objective 4.10: Alleviate the occurrence of substandard and/or deteriorated development within the City through the use of regular, consistent development review and code enforcement practices.

Objective 4.11: Manage development in the floodplain and in areas that the City determines are subject to flooding, with the exception of development that can utilize the floodplains and not substantially alter it (e.g., park and recreation uses).

NONRESIDENTIAL DEVELOPMENT (SECTION 7)

GOAL 5: Support the diversification of the local economic base by encouraging nonresidential development in the appropriate areas of the City and providing the necessary zoning controls to ensure that nonresidential areas work in concert with residential neighborhoods.

Objective 5.1: Maintain a sufficient amount of nonresidential land to meet the future requirements for new businesses and that encourages local employment and increasing property values.

Objective 5.2: Utilize physical buffers, such as permanent open space, landscaping, fencing or walls, (as appropriate) between residential areas and nonresidential areas and/or differing residential densities where appropriate.

Objective 5.3: Alleviate the occurrence of substandard and/or deteriorated development within the City and its extraterritorial jurisdiction through the use of regular, consistent development review and code enforcement practices.

Objective 5.4: Manage development in the floodplain and in areas that the City determines are subject to flooding, with the exception of development that can utilize the floodplains and not substantially alter it (e.g., park and recreation uses).

INFRASTRUCTURE & UTILITIES (SECTION 8)

GOAL 6: Manage development of infrastructure and utilities to meet the requirements for future development and growth.

Objective 6.1: Develop an equitable system of fees for water and sewer services and facilities that reflect the cost of extending and providing those services.

Objective 6.2: Allow connection to water and wastewater services to undeveloped areas in accordance with the Utility ordinances.

Objective 6.3: Provide for a system of orderly development through regular bond programs at reasonable rates.

Objective 6.4: Identify areas where water and wastewater lines can be efficiently extended and consider incentives to encourage growth in these areas.

Objective 6.5: In equitable fashion require development that is not adjacent to existing utility lines or streets to pay for the utility and street extensions under policies set and adopted by City Council.

Objective 6.6: Moderate the incremental increasing of local taxes through the equitable use of development impact fees for roadways, water and wastewater.

Objective 6.7: Develop an infrastructure extension policy based on the phasing in of the City's capital improvement program which would not place an undue burden on City services.

TRANSPORTATION (SECTION 9)

GOAL 7: Develop and maintain a transportation system that will safely, economically, and efficiently accommodate future growth.

Objective 7.1: Develop and maintain a system of arterial and collector streets that will accommodate current and future traffic in accordance with planning and zoning standards and considerations.

Objective 7.2: Improve and upgrade streets to size and quality standards that are appropriate for their anticipated use and maximum right-of-way.

Objective 7.3: Maintain regular street maintenance program to minimize street deterioration.

Objective 7.4: Develop the H. H Coffield Airport and its environs in an orderly manner.

Objective 7.5: Consider the acquisition of property and development of City owned hangers, parking spaces, and transient facilities.

Objective 7.6: Promote public transportation as appropriate.

CITY SERVICES (SECTION 10)

GOAL 8: Provide the highest level of City services possible to meet the current and future needs of its residences and businesses.

Objective 8.1: Locate and adequately equip libraries, parks, recreational facilities and police stations that will provide protection of life and property as efficiently and economically as possible.

Objective 8.2: Work with the medical community (federal, state, and/or private) to preserve existing health facilities.

Objective 8.3: Develop a digitized geographical information system including occupied lots, unoccupied lots, utility locations, updated road locations, and other pertinent data.

Objective 8.4: Maintain and update the City web page to allow citizen access to City Forms, Building Code, Zoning Code, and City Calendar, news, and other pertinent information.

Objective 8.5: Identify new opportunities for high quality parks and recreation facilities that meet current and projected park and recreation needs.

Objective 8.6: Initiate and develop recreational programs needed by the community that private associations or private interests are not able to provide.

Objective 8.7: Utilize as much of the City's drainage corridors and floodplain areas as possible for open space, private parks and other uses that are compatible with the flood hazard.

Section 3: Quality of Life

3.0 QUALITY OF LIFE

3.1 GOALS AND OBJECTIVES

GOAL 3: Enhance the quality of life provided in Rockdale by expanding and preserving the recreational, cultural, educational, economic, historic, natural and aesthetic resources of the community.

Objective 3.1: Preserve, protect and enhance the values of commercial and residential neighborhoods through establishment, implementation, and enforcement of ordinances and codes.

Objective 3.2: Promote cultural activities, historic preservation and the arts locally.

Objective 3.3: Promote a continuing program of civic revitalization, maintenance of homes and businesses, and other measures that will contribute to an aesthetically desirable environment.

Objective 3.4: Preserve the beauty of the rural setting by establishing and enforcing ordinances and guidelines that protect and enhance aesthetic values.

Objective 3.5: Protect the environmental quality of Rockdale's urban environment by acquiring and protecting flood prone areas, maintaining and increasing healthy urban forests, and protecting wildlife and natural resources.

Objective 3.6: Ensure the availability and conservation of water, our most precious resource, within Rockdale.

Objective 3.7: Control impact of development on the environment through appropriate regulation of landscaping, plant removal and lot excavation.

Objective 3.8: Promote family centered medical facilities that provide patient care that is developmentally age appropriate, compassionate and effective for the treatment of health problems and the promotion of health.

Objective 3.9: Promote and advocate public education that is strong and well funded that provides primary and secondary education that encourages lifelong learning and provides a gateway to the future.

3.2 OVERVIEW

Every change or action we take in the Rockdale community affects our quality of life. The overall quality of life and our way of life is synonymous with the preservation of the environmental quality and integrity of the community. There are three levels (material, health and sustainability) that combine to equal the total quality of life. The material level includes such demographical categories as culture, economics and infrastructure. Health and integrity of biological and ecological factors comprise the health level. Finally, ensuring provisions for the stakeholders to participate and to contribute to this ongoing and current planning process is the sustainability level. Without this, we no longer have our beautiful community. Our health, safety and welfare depend on setting and executing goals for the protection of our surroundings. Quality of life objectives will enable Rockdale to safeguard our environment, biological and natural resources, cultural community, and enhance our ability to achieve a balance between commercial enterprises, ecology and aesthetics.

Quality of life is a major consideration in planning for the City's future. As growth occurs, issues concerning undeveloped lots, air quality, clean air and water, litter, noise and light pollution become more obvious. It follows that this plan must consider discussion of broader issues including interdependence, limits of carrying capacity, ecological soundness, and cultural needs into a plan that provides for all.

Central Texas is not alone in experiencing a conflict between the forces of economic growth and the preservation of cultural, environmental, historic and natural resources. Rockdale can benefit from research and policy development undertaken in other comparable jurisdictions. A growing number of cities are adopting smart growth policies and sustainable development criteria. The City should review the programs developed by these other communities to manage traffic, lighting, noise, air and water pollution, soil disturbance, chemical leaching and vegetation disruption to determine which if any might be applicable for Rockdale.

Ordinance changes can also be a factor in protecting our quality of life. The City should utilize Geographic Information Systems (GIS) to develop a system of maps depicting unoccupied and /or inaccessible lots, sensitive zones and

protected green spaces. Rockdale should take the opportunity to increase open space by knowing more about current and projected land use. Other applications may include general water, air and land zones, as well as specific historical and wildlife sites.

The City should continue to ensure an appropriate amount of open space in its approval of new residential developments. Managing open space should involve encouraging growth of clusters of mixed use development. These could include intensely developed clusters, lightly developed neighborhoods, and protected open space and likely will require land acquisition and/or rezoning.

Many factors affect the citizens' sense of well-being which can be measurable in the economic and social characteristics of the community. But quality of life extends beyond measures such as population, income, employment, taxes, education, etc. Quality of life includes such amenities as clean air, smooth traffic flow, and freedom from crime that must also be measured. The City should consider developing measures of quality of life to be used in future planning.

The City should carefully examine the impact of growth. Possibly, future configurations of the community could be projected using computer modeling and GIS technology.

3.3 RECOMMENDATIONS

1. Consider development of an ecological map (topography, vegetation, ravines and unoccupied areas) reflecting existing development of Rockdale.
2. Develop and implement new criteria and standards to protect ecological features and habitats, as maybe required.
3. The preservation of the local community setting should be managed through zoning and ordinances established by the City Council.
4. Encourage support of native plant protection, tree preservation and water conservation and water harvesting.
5. Recognize and support the cultural significance of historic sites and relics as mapped and identified by recognized historical authorities.
6. Develop a comprehensive drainage plan.

Section 4: Economic Development

4.0 ECONOMIC DEVELOPMENT

4.1 GOALS AND OBJECTIVES

GOAL 4: Promote, formulate and guide development initiatives that contribute to expanding the local tax base and providing a diversified economy, while enhancing the quality of life in Rockdale.

Objective 4.1: Provide economic initiatives that will encourage the improvement of existing businesses and the establishment of new businesses that would benefit the community.

Objective 4.2: Provide consistency and stability for nonresidential development in order to strengthen the economic base of the City.

Objective 4.3: Promote Rockdale as a desirable location for new and existing businesses and development.

Objective 4.4: Endeavor to make local taxes and services regionally competitive.

Objective 4.5: Identify and pursue the types of businesses that allow the City of Rockdale to be more self-sustaining and take advantage of existing commercial and recreational facilities.

Objective 4.6: Increase the City tax base and provide new jobs by implementing programs that encourage retail, commercial and industrial development.

Objective 4.7: Provide the necessary studies required to help identify and attract the types of businesses the City needs.

Objective 4.8: Provide the necessary studies required to help identify and attract the types of nonresidential development that takes advantage of existing commercial / recreational facilities.

Objective 4.9: Provide and/or attract vocational and/or higher academic institutions for continuing education of post-high school citizens. Rockdale has a high graduation rate for high school, but a low rate for higher continuing education or college.

4.2. OVERVIEW

Appropriate nonresidential development will benefit Rockdale by building the tax base while both diversifying the economy and improving its quality of life. The underlying expectation is that as new sources of tax revenue are developed tax rates will hold constant or trend lower. By adding jobs, economic development also contributes to greater residential property tax revenue.

Economic development should be planned to be consistent with the needs of the community including citizens' quality of life. Preventing nuisances (e.g., noise, odor) and environmental degradation associated with new development is extremely important to the City. It is the intent of the city plan that environmentally disruptive businesses would not be solicited, and would be considered less-favorable growth in the city plan. Economic development actions should encourage growth of businesses which support the local tax base for City and school services, but also enhance quality of life. With effective planning it is possible to attract good-neighbor businesses to the City.

Subsidization of business is not intended in the plan, as this is not a sustainable policy. Any financial incentives must be linked to known and measurable benefits showing a financial feasibility from the perspective of the City. Whether recoupment of these incentives is from direct or indirect means, it should be understood before making any economic development investment. Proper due diligence is expected to ensure the promises made will be kept and that the City receives the anticipated benefits of economic development.

There are several organizations/business groups that are stakeholders in the economic development of the City. They are Banks/Lending Institutions, Brokers and Realtors, Rockdale Chamber of Commerce, City of Rockdale, Developers, Rockdale Downtown Association, Rockdale Historical Society and Milam County Historical Commission, Rockdale Hospital District, Rockdale Independent School District, Landowners, Local Businesses and Non-Profit Organizations, the Media, Milam County, Rockdale Municipal Development District, State of Texas and the Workforce Development Center.

4.3 ORGANIZATIONS/BUSINESS GROUPS GOALS

Banks/Lending Institutions

- Provide funding for projects
- Provide information on the local economy and businesses

Brokers and Realtors

- Provide information on regulations
- Assist in making contacts

- Research property values, titles and any deed restrictions on property
- May assist in negotiation of purchase/sale of property
- Provide feedback of residential and commercial real estate trends and needs

Rockdale Chamber of Commerce

- Marketing of the community to attract additional businesses
- Counseling members to retain current business
- Promotion of tourism

City of Rockdale

- Regulates type and conditions of development (zoning ordinance, subdivision ordinance, development of master plans)
- Provides infrastructure such as water, sewer, drainage, streets, parks, airport
- Provides municipal public safety
- Promotes tourism through collection of hotel/motel tax
- Markets the community through advertising and website

Developers

- Research property
- Land assembly, if necessary
- Secure financing of projects
- Arrange for construction of projects

Rockdale Downtown Association

- Promotes downtown revitalization and development
- Mission Statement – To foster, promote, maintain and encourage the civic, social, commercial, tourist and economic welfare of downtown Rockdale by empowering the merchants in the downtown area with guidance and education and to encourage consumers for greater patronage through various public activities.

Rockdale Historical Society/Milam County Historical Commission

- Promotes historical preservation, awareness of area history, and tourism

Rockdale Hospital District

- Provides health services to area residents
- Important factor in attracting business and residents
- Healthcare is a growing industry

Rockdale Independent School District

- Provides education for youth (future labor force)
- Provides recreational opportunities for youth
- Businesses and industries often look at quality of schools in making location decisions

Landowners

- Acquire property
- Determine if property is for sale

- Negotiate land sale and any conditions on the transfer of property such as deed restrictions

Local Businesses and Non-Profit Organizations

- Provides goods and services
- Promotes the community to prospective business organizations
- Pay taxes (property taxes, sales taxes, possibly hotel/motel occupancy taxes) and fees to support public infrastructure and services
- Utility companies often have economic development departments

Media (KRXT, Rockdale Reporter, area newspapers)

- Provides information about local events
- Advertises local business

Milam County

- Provides information about the county
- Provides information on property records
- Regulates subdivision development in the unincorporated areas outside the city's extra-territorial jurisdiction

Rockdale Municipal Development District (MDD)

- Provides funding for projects which are allowable under state law
- Studies opportunities to attract business, jobs and industries to the community and extra-territorial jurisdiction
- Mission Statement – To aid the City of Rockdale and any interested private or public entity in making the community a better place to live, work, and do business. In so doing, the MDD may help develop and finance any permissible project as defined in Chapter 377 of the Texas Local Government Code and that benefits, strengthens, and diversifies the economic base of Rockdale

State of Texas

- Determines highway improvement projects
- Provides grants/loans to business prospects
- Regulates environmental aspects of projects
- Governor's Office of Economic Development
- Provides information about cities/local areas

Workforce Development Center

Job Seeker Assistance

- Provide job counseling and assistance
- Assist in preparation of resume and cover letters
- Provide skills training in preparing job seekers for interviews
- Provide computer classes to upgrade technical skills

Employer Assistance

- Screen applicants based on skills required for the position posted by the employer
- Provide one on one employer assistance with recruiting, retention, compensation and human resource issues

- Provide low cost customized training as required
- Assisting with Job Fairs for employee recruitment

4.4 COMPETITIVE ASSESSMENT

Many effective economic development programs include property or sales tax incentives paid in order to attract strategic nonresidential investments. The City's current policy involves treating each prospective development on a case by case basis based on a thorough cost/benefit analysis.

The presence of businesses which serve everyday needs can decrease citizens' cost of living and keep tax money from leaving the community. Because of this dual benefit, such businesses are extremely desirable. Retail businesses can be aesthetically pleasing, have low infrastructure needs and cost little to develop.

A healthy economic climate supported by nonresidential investment creates local job opportunities. An example would be light industry and technology businesses which provide higher wage levels, add consistency to the labor force and are environmentally compatible.

The proposed new businesses should be compatible with the predominately residential character of the City; for example, having a low environmental impact. Most service, warehousing and wholesale businesses would meet this requirement. Within the manufacturing arena, light industry would also meet this requirement. A Light Industry activity produces low volume, high value products using moderate amounts of processed materials. It can be carried out near residential areas because it does not produce detrimental side effects such as noise, soot and fumes.

Business development which taps the value of assets already in place is also desirable. Rockdale must be perceived as a desirable location for business and the City must create and present a consistent image to prospective businesses.

The following chart shows that Rockdale is centrally located to major cities in our geographic area:

Source: city-data.com

	Nearest city with 50,000+ population	Nearest city with 200,000+ population	Nearest city with 1,000,000+ population
Rockdale	37 miles (Temple)	50 miles (Austin)	115 miles (Houston)
Bastrop	28.8 miles (Austin)	28.8 miles (Austin)	85.1 miles (San Antonio)
Caldwell	22.0 miles (Bryan)	64.4 miles (Austin)	94.9 miles (Houston)
Cameron	28.1 miles (Temple)	59.7 miles (Austin)	121.6 miles (Houston)
Elgin	21.3 miles (Round Rock)	22.6 miles (Austin)	92.3 miles (San Antonio)
Giddings	47.0 miles (College Station)	49.2 miles (Austin)	97.4 miles (Houston)
Hearne	20.0 miles (Bryan)	79.4 miles (Austin)	105.8 miles (Houston)
La Grange	58.5 miles (College Station)	58.8 miles (Austin)	90.1 miles (Houston)
Luling	43.3 miles (Austin)	43.3 miles (Austin)	54.5 miles (San Antonio)
Navasota	20.1 miles (College Station)	40.6 miles (Northwest Harris County)	60.3 miles (Houston)
Smithville	40.8 miles (Austin)	40.8 miles (Austin)	90.2 miles (San Antonio)

The chart shows that Rockdale does not have a disadvantage to the other cities in our area from the standpoint of location to major cities. Drive times to major cities can be a consideration for companies and workers.

For an exhaustive comparison of cities by population, age distribution, labor force statistics and education attainment, the website www.texassitesearch.com can be used to compare cities in the geographic region of Rockdale.

After comparing Rockdale with other cities in our region you will see that Rockdale can compete with all of the cities with its lower tax rates, available properties and land, good schools, work force, public safety and small town values.

The main purpose of the economic development recommendations in the City Plan is to help reduce the City's reliance on residential property taxes by extending the nonresidential tax base and by generating more sales tax revenue. By creating opportunities to have the point of sale within the City, sales tax offers an opportunity to retain tax revenue and bring additional revenue from outside the City. Flexibility exists here that is unavailable through property taxes.

4.5 RECOMMENDATIONS

1. Proactively evaluate economic development opportunities to ensure quality economic development decisions.

2. Identify data and information resources to evaluate economic development opportunities.
3. Evaluate alternative comprehensive funding strategies and appropriate performance measures for the use of economic development funds.
4. Encourage the development of a consistent incentive policy between the City and County for economic development.
5. Identify and locate and recruit appropriate retail, service businesses and light commercial businesses that would be appropriate for Rockdale and the industrial park.
6. Leverage opportunities for quality of place and tourism.



Strategic Economic Development Plan

Administered by:

Rockdale Municipal Development District

September 2012

Mission

It is the Mission of the Rockdale Municipal Development District (MDD) to aid the City of Rockdale and any interested private or public entity in making the community a better place to live, work, and do business. In so doing, the MDD may help develop and finance any permissible project as defined by Chapter 377 of the Texas Local Government Code and that benefits, strengthens and diversifies the economic base of Rockdale.

Strategy

The MDD will consistently and aggressively focus on promotion of business growth through a highly effective five-point strategy:

- Retention and Expansion of Existing Businesses
- New and Small Business Development
- Targeted Marketing and Attraction of New Business
- Incentives and Infrastructure
- Improved Quality of Place

• Retention and Expansion of Existing Businesses

A. Formalized Retention Program

- a) Visit 2 Rockdale Businesses per month
 - Include 1 Community Leader on each visit (City Council, School Board, MDD Board, Etc.)
- b) Collect Data including # of Employees, future plans for growth or downsizing, assistance needed for growth, size of building, future building needs, lease or own and if lease what is the lease rate
- c) Work with SCORE to set up a local mentoring program to assist local businesses and entrepreneurs

• New and Small Business Development

A. Survey Rockdale Citizens annually to determine what businesses they are most likely to support

B. Create programs that promote an entrepreneurial environment

- a) Develop a Business Incubator in Downtown Rockdale
- b) Host periodic programs to educate potential and existing entrepreneurs on the latest trends

C. Assist the City of Rockdale in developing incentives specifically designed for new and small business development

- a) 1st twelve month sales tax rebate for new businesses
- b) 1st year property tax abatement for building owners that locate and new business in their facility

- D. Provide information on federal, state and local programs that assist businesses

- **Targeted Marketing and Attraction of New Businesses**

- A. Developed Target Markets
 - a) Identify Industry Targets that match with Milam County Labor Force and resources
 - b) Attend at least 2 Trade Shows per year that emphasizes our Industry Targets
 - c) Host periodic “coffee” and/or “receptions to educate business and community leaders about our industry targets, activities and what role they can play in Economic Development
- B. Develop new, comprehensive Website for the MDD
 - a) Offers all the information site selectors, realtors, investors etc... may need to make an informed business decision to locate, expand or invest in Rockdale
 - b) Include Social Networking with Website to include Facebook, LinkedIn and Twitter
- C. Develop Rockdale Business Park
 - a) Negotiate with the Rockdale Chamber of Commerce and the City of Rockdale for control of the approximately 170 acres of land that was donated to these entities for the purpose of job creation in Rockdale
 - b) Re-plat both parcels as one large park with multiple 5 to 25 acre parcels for development
 - c) Construct a 7,500 to 10,000 sq. ft. Speculative (Spec) Building in the Park
 - d) Construct a Monument Sign at the entrance to the Park
- D. Conduct an annual “Milam County FAM Tour”
- E. Develop a monthly Constant Contact Communications Program to communicate business and economic development happenings in around Rockdale

- **Incentives and Infrastructure**

- A. Working with the City of Rockdale and Milam County, develop a comprehensive incentive program encourages businesses to locate in Rockdale and assists existing businesses with their growth in Rockdale.
 - a) Tax Abatement or Tax Phase In
 - b) Sales Tax Rebate
 - c) Infrastructure Grant Program
 - d) Building Façade Rehabilitation Grant Program
 - e) Free or Reduced Cost Land Program
 - f) Reduced Cost Building Program (Spec Building Program)
- B. Work with City of Rockdale Staff to identify areas of need in the Community where infrastructure upgrades and improvements need to be made for the purpose of Commercial Growth.
 - a) Identify available grants and other funding programs
 - b) Investigate Bond Funding opportunities

- **Improved Quality of Place**

- A. Continue moving forward with Rockdale 2022 Visioning Exercise
- B. Complete Downtown Master Plan
 - a) Present plan to the public through various avenues including a joint meeting of the MDD Board, City Council, Chamber of Commerce and Downtown Association
 - b) Make presentations regarding the Downtown Master Plan to various Civic Clubs including Rotary and Lions Clubs
 - c) Request the City of Rockdale, the MDD, the Chamber of Commerce and the Downtown Association officially accept the plan as something they approve and will support with any resources they may bring to the table
- C. Implement the Downtown Master Plan
 - a) Initiate Building Façade Rehabilitation Grant Program (see above)
 - b) Hire Grant Write(s) to leverage Master Plan to acquire TxDOT Transportation Enhancement, Texas Parks and Wildlife, Texas Department of Agriculture and all other monies that may be available to improve downtown
- D. Complete Gateway Monument Project
 - a) Complete Hwy 79 West sign in FY 2012 – 2013
 - b) Complete Hwy 77 North sign in FY 2013 - 2014
- E. Explore funding options to make Patterson Center Improvements
- F. Create a “Young Emerging Leaders” Program (20 -40 year olds)
 - a) Recruit our next leaders conducting a kickoff reception
 - b) Encourage community participation including the development of youth programs
- G. Conduct a “Rockdale Day in Austin” Program during each Legislative Session
 - a) Invite community and business leaders from Rockdale including the City Council and Staff, MDD Board Members and Staff, Chamber of Commerce, Downtown Association and other community participants
 - b) Schedule meetings with appropriate agencies including the Governor’s Office of Economic Development and the State Comptroller’s Office
 - c) Schedule meetings with Rockdale’s elected State Representative and State Senator along with their staffs

Section 5: Future Land Use

5.0 FUTURE LAND USE

5.1 GOALS AND OBJECTIVES

GOAL 5: Ensure that all new development (both residential and nonresidential) is consistent with demographic projections and enhances the quality of life.

Objective 5.1: Model the existing population, the work force demographic and regional growth rates on an as needed basis to develop an accurate planning basis.

Objective 5.2: Ensure enough land to accommodate multiple land uses and housing for residents of varying income levels.

Objective 5.3: Direct future land use so that it occurs as a consistent extension of the existing community.

Objective 5.4: Revise update, establish and enforce ordinances and codes to provide uniform requirements for all future development.

Objective 5.5: Ensure that land uses and their respective aesthetic and historic value within the City of Rockdale makes a positive contribution to the area and to the City as a whole.

Objective 5.6: Promote the development of a nonresidential district characterized by small shops, restaurants, professional offices, and open space/parks.

5.2 OVERVIEW

The City's goal is to provide the best possible plan to ensure land use patterns promote optimum use of all areas within the City. The way property in Rockdale currently is used is shown on the Current Zoning Map (Map 5-1). The Future Land Use map, which is shown on Map 5-2, is an expression of intent regarding Rockdale's future land use patterns. This map identifies areas in the City Limits and it's Extra Territorial Jurisdiction (ETJ) that is suitable for various types of land use activities, such as residential, retail, commercial, and industrial, while recognizing the public good must be predominant over individual desires.

The highest and best use of land is inherently connected with transportation and economics. Simply put, roadways must have the capacity to allow people to experience various land uses. This is particularly important for nonresidential land uses because without access, their economic viability is questionable. Therefore, the Future Land Use Plan for Rockdale takes into consideration all of the other elements of the City Plan, especially Economic Development and Transportation.

5.2.1 Existing Land Use

Rockdale was a town formed at the end of the construction of the I & GN Railroad line. In May of 1874, Rockdale had enough citizens to call for an incorporation meeting. On May 8, 1874, the vote on incorporation passed for the Town of Rockdale by majority vote. The name was changed to the City of Rockdale in 1875. The town grew outward for the railroad as it's center. The town grew as a typical railroad town during the early years. In the early 1950's ALCOA was a contributor to growth in the town and surrounding area. This created new residential subdivisions within the city and new business growth. Map 5-1 shows the existing land use with the City Limits. As the City grows, planning efforts must be responsive to Rockdale's past and future trends. The Future Land Use Plan is intended to blend these trends together to provide the City with a balanced land use pattern.

Information on Rockdale school enrollment, school statistics and demographics can be found at the following website:
<https://schools.texastribune.org/districts/rockdale-isd/>

Land use planning for Rockdale is influenced by zoning within the current City Limits and as well as the land use map in the existing City Plan. Table 5-1 shows the approximate breakdown of current zoning districts in relation to the lots within Rockdale.

Table 5-1 Current Zoning District Classifications	
Zoning Category	Zoning Category
R-1	Single Family Residential
R-1C	Residential 1 Commercial
R-1E	Residential 1 Estate
R-2	Residential Multi-Family
R-3	Residential Multi-Plex
M-1	Manufactured Home Subdivision
M-2	Manufactured Home Park

CA	Central Area
C-1	Commercial-Light
C-2	Commercial-Intense
I	Industrial
PUD	Planned Unit Development
GOV	Governmental
A	Agricultural

5.3 POPULATION

5.3.1 Rate of Population Growth

Estimating the future population of Rockdale is difficult. In recent years the population growth has been a slow increase over prior census. However, looking at the prior census years in Table 5-2 below it has been erratic.

Table 5-2 Population of Rockdale City				
1970 Census Population	1980 Census Population	1990 Census Population	2000 Census Population	2010 Census Population
4665	5611	5235	5439	5595

5.4 TYPES AND CONSIDERATIONS FOR LAND USE

The recommended Future Land Use Plan for Rockdale is shown on Map 5-2. As noted in its legend, land use categories (zoning districts) have been identified for each appropriate land use which may exist within the community. It is important to recognize that the Plan map is only the graphic portion of Rockdale's Future Land Use Plan. The map designations and key land use concepts are further supplemented and explained in the following text sections and the remainder of this City Plan. A more detailed definition of zoning categories can be found in the City zoning ordinance at www.rockdalecityhall.com

5.5 Annexation

Developers may turn to Rockdale as a vehicle to acquire water and sewer services. In some cases these developments are areas outside of the current City Limits and require annexation. The City must decide if this is a desired methodology to growing the City. The obvious advantages to growth are increased tax revenues and new business. The disadvantages include increased traffic with attendant problems such as the requirement for additional road

improvements, as well as additional capital improvements, expenditures for infrastructure and schools. Ultimately the City must decide if growth is desired through annexation of new areas and plan accordingly.

5.6 Future Use

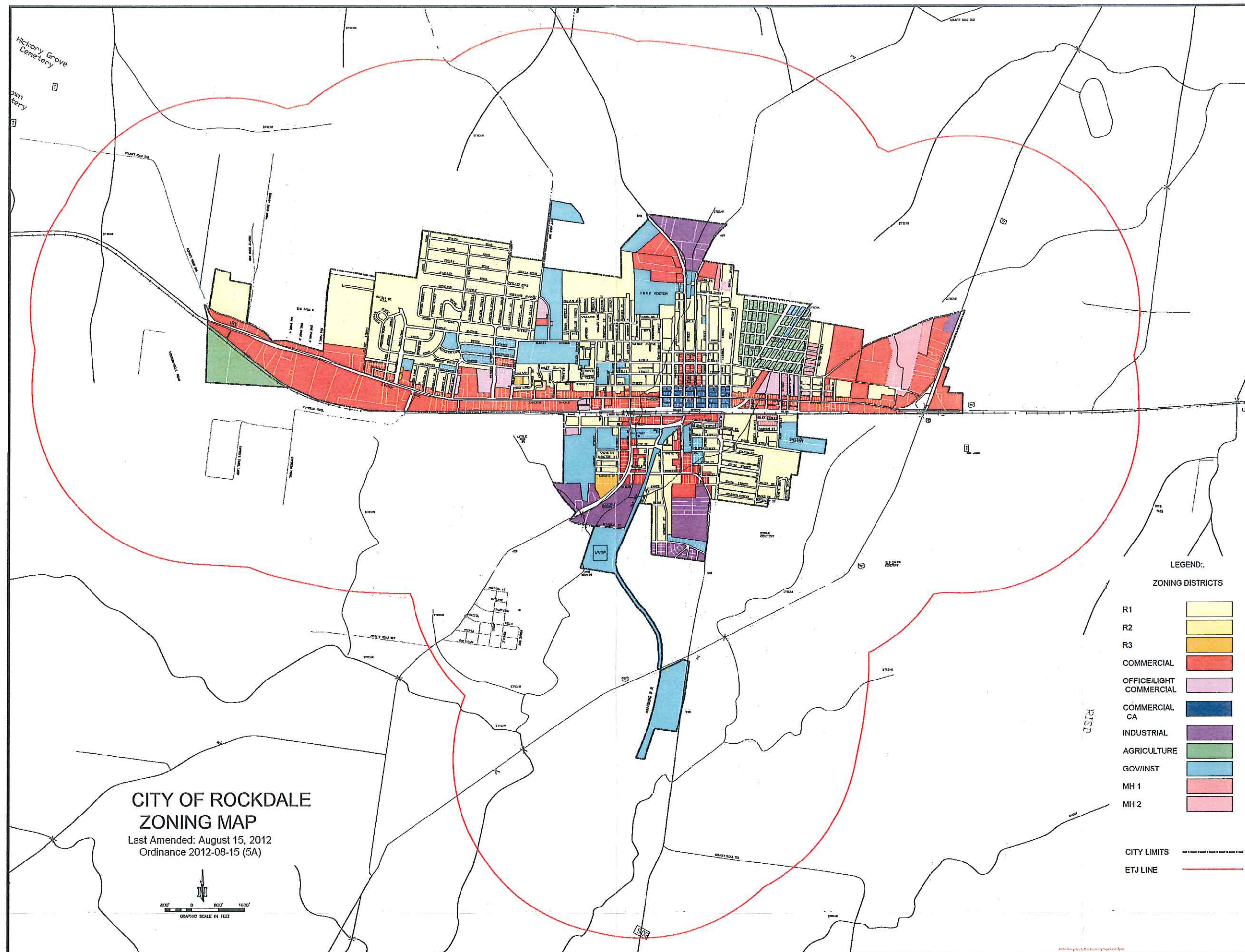
The recommendations in this Future Land Use Section are intended to guide Rockdale's future land use planning and related policies. Note that the Future Land Use map (Map 5-2), taken together with the remainder of this City Plan, will also serve as a guide to decision making regarding the City's land use patterns. The Residential Development and Nonresidential Development Sections include numerous recommendations calling for consideration of rezoning undeveloped land. The proposed optimum allocation of land use in the future has not been quantified; however, a key goal is to increase the amount of commercial and industrial property, as well as similarly valuable property, for the purpose of increasing the City's tax base and thereby reducing the tax rates for individual homes. The boundaries of the land use categories depicted on Map 5-2 should be used to determine the appropriate land use category for areas that are clearly delineated on the official zoning map.

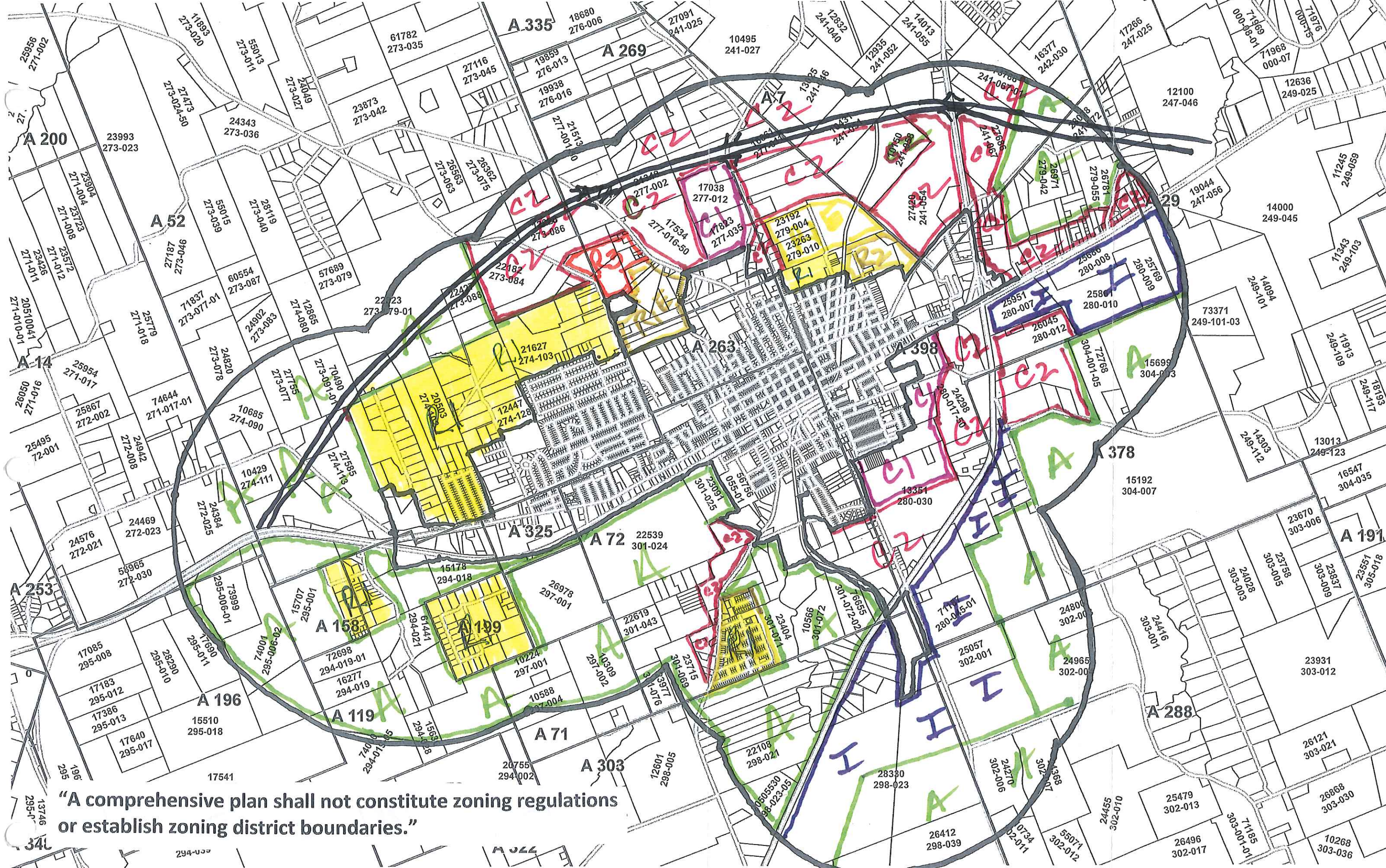
If a rezoning request is consistent with the Plan, the City's routine review process should follow. Staff recommendation of the project to the Planning & Zoning Commission and City Council should include notation in the staff report that the proposed rezoning request is consistent with the Plan. Other review criteria (i.e., traffic analysis, compatibility with surrounding uses, etc.) should be applied as usual. It is recommended that the City of Rockdale engage in regular review of the Future Land Use Section to further ensure that zoning is consistent and that the document and the map reflect all amendments made subsequent to the Plan's initial adoption.

5.7 Recommendations

1. Encourage land use allocation within the City in a manner consistent with Map 5-2.
2. Encourage lot consolidation as a method to enable construction of larger homes and create more open space.
3. Develop programs and procedures to stimulate more grouping of residential construction into a given geographic area.
4. Consider current land uses and related zoning considerations to ensure existing zoning reflects the appropriate use of land parcels.

5. With so little property currently zoned for nonresidential use, it is critical additional land be set aside for nonresidential use.
6. Establish standards for the development of nonresidential uses, including exterior standards, to ensure that such development makes a positive contribution to the City of Rockdale as a whole.
7. Consider annexation of portions of the Future Growth Area shown on the Future Land Use Plan map for the purpose of encouraging nonresidential development.
8. Consider rezoning/acquiring land to allow more commercial or light industrial development in close proximity to the Rockdale airport.
9. Consider acquiring land for new parks, open space, and public use areas as this will be necessary if such projects are to be developed.
10. Conduct a traffic study to look at the traffic level at build out of the existing zoning configuration to provide a baseline for evaluating projects likely to significantly affect traffic.





"A comprehensive plan shall not constitute zoning regulations or establish zoning district boundaries."

5.2

Section 6: Residential Development

6.0 RESIDENTIAL DEVELOPMENT

6.1 GOALS AND OBJECTIVES

GOAL 6: Develop high quality residential neighborhoods that promote public health, safety and welfare, and meet the various housing market needs of the community.

Objective 6.1: Promote the development of quiet, safe, and clearly defined neighborhoods.

Objective 6.2: Update building codes and zoning standards with respect to current residential construction technologies and architectural designs. These standards should preserve the economic value and amenity of existing neighbor's property.

Objective 6.3: Encourage the construction of energy efficient residences and use of native plants and low-water-use landscaping.

Objective 6.4: Encourage residential development within areas that have adequate public facilities and City services, including roads and streets, police and fire protection, sewage disposal, water supply and pressure, telephone and electricity.

Objective 6.5: Investigate providing City utilities to predetermined underdeveloped areas within Rockdale as a development stimulus.

Objective 6.6: Protect single-family residential areas from traffic congestion and through-traffic, including traffic generated by nonresidential and high density residential land uses.

Objective 6.7: A mixture of land uses and densities should be encouraged wherever possible, which would be beneficial for the neighborhood.

Objective 6.8: Update standards and master planning criteria for new subdivisions and other major residential developments, as needed.

Objective 6.9: Accept lot consolidation in residential areas.

Objective 6.10: Ensure that new development and the related development review processes achieve, maintain, and improve the quality of life.

Objective 6.11: Alleviate the occurrence of substandard and/or deteriorated development within the City and its extraterritorial jurisdiction through the use of regular, consistent development review and code enforcement practices.

Objective 6.12: Manage development in the floodplain and in areas that the City determines are subject to flooding, with the exception of development that can utilize the floodplains and not substantially alter it (e.g., park and recreation uses).

Objective 6.13: Encourage the development and implementation of conservation programs providing incentives to developers for environmentally friendly construction standards and practices.

6.2 OVERVIEW

Residential development is valuable to the community because it brings new neighbors to add to the social framework, share in the cost of providing services and serve the local community. New development must be constructed in a high quality, well planned and controlled fashion. The quality of construction, architecture, dwelling square footage, and the residential land use that is incorporated into single family and multifamily residential development will dictate future property values, City growth, and quality of life. Properly planned residential development ensures that population density across the City is consistent with community standards. It imposes fairness to adjacent landowners by protecting property values and provides a pleasant living environment.

Residential development is the economic engine that attracts new businesses, commercial development and provides a stable tax base for the City. The majority of the City's tax revenues are generated by residential development providing the City with steady income. Residential development is the driver that provides sustainable, steady economic growth.

6.2.1 Existing Conditions

There are approximately 2,589 housing units based on the 2010 census. There were no new housing permits issued in years 2009 and 2010. Residential housing development has seen very little development in the last ten (10) years. There are a few residential lots available for the development in the

west part of the City. The City needs to develop programs and processes that encourage more grouping of residential development into a given geographic area where utilities exist. Grouping residences will over time help the city with regard to road maintenance, utility distribution and lower cost of new residential construction.

6.2.2 Single Family Home Construction

The City of Rockdale population grew from 5439 in year 2000 to 5595 in year 2010. There was very little single family home construction during this period.

The City should focus on maintaining an appropriate mix of housing units ranging from low cost/affordable to the more expensive homes. To accommodate affordable housing, the City zoning ordinance allows for a minimum home size of 1,000 Square Feet, Manufactured Home districts and multifamily homes.

Based on current state law, Industrialized Modular Homes are recognized as Single Family dwellings.

6.2.3 Multifamily Residential

Little significant multifamily residential construction has taken place in Rockdale in recent years. One multifamily development has occurred in the past few years. There is the potential for a new development in the next few years. The last census reported 806 households renting in Rockdale. The availability of affordable housing is an important quality of life consideration in the community. The City should continue to ensure that at least the current availability of land dedicated to multifamily use is maintained until future affordable housing is developed.

6.2.4 Floodplains

Managing new residential construction in the floodplain or areas of the City that are subject to flooding should be carefully evaluated based on FEMA regulations. The City does not encourage residential construction in a flood zone. It is desirable for land in the floodplain or flood prone areas to be utilized as parks, open space or other compatible uses.

6.2.5 Planning and Zoning

The City has obligations to its citizens to ensure the proper balance between quality of life, residential growth, tax rates and economic competitiveness. It is

critical that Rockdale through its Planning and Zoning and Economic Development processes decide what growth is desired and take the necessary steps to move Rockdale into the future while preserving its quality of life.

6.2.6 Enforcement and Compliance

To protect the beauty of the area and maintain property values within the City, existing building codes and zoning ordinances must be strictly enforced to prevent the occurrence of substandard development and/or deteriorating development. Property owners with deteriorating structures or poor land use habits should be required to bring their property up to a minimum standard. For new residential development, it is important that project reviews are conducted on a regular basis to ensure code conformance and protect our quality of life.

6.2.7 Mobile Homes and Manufactured Homes

Manufactured Homes are controlled in the City's Zoning Ordinance. Land area has been set aside through zoning to accommodate this important element of affordable housing. The citizens represent many diverse levels of economic ability, and all deserve the chance to live within their means in our sustainable community. Where non-site built homes are chosen, concerns often arise with neighbors based on perceptions that the quality, value or tax burden of these homes are inconsistent with the community. But, as the manufactured housing industry points out, these homes allow greater participation in homeownership by persons who would otherwise be renters and increased homeownership rates add economic vitality to the local community.

6.2.8 Conservation

With the growing emphasis locally and nationally on the conservation of water, electricity and fuel consumption, the City needs to consider implementing programs, where feasible, that help conserve our natural resources. Currently there are two widely utilized programs that are endorsed by the Department of Energy (DOE) that address the reduction of residential energy consumption: Energy Star and Residential Energy Network (RESNET) or other green builder programs. The City needs to be a good steward of our environment by evaluating and implementing nationally recognized environmental programs that preserve our natural resources.

6.3 RECOMMENDATIONS

1. Encourage lot consolidation as a method to enable the construction of larger homes and create more open space.
2. Take steps in developing utility infrastructure in areas that lack water and sewer services as a development incentive.
3. Electrical utility provider should be encouraged to participate in Department of Energy approved energy reduction programs with the City, builders and citizens of Rockdale.
4. Review and implement nationally recognized programs that conserve water while maintaining the natural beauty of the area.

Section 7: Nonresidential Development

7.0 NONRESIDENTIAL DEVELOPMENT

7.1 GOALS AND OBJECTIVES

GOAL 7: Support the diversification of the local economic base by encouraging nonresidential development in the appropriate areas of the City and providing the necessary zoning controls to ensure that nonresidential areas work in concert with residential neighborhoods.

Objective 7.1: Maintain a sufficient amount of nonresidential land to meet the future requirements for new businesses and that encourages local employment and increasing Rockdale property values.

Objective 7.2: Provide the necessary studies and review processes to ensure that nonresidential areas work in concert with existing and future residential neighborhoods using best known zoning and other management methods.

Objective 7.3: Review and update the existing nonresidential building and zoning codes as necessary in support of future commercial development requirements.

Objective 7.4: Develop zoning codes that include businesses consistent with the economic development plan.

Objective 7.5: Utilize physical buffers, such as permanent open space, landscaping, fencing or walls, (as appropriate) between residential areas and nonresidential areas and/or differing residential densities where appropriate.

Objective 7.6: Ensure that new development and the related development review processes achieve, maintain, and improve the quality of life; and develop and enforce effective external construction standards to alleviate the impact of growth (e.g., dimensional, landscaping, lighting and signage).

Objective 7.7: Alleviate the occurrence of substandard and/or deteriorated development within the City and its extraterritorial jurisdiction through the use of regular, consistent development review and code enforcement practices.

Objective 7.8: Manage development in the floodplain and in areas that the City determines are subject to flooding, with the exception of development

that can utilize the floodplains and not substantially alter it (e.g., park and recreation uses).

7.2 OVERVIEW

Retail, services, light industrial, commercial, public use, parks and open spaces are all examples of areas that would be considered as nonresidential development. Nonresidential development is necessary for healthy growth and the continued improvement of quality of life within our City. As the residential growth occurs, more retail and service businesses will be required to provide the needed goods and services the public expects and requires. With growth, parks and open spaces will need to be added in proportion to the increasing population. Residential growth also will stimulate demand for more City services, necessitating new funding that might be raised through nonresidential taxes. Accordingly making adequate land available for future nonresidential development will become a greater priority for the City. Planning for managed growth in nonresidential development will ensure that needed businesses, public services, parks and open spaces are consistent with goals of the community.

7.3 EXISTING CONDITION

With so little property currently zoned for nonresidential usage, it is critical that additional land be preserved for nonresidential development. As the City grows, it is conceivable some residential lots may need to be rezoned for nonresidential usages to satisfy the demand for new retail and commercial business, public use facilities, parks, and open spaces.

Most new businesses will most likely continue to locate in areas already zoned for nonresidential use along Highway 79, where the majority of developed commercial land is located.

As for public use facilities, the City owns and operates City Hall, city parks, the sports facilities, an airport and the library. There is one golf course that is privately owned and operated outside the city limits. There are numerous other school, recreation and utility properties around the City, but very little reserved open space. If new parks, open space or public use areas are to be developed, the City would need to acquire and rezone the land for such projects.

7.4 PLANNING AND ZONING

The City has obligations to its citizens to ensure the proper balance between quality of life, residential growth, tax rates and economic competitiveness. It is critical that Rockdale through its Planning and Zoning and Economic Development processes decide what growth is desired and take the necessary steps to move Rockdale into the future while preserving its quality of life.

7.5 DEVELOPMENT

Rockdale is fortunate to have an existing airport, available land and an existing workforce. The City should leverage these attributes and take advantage of the economic benefits, enhancements to the community and quality of life these assets bring to the community. Nonresidential development which is compatible to and associated with these amenities could be extremely favorable economically to the City provided it is accomplished in agreement with the City plan.

The H. H. Coffield Regional Airport can potentially support some additional commercial and light industrial businesses. Some land around the airport could be annexed and rezoned in preparation for the potential addition of new businesses which could take advantage of locations in close proximity to the airport. Some utility upgrades and road improvements may be necessary to support any major new development.

The City needs to consider ways to enhance its ability to accommodate architecturally compatible lodging, condominiums, town homes and other accommodations in support of the development of business and employment opportunities. Developing and having both temporary and permanent housing in support of these businesses will help in their ability to maintain more stable and successful operations. To accomplish this, some land currently zoned as single family residential might need to be rezoned in order to provide the appropriate development stimulus.

Rockdale generally lacks sufficient tourist destinations to attract overnight visitors. The City needs to develop attractions that make Rockdale a destination for tourists and travelers.

7.6 ENFORCEMENT AND COMPLIANCE

This plan reflects the desire of many citizens in the community to protect the beauty of the area and maintain property values within the City. Therefore building codes and zoning ordinances should be strictly enforced to prevent

the occurrence of substandard development and/or deteriorating properties. Current regulations need to be reviewed and updated periodically to allow for easier enforcement and compliance. Commercial property owners with deteriorating structures or poor land use habits should be encouraged to bring their property up to a minimum standard. The City must promote high standards of appearance for all buildings, and should review, update and enforce construction standards, sign and on-site storage ordinances in order to ensure these standards are adhered to. The retail businesses located on Highway 79 are the gateways to our community, it is essential that these properties are representative of Rockdale's values.

7.7 RECOMMENDATIONS

1. Acquire additional land and preserve for nonresidential land use.
2. Review and update, as needed, the existing building codes and zoning ordinances in support of future commercial and industrial development.
3. Utilize physical buffers, such as permanent open space, landscaping, fencing or walls, (as feasible and appropriate) between residential areas and nonresidential areas and/or differing residential densities.
4. Underdeveloped land with potential use as architecturally compatible lodging, condominiums, town homes and other such accommodations should be identified and considered for rezoning to enhance nonresidential development to stimulate potential business and employment.
5. Undeveloped land adjacent to the airport should be evaluated to determine potentially needed zoning changes to support additional nonresidential development.

Section 8: Infrastructure and Utilities

8.0 Infrastructure and Utilities

8.1 Goals and Objectives

Goal 8: Manage and development of infrastructure and utilities to meet the requirements for future development and growth.

Objective 8.1: Maintain an equitable system of fees for water and wastewater services and facilities that reflect the cost of extending and providing those services.

Objective 8.2: Extend water and wastewater services to undeveloped areas in accordance with City Utility Plan.

Objective 8.3: Provide for a system of orderly development through regular bond programs and reasonable rates.

Objective 8.4: Identify areas where water and wastewater lines can be efficiently extended and consider incentives to encourage growth in these areas.

Objective 8.5: In equitable fashion require development that is not adjacent to existing utilities or streets to pay for the utilities and street extensions under policies set and adopted by the City Council.

Objective 8.6: Moderate the incremental increasing of local taxes and utility rates through the equitable use of development impact fees for roadways, and utilities.

Objective 8.7: Develop and maintain an infrastructure extension policy based on the phasing in of the City's capital improvement program which would not place an undue burden on City services.

Objective 8.8: Maintain energy and water conservation plans for the City of Rockdale, leveraging state and federal funding opportunities to support them.

8.2 Overview

There are three major concerns with respect to the development, financing and operation of the infrastructure for the City. These concerns revolve around the

requirement to provide an adequate level of water and wastewater service. The first of these concerns is managing growth to the extent that it is possible to adequately plan, finance and develop the infrastructure necessary to accommodate an uncertain increase in population. We must have the ability to acquire an adequate water supply and the ability to treat the water at a higher standard than is required by state agencies. A second concern is how the incremental additions to infrastructure are financed. There are several different ways to accomplish this, each with its own political and fiscal considerations. A third concern is the development and implementation of management strategies for charging customers for use of the infrastructure as this will normally be one of the major revenue sources for the City. Drought conditions, conservation practices and competitiveness are all factors which must be considered.

8.3 Water System

The City of Rockdale presently owns and operates the water distribution system and treatment plants. The System includes water wells for supply, treatment units for the well water, pumping stations, ground storage tanks, and elevated storage tanks.

The distribution system is operated in two pressure planes, called the "High Plane" and the "Low Plane". The distribution system consists of pipes ranging in diameters from one inch to sixteen inches. The materials that make up the pipe include PVC, ductile iron, concrete lined, unlined cast iron and asbestos cement, with the goal of updating all pipes to industry standards.

The City owns and operates two treatment plants, the Mill Street Water Treatment Plant (Mill St. WTP) and the Texas Street Water Treatment Plant (Texas Street WTP).

The Mill Street WTP treats water from three wells located at the airport. The Mill St. WTP utilizes an aeration and filtration process along with chlorination for disinfection. The treated water is then stored in the Mill Street Ground Storage Tank (Mill St. GST). The Mill St. WTP then pumps water into the Mill Street Elevated Storage Tank (Mill St. EST) that serves to also provide storage and maintains pressure throughout the Low Plane. The Texas St. WTP treats water from two wells located at the Texas St. WTP site.

The Texas St. WTP utilizes mechanical aeration and chlorine for disinfection to treat the groundwater from the wells and is stored in the Texas Street Ground Storage Tank (Texas St. GST). The Texas Street WTP pumps water to the Allday Elevated Storage Tank (Allday EST) located on Allday Street. The Allday EST serves as a storage tank and also provides pressure to the High Plane.

8.3.1 Raw Water

The City currently owns and operates five groundwater wells and obtains water from these wells for its water supply. The wells are located in the Carrizo-Wilcox aquifer that provides an adequate supply of water for the city presently and in the future. Two factors will control the need to drill new wells or find other sources of water. One factor will be the future growth of the City and the other being the need to replace an existing well due to malfunction and/or cost to repair the well. The City currently has an emergency tap that is connected to Southwest Milam Water Supply Corporation and is utilized only in the case of an emergency. Maintaining a management strategy to provide a good raw water source is critical to the water system and should be as follows:

- Maintain well logs and maintenance records of the existing wells
- Perform annual inspections of the groundwater tables (Post Oak Savannah Groundwater Conservation District) and in coordination with the Texas Commission on Environmental Quality (TCEQ)
- Test production from wells and perform maintenance as required.

8.3.2 Water Demand

The City currently provides water to over 2400 service connections to customers in and outside of the incorporated limits. The system is maintained to provide adequate pressure and volume to all customers. The City shall plan for each element that would cause the demand to increase such as new subdivisions and businesses.

8.3.3 Water Quality:

The quality of water that is produced from the existing wells has concentrations of iron and manganese that must be removed to meet the primary standards for safe drinking water. The treatment plants remove these constituents to levels below the primary standards. Secondary standards are not required by state

regulations as they are only to meet aesthetic qualities of the water. The water treatment facilities will need to be upgraded to meet the secondary standards.

8.3.4 Water System Improvements

The City continues to do water distribution studies and water treatment studies. The studies provide a good plan on the improvements the City will need to improve the water system. The water system should be reviewed every five (5) years for improvements. The projects include:

8.3.5 Distribution Recommendations:

- Increase pump capacity at Texas St. WTP for the High Plane
- Water line replacement to improve fire flow, low pressures and quality of water
- Replace Mill St. EST
- Provide emergency power to the pump stations
- Continue to upgrade mapping
- Continue to improve on monitoring for water system and alert systems

8.3.6 Water Treatment Recommendations:

- Upgrade Existing Infrastructure at Mill St. WTP and Texas St. WTP
- Add pressure treatment at Mill St. WTP and Texas St. WTP
- Rebuild Mill St. Central Treatment Facility

8.3.7 Water Mains

Major water mains, 12 inches in diameter and larger, should be located approximately one mile apart in each direction. 8-inch diameter water mains should be located approximately one-half mile apart in each direction and about half way between major water mains.

A minimum of 8-inch diameter water mains should be installed in all commercial and industrial areas. A minimum of 6-inch diameter water mains should be installed in all residential areas.

Figure No. 2 Water Distribution System Plan, shows the locations of proposed water mains in the City of Rockdale.

For Water System Schematic see Appendix A. **NEEDS REVISION (waiting on KSA update)**

For Water System Map see Appendix B. **NEEDS REVISION (waiting on KSA update)**

8.4 Wastewater System

The wastewater system is made up of the collection system and the wastewater treatment plant. The collection system consists of clay tile, PVC and cast iron piping ranging in size from 6 inch to 18 inch pipes. The wastewater treatment plant is a sequential batch reactor (SBR) that was put online in February 2007. The current capacity of the plant is 1.25 million gallons per day with a peak two hour flow of 2.5 million gallons per day. The plant is located on Beverly Drive and serves the entire City of Rockdale.

8.4.1 Collection System

The collection system provides sewage services to residential and commercial developments. The system is designed to carry the wastewater to the treatment plant located on Beverly Drive. The older pipes are the cause of Inflow/Infiltration that allows the extraneous water to flow into the sewer system. Improvements to the system are very important and several factors will need to be considered when replacing these lines such as:

- Existing flow and pipe diameter allow for expansion
- Future growth to extend system
- Construction cost

8.5 Wastewater System Plan

8.5.1 General

The City continues to update current wastewater facilities working with City engineers and repairing lines with grant and City funds.

The areas of anticipated growth are within the drainage areas of Ham Branch, Little Ham Branch, and Rockdale Branch. FIGURE NO. 1 shows the different drainage areas studied, and they are designated by Letters A through K.

The acreage in each drainage area was determined, excluding those designated by school grounds, parks, the proposed Relief Route, cemeteries,

and areas in the 100-year flood plain. Wastewater flows were calculated as though the drainage areas were fully developed. Then preliminary pipe sizes were determined, using grades developed from U.S.G.S. contour maps of the area, to convey the accumulated wastewater to the treatment plant.

8.5.2 Wastewater Characteristics and Flows

1. Characteristics

The City's wastewater system provides service to residential, commercial, and a minimum of industrial development. In addition to the domestic and industrial wastewater flows contributed by the various types of developments, extraneous water (infiltration/inflow) also enters the collection system through faulty materials or breaks in the collection system.

The domestic wastewater is that sewage that can be attributed to residences and commercial establishments and is quite often expressed as a certain percentage of water usage. Domestic sewage or wastewater is usually of normal strength and presents no special problems in collection or treatment.

Industrial wastewater is comprised of the discharge from establishments engaged in the various aspects of processing or producing some material or product. Many times this type of waste is of a nature that requires special processes and equipment for sufficient treatment before it can be safely discharged into a stream. If this type of wastewater is discharged into a sewerage system at full strength and in appreciable quantities, the pipe lines and pump stations can suffer damage, and the chemical-biological composition of the sewage entering the plant may necessitate changes in the treatment operations. Unlike domestic sewage, which usually has fairly constant characteristics, industrial wastes will vary according to the type of industrial process, time of day, day of the week, season of the year, volume of business, and numerous other conditions.

At the present time, there are very few industrial wastewater contributors in the City. In the future, consideration should be given to requiring industries to pre-treat their wastes through the enforcement of an industrial waste ordinance. Of course, the location, type, and capacity of the required pre-treatment facilities will be according to the specific needs at each industrial site.

Extraneous wastewater, known as infiltration/inflow, is that part of the wastewater flow that comes from stormwater run-off and groundwater. This water enters the sewage collection system by leakage through faulty pipe joints, manholes, cracked pipe, and any connections that may not be watertight. All wastewater collection systems have some infiltration/inflow because it has not been economically feasible to build and maintain a watertight sewerage system, except in areas where the sewer mains are constructed below the groundwater table.

2. Flows

In analyzing the principal sewer mains in the sanitary sewerage system, projected peak flows were routed through the system using Manning's Formula for the flow of water by gravity through pipe.

Manning's Formula is $V = (1.486/n) R^{2/3} S^{1/2}$, in which "S" is the slope ratio and "R" is the hydraulic radius. The coefficient of roughness "n" was assumed to be 0.013, which is believed to be an average, typical of the entire system, although some of the older sewers may have a higher coefficient of roughness.

In a review of recent flow records of the City, it was determined that the wastewater flows varied from 90 gallons per capita per day (GPCD) in dry weather to 110 GPCD during wet weather conditions. These compare favorably with the recommended wastewater flows of the Texas Commission on Environmental Quality (TCEQ) of 100 GPCD for average dry weather flow and an infiltration flow of 20 GPCD. Therefore, the recommended flows of TCEQ were used in the preliminary designs of facilities in this Wastewater Plan.

The criteria used in establishing flow characteristics for each drainage area were based upon estimated population densities that might be expected for each type of zoning or land—use development. In this Plan, a population equivalent of 6 people per acre was assumed for all residential, commercial, and industrial development.

In the design analysis of the system of wastewater mains, average flows do not represent the flows which the mains must be expected to handle. The wastewater mains should be designed to carry the projected peak flows which can range from 2.5 to 5.0 times the average flow, depending upon

the drainage area and population served by the wastewater main. The peak flows should include all wastewater contributed from domestic, commercial, and industrial developments with allowances for peak infiltration/inflow.

For purposes of this Report, peak flows are based on the Babbitt Formula, $M=5/p^{0.2}$, where M is the ratio of maximum to average for sewage flows and p is the accumulated population in thousands. The Babbitt Formula is illustrated by FIGURE NO. 2.

FIGURE NO. 1, shows the drainage areas studied and the preliminary pipe sizes that will be required to convey the wastewater from those areas when fully developed.

The following table shows the total acreage, total contributing population equivalent, and total maximum flow rates in million gallons per day (MGD) anticipated from each drainage area studied.

<u>Area</u>	<u>Total Acres</u>	<u>Total Population Equivalent</u>	<u>Maximum Flow Rate (MGD)</u>
A	1,146	6,876	2.81
B	1,758	10,548	3.92
C	886	5,316	2.30
D	136	816	0.49
E	894	5,364	2.32
F	175	1,050	0.57
G	60	360	0.22
H	272	1,632	0.88
I	115	690	0.42
J	494	2,964	1.42
K	267	1,602	0.87

8.5.3. Existing Collection and Treatment Facilities

1. Collection System

The collection and transmission of wastewater in Rockdale is principally accomplished by a gravity flow system which consists of pipes ranging in size from 4 inches to 21 inches in diameter. The majority of the collection system, however, is comprised of 6-inch and 8-inch diameter mains.

The collection system conveys wastewater to the treatment plant from four principal areas. These are as follows:

- a. The Little Ham Branch consists of two 8-inch interceptors. The first interceptor begins at the Meadow Drive/Alcoa Street intersection; then flows southward along Meadow Drive and crossing Cameron Avenue (U.S. Highway 79); then flows eastward parallel to the Union Pacific Railroad to the Little Ham Branch; then flows southward along the Little Ham Branch. The second interceptor begins east of the Childress Street/Cameron Avenue intersection; then flows southward to the Union Pacific Railroad and continuing in the Little Ham Branch parallel to the first described interceptor. Both 8-inch interceptors connect to a 10-inch interceptor that flows along the Little Ham Branch and culminates in a 12-inch interceptor before reaching the wastewater treatment plant located on the south side of the City.
- b. The western portion of the City consists of 6-inch and 8-inch collection lines. The primary flows are from the Murray Street/Calhoun Boulevard intersection southward along Calhoun Boulevard to Cameron Avenue. An 8-inch interceptor flows along the north side of Cameron Avenue eastward to the above-described 8-inch interceptor located in Meadow Drive.
- c. The Ham Branch area consists of 6-inch collection lines in the northern portions of the City beginning along F.M. 487 (Ackerman Street) and F.M. 908 (Main Street) and flowing southward to the Cameron Avenue/Ham Branch crossing. An 8-inch interceptor begins at Cameron Avenue and flows southward along Ham Branch and connects to a 15-inch interceptor south of the Mill Street Water Treatment Plant. The 15-inch interceptor flows southward along Ham Branch and connects to a 21-inch interceptor located along the Old Railroad right-of-way before reaching the wastewater treatment plant. This area serves the northern and central portions of the City including the downtown district.

- d. The Rockdale Branch includes the eastern portion of the City's service area. The collection system consists primarily of 6-inch lines. An 12-inch interceptor begins at the Third Street/Upton Street intersection and flows westward along Third Street to MLK Drive, then southward to the Rockdale Branch, and traversing southwesterly along the Rockdale Branch to the above mentioned 21-inch interceptor.

FIGURE NO. 3 shows the layout of the existing principal wastewater mains in the collection system, 6 inches in diameter and larger,

2. Treatment Plant

The wastewater treatment plant consists of an influent lift station, bar screen, SBR, digester, drying beds, sludge dewatering boxes and ultra violet disinfection. The SBR is permitted at 1.25 MGD and as population and industry grow the plant should expand to meet any of these needs. Sludge dewatering boxes were added in 2011 to the plant to assist the sludge drying beds during rainy events.

8.5.4 Proposed Collection and Treatment Facilities

1. Criteria for Design

The overall objective in the preparation of a wastewater plan for the City of Rockdale is to present a general guide for the future development of the City's wastewater collection system which can be integrated with the future growth of the City and its surrounding area. Due to the large amount of relatively open or undeveloped land which exists in the areas surrounding the City, recommendations for initial improvements should be confined to the existing areas of development and to those projects which justify immediate attention.

As the needs arise to construct future wastewater mains in the locations shown, a detailed study should then be made of that specific area in order to determine the pipe size, alignment, expenditure, and the type of development and wastewater flow the area is expected to have. Due to the large size of some drainage areas and small amount of development, it is highly probable that one or more intermediate steps or phases of construction may be required in the interim period prior to accomplishing the total plan for the future overall wastewater mains shown on FIGURE NO. 1. However, with an overall plan as a guide, there should be little difficulty in constructing facilities that would be compatible with future growth and expansion. Also, as required easements or

rights-of-way are acquired, they should be of sufficient width to provide for the installation of future parallel mains.

The smaller diameter mains (6-inch and smaller) providing service in the wastewater collection system need continued surveillance to identify problem areas which may re-establish the priorities for proposed improvements.

Major problems requiring large capital expenditures may need to be handled through bond issues; however, as the funds, personnel, and equipment of the City will permit, the smaller problems should be budgeted for and handled by the City as part of an ongoing annual program of sewerage system improvements.

The design for the new wastewater mains should conform to the criteria of the TCEQ, and particular attention should be given to the minimum grades that provide cleansing velocities (2.00 feet per second or greater). It is recommended that the following sizes of pipe should be designed and constructed with the minimum grades indicated.

RECOMMENDED MINIMUM SEWER MAIN GRADES

<u>Pipe Diameter (I.D. in inches)</u>	<u>Minimum Grade (ft./100 Ft. of Pipe)</u>	<u>Q* MGD.</u>	<u>Velocity* (Ft./Sec).</u>
6	0.50	0.259	2.02
8	0.33	0.458	2.03
10	0.25	0.735	2.05
12	0.20	1.04	2.04
15	0.15	1.67	2.11
18	0.11	2.35	2.06
21	0.09	3.24	2.08
24	0.08	4.14	2.04
36	0.045	9.65	2.11

*Based on n = 0.013

For any sewer pipe larger than 24 inches in diameter, the grade that will maintain a minimum velocity of 2.0 feet per second and carry the anticipated flow may be determined by Manning's formula.

The manholes in a wastewater collection system provide a convenient access to the sewer pipe for inspection of flows and maintenance purposes. However, if the manhole is poorly constructed or the spacing is not properly made, the value of the manhole is lost. Again, the TCEQ recommends specific criteria for the design and construction of manholes in the wastewater system. These recommendations should be reviewed and adopted as minimum standards of the City. A recommended maximum spacing and diameter for manholes are shown in the following table according to the largest pipe entering the manhole.,

DESIGN CRITERIA FOR SANITARY SEWER MANHOLES

Pipe Diameter	Maximum Spacing	Manhole Diameter
8"-15"	500'	4.0'
18"	600'	4.0'
21"-24"	600'	5.0'

Where wastewater mains will not be extended beyond a given point, it is recommended that a cleanout be constructed at the end of the pipe. This will, at least, provide a means for cleaning the pipe, if it becomes necessary.

2. Collection System

a. Drainage Area A

Drainage Area A includes the western portion of the City's wastewater collection system. The system consists of 6-inch and 8-inch collection lines that flow from the northern portion of Drainage Area A southward to and along Cameron Avenue into two 8-inch interceptors located south of the Childress Street/Cameron Avenue intersection. The two 8-inch interceptors flow along Little Ham Branch into a 10-inch interceptor which connects to a 12-inch interceptor before reaching the treatment plant.

As anticipated flows increase in Drainage Area A, it is recommended that 8-inch, 10-inch, 12-inch and 15-inch interceptors be installed in the drainage

area. A 10-inch interceptor is recommended to be installed along Calhoun Boulevard flowing southward across Cameron Avenue to the Union Pacific Railroad and connecting to a 15-inch pipe traversing southward to a proposed lift station located approximately 3/4 mile south of the Union Pacific Railroad.

It is also recommended that an 8-inch interceptor be installed along the east side of the Oak Park Subdivision and flow southward, and connect to a proposed 12-inch interceptor flowing eastward along U.S. Highway 79 which culminates into the previously mentioned 15-inch interceptor. A proposed lift station will pump the anticipated flows eastward via force main to a new 15-inch interceptor which culminates into a proposed 18-inch interceptor located along Little Ham Branch before reaching the treatment plant.

It is recommended that 8-inch and 10-inch interceptors be installed south of the Union Pacific Railroad in Drainage Area A and located along Little Ham Branch, and connect to the above mentioned 18-inch interceptor.

b. Drainage Area B

The existing wastewater collection system in Drainage Area B consists of 6-inch and 8-inch lines and includes an area from the treatment plant through the central portion of the City, and northward along F.M. 487 and F.M. 908 to the proposed U.S. Highway 79 Relief Route. In the western portion of Drainage Area B, it is recommended that an 8-inch and 10-inch interceptor be installed beginning along the west side of an electrical substation located along F.M. 908 and flowing southward to a proposed 12-inch interceptor north of Wilcox Street. It is also recommended that two 8-inch interceptors be installed north of the Rockdale Junior High School along Bushdale Road and flow eastward to the before mentioned 12-inch interceptor.

A 15-inch interceptor is proposed to be installed beginning north of Wilcox Street and flowing southward along Wilcox Street to the Cameron Avenue /Ham Branch intersection. An additional 10-inch interceptor is recommended to be installed east of the Junior High School beginning in Highland Street and flow eastward and connect to the proposed 15-inch interceptor at the Wilcox Street/Hillyer Street intersection.

The eastern portion of Drainage Area B is recommended to consist of three interceptor routes. One route, consisting of three 8-inch and one 12-inch interceptors, is proposed to begin along F.M. 487 traveling southward along Ham Branch to Main Street and connect to a proposed 15-inch interceptor to be installed along Ham Branch north and west of the Main Street/San Andres Street intersection.

The second route is proposed to begin with an 8-inch interceptor west of Texas Street and flow southward and connect to a proposed 10-inch interceptor beginning east of the Ferguson Street/Smith Road intersection and traverse along the east channel of Ham Branch and connect to the previously mentioned 15-inch interceptor.

The third route is recommended to begin at the Bell Street/Texas Street intersection and flow westward to San Gabriel Street, southward to an alley between Cameron Avenue and Bell Street, and then westward through the alley and connect to the above-mentioned 15-inch interceptor in Ham Branch.

The recommended route of the proposed 15-inch interceptor is along Ham Branch from north and west of the Main Street/San Andres Street intersection until crossing Cameron Avenue. This will connect to the 18 inch interceptor and flow southward along Ham Branch.

c. Drainage Areas C and J

The C Drainage Area consists primarily of the eastern portion of the City's wastewater collection area. Two interceptor routes are proposed in the drainage area. In the first route, it is recommended that an 8-inch interceptor be installed beginning east of Texas Street in the Old Railroad right-of-way and flow southward to a proposed 10-inch interceptor beginning north of the Belton Street/Pear Street intersection. An additional 8-inch interceptor is recommended to be installed beginning north of Belton Street and flow westward to the proposed 10-inch interceptor. The 10-inch interceptor is proposed to flow along Rockdale Branch southward to Cameron Avenue. This will connect to the 12 inch line in Rockdale Branch.

The second route is recommended to consist of a 12-inch interceptor and begin approximately 1,000 feet west of the U.S. Highway 77/County Road 333 intersection and flow parallel to U.S. Highway 77 southward to U.S. Highway

79 and across the Union Pacific Railroad into Drainage Area J. The 12-inch pipe will continue flowing southward in Drainage Area J to Third Street east of the Oaklawn Cemetery. From this point, it is recommended that a 15-inch interceptor be installed flowing southward to U.S. Highway 77 into a proposed new lift station located approximately 1,000 feet east of the U.S. Highway 77/F.M. 908 intersection.

It is also recommended that an 8-inch interceptor be installed south of the Riddle Cemetery and flow eastward to the 15-inch pipe along U.S. Highway 77. A lift station and force main will then be installed to pump flows westward into a 15-inch interceptor located in Drainage Area K.

d. Drainage Area D

Anticipated flows in Drainage Area D are proposed to flow westward in an 8-inch interceptor along County Road 306 to a proposed new lift station to be located west of County Road 306 and along the proposed U.S. Highway 79 Relief Route. From this lift station, the wastewater will be pumped in a force main eastward along U.S. Highway 79 to a proposed 12-inch interceptor in Drainage Area A.

e. Drainage Area E

Studies of Drainage Area E show that wastewater should be collected in three separate 8-inch interceptors and flow in a 10-inch interceptor to a proposed new lift station to be located north of the proposed U.S. Highway 79 Relief Route. Wastewater will then be pumped southward via a force main to U.S. Highway 79 and connect with the proposed force main serving Drainage Area D.

f. Drainage Area F

Wastewater in Drainage Area F is proposed to flow northward in an 8-inch interceptor to a proposed lift station located along the proposed U.S. Highway 79 Relief Route and west of Bushdale Road. Wastewater will then be pumped through a force main along the proposed Relief Route to an 8-inch interceptor located in Drainage Area G.

g. Drainage Area G

The proposed 8-inch interceptor in Drainage Area G is recommended to flow eastward for approximately 1,000 feet along the proposed U.S. Highway 79 Relief Route to a new lift station to be located west of FM. 908. Flows will then be pumped through a force main southward to a proposed 10-inch interceptor located in Drainage Area B.

h. Drainage Areas H and I

Three 8-inch interceptors are recommended in Drainage Area H and are proposed to flow northward along the Old Railroad right-of-way to a proposed new lift station to be located along the proposed U.S. Highway 79 Relief Route. Wastewater will then be pumped via a force main to a 10-inch main to be located in Drainage Area I and flow eastward to a proposed new lift station located along U.S. Highway 77. An 8-inch interceptor is also recommended north of County Road 333 flowing northward to the lift station. Wastewater will then be pumped through a force main to the proposed 12-inch interceptor located west of U.S. Highway 77 in Drainage Area C.

i. Drainage Area K

In Drainage Area K, a 15-inch interceptor is recommended to begin approximately 1,000 feet north of the U.S. Highway 77/F.M. 908 intersection and flow westward approximately 3,000 feet to a proposed new lift station to be located east of the treatment plant along the Old Railroad right-of-way. It is also recommended that an 8-inch interceptor be installed beginning east of the Beverly Street/F.M. 908 intersection and flow southwesterly to the previously mentioned lift station. From the lift station, it is recommended that wastewater be pumped via a force main westward to the 21-inch interceptor in Drainage Area B.

8.5.5 Conclusions and Recommendations

1. The City has a wastewater collection system that flows by gravity to an existing wastewater treatment plant located approximately one mile south of the Cameron Avenue/Wilcox Street intersection.
2. The collection mains vary in size from 6-inch pipes, principally in residential areas, to 12-inch pipes which enter the treatment plant site.

3. The existing and proposed wastewater collection system was evaluated and preliminarily sized to meet the design criteria of TCEQ. In the design of future wastewater facilities, the City should continue to design its facilities to meet at least the minimum criteria of TCEQ, as included herein.
4. Large drainage areas are located in all directions around the City, and the effluent flows from future development in these areas will flow by gravity primarily along the Ham Branch, Little Ham Branch, Rockdale Branch, and then to the wastewater treatment plant.
5. It is recommended that, hereafter, the minimum size of wastewater lines are 8 inches in diameter. Only on dead-end lines, 500 feet and shorter, should 6-inch pipes be considered, and then they should terminate with a cleanout.
6. Along with additional wastewater flows occurring from development along the proposed U.S. Highway 79 Relief Route, it is recommended that the proposed interceptors in Drainage Area B be installed beginning at the wastewater treatment plant to (a) east of the Rockdale Junior High School, (b) north of the Rockdale Youth Baseball Complex along Wilcox Street, (c) north of the I.O.O.F. Cemetery along F.M. 908, (d) to the Rice Street/Ferguson Street intersection, and (e) to the Bell Street/Texas Street intersection.

8.6 Solid Waste Service

Garbage service is mandatory to property owners and provided by the City through contract. The City might consider a composting and mulching operation as a potential revenue source and environmental issue.

8.7 Water, Wastewater and Sanitation Rates

See City Fee Schedule at www.rockdalecityhall.com.

8.8 DRAINAGE PLAN

8.8.1 SECTION I - INTRODUCTION

8.8.2 Purpose

The purpose of this document is to provide the City of Rockdale, Texas with information to use as a guideline in the planning and development of a comprehensive stormwater management system. This information will be used

in conjunction with the Stormwater Management Design Criteria Manual as adopted by the City of Rockdale. This document is a part of the Comprehensive City Plan prepared for the City of Rockdale.

8.8.3 Scope

This document will present recommendations to the City of Rockdale for use by the City and developers in the design of future storm drainage facilities. The recommendations will involve several aspects of the overall stormwater drainage characteristics of the City and the immediate surrounding areas including but not limited to:

- Analysis of the drainage areas in and around the City.
- Determination of drainage areas and runoff within the presently developed areas of the City.
- Preparation of a separate document that will serve as a drainage design manual.
- Preparation of a general plan for proposed major improvements to the existing storm drainage system.
- Preparation of a general plan for proposed improvements in areas that currently experience flooding and/or ponding due to the absence of an existing system.
- Recommended locations and alignments for major drainage facilities including open channels, and enclosed inlet and pipe systems.

8.8.4 Background

The City of Rockdale, Texas is located in the east-central part of the State, in the southern half of Milam County. The City lies approximately 170 miles northwest of the Gulf of Mexico in the coastal plain.

The soils in the area consist of several types including Silstid Series, Padina Series, Rader Series, Minerva Series and Edge Series. These soil types have drainage characteristics that range from well-drained loam in the Silstid, Padina and Minerva Series to very slowly permeable silts in the Rader and Edge Series. The well-drained, moderately permeable Padina soils are located in the far west and northwest part of the City. The well drained, moderately permeable Silstid

soils are found in the near west and central part of the City. The very slowly permeable soils in the Rader and Edge Series are found in the eastern and southeastern part of the City.

The drainage in and around the City of Rockdale is predominantly from the northwest to the southeast. There is a drainage divide in the northwest corner of the extraterritorial jurisdiction (ETJ) that separates the major drainage basins of Brushy Creek and East Yegua Creek. The topography is such that the City is then divided into six (6) minor drainage basins that drain into tributaries of East Yegua Creek. These tributaries empty into the main channel of Yegua Creek approximately 4.5 miles south of the City.

The tributaries are named in some areas of the City. The tributaries are as follows, starting from the west and moving to the east along the roadway of U.S. Highway 79: (See tributary/creek and flood plain Map)

- A channel that begins at the intersection of San Jacinto Drive and Cameron Avenue. This channel flows to the south for approximately two (2) miles before turning east. The channel joins several other small tributaries before merging with the Ham Branch Creek about 2.5 miles south of the City. This channel is unnamed according to information available at the time of this report. This document will subsequently refer to the tributary as the "West Channel".
- A channel that begins at the intersection of Childress Drive and Cameron Avenue. This channel becomes the Little Ham Branch as it flows to the south of the City.
- A channel that joins the Ham Branch Creek on the south side of Cameron Avenue between Wilcox Street and Scarborough Street. This channel is unnamed according to information available at the time of this report. This document will subsequently refer to the tributary as the "West Ham Branch Channel".
- The main channel of the Ham Branch Creek that crosses Cameron Avenue between Wilcox Street and Scarborough Street.
- The channel that is known as the Rockdale Branch Creek that crosses Cameron Avenue between Texas Street and Pear Street.

- A channel that crosses Cameron Avenue on the east side of the City at approximately the current City Limits. This channel is unnamed according to information available at the time of this report. This document will subsequently refer to the tributary as the "East Channel".

An aerial representation of these channels is shown in Figure I-1. These channels and creeks are overgrown with weeds, grass and small trees in many places. There is also a high degree of sedimentation along many reaches as well as accumulated debris. The result is a reduction in capacity to convey stormwater runoff from major storm events. The demand on the capacity of these channels is expected to increase significantly as the City develops. Any future improvements in the upstream reaches of these tributaries should take into account the potential downstream effects of the development. This document will provide guidelines and recommendations to successfully manage future development related drainage issues.

8.8.5 Design Criteria Overview

8.8.5.1 Determining Runoff

There are several methods available to professionals in the field of hydrology to determine the amount of rainfall runoff from a given storm event. The most commonly used and accepted is known as the Rational Method. This method involves several key factors including the size of the area under investigation, the surface characteristics of the area, the topography of the area, the intensity of the storm, and time factors such as the duration and frequency of the storm in question. The Rational Method applies the equation:

$$Q = C * I * A$$

Where Q represents the quantity of rainfall runoff in cubic feet per second, (cfs); C represents a coefficient that indicates the percentage of runoff from a rainfall event; I represents the intensity of rainfall in inches per hour; and A represents the size of the drainage area in acres.

8.8.5.2 Area Size

The size of the area is determined by the natural topography of the area. The area is surrounded by drainage "divides" that follow the high points in the adjacent terrain. The unit of area used in the Rational Method is an acre.

8.8.5.3 Surface Characteristics and Runoff Coefficients

The runoff coefficient is a unitless coefficient that reflects the surface conditions and the ability of the soils to absorb or retain the excess rainfall from the storm event. This coefficient can range from as low as 0.3 for pastures, parks, and cemeteries with thick grass cover to 0.90 for large commercial shopping areas where parking and street pavement cover much of the area and are considered impervious to rainfall absorption. These latter types of areas present problems for the planner in that large areas of impervious cover can cause severe flooding in downstream areas. The following Table may be used to estimate the runoff coefficient for various land uses:

Land Use	Runoff Coefficient "C"
Residential	0.6
Commercial	0.9
Industrial	0.8
Multiple Unit Dwelling	0.8
Parks	0.4
Cemeteries	0.3
Pasture	0.4
Woods	0.3
Cultivated	0.5
Shopping Centers	0.9
Paved Areas	0.9
Schools	0.7
Patio Homes	0.6

8.8.5.4 Rainfall Intensity

The intensity of the rainfall during a storm event is determined by the use of curve data developed from the National Weather Service Rainfall-Frequency Data as presented in Technical Memorandum NWS Hydro-35, dated June, 1977, and Technical Paper No. 40, dated May, 1961. The curves have been prepared for a range of storm frequencies and durations. The duration of the storm is assumed to be equal to or greater than the time of concentration. The terms frequency and time of concentration will be described very briefly in the following paragraphs. However, reference should be made to the Stormwater Management Design Criteria Manual for a complete discussion on these concepts. Figure I-a shows a typical set of Rainfall Intensity Curves for a range of storm durations.

8.8.5.5 Frequency

The design discharge resulting from storm runoff is dependent upon the required level of protection, which represents a certain "return" period, or frequency of occurrence, in years. For example, for a storm event that has a design frequency of five (5) years, the probability that a storm of equal or greater severity occurring at least once in five (5) years is 100%. Similarly, the probability that a storm of equal or greater severity occurring at least once every year is 20%. The same principle applies for the entire range of frequencies used in stormwater drainage design. A 25-year design frequency storm event has a 100% probability of occurring at least once in 25 years, and a 4% chance of occurring at least once every year. This report recommends that the City of Rockdale use the 25 -year storm as a basis for future planning.

8.8.5.6 Time of Concentration

The time of concentration (t_c) used in determining the rainfall intensity is defined as the time required by a theoretical drop of water to travel from the most hydraulically remote point of the drainage area to the point of interest. This time is a combination of the overland travel time, channelized travel time, and the travel time in the drainage facilities. The overland travel time is the time required by the drop of water to travel a certain overland distance where there is no defined channel, gutter or storm drainage facility. The maximum overland travel distance allowed is 300 feet, after which the flow should be considered channelized. If there is evidence of a well-defined channel in the upper

reaches of a drainage area, channelized flow should be considered even though the overland travel distance will be only a fraction of the 300-feet allowable. The inlet time of concentration is defined as the sum of the overland travel time and the channelized travel time required by a drop of water to travel from the most hydraulically remote point of the drainage area to the first inlet into the storm drainage system. The Table below may be used to estimate the minimum time of concentration for inlets used in various types of land uses.

Land Use	Minimum Inlet Time (Minutes)
Residential	15
Commercial	10
Industrial	10
Multiple Unit Dwelling	10
Parks	15
Cemeteries	15
Pasture	15
Woods	15
Cultivated	20
Shopping Centers	10
Paved Areas	10
Schools	15
Patio Homes	15

8.8.5.7 Channels

The three types of drainage channels that will be recommended in this report are Type I, Type II, and Type III. Figure I-b shows the typical cross sections of these three types of channels. A Type I channel is a channel that is mostly

unimproved with respect to cross section or slope. The channel is intended to remain in its natural state with minor maintenance activities such as mowing and debris removal performed at appropriate intervals. This type of channel has the largest right-of-way and easement requirements.

8.8.6 Organization

This document will be organized to present findings, recommendations, proposals, and conclusions in the following manner:

- A Section that will contain a brief discussion of the major and minor drainage basins that comprise the overall stormwater drainage system of the City and immediate surrounding areas.
- A Section that will contain descriptions of the various types of stormwater drainage control structures as well as some of the benefits that accompany the use of these structures.
- A Section that will present proposals and suggestions for the locations of future drainage improvements that will include the appropriate use and placement of the various types of structures.
- A Section that will present a summary of conclusions and recommendations, based upon available information, that will serve as a guideline for the City of Rockdale in the planning of future stormwater drainage systems.

8.9 SECTION II – MAJOR AND MINOR DRAINAGE BASINS

8.9.1 DRAINAGE BASINS

The City of Rockdale is located in a topographical area which creates eighteen (18) major and minor drainage basins within an area bounded by an imaginary line drawn approximately one mile outside the present City Limit line. The three largest basins are in excess of 600 acres in area, with the largest being greater than 780 acres. There are several intermediate-sized basins ranging in size from 140 acres to 440 acres. The smaller basins range from 28 acres to 130 acres. A list of the drainage areas and their designations is as follows:

<u>Drainage Area Name</u>	<u>Drainage Area Size (Acres)</u>
W1	198
W2	341
W3	28
C1	438
C2	606
C3	785
C4	137
E1	129
E2	321
E3	301
SW1	309
SW2	65
SC1	144
SC2	399

SE1	163
SE2	396
S1	151
S2	84

Figure II-1 illustrates the drainage basins and their relative location within the City and surrounding area.

8.9.2 Drainage Areas, Basins and Runoff

This section will present the drainage areas shown in Figure II-1 with a brief discussion of the area's estimated runoff, the drainage channel that serves the area, the present surface characteristics of the area, and the potential changes that may be expected with future development.

8.9.2.1 Drainage Area - W1

This area is located on the west side of the study area. The drainage basin includes the Oak Park community. The area is approximately 25% developed at this time. The area is approximately 198 acres in size and will generate between 220 to 390 cfs, depending on the severity of the storm and the type of future development. The runoff is conveyed downstream via a natural channel which passes under U.S. Highway 79 through an improved box culvert that has been installed as part of the highway improvements by the Texas Department of Transportation (TxDOT). The channel joins with another channel at the southernmost point and continues to flow to the south.

8.9.2.2. Drainage Area - W2

This area is located in the western portion of the City and includes the Edgewood and Hogan Subdivisions and portions of the Linwood, Coffield #4, Coffield #3, Westwood, Parkview and Hillcrest 1 Subdivisions. These areas are residential in nature with some light commercial use along U.S. Highway 79. The area is approximately 50% developed at this time. The area is approximately 340 acres in size and will generate between 490 to 860 cfs, depending on the severity of the storm and the type of future development.

The runoff is conveyed downstream via overland flow, small local natural channels, streets, gutters and a small enclosed pipe system. The pipe system discharges through two (2) twenty-four inch (24") pipes into a culvert at the intersection of San Jacinto Drive and West Cameron Avenue. The culvert discharges into an improved natural channel and continues to flow south to another culvert under the railroad tracks. This culvert is undersized at this point and will not accommodate the anticipated flows from future development within this drainage basin. This situation will be discussed in further detail in Section IV.

8.9.2.3. Drainage Area - W3

This area is undeveloped and is located south of the railroad tracks adjacent to the drainage channel that serves Drainage Area - W2 described above. The natural channel continues to the south where it joins the channel that serves Drainage Area - W1. The area is relatively small in size and will contribute 25 to 48 cfs of surface runoff to the creek system.

8.9.2.4. Drainage Area - C1

This area contains land uses that range from school districts, residential tracts and medical offices to commercial properties along U.S. Highway 79. The school districts include both Rockdale Senior High School and the Junior High School. The residential tracts include the Meadowbrook, Linwood 1 & 2, Coffield 1 & 2, Town East, McGranahan and Smith Subdivisions. The area is over 95% developed at this time. The land use and level of development in this area indicates a surface runoff coefficient of 0.60. The area is approximately 440 acres in size and can generate as much as 1,230 cfs.

The runoff is conveyed downstream via overland flow, small local natural channels, streets, and gutters onto Meadow Drive and Childress Drive. The runoff then enters culvert pipes at the intersections of those streets and West Cameron Avenue. The flow on Meadow Drive and Childress Drive is intercepted on the north side of the highway right-of-way and conveyed in box culverts under the highway to discharge into a natural channel south of the Childress Drive intersection. The channel continues to the south where it enters another box culvert to pass under the railroad tracks. This box culvert is also undersized at this point and will not accommodate the anticipated flows from current

development within this drainage basin. This situation will also be discussed in further detail in Section IV.

8.9.2.5. Drainage Area - C2

This area is the second largest drainage basin in the study area. The drainage area is located in the west central part of the City and is bounded by the major drainage divide to the north of the City. The area is predominately residential in use with a portion of IOOF Cemetery, several baseball fields, and undeveloped pasture included within the boundaries. The developed portion consists primarily of established residential neighborhoods with small to medium sized lots. The undeveloped area in the north will have a high potential for development, particularly with the prospect of a Relief Route being built along the northern boundary of this drainage area. The area is approximately 40% developed at this time. The area is approximately 605 acres in size and will generate between 870 and 1,540 cfs, depending on the severity of the storm and the type of future development.

The runoff is conveyed downstream via overland flow, small local natural channels, streets, and gutters which discharge into a well-defined natural channel at various points along the channel course. The channel meanders from the northwest to the southeast for about a mile before turning to the south and roughly paralleling North Wilcox Street to a point just south of Cameron Avenue. At this point the channel joins the main channel of Ham Branch and continues south through Drainage Area – SC1.

The channel is currently severely choked with grass, weeds, and debris from past storms in several places. This blockage in the stream bed occurs mainly along the reaches in developed neighborhoods and severely limits the capacity of the channel to effectively convey the runoff. The channel is irregular in cross section which causes rapid changes in the flow velocity. This leads to scouring and erosion problems along the stream course. As the areas to the north are developed, this channel will require considerable improvement and modification to ensure sufficient capacity. These improvements may include:

- The widening of the channel in some areas.
- Reshaping the channel to a more hydraulic efficient cross section in some areas.

- Lining the channel with concrete sides and bottom.
- Cleaning debris from the stream bed.
- Regular mowing of grass-lined sections to maintain a uniform vegetal cover.
- Installing a non-erosive lining, such as concrete, in sharp bends and corners of unlined portions.
- Realignment of the channel to reduce the number of sharp bends and corners.
- Modification and/or replacement of street crossings with properly designed box culverts to improve hydraulic efficiency.

These improvements and modifications will increase the capacity of the channel to accommodate future development in the upstream reaches. The planner must also bear in mind that this increase in capacity along the upstream reaches will ultimately flow into the downstream reaches, and appropriate consideration will be required to prevent creating downstream problems while resolving the upstream drainage issues.

8.9.2.6. Drainage Area - C3

This drainage area is the largest basin within the study area. The drainage area is located in the east central part of the City and is bounded by the major drainage divide to the north of the City. The area is predominately residential in use and includes a large portion of the Original Township of Rockdale as well as a portion of IOOF Cemetery and undeveloped pasture land within the boundaries. There is currently some light industry along Farm-to-Market Roads 908 and 487. The developed portion consists primarily of established residential neighborhoods with small to medium sized lots. The undeveloped area in the north will have a high potential for development, particularly with the prospect of a Relief Route being built along the northern boundary of this drainage area. The area is approximately 35% developed at this time. The area is approximately 785 acres in size and will generate between 1,120 and 1,990 cfs, depending on the severity of the storm and type of future development.

The runoff is conveyed downstream via overland flow, small local natural channels, streets, and gutters which discharge into the main channel of Ham Branch Creek at various points along the channel course. This creek is the

largest of the drainage channels, and all but one of the remaining channels are tributaries to this creek and join at some point downstream.

The creek channel flows south through the City and becomes progressively larger in capacity as the tributaries discharge their runoff flows into the creek. There are some locations along the stream bed that are restricted by unchecked vegetal growth, driftwood and debris from previous storms, and trash articles. Because this creek is the main drainage channel for the entire Rockdale area, it is essential that a concerted effort be made by the appropriate agencies to keep the main channel clear from these types of blockage. As the undeveloped areas are developed, drainage easements such as those described in the Stormwater Management Design Criteria Manual should be acquired to allow access for maintenance personnel and equipment.

As the areas to the north are developed, the creek channel will require some degree of improvement and modification to ensure sufficient capacity. These improvements may include:

- The widening of the creek channel in some areas.
- Reshaping the creek channel to a more hydraulic efficient cross section in some areas.
- Lining the channel with concrete sides and bottom.
- Cleaning debris and trash from the stream bed.
- Regular mowing of grass-lined sections to maintain a uniform vegetal cover.
- Installing a non-erosive lining such as concrete in sharp bends and corners of unlined portions.
- Realignment of the channel to reduce the number of sharp bends and corners.
- Modification and/or replacement of street crossings with properly designed box culverts to improve hydraulic efficiency.

These improvements and modifications represent the most cost-effective means to increase the capacity of the creek channel to accommodate future development along Ham Branch as it flows through the City and its Extraterritorial Jurisdiction (ETJ). There are other options that may be considered

at such time that a particular problem area is defined and solutions are designed. As in the case of the tributaries to this creek channel, the planner must also bear in mind that this increase in capacity along the upstream reaches will ultimately flow into the downstream reaches, and appropriate consideration will be required to prevent creating downstream problems while resolving the upstream drainage issues.

8.9.2.7. Drainage Area - C4

This area is located in the northeastern part of the City and is also bounded by the major drainage divide to the north of the City. Most of the area is currently undeveloped; however, tax assessment maps indicate that approximately 40% of the land is planned for high-density residential use. The area has a fair to high potential for development in conjunction with the proposed thoroughfare plan and Relief Route construction. The area is approximately 137 acres in size and will generate between 170 and 305 cfs, depending on the severity of the storm and the type of future development.

The runoff is conveyed downstream via overland flow, small local natural channels and gutters which discharge into a poorly-defined natural channel at various points along the channel course. The channel meanders from the northeast to the southwest for about one-half mile before joining the main channel of the Rockdale Branch. The main channel of Rockdale Branch continues southwest through Drainage Area - SC2.

The channel in this area is currently overgrown with grass, weeds, and debris from past storms in places where the channel is too shallow or lacks definition. This lack of depth and definition severely limits the capacity of the channel to effectively convey the runoff, and this problem will worsen with upstream development. The channel is irregular in cross section which causes rapid changes in the flow velocity. This leads to scouring and erosion problems along the stream course.

As the areas to the north are developed, this channel will require considerable improvement and modification to ensure sufficient capacity. These improvements may include:

- The widening of the channel in some areas.

- Reshaping the channel to a more hydraulic efficient cross section in some areas.
- Lining the channel with concrete sides and bottom.
- Cleaning debris from the stream bed.
- Regular mowing of grass-lined sections to maintain a uniform vegetal cover.
- Installing a non-erosive pilot channel, such as concrete, in the unlined portions to help define the channel course.
- Realignment of the channel to reduce the number of sharp bends and comers.
- Modification and/or replacement of street crossings with properly designed box culverts to improve hydraulic efficiency.

These improvements and modifications will increase the capacity of the channel to accommodate future development in the upstream reaches. The same downstream issues mentioned above will be in effect and should be considered when planning channel improvements. As future development occurs, drainage easements should be acquired wherever possible to facilitate maintenance and construction activities.

8.9.2.8. Drainage Area - E1

This area is located next to Drainage Area - C 4 in the eastern part of the City and is also bounded by the major drainage divide to the north of the City. Most of the area is currently undeveloped; however, tax assessment maps indicate that approximately 45% of the land is planned for medium-density residential use. The area has a fair to high potential for development in conjunction with the proposed thoroughfare plan and Relief Route construction. The area is approximately 129 acres in size and will generate between 160 and 290 cfs, depending on the severity of the storm and the type of future development.

The runoff is conveyed downstream via overland flow, small local natural channels, streets, and gutters which discharge into a poorly-defined natural channel at various points along the channel course. The channel meanders from the northeast to the southwest for about one-half mile before becoming the main channel of the Rockdale Branch. Rockdale Branch continues

southwest through Drainage Area - SC2. The channel in this area is currently overgrown with grass, weeds, and debris from past storms in places where the channel is too shallow or lacks definition. This lack of depth and definition severely limits the capacity of the channel to effectively convey the runoff, and this problem will worsen with upstream development. The channel is irregular in cross section which causes rapid changes in the flow velocity. This leads to scouring and erosion problems along the stream course.

As the areas to the north are developed, this channel will require considerable improvement and modification to ensure sufficient capacity. These improvements may include:

- The widening of the channel in some areas.
- Reshaping the channel to a more hydraulic efficient cross section in some areas.
- Lining the channel with concrete sides and bottom.
- Cleaning debris from the stream bed.
- Regular mowing of grass-lined sections to maintain a uniform vegetal cover.
- Installing a non-erosive pilot channel, such as concrete, in unlined portions to help define the channel course.
- Realignment of the channel to reduce the number of sharp bends and corners.
- Modification and/or replacement of street crossings with properly designed box culverts to improve hydraulic efficiency.

These improvements and modifications will increase the capacity of the channel to accommodate future development in the upstream reaches. The downstream issues mentioned previously will be in effect and should be considered when planning channel improvements. As future development occurs, drainage easements should be acquired wherever possible to facilitate maintenance and construction activities.

8.9.2.9. Drainage Area - E2

This area is in the eastern part of the City and includes the area extending to U.S. Highway 77 at the eastern edge of the current City Limits. The area is currently sparsely developed along the roadway alignments of U.S. Highways 77 and 79. The area has a fair potential for development in conjunction with the proposed thoroughfare plan and Relief Route construction. The area is approximately 300 acres in size and will generate between 280 and 505 cfs, depending on the severity of the storm and the type of future development.

The runoff is conveyed downstream via overland flow, small local natural channels and gutters which discharge into a fairly-defined natural channel at various points along the channel course. The channel meanders in a southerly direction for about a mile before joining another channel which combine to form an unnamed creek that this document will refer to as the "East Channel". The East Channel continues south through Drainage Area - SE1. The creek continues to the south and eventually joins Reece Creek southeast of the City. The channel is similar to other channels in the City in that it is currently overgrown with grass, weeds, and debris from past storms in places where the channel is too shallow or lacks definition. This lack of depth and definition will limit the capacity of the channel to convey the runoff, and this problem will worsen with upstream development. The channel is irregular in cross section which leads to scouring and erosion problems along the stream course. The channel represents the primary drainage channel for this portion of the City.

As this area is developed, this channel will require considerable improvement and modification to ensure sufficient capacity. These improvements may include all of the types of improvements that have been presented in the previous discussions. These improvements and modifications will increase the capacity of the channel to accommodate future development in the upstream reaches. The downstream issues mentioned previously will be in effect and should be considered when planning channel improvements. As future development occurs, drainage easements should be acquired wherever possible to facilitate maintenance and construction activities.

8.9.2.10. Drainage Area - SC1

This area is located in the west half of the south-central part of the City. The land is primarily used for commercial purposes along the major thoroughfares

with light industrial, agricultural supply, and water treatment facilities interspersed throughout the area. The area is approximately 85 % developed at this time. The area is approximately 144 acres in size and will generate between 320 and 570 cfs of runoff through this reach, depending on the severity of the storm. This runoff will combine with runoff from the upstream reaches, and the combined flows will represent a significant portion of the total runoff from the central part of the City. The runoff is conveyed downstream via overland flow, small local natural channels, streets, and gutters which discharge into the main channel of Ham Branch at various points along the channel course. This creek is the largest of the drainage channels, and this reach is one of five critical reaches in the overall drainage scheme.

There are some locations along the stream bed that are restricted by unchecked vegetal growth, driftwood and debris from previous storms, and trash articles. Because this creek is the main drainage channel for the entire Rockdale area, it is essential that a concerted effort be made by the appropriate agencies to keep the main channel clear from these types of blockage. At some point in the near future, the creek channel will require some degree of improvement and modification to ensure sufficient capacity. These improvements should be made as soon as it is economically feasible. These improvements will include:

- The widening of the creek channel in some areas.
- Reshaping the creek channel to a more hydraulic efficient cross section in some areas.
- Construction or replacement of street crossings with properly designed box culverts to improve hydraulic efficiency.
- Cleaning debris and trash from the stream bed.
- Regular mowing of grass-lined sections to maintain a uniform vegetal cover.
- Installing a non-erosive lining, such as concrete, in sharp bends and corners.
- Realignment of the channel to reduce the number of sharp bends and corners.

Improvements made along this reach should be extended to the south to include the reach of streambed that passes through Drainage Area-SW2.

8.9.2.11. Drainage Area - SC2

This area is located in the east half of the south-central part of the City. The land is mixed use with commercial and light industrial development along the major thoroughfares. Single-family residential neighborhoods in the area include a large portion of the Original Township of Rockdale, Rowlett Subdivision, Milam Oaks Subdivision, as well as Sunrise, Perry, Camp, and Washington Heights Subdivisions.

The area is approximately 90% developed at this time. The area is approximately 399 acres in size and will generate between 700 and 1,230 cfs of runoff through this reach, depending on the severity of the storm. This runoff will combine with runoff from the upstream reaches, and the combined flows will represent the majority of the total runoff from the eastern part of the City. The runoff is conveyed downstream via overland flow, small local natural channels, streets, and gutters which discharge into the main channel of Rockdale Branch at various points along the channel course. This creek is the second largest of the drainage channels, and this reach is also one of five critical reaches in the overall drainage scheme.

This creek is one of the two main drainage channels for the entire Rockdale area, it is essential that efforts are made to keep the main channel clear. At some point in the near future, the creek channel will require some degree of improvement and modification to ensure sufficient capacity. These improvements should be implemented in conjunction with the necessary improvements on the Ham Branch as soon as it is economically feasible. These improvements will include:

- The widening of the creek channel in some areas.
- Reshaping the creek channel to a more hydraulic efficient cross section in some areas.
- Construction or replacement of street crossings with properly designed box culverts to improve hydraulic efficiency.
- Cleaning debris and trash from the stream bed.
- Regular mowing of grass-lined sections to maintain a uniform vegetal cover.

- Installing a non-erosive lining, such as concrete or rock, in sharp bends and corners.
- Realignment of the channel to reduce the number of sharp bends and corners.

Improvements made along this reach should include the reach of streambed downstream of the confluence of the Ham Branch and Rockdale Branch that passes through Drainage Area - SW2.

8.9.2.12. Drainage Areas — E3, SE2, SE1, S1, S2, SW2, & SW1

A wastewater treatment facility is included in this drainage area. These areas are all in the outlying sections of the City to the east and south of the current City Limits. Plans for future development will inevitably include some or all of these areas. Several of these areas include the downstream reaches for the major drainage channels that serve the City and its ETJ. This requires that these areas be considered as part of the overall drainage scheme during the planning stages of future development in the upstream regions. The present level of development is low, and this results in low runoff contributions to the relatively large runoff flows from the developed upstream reaches. However, these reaches must remain capable of passing the increased flows from future development. This will require the same type of improvements that have been suggested for the developed reaches. Similarly, the effects on downstream properties must be evaluated prior to implementation of the planned improvements. This report recommends that the City of Rockdale seek professional services with experience in hydrological and hydraulic evaluation in Stormwater Management to perform these activities at such time that development occurs.

8.10 SECTION III - FUTURE DRAINAGE IMPROVEMENTS

8.10.1 FUTURE DRAINAGE IMPROVEMENTS – OVERVIEW

The planning of future drainage improvements is a complex process of balancing the need for reducing the risk of flooding and the damage caused by flooding with the availability of funding required to implement the necessary improvements. Some of the complications arise from the difficulty in foreseeing problems that may not exist at a given planning stage but manifest themselves after that particular phase of development has been completed. Other sources of complication are the political and economic realities that exist in every community. There are inevitable conflicts that occur when improvements are made in some areas, and other areas are left for future consideration.

The proposed improvement plans contained within this report are based upon available current information such as USGS Topographic Maps, field observations of existing conditions, and past experience in drainage problems that occur in developing urban communities. The proposed improvements are ambitious in nature, but every attempt has been made to propose improvements that will be feasible in an economic sense as well. The proposed improvements will be presented in an order that is based on the Index of Sheets as shown on the next page. The Index contains an area that is considerably larger than the City of Rockdale and its surrounding ETJ.

Only the Map Sections that contain proposed improvements will be presented in this report. Those sections are outlined by a yellow line surrounding the included sections. The sections included are Map Section B-3, B-4, B-5, C-2, C-3, C-4, D-2, D-3, and D-4. This will be the order in which the proposed improvements are presented with a description of the improvements. The individual Map Section will be shown at the end of each discussion for convenient visual reference.

8.10.2. MAP SECTION B-3

This section is located in the northwest part of the City and includes the residential neighborhoods of the Linwood 1, 2, and 3 Subdivisions. The proposed drainage improvements are as follows:

- An enclosed pipe system that will run along Cady Road. This system will include inlets that will collect runoff from the neighborhood to the east. The system will flow southward from Skyles Road on the north and northward from

O'Kelley Road on the south to a collection point between Sager Lane and Yokley Road. The system will discharge to the west into a natural channel. Cady Road is currently a partially paved road with no curb and gutter. The anticipated growth in this direction will undoubtedly warrant an upgrade to curb and gutter sections as additional roads are built to the west. This system will consist of standard curb inlets, reinforced concrete pipe (RCP), and an outlet structure with head and wing walls.

- An enclosed pipe and inlet system in Brazos Street from Sager Lane south to Yokley Road and in Yokley Road from Brazos Street east to the low point just west of Rockdale Road. This system will flow into a storm sewer which will flow southward from Skyles Road.
- An enclosed system of inlets and pipes that will flow southward from Skyles Road, west of and parallel to Rockdale Road, to Alcoa Street. This storm sewer will need to be installed in easements between existing houses through the low points on Skyles, Sager, Yokley, and O'Kelley Roads, and Highland Avenue and down Coffield Street to Alcoa Street.
- The upper end of an enclosed pipe and inlet system that will run along Brazos Street from O'Kelley Road on the north to Murray Avenue on the south. The system will flow to the south where it will continue into Map Section B-4. The system will consist of standard curb inlets and RCP.
- Inlets and a pipe system at the low point in Rockdale Road north of Skyles Road. This storm sewer will discharge into an existing ditch which flows eastward into West Ham Branch.

8.10.3. MAP SECTION B-4

This section is located in the western part of the City and includes the residential neighborhoods of the Coffield 2 and 4 Subdivisions, as well as the Westwood, Edgewood, and parts of several other Subdivisions. The proposed drainage improvements are as follows:

- The lower end of an enclosed pipe and inlet system that begins in Map Section B-3. This system flows south on Brazos Street to Murray Avenue and then eastward in Murray Avenue to Meadow Drive.
- The lower end of an enclosed pipe and inlet system that continues southward in Coffield Street from Highland Avenue to Alcoa Street. From there, the storm sewer will continue eastward in Alcoa Street to Meadow Drive and southward in Meadow Drive to Cameron Avenue (U.S. Highway 79).
- A system of inlets, pipe, and outlet structure at the low point on Ortega Street

north of Alcoa Avenue. From there, an improved channel section will extend to the west and south where it will discharge into an inlet/outlet structure specifically designed for this channel on Post Oak Road.

- An enclosed pipe and inlet system that begins at the inlet/outlet structure described above on Post Oak Road. The system will flow south on San Jacinto Drive to discharge into an improved drainage culvert at Cameron Avenue. This system will represent an extension and upgrade to the existing system which does not possess sufficient capacity to accommodate current runoff flows.
- A system of Inlets, pipe, and outlet structure at the low point of Allday Street; an improved drainage channel that flows eastward to Post Oak Road; and a storm sewer system that will convey the flows from the low point in Post Oak Road eastward to the proposed storm sewer in San Jacinto Street.
- An enclosed pipe and inlet system that begins at the intersection of Murray Avenue and Calhoun Boulevard and flows south in Calhoun Boulevard to the reinforced box culverts at U.S. Highway 79. The main trunk in Calhoun Boulevard will intercept storm sewers in Vogel Street from Alamo Drive westward and in Post Oak Road from Mistletoe Lane westward.

8.10.4. MAP SECTION B-5

This section is located in the southwest part of the City and is largely undeveloped at this time. There are several drainage channels in the area. These channels will serve future development in this part of the City. As this development occurs, drainage easements should be obtained where possible.

The primary identifiable source of drainage problems at this time is the culvert that passes under the railroad right-of-way and discharges to the south. This channel is a continuation of the improved channel on the north side of the railroad. The current and future runoff flows from Map Section B-4 are conveyed through this channel reach.

The proposed drainage improvements will consist of an improved channel section that begins at the railroad culvert bridge. The improved section will extend to the south for an appropriate distance to be determined by an in-depth study and final design process. This improvement should be made in conjunction with negotiations to modify the culvert bridge at the time of Improvement.

The culvert bridge under the railroad does not appear to have sufficient capacity to accommodate either presently anticipated flows from the TxDOT improvements or

expected increases in runoff from future development in the area. At some future date, negotiations will need to be accomplished with the railroad for additional capacity at the culvert to accommodate the increased flows.

8.10.5. MAP SECTION C-2

This section is located in the north part of the City and is largely undeveloped at this time. The future development in the area will be considerable due to the construction of a Relief Route in this vicinity. As this development occurs, drainage easements should be obtained where possible. This report does not recommend any specific improvements at this time; however, the upstream reaches of Ham Branch are located in this section. Improvements along this channel will be necessary as development progresses, and these improvements can be identified at such time.

8.10.6. MAP SECTION C-3

This section is located in the north-central part of the City and includes many well established residential neighborhoods as well as several parcels of undeveloped land. The Rockdale Junior High School and a baseball field complex are also in this area. This area will likely experience considerable growth associated with the construction of a new Relief Route north of the area. This development will introduce significant increases in runoff to the existing drainage channels. The principal drainage channels in the area are the west tributary and the main channel of the Ham Branch. The proposed drainage improvements are as follows:

- An improved Type III concrete-lined channel section in the west tributary that begins at the current City Limits just north and west of the baseball complex on North Wilcox Street. The improved section will extend to the east and south to where it converges with the main channel of the Ham Branch just south of Cameron Avenue in Map Section C-4. The improved section will be approximately one-half mile in length and will include several street crossings where construction and/or modification of a reinforced concrete box culvert (RCB) will be required. The specific type and size of the structures will be determined by a final design as development occurs. The street crossings that will require improvement include Copeland Street, North Wilcox Street, Hillyer Avenue, Brandon Street, Murray Avenue, Belton Avenue, West Davilla Street, West Bell Avenue, and Cameron Avenue. The improved section of the tributary will discharge into an inlet/outlet structure specifically designed for this channel at the confluence with the main channel of Ham Branch. The improved

reach of the tributary channel will consist of concrete sides and bottoms with the slope and cross section shape to be determined by a final design.

- An improved Type III concrete-lined channel section in the main channel of the Ham Branch that begins at the existing City Limits at a point adjacent to North Main Street. The improved section will extend to the south to where it converges with the channel of the west tributary just south of Cameron Avenue in Map Section C-4. The improved section will be approximately one-half mile in length and will include several street crossings where construction and/or modification of a reinforced concrete box culvert (RCB) will be required. The specific type and size of the structures will be determined by a final design as development occurs. The street crossings that will require improvement include North Main Street, Burleson Street, Murray Avenue, San Andres Avenue, West Belton Avenue, West Davilla Avenue, West Bell Street, and Cameron Avenue. The improved section of the Ham Branch main channel will intercept the west tributary channel just south of Cameron Avenue in Map Section C-4 and a minor tributary from the east at a point just north of Murray Avenue. The improved main channel will consist of concrete sides and bottoms with the slope and cross section shape to be determined by a final design.
- An improved Type III concrete-lined channel section in the minor tributary of Ham Branch that joins from the east just north of Murray Avenue. The improved reach begins at the existing City Limits at a point northeast of the Rice Street crossing in Map Section D-3. The improved section will extend to the southwest to where it converges with the main channel of Ham Branch. The improved section will be approximately one-half mile in length and will include several street crossings where construction and/or modification of a reinforced concrete box culvert (RCB) will be required. The specific type and size of the structures will be determined by a final design as development occurs. The street crossings that will require improvement include Rice Street, San Gabriel Street, Green Street, Ackerman Street, and North Main Street. The improved section of the tributary will discharge into an inlet/outlet structure specifically designed for this channel at the confluence with the main channel of Ham Branch. The improved main channel will consist of concrete sides and bottoms with the slope and cross section shape to be determined by a final design.
- A short enclosed pipe and Inlet system under Bushdale Road at Yokley Road. The system will terminate in an outlet structure and discharge into an existing ditch that flows northeasterly into West Ham Branch.
- An enclosed pipe and inlet system that begins at a low point on Dyer Street

south of Highland Street and extends eastward to Miller Street, thence northward in Miller Street to Highland Street. From there, the storm sewer will flow northeastward, across Broadnax Street to Stokes Street. This system will then discharge into an improved channel which will flow northeastward into West Ham Branch.

- A system of inlets and pipes that begins at the northern end of Jackson Street and flows northward to Williams Street. The storm water will then flow eastward in Williams Street to Shelton Street and thence northward in Shelton Street for a discharge into the Stokes Street Channel.
- An enclosed pipe and inlet system that begins at the intersection of Murray Avenue and Francine Street. The trunk line flows east on Murray Avenue to North Wilcox Street and then to the south where it joins the main trunk line flowing from the west at Belton Avenue. The combined system then continues south to discharge into the improved channel of the west tributary at a point just north of West Davilla Street. The Belton Avenue storm sewer will begin at Bowser Street and continue in Belton Avenue for its intersection with the storm sewer in Wilcox Street.
- Short storm sewer systems that flow into Ham Branch:
 1. In Murray Avenue from Scarbrough Street eastward to Ham Branch
 2. In Belton Avenue from Burleson Street westward to Ham Branch
 3. In Scarbrough Street from Belton Avenue to Ham Branch in Davilla Street.
- A storm sewer system is proposed In Green Street from San Andres Street northward to the east tributary of Ham Branch.
- Storm sewer systems are proposed in San Gabriel Street from Hamilton Street southward to the east tributary of Ham Branch and from San Andres Street northward to the east tributary of Ham Branch.
- An enclosed pipe and inlet system that begins at the intersection of Main Street and East Davilla Street and flows northward in Main Street to San Andres Street. At that point, the storm sewer joins another system in San Andres Street which starts at Ackerman Street and flows westward. The combined system then flows westward to San Andres Street to Ham Branch.
- An enclosed pipe and Inlet system that begins at the intersection of Main Street and Cameron Avenue. The system will flow to the west to Scarbrough

Street, northward in Scarbrough Street to Bell Avenue, and westward in Bell Avenue to discharge into Ham Branch.

8.10.7. MAP SECTION C-4

This section is located in the southern part of the City and includes many well-established residential neighborhoods as well as several parcels of undeveloped land. The Rockdale High School, football stadium, and baseball complex are also in this area. Fair Park is also included in this section. This section is located downstream of many of the proposed improvements and will ultimately receive the runoff from existing and future development in those areas. The principal drainage channels in the area are the Little Ham Branch and the main channel of the Ham Branch. The proposed drainage improvements are as follows:

- An enclosed pipe and Inlet system that begins at the intersection of Cameron Avenue and Travis Street. The system will flow to the east along Cameron Avenue to discharge into the main channel of Ham Branch.
- An enclosed pipe and inlet system that begins on Maple Avenue east of Spence Street. Storm water will flow westward in this system in Maple Street and southward in Spence Street to Bell Avenue. From there, it will flow westward in Bell Avenue, southward in Charles Street, and under Cameron Avenue for discharge into an improved channel to the railroad.
- An enclosed pipe and inlet system that begins at the intersection of Main Street and Cameron Avenue, flows westward in Cameron Avenue to Scarbrough Street, north to Belton Avenue, and westward in Bell Avenue for a discharge into Ham Branch.
- The lower end of a main trunk line collects flows at the intersection of Murray Avenue and Meadow Drive. The trunk then flows south on Meadow Drive where it will discharge into the box culvert system at U.S. Highway 79. This system, when connected to the system in Childress Street, will comprise the largest storm sewer system in the City.
- The lower end of a main trunk line that begins at the intersection of Hunter and Alcoa Streets in Map Section C-3. The system will provide crucial relief of local flooding problems in the area. This relief is crucial to the proposed major thoroughfare alignment in this area. The trunk line will continue southward around the current high school baseball practice facilities to a point just north of the cul-de-sac at the north end of Bounds Avenue. The line will then turn south along Bounds Avenue to Zana Lane, west to Childress Street, and south to the box culvert stub-out at U.S. Highway 79.

The entire system will consist of standard curb inlets, reinforced concrete pipe (RCP), and reinforced concrete box (RCB).

- An improved Type III concrete-lined channel section in the main channel of Ham Branch that begins at the confluence of the northern main channel and the west tributary just south of Cameron Avenue. The improved concrete section will extend to the south to West Roberts Street where a transition to a Type II natural grass-lined channel occurs. The channel continues to the south where it converges with the main channel of Little Ham Branch in Map Section C-5. The improved sections will be approximately three-fourths (3/4) mile in length and will include street crossings where construction and/or modification of a reinforced concrete box culverts (RCB) will be required. The specific type and size of the structures will be determined by a final design as development occurs. The street crossings that will require Improvement are Mill Street and West Offield Street. Consideration must be given to ensure that the railroad culvert bridge will have sufficient capacity to carry the anticipated increase in runoff flows from upstream development. The cross sections of the improved concrete portion of the main channel and the improved grass-lined portion of the channel with a concrete pilot channel will need to be determined by a final design.
- An improved Type II natural channel section in the main channel of Little Ham Branch that begins at the end station of the improved channel at U.S. Highway 79 at Childress Street. The improved section will pass under the railroad right-of-way and extend to the south and east where it converges with the main channel of Ham Branch in Map Section C-4. The improved section will be approximately one mile in length across topography that is currently undeveloped land. The improved section of the tributary will discharge into the improved main channel of Ham Branch. Consideration must be given to ensure that the railroad culvert bridge will have sufficient capacity to carry the anticipated increase in runoff flows from upstream development.

8.10.8. MAP SECTION D-2

This section is located in the northeastern part of the City. The land in this area is currently undeveloped. The potential for future development is high due to the proximity of the proposed Relief Route in this area. The headwaters of the main channels of Rockdale Branch and the "East Channel" are in this area. As development occurs, drainage easements should be obtained where possible. This report does not recommend any specific improvements at this time. Improvements along these channels will be necessary as development

progresses, and these improvements can be identified at such time.

8.10.9. MAP SECTION D-3

This section is located in the eastern part of the City and includes some residential neighborhoods as well as large areas of undeveloped land. The potential for future development is high due to the proximity of the proposed Relief Route in this area. The principal drainage channels in the area are the main channel of Rockdale Branch and the main channel of the "East Channel". The proposed drainage improvements are as follows:

- An enclosed pipe and inlet system that begins at a point just east of the intersection of Cameron Avenue and Sanford Street. The system flows to the east along Cameron Avenue to discharge into the "East Channel". The system will prevent excessive street flows resulting from future development.
- An enclosed pipe, inlet, and channel system that begins at a low point on Yoakum Street between Cameron Avenue and Belton Avenue. The system then flows northwesterly in a channel to Belton Avenue. The channel will be intercepted by a storm sewer system that starts at the intersection of Douthit Street and Belton Avenue and then flows westward in Belton Avenue to discharge into Rockdale Branch.
- An enclosed pipe and inlet system that begins at the Intersection of Cameron Avenue and Green Street. The system flows to the east along Cameron Avenue with 1-block extensions joining from the north at San Gabriel Street and Rice Street. The system will discharge into Rockdale Branch.
- An enclosed pipe and inlet system that begins at the low point on Douthit Street south of Isaac Avenue and flows southwesterly across Houston Street in Rockdale Branch.
- A storm sewer at the intersection of Riley Street and Peach Street which will discharge westerly into Rockdale Branch.
- An improved Type III concrete-lined channel section in the main channel of the Rockdale Branch that begins at Houston Street and extends southwesterly to Roberts Avenue.
- A storm sewer system beginning at the intersection of Third Street and Pear Street which flows southward into an improved channel. From there the flow will be westerly, crossing under Baxter Street to discharge into Rockdale Branch.

8.10.11. MAP SECTION D-4

This section is located in the southeastern part of the City and includes some residential neighborhoods as well as large areas of undeveloped land. The potential for future development is fair to high due to the proximity of open land and utilities. The principal drainage channels in the area are the main channel of Rockdale Branch and the main channel of the "East Channel". The proposed drainage improvements are as follows:

- An enclosed pipe and inlet system that begins at the intersection of First Street and Pecan Street and flows southward to Rockdale Branch.
- An improved Type III concrete-lined channel section in the main channel of Rockdale Branch that continues from the north in Map Section D-3. The improved concrete section will extend to the south to Roberts Street where a transition to a Type II natural grass-lined channel occurs. The channel continues southward to merge with the main channel of Ham Branch in Map Section C-4. The improved sections will be approximately one mile in length and will include street crossings where construction and/or modification of reinforced concrete box culverts (RCB) will be required.
- Short sections of storm sewer should be installed at MLK Drive from Fifth Street to Rockdale Branch; from the low point on Fourth Street to Rockdale Branch; and from the low point on White Street to Rockdale Branch.
- A storm sewer will be required at the intersection of Seventh Street and MLK Drive and an improved channel from that point northwesterly to Rockdale Branch.

8.11 SECTION IV - CONCLUSIONS AND RECOMMENDATIONS

8.11.1. GENERAL

The scope of the improvements that have been discussed in Section III of this report is quite broad and is intended to serve as a guideline for planning future stormwater management methods and means. The proposed improvement plans contained within this report are based upon available current information such as USGS Topographic Maps, field observations of existing conditions, and past experience in drainage problems that occur in developing urban communities. The proposed improvements are ambitious in nature, but every

attempt has been made to propose improvements that will be feasible in an economic sense as well.

The improvements by TxDOT as part of the widening of U.S. Highway 79 will aid the City in the efforts to control stormwater runoff. The addition of the proposed improvements by the City will enhance those of TxDOT and provide an efficient stormwater drainage system that should serve the City of Rockdale in an exemplary manner for many years into the future.

These improvements are intended as suggestions to manage flooding problems associated with urban development over an extended period of time. Significant changes to the type, quantity, size, and locations of actual drainage improvements should be expected. The proposed improvements discussed in this report are based on the available information at the time of the report. The overall concept contains sufficient flexibility to accommodate these types of changes.

The areas that have been identified in Section II and Section III are within the City of Rockdale and its Extraterritorial Jurisdiction (ETJ). They are consistent with the Zoning Plan, the proposed alignment of a Relief Route, and the proposed Thoroughfare Plan. The proposed improvements are general in nature to afford the City maximum flexibility. The proposals are intended for use as a guideline and a forecasting tool to assist in planning future stormwater drainage improvements in areas of the City that are likely to be developed in the near future. An emphasis is placed on the acquiring of drainage easements wherever possible along the natural channels to allow access for future modification, improvement, and maintenance. As development occurs, studies should be conducted at appropriate intervals to determine final design parameters for individual areas. These studies will determine the most cost-effective means of providing the optimum level of stormwater drainage.

8.11.2. PRIORITY AREAS

At the time of this report there are five (5) specific areas that have been identified as areas that have chronic severe drainage problems. These areas are characterized by flooding that overtops the curbs during minor rainfall events, ponding of runoff water for extended periods of time following the rainfall events, and damage to existing roadway surfaces, appurtenances, and

surrounding structures caused by standing water or erosion. These areas are listed below in the recommended order of priority for improvement:

- The enclosed pipe system on Calhoun Street from the intersection at U.S. Highway 79 north to Murray Avenue. This system will connect to the improvements by TxDOT and relieve the flooding in this area during storm events, Refer to Map Section B-4.
- The enclosed pipe system along San Jacinto Drive from the intersection at U.S. Highway 79 to north of Post Oak Road. This system will connect to the improvements by TxDOT and, combined with the system on Calhoun Boulevard, should eliminate the flooding problems in the area. Refer to Map Section B-4.
- The combined enclosed pipe system on Meadow Drive from the intersection at U.S. Highway 79 north to Alcoa Street, west on Alcoa Street to Coffield Street, and north on Coffield Street to Highland Avenue. This system will connect to the improvements by the TxDOT and should relieve the flooding in this area during storm events. Refer to Map Sections B-4, C-3, and C-4.
- The combined enclosed pipe system on Childress Street from the intersection at U.S. Highway 79 north to Zana Lane, east to Bounds Avenue, and north to the southern edge of the High School Athletic Fields.
- The combined enclosed pipe system along Alcoa Street from the intersection of Hunter Street eastward to east of Hogan Street.
- The combined enclosed pipe system on Charles Street from the intersection at U.S. Highway 79 north to Bell Street, east to Spence Street, north on Spence Street, and east to the west end of Maple Avenue.
- Improving the existing channels through the City either by widening the existing earth channels or constructing concrete lining.
- Storm sewers in Murray Avenue from Meadow Drive to Brazos Street and in Brazos Street from Murray Avenue to O'Kelley Road.
- The two storm sewer systems along and near Williams Street from Dyer Street to Francine Street.

- A storm sewer system in Green Street from San Andres Street to the east channel of Ham Branch.
- Storm sewers and improved channels between Mill Street and White Street from Hickory Street westward to Ham Branch.

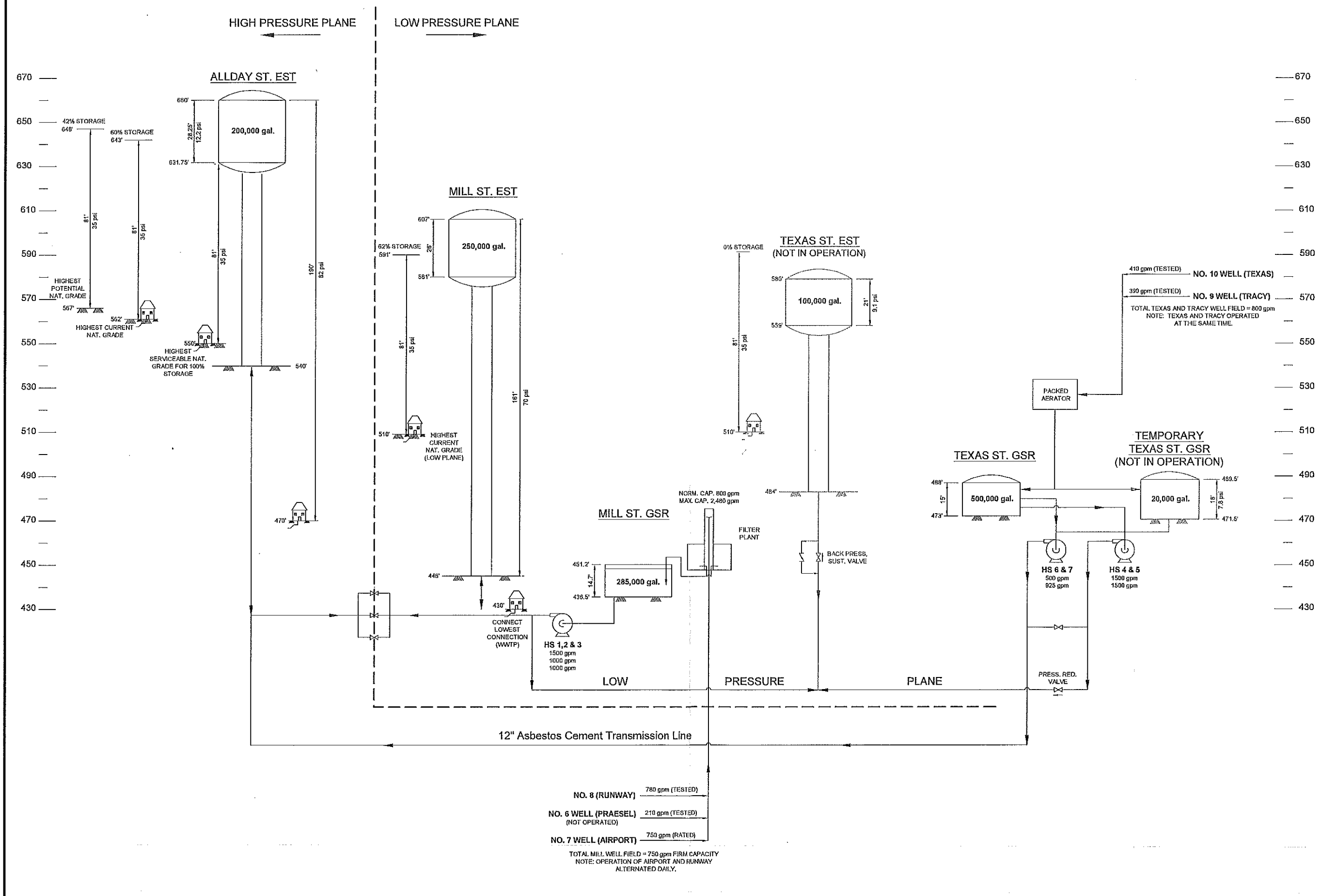
8.11.3. SUMMARY

In summary, this report recommends that the City of Rockdale, through the appropriate agencies, direct the efforts in stormwater management in the following manner:

- Seek public input to assist in identifying drainage problems throughout the community.
- Seek professional assistance in developing cost-effective solutions to the problem areas as they become identified.
- Coordinate the improvements proposed in this document with any current or future plans for TxDOT improvements.
- Develop a maintenance program for the future enclosed drainage systems. The purpose of this will be to remove built-up sediment that will accumulate over time. This sediment will adversely affect the hydraulic functions of these systems.
- Develop a maintenance program for the existing and improved natural drainage channels. The purpose of this will be to remove built-up sediment, grass, weeds, and trash that has accumulated. These types of obstructions will also cause adverse effects on the hydraulic functions of these channels.
- Where possible, acquire drainage easements along the channels in order to facilitate maintenance, modification, and future improvement.
- Require developers to provide on-site detention facilities that limit post-development runoff volumes to pre-development levels. The developer should be responsible for the maintenance of the facility.
- Require new developments to dedicate drainage easements for all stormwater drainage facilities and systems.

- Adopt a Stormwater Management Policy that includes minimum requirements for new development as well as standards for rehabilitation and repair of existing systems. The Stormwater Management Design Criteria Manual should serve as the blueprint for such a policy.
- Limit or restrict development within the flood plains. Identification of the flood plain limits has not been included in the scope of this report. A study should be performed to identify any 100-year flood plain areas within the City and its ETJ. The federal agencies responsible for determining the limits of flood plains issue periodical revisions of this information. The City should consult with professionals in this field to stay apprised of such revisions.
- Require developers to install enclosed inlet and pipe systems as needed in new subdivisions and when streets and thoroughfares are improved or upgraded. These systems should discharge into downstream channels through structures designed to minimize adverse effects on the downstream properties.
- Maintain constant communication with the TxDOT in order to stay fully informed of the proposed improvements, construction schedule, and changes made to the plans.
- Identify any problem areas, not mentioned previously in this document, which may be eliminated by incorporation into these proposed improvements.
- The City is requesting FEMA to update the flood plain map for the City and Extraterritorial Jurisdiction (ETJ).

A

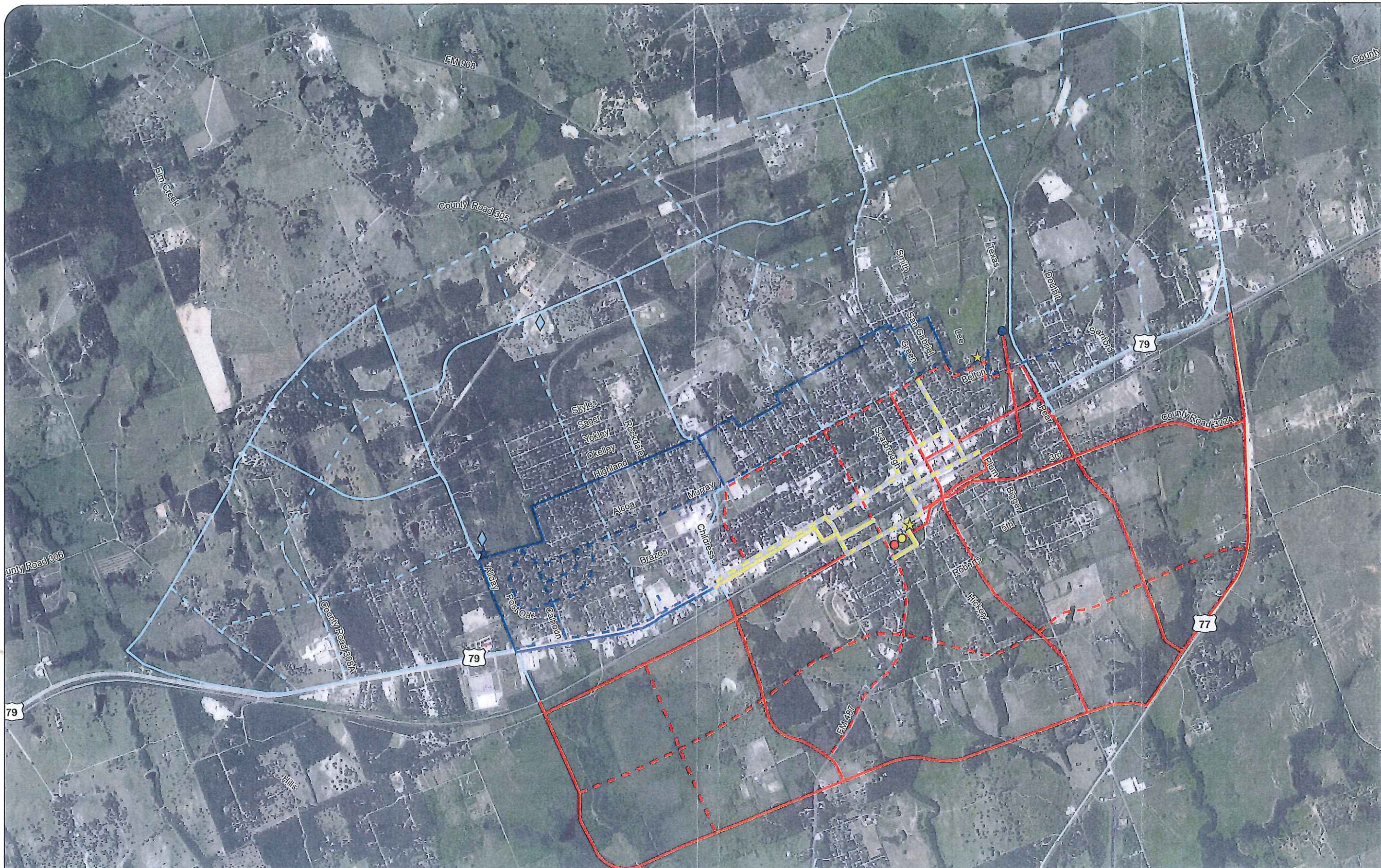


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HORIZ. SCALE	1"=100'
PLANT SCALE	1"=100'
WATER SCH.	1"=100'
DRAWING NAME	WATERSCH.
REVISION	
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**HIGH PLANE
SERVICE AREA**

- | | | |
|-----------------|-----------------|-----------------------|
| Proposed | Existing | |
| | | 8 Inch |
| | | 12 Inch or Larger |
| | | Elevated Storage Tank |
| | | Ground Storage Tank |

**LOW PLANE
SERVICE AREA**

- | | | |
|-----------------|-----------------|-----------------------|
| Proposed | Existing | |
| | | 8 Inch |
| | | 12 Inch or Larger |
| | | Elevated Storage Tank |
| | | Ground Storage Tank |



Water Distribution System Plan (September 2010)

High and Low Plane Service Areas

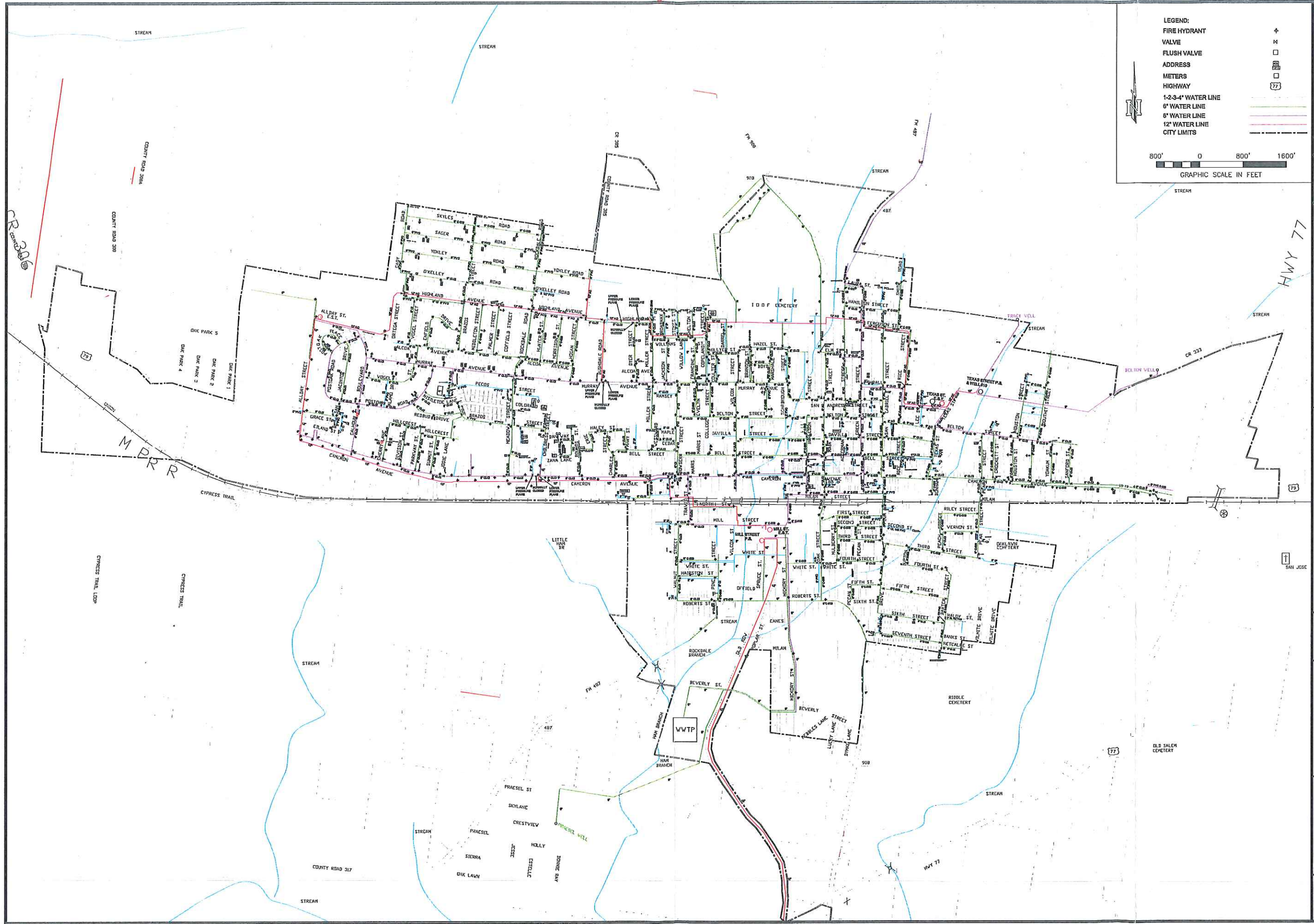
CITY OF ROCKDALE

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DATE CREATED	August 2010
DATUM & COORDINATE SYSTEM	NAD83 State Plane (feet) Texas Central
FILE NAME	WaterPlan.mxd
PREPARED BY	JM

FREESE AND NICHOLS, INC.
 10814 JOLLYVILLE ROAD
 BUILDING 4, SUITE 100
 AUSTIN, TX 78759
 PHONE: 512.617.3100

**FIGURE
No. 2**

B



LEGEND:

- FIRE HYDRANT
- VALVE
- FLUSH VALVE
- ADDRESS
- METERS
- HIGHWAY
- 1-2-3-4" WATER LINE
- 6" WATER LINE
- 8" WATER LINE
- 12" WATER LINE
- CITY LIMITS

GRAPHIC SCALE IN FEET

800' 0 800' 1600'

VERT. SCALE		HORIZ. SCALE		PLOT SCALE		DRAWING NAME		MARK		DATE	
				1:1		Rockdale Water Base Map					

BASEMAP

Rockdale, Texas

PROJECT NAME: RD-003

DRAWN BY: MM

DESIGNED BY: BPB

LATEST REVISION: 03/10/2008

NSA JOB NO.: RD-003

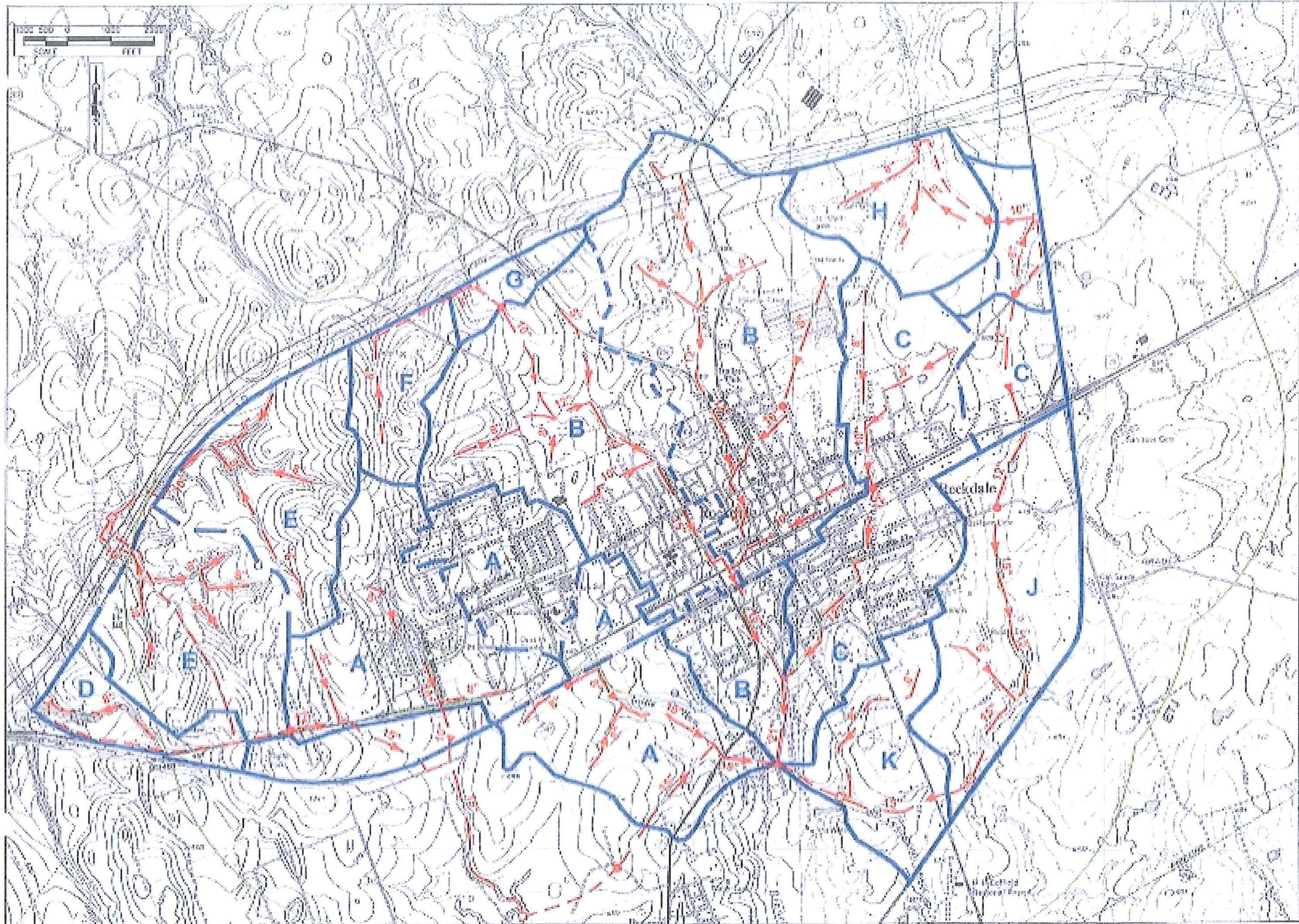
4833 Spicewood Springs Rd., Suite 204, Austin, Texas 78779, 512-342-6666, www.ksaengineers.com



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SEAL: TYPE Firm Registration No. 1350 SHEET NO. SHEET OF

PROJECTS: RD-003 WATER SYSTEM BASE MAP UPDATE, ROCKDALE WATER BASEMAP.DWG, LAYOUT: (2)



WASTEWATER LEGEND		CITY OF ROCKDALE	COMPREHENSIVE WASTEWATER PLAN				
5 INCH  8 INCH  10 INCH  12 INCH 		THE HOGAN CORPORATION Engineers • Planners • Consultants 1000 N. 1st St. • Rockdale, Ill. 60442	DRAINAGE BASINS WITH PROPOSED WASTEWATER COLLECTION IMPROVEMENTS				
1" = 2000'			DESIGN	DATE	SCALE	PLAN NO.	SHEET NO.
FIGURE NO. 1			1984	04/84	10" = 1000'	1000	1000

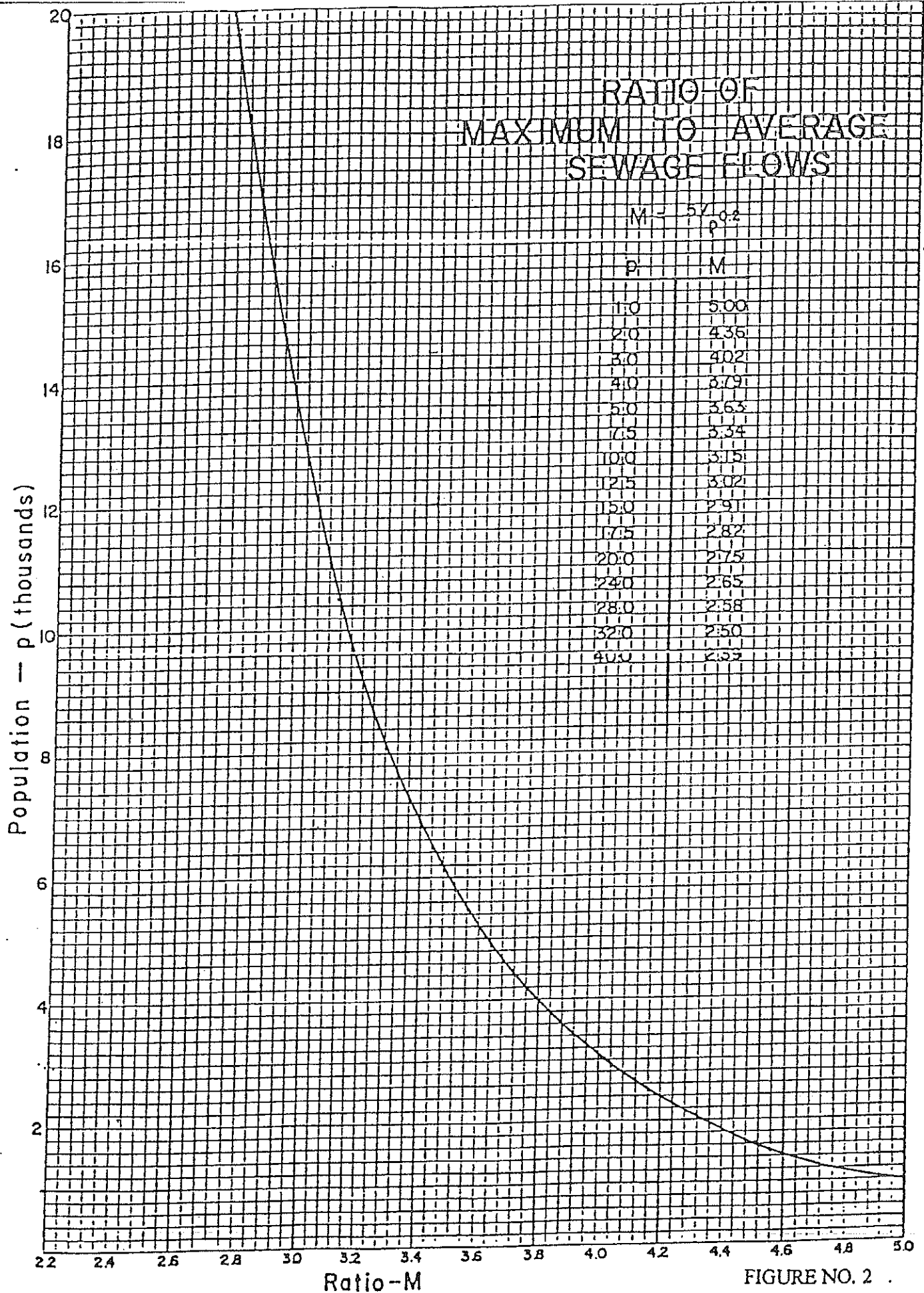


FIGURE NO. 2 .



WASTEWATER LEGEND

- 6 INCH
- 8 INCH
- 10 INCH
- 12 INCH

1" = 2000'

FIGURE NO. 3

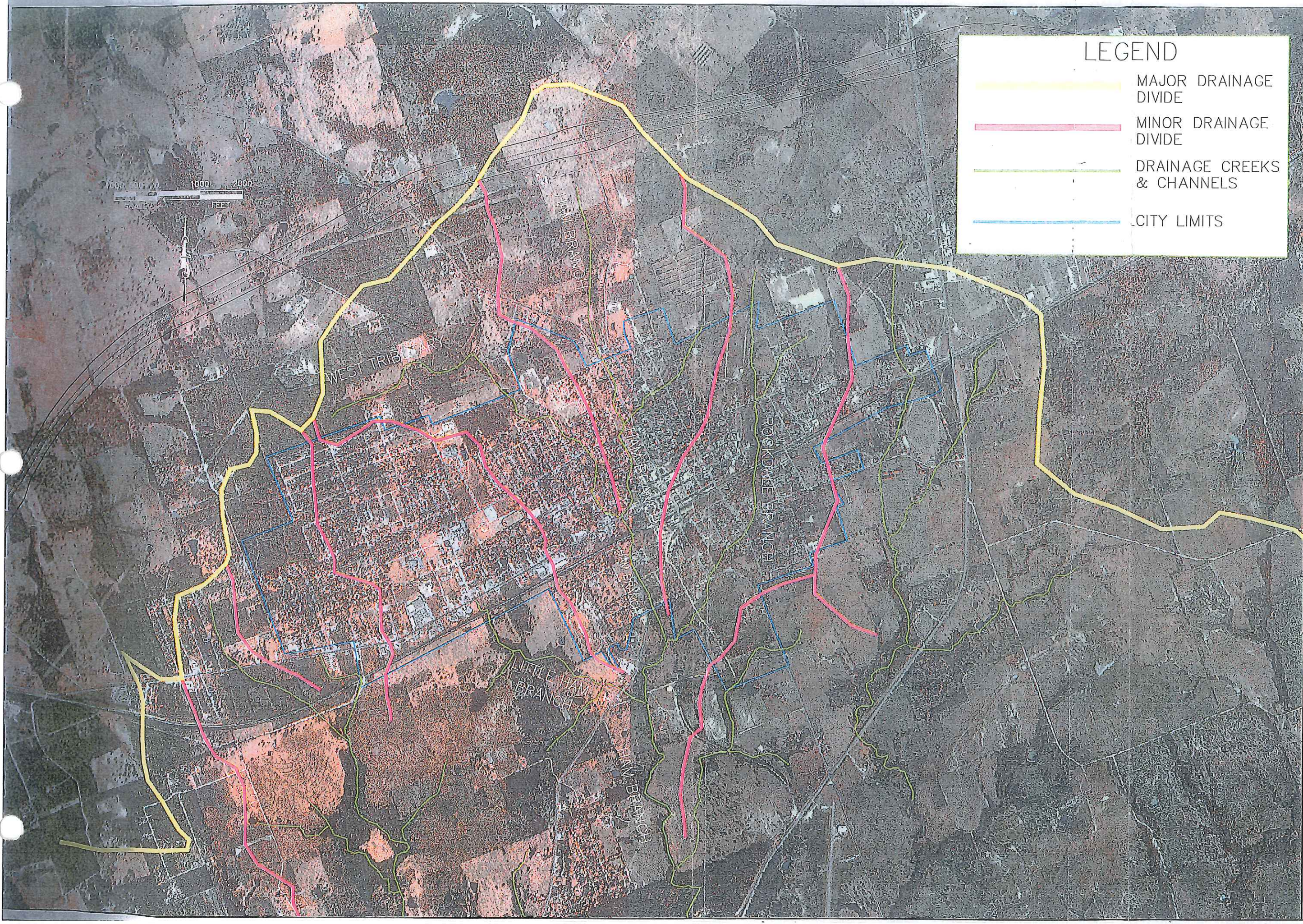
CITY OF ROCKDALE

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COMPREHENSIVE MASTER PLAN

EXISTING WASTEWATER SYSTEM

DESIGN	DRAWN	DATE	SCALE	PAGE NO.	SHEET NO.
THIS	DATE	02/02	AS SHOWN	248-07.10	



LEGEND

MAJOR DRAINAGE DIVIDE

MINOR DRAINAGE DIVIDE

CITY OF ROCKDALE

1" = 2000'

FIGURE I-1
DRAINAGE BASINS
& CHANNELS

A-1	B-1	C-1	D-1	E-1
A-2	B-2	C-2	D-2	E-2
A-3	B-3	C-3	D-3	E-3
A-4	B-4	C-4	D-4	E-4
A-5	B-5	C-5	D-5	E-5

COMPREHENSIVE MASTER PLAN
STORMWATER DRAINAGE

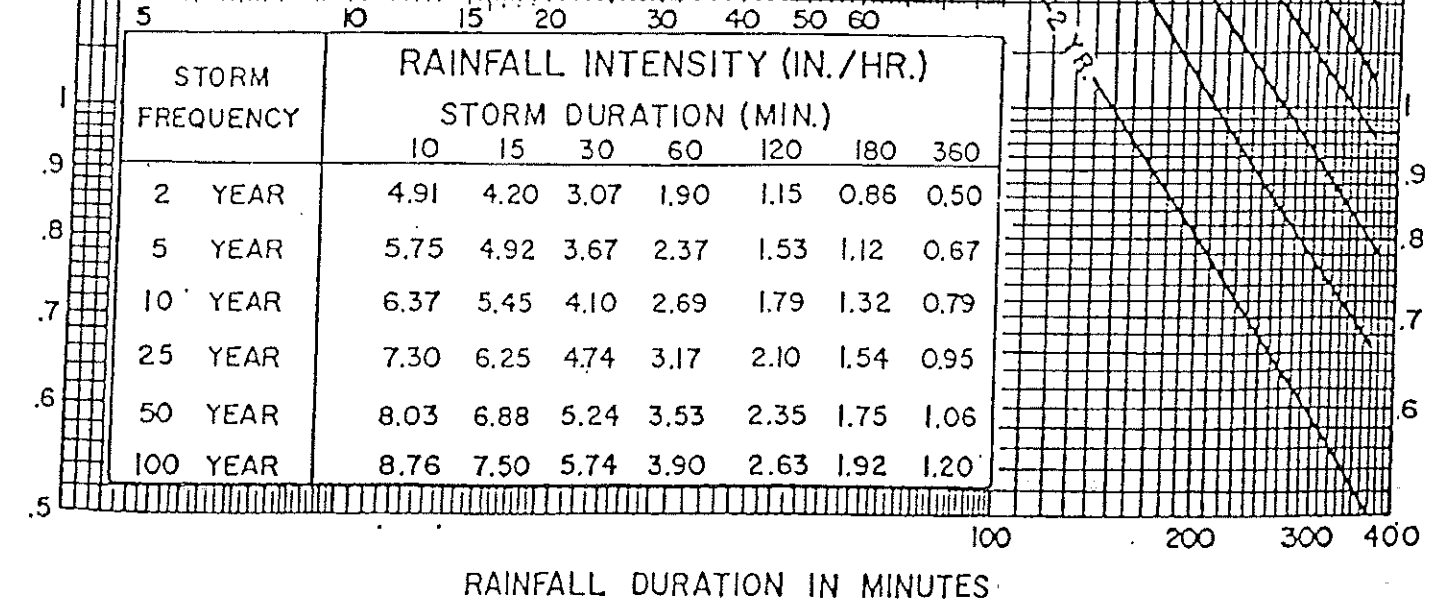
EXISTING DRAINAGE BASINS
& CHANNELS

DESIGN	DRAWN	DATE	SCALE	PROJ. No.	SHEET No.
CED	SET	11/01	AS SHOWN	248-07.10	FIGURE I-1

RAINFALL INTENSITY CURVES

CURVES DEVELOPED FROM NATIONAL WEATHER SERVICE
RAINFALL FREQUENCY DATA PRESENTED IN TECHNICAL
MEMORANDUM NWS HYDRO-35, DATED JUNE, 1977 AND
TECHNICAL PAPER NO. 40, DATED MAY, 1961.

RAINFALL INTENSITY IN INCHES PER HOUR

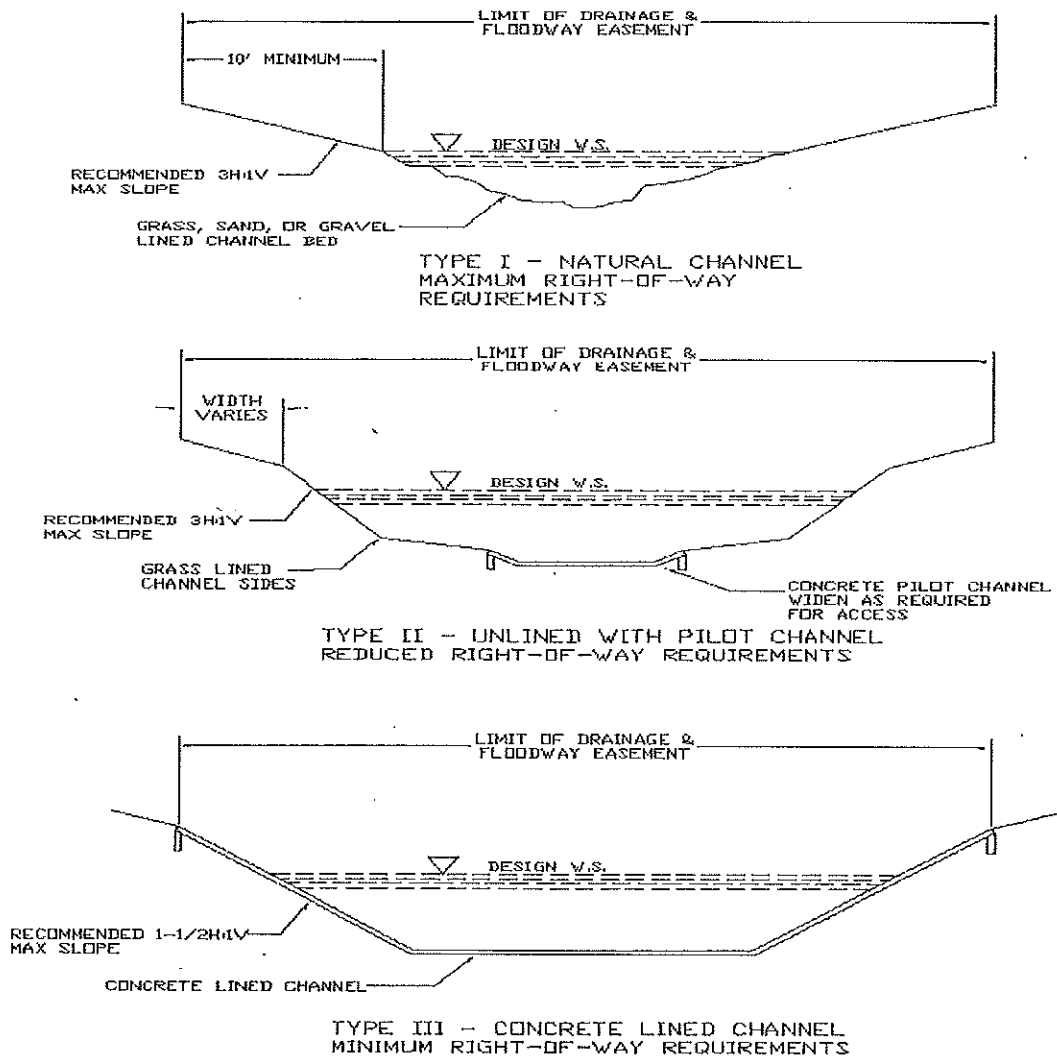


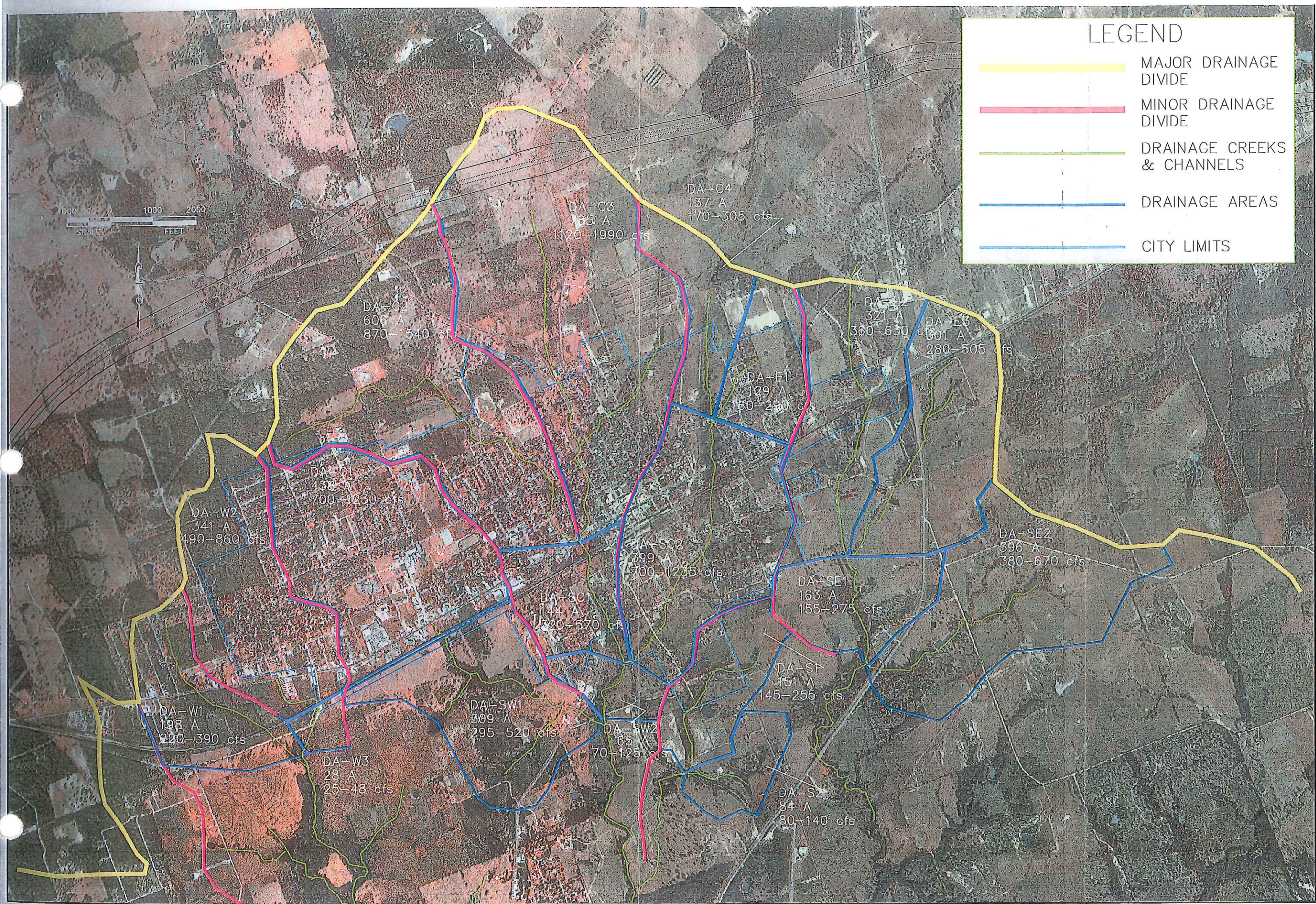
RAINFALL DURATION IN MINUTES

Figure I-a

Types of Channels

Figure I-b





CITY OF ROCKDALE

COMPREHENSIVE MASTER PLAN
STORMWATER DRAINAGE

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EXISTING DRAINAGE AREAS
W/ CHANNELS

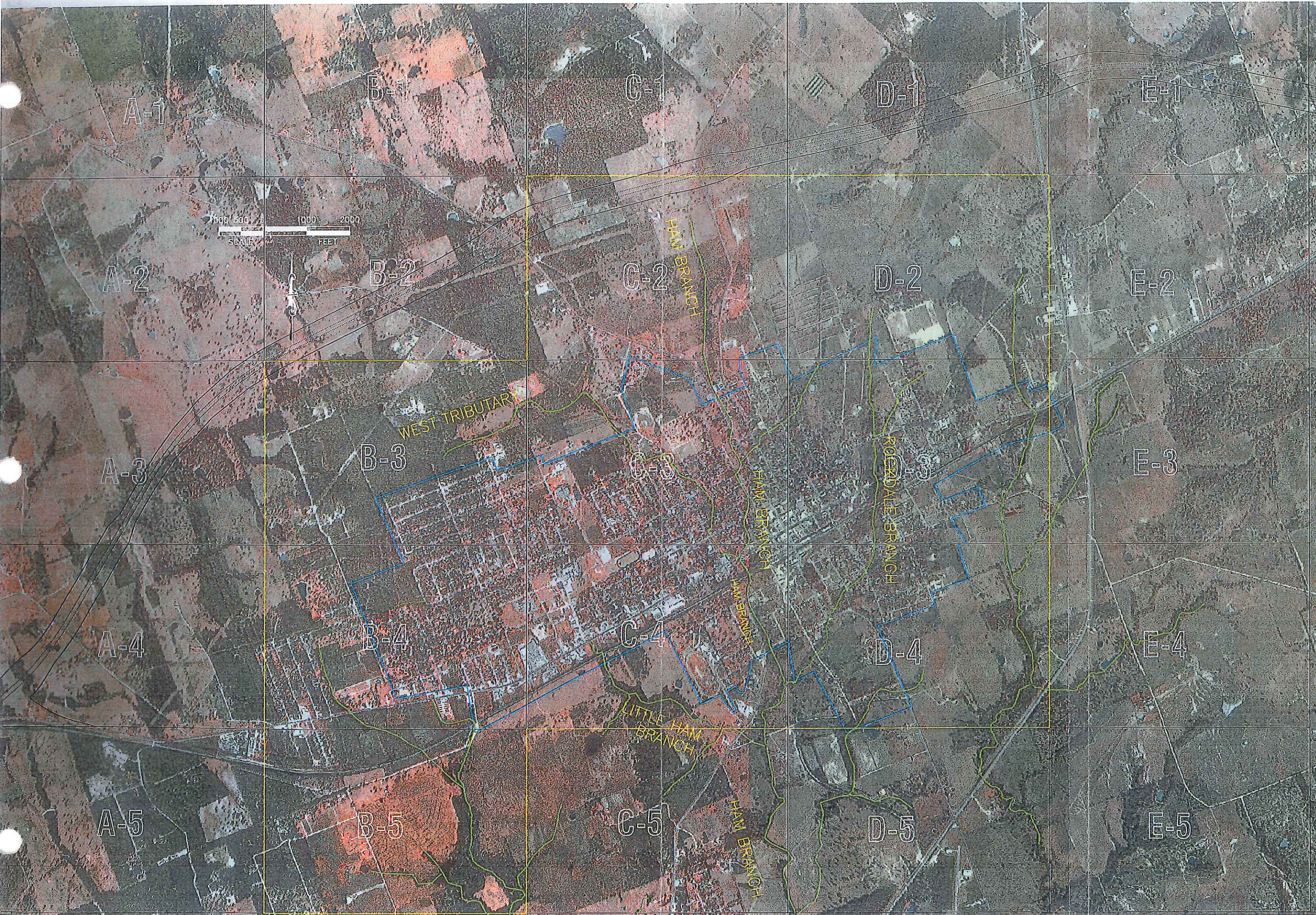
DESIGN	DRAWN	DATE	SCALE	PROJ. No.	SHEET No.
CHN	SPM	11/14	AS SHOWN	DA-07-10	DRIPED II-1

1" = 2000'

1000 500 0 1000 2000
SCALE FEET

**FIGURE II-1
DRAINAGE
AREAS
W/ CHANNELS**

A-1	B-1	C-1	D-1	E-1
A-2	B-2	C-2	D-2	E-2
A-3	B-3	C-3	D-3	E-3
A-4	B-4	C-4	D-4	E-4
A-5	B-5	C-5	D-5	E-5



COMPREHENSIVE MASTER PLAN
STORMWATER DRAINAGE

PROPOSED FUTURE DRAINAGE
IMPROVEMENTS

DESIGN	DRAWN	DATE	SCALE	PROJ. No.	SHEET No.
CPN	SPN	11/11	AS SHOWN	248-0710	1 OF 10

CITY OF ROCKDALE

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1" = 2000'

1000 500 0 1000 2000
SCALE FEET

INDEX
OF SHEETS

A-1	B-1	C-1	D-1	E-1
A-2	B-2	C-2	D-2	E-2
A-3	B-3	C-3	D-3	E-3
A-4	B-4	C-4	D-4	E-4
A-5	B-5	C-5	D-5	E-5

B-3

LEGEND	
	CONCRETE-LINED CHANNEL IMPROVEMENTS W/R.O.W.
	NATURAL GRASS-LINED CHANNEL IMPROVEMENTS W/R.O.W.
	TRIBUTARY AND DRAINAGE CHANNEL COURSE
	PROPOSED ENCLOSED PIPE SYSTEMS
	MULTIPLE/SINGLE BOX CULVERT OR CULVERT PIPES AS REQUIRED BY FINAL DESIGN
	HEADWALL OR OUTLET STRUCTURE AS REQUIRED
	CURB INLET - SIZE AS REQUIRED
	FLOW DIRECTION

1" = 400'
200 100 0 200 400
SCALE FEET

MAP B-3

	C-2	D-2
B-3	C-3	D-3
B-4	C-4	D-4

CITY OF ROCKDALE

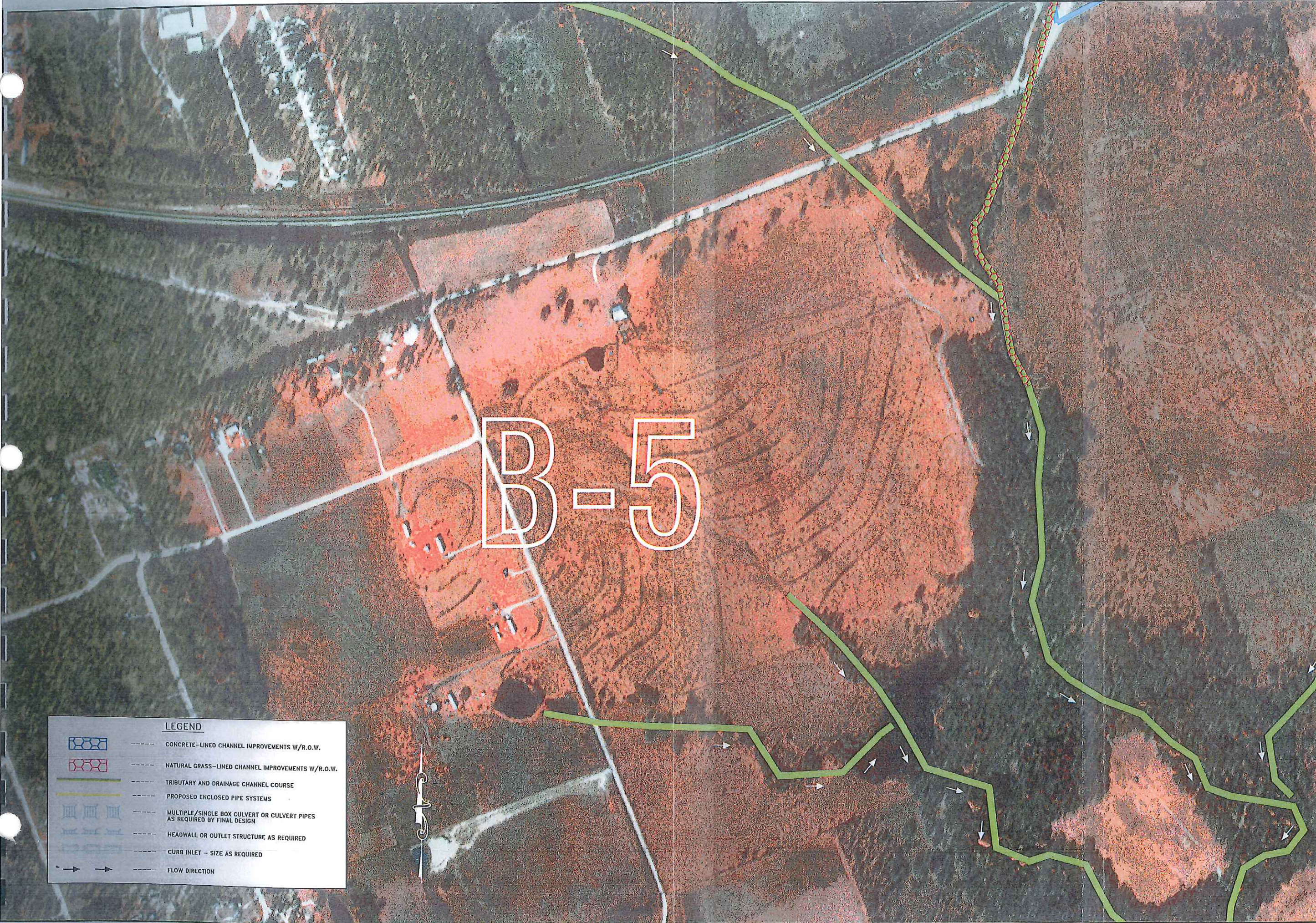
COMPREHENSIVE MASTER PLAN
STORMWATER DRAINAGE

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PROPOSED FUTURE DRAINAGE
IMPROVEMENTS

DESIGN	DRAWN	DATE	SCALE	PROJ. No.	SHEET No.
CED	SET	11/01	AS SHOWN	248-07.10	2 OF 10



B-5

LEGEND	
	CONCRETE-LINED CHANNEL IMPROVEMENTS W/R.O.W.
	NATURAL GRASS-LINED CHANNEL IMPROVEMENTS W/R.O.W.
	TRIBUTARY AND DRAINAGE CHANNEL COURSE
	PROPOSED ENCLOSED PIPE SYSTEMS
	MULTIPLE/SINGLE BOX CULVERT OR CULVERT PIPES AS REQUIRED BY FINAL DESIGN
	HEADWALL OR OUTLET STRUCTURE AS REQUIRED
	CURB INLET - SIZE AS REQUIRED
	FLOW DIRECTION

COMPREHENSIVE MASTER PLAN STORMWATER DRAINAGE			
PROPOSED FUTURE DRAINAGE IMPROVEMENTS			
DESIGN	DRAWN	DATE	SCALE
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PROJ. No.		SHEET No.	
248-07.10		4 OF 10	

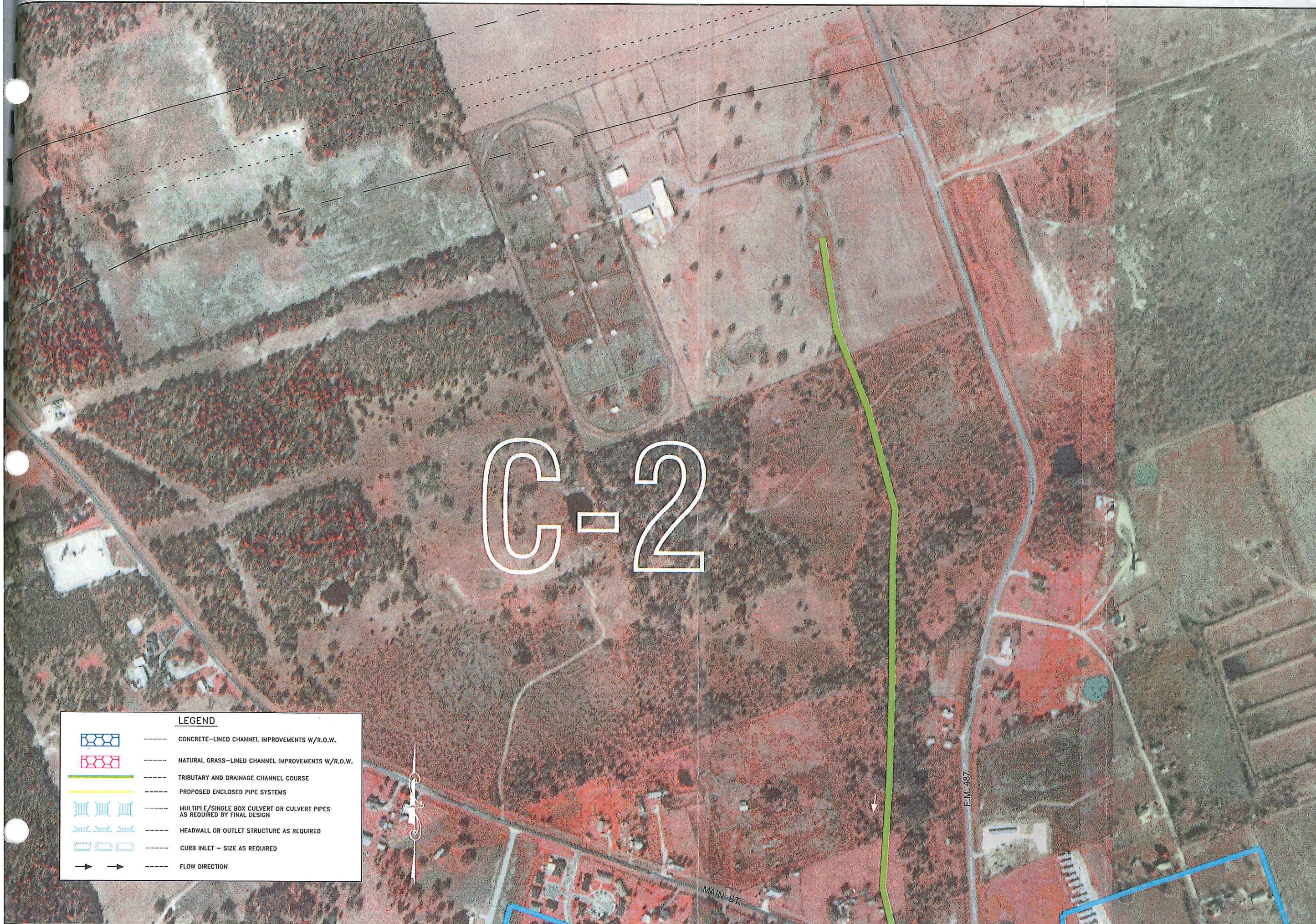
CITY OF ROCKDALE
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1" = 400'

200 100 0 200 400
SCALE FEET

MAP B-5

	B-3	B-4	B-5
C-2	C-3	C-4	C-5
D-2	D-3	D-4	D-5



LEGEND

	CONCRETE-LINED CHANNEL IMPROVEMENTS W/R.O.W.
	NATURAL GRASS-LINED CHANNEL IMPROVEMENTS W/R.O.W.
	TRIBUTARY AND DRAINAGE CHANNEL COURSE
	PROPOSED ENCLOSED PIPE SYSTEMS
	MULTIPLE/SINGLE BOX CULVERT OR CULVERT PIPES AS REQUIRED BY FINAL DESIGN
	HEADWALL OR OUTLET STRUCTURE AS REQUIRED
	CURB INLET - SIZE AS REQUIRED
	FLOW DIRECTION

COMPREHENSIVE MASTER PLAN STORMWATER DRAINAGE			
PROPOSED FUTURE DRAINAGE IMPROVEMENTS			
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1" = 400'

200 100 0 200 400
SCALE FEET

MAP C-2

	C-2	D-2
B-3	C-3	D-3
B-4	C-4	D-4

LEGEND

- CONCRETE-LINED CHANNEL IMPROVEMENTS W/R.O.W.
- NATURAL GRASS-LINED CHANNEL IMPROVEMENTS W/R.O.W.
- TRIBUTARY AND DRAINAGE CHANNEL COURSE
- PROPOSED ENCLOSED PIPE SYSTEMS
- MULTIPLE/SINGLE BOX CULVERT OR CULVERT PIPES AS REQUIRED BY FINAL DESIGN
- HEADWALL OR OUTLET STRUCTURE AS REQUIRED
- CURB INLET - SIZE AS REQUIRED
- FLOW DIRECTION



COMPREHENSIVE MASTER PLAN STORMWATER DRAINAGE			
PROPOSED FUTURE DRAINAGE IMPROVEMENTS			
DESIGN	DRAWN	DATE	SCALE
CED	SET	11/01	AS SHOWN 248-07.10
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			6 OF 10

CITY OF ROCKDALE

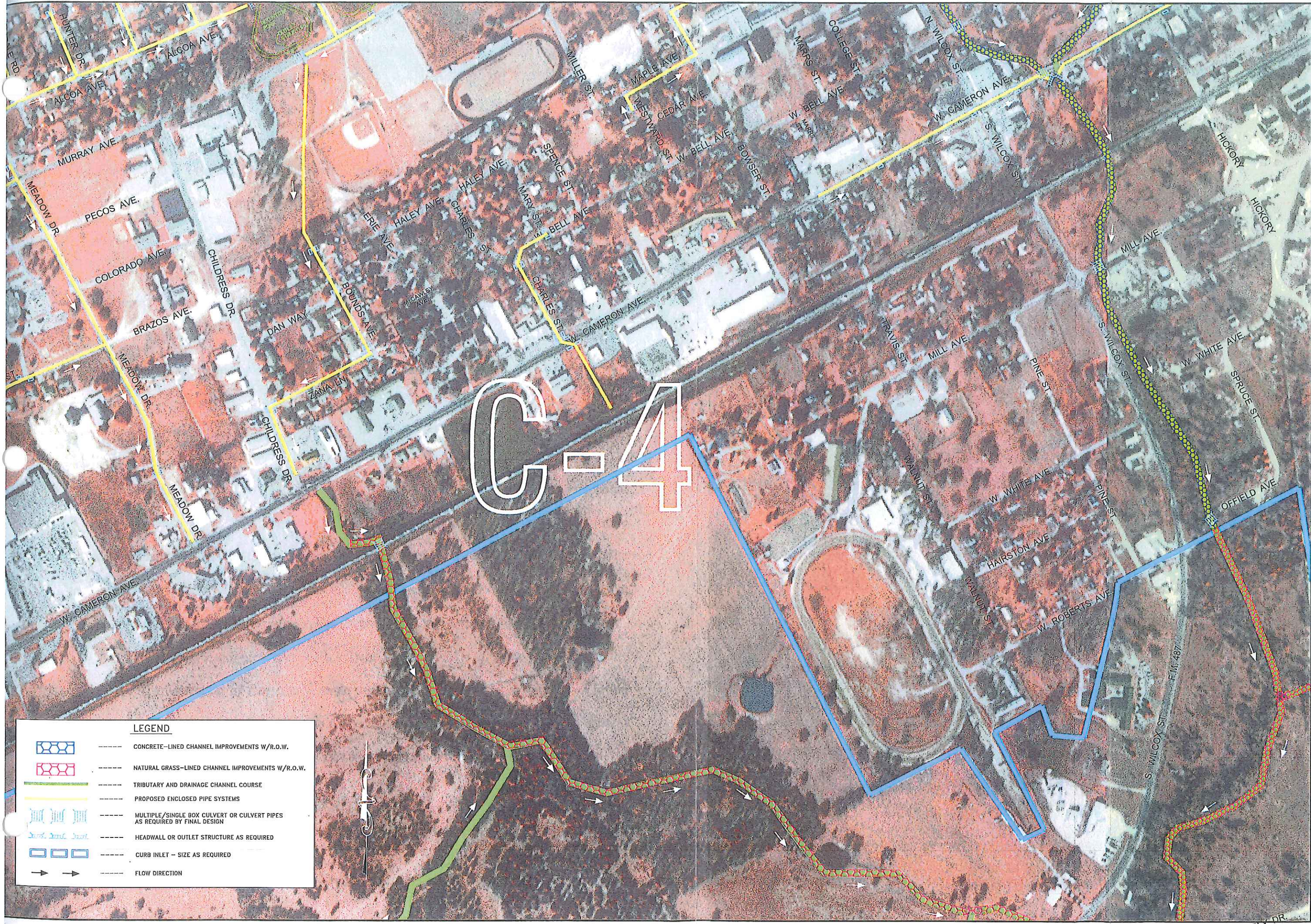
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1" = 400'

200 100 0 200 400
SCALE FEET

MAP C-3

	C-2	D-2
B-3	C-3	D-3
B-4	C-4	D-4



COMPREHENSIVE MASTER PLAN STORMWATER DRAINAGE			
PROPOSED FUTURE DRAINAGE IMPROVEMENTS			
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1" = 400'	
200 0 200 400	
SCALE FEET	
MAP C-4	

C-2 D-2	
B-3 C-3 D-3	
B-4 C-4 D-4	

D-2

LEGEND

- CONCRETE-LINED CHANNEL IMPROVEMENTS W/R.O.W.
- NATURAL GRASS-LINED CHANNEL IMPROVEMENTS W/R.O.W.
- TRIBUTARY AND DRAINAGE CHANNEL COURSE
- PROPOSED ENCLOSED PIPE SYSTEMS
- MULTIPLE/SINGLE BOX CULVERT OR CULVERT PIPES AS REQUIRED BY FINAL DESIGN
- HEADWALL OR OUTLET STRUCTURE AS REQUIRED
- CURB INLET - SIZE AS REQUIRED
- FLOW DIRECTION

COMPREHENSIVE MASTER PLAN
STORMWATER DRAINAGE

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PROPOSED FUTURE DRAINAGE
IMPROVEMENTS

DESIGN	DRAWN	DATE	SCALE	PROJ. No.	SHEET No.
CED	SET	11/01	AS SHOWN	248-07.10	8 OF 10

1" = 400'
200 100 0 200 400
SCALE FEET
MAP D-2

	C-2	D-2
B-3	C-3	D-3
B-4	C-4	D-4



COMPREHENSIVE MASTER PLAN
STORMWATER DRAINAGE

CITY OF ROCKDALE

1" = 400'

200 100 0 200 400
SCALE
FEET

MAP D-3

B-3	C-2	D-2
B-4	C-3	D-3
	C-4	D-4

PROPOSED FUTURE DRAINAGE
IMPROVEMENTS

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COMPREHENSIVE MASTER PLAN STORMWATER DRAINAGE			
PROPOSED FUTURE DRAINAGE IMPROVEMENTS			
DESIGN	DRAWN	DATE	SCALE
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			SHEET No.
			10 OF 10

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1" = 400'

200 100 0 200 400
SCALE
FEET

MAP D-4

	C-2	D-2
B-3	C-3	D-3
B-4	C-4	D-4

Section 9: Transportation Plan

9.0 TRANSPORTATION PLAN

9.1 SECTION I - INTRODUCTION

9.1.1 Authorization to Report

On October 8, 2001, the City of Rockdale, Texas, authorized the preparation of a Comprehensive City Plan, the plan was reviewed and updated in 2012 and again in 2018.

The planning area for this study and report consists of the area within the present City Limits and the City's present Extraterritorial Jurisdiction (ETJ). Other parcels of land adjacent to these areas are included where necessary for development of the Plan. The study covers an area which might be expected to develop within the next twenty (20) years.

9.1.2 Purpose

The purpose of this study is to investigate and analyze the existing major street and highway patterns in and around the City and, based upon the street and thoroughfare cross sections and criteria recommended herein, to develop a Thoroughfare Plan for the City. This Plan provides a very important planning tool to locate routes throughout the City which will have continuity in alignment and right-of-way widths and pavement sections adequate to handle anticipated traffic volumes. Also, this Plan serves as a guide for formulating capital improvement programs to build a street and thoroughfare system over a period of years as the City's urban area develops. As a result, the City should reserve recommended rights-of-way in the proper locations as future developments occur.

9.1.3 Scope of Study

The general scope of work performed in this study by the Engineer was as follows:

- a) Review all known prior studies, street layouts, plans, and all other available data pertaining to the existing street system
- b) Check, in the field, existing development conditions and potential areas for possible right-of-way acquisition
- c) Review highway plans, traffic counts and projections, and other planning data from the Texas Department of Transportation (TxDOT)
- d) Address all known environmental concerns and elements as they currently exist

- e) Recommend applicable standards and criteria for thoroughfare planning
- f) Determine alternatives, if any, for the thoroughfare routing based on the following considerations:
 - 1) Requirements for right-of-way
 - 2) Availability of right-of-way
 - 3) Existing developments, land use, and zoning
 - 4) Natural and man-made restrictions
 - 5) Effects from the alignments of other thoroughfares (existing and future)
 - 6) Street cross sections
 - 7) Other (i.e. storm drainage, railroad and highway requirements, existing utilities, etc.)
- g) Prepare layout(s) for the proposed thoroughfares, and illustrate the general alignments in relation to the existing streets and thoroughfares
- h) Present recommendations for the overall planning for thoroughfares, including right-of-way requirements and typical street cross sections.

9.2 SECTION II – THOROUGHFARE PLANNING AND DESIGN CRITERIA

9.2.1 Design Criteria

In determining the layout of a Thoroughfare Plan, consideration should first be given to the purposes for different types of thoroughfares and the criteria for their right-of-way widths and locations.

Experience has shown that major thoroughfares, or arterials, should be located approximately one mile apart, and their principal purpose is to carry through traffic from one area of the city to another. Direct access from abutting properties to major thoroughfares should be avoided, wherever possible. Major thoroughfares should be straight and continuous, with only gentle curves providing for changes in alignment. They should have sufficient right-of-way to provide for six (6) traffic lanes and a dividing median wide enough to provide for left turn lanes. In Rockdale, the right-of-way widths for major thoroughfares vary from 100 feet to 200 feet.

Secondary thoroughfares and collector streets are located about halfway between major thoroughfares and are used to collect traffic which has accumulated in neighborhoods from local streets and carry that traffic to major thoroughfares. This classification of street should have sufficient width for at least two (2) traffic lanes and two (2) parking lanes and should be fairly straight and continuous. The current right-of-way widths for these street classifications in Rockdale vary from 60 feet to 80 feet.

The local street classification has a purpose of serving the abutting property only. It should be purposely narrow and curvilinear to discourage through traffic and thereby assist in maintaining property values in neighborhoods. In Rockdale, the minimum right-of-way width for local streets is 50 feet.

9.2.2 Recommended Cross Sections

TxDOT will determine the right-of-way and pavement widths on those roadways in or near the City where the State is providing the funds for the construction. On all other roadways - - and on the future full developments of highways - - in the City, the cross sections for proposed roadways should be as described hereafter and as shown on Figure No.1.

1. Class A - Entrance Roadway

This roadway is planned to connect the proposed U.S. Highway 79 Relief Route to the downtown area. Roadway's FM 487 North and FM 908 North are planned as main entrances into the City from the north.

Direct access to abutting properties should be avoided, except onto collector streets.

Main Street and Ackerman Street will be main entrances to the city from the north. These two streets will come together into a Class B Major Thoroughfare on the south side of the City.

Three (3) 12-foot traffic lanes are proposed on each side of the roadway centerline, with provision for an 8-foot parking lane on each side. Sufficient right-of-way width has been provided on each side for berms, winding sidewalks, and planting. The recommended right-of-way width for this class of roadway is 200 feet. The recommended minimum centerline radius is 2,000 feet.

2. Class B – Major Thoroughfare

This roadway is planned to convey traffic along a continuous alignment across the City. Major thoroughfares are usually located about one mile apart in each direction. Direct access to abutting properties should be avoided, wherever possible. Three (3) traffic lanes, each 12 feet wide, are planned on each side of a 16-foot wide median. Left turn lanes are to be provided at major street intersections. Sidewalks, 4 feet in width, are planned on each side of the roadway.

The recommended right-of-way width for this roadway is 120 feet. The recommended minimum centerline radius is 1,000 feet.

3. Class C – Major Thoroughfare

This class of roadway is very similar to the Class B Major Thoroughfare, except that it is planned to convey traffic for somewhat shorter distances from one major thoroughfare or area to another. Three (3) traffic lanes, each 11 feet in width, are planned on each side of a 15-foot wide median. Four-foot wide sidewalks are proposed on each side of the roadway.

The right-of-way width for this roadway is recommended to be 100 feet, while the minimum centerline radius is recommended to be 1,000 feet.

4. Class D – Secondary Thoroughfare

The secondary thoroughfare is proposed to be constructed for four (4) traffic lanes, without a median, on a limited right-of-way width. The secondary thoroughfare is planned to be constructed on some major routes through the presently developed areas of the City and is recommended for all streets in industrial subdivisions. Wherever possible, 8-foot wide parallel parking lanes should be provided on each side.

Access to abutting properties is allowed but considered to be secondary in purpose.

This roadway is planned to provide for at least four (4) 11-foot traffic lanes on a right-of-way width of 80 feet. The minimum centerline radius should be 500 feet. Four-foot wide sidewalks are proposed on each side of this roadway in all developments other than in industrial areas.

5. Class E – Collector Street

The collector street is planned to collect traffic generated from residential neighborhoods or developed areas and convey that traffic to major thoroughfares. Access to abutting property is allowed but is considered to be secondary in purpose. Two (2) 12-foot wide traffic lanes and two (2) 8-foot wide parking lanes are proposed on each side of the street centerline. Four-foot wide sidewalks are proposed to be constructed on each side.

A right-of-way width of 60 feet is proposed for this roadway. The minimum centerline radius is recommended to be 500 feet.

6. Class F – Collector Street

This class of roadway is planned to be constructed principally along or around schools, to provide access to parks, or in congested existing residential areas where the right-of-way width is limited. It will provide for two (2) 10-foot wide traffic lanes and two (2) 8-foot wide parking lanes. By design, this street will allow for two traffic lanes but will naturally cause the traffic to move more slowly than in other types of roadways. Also, two parking lanes will be provided around schools or parks, which is of utmost importance. Four-foot wide sidewalks are recommended on each side of the roadway. Access to abutting property is allowed.

Sixty (60) feet of right-of-way width are recommended for this class of roadway. The recommended centerline radius is 300 feet.

7. Class G – Minor Street

The principal purpose for this class of roadway is to serve the abutting property. It should be purposely narrow and curvilinear to discourage through traffic. The pavement can vary from 26 to 30 feet in width to provide for one (1) traffic lane and two (2) parking lanes. Sidewalks 4 feet in width are proposed on each side of the roadway.

Right-of-way width should be a minimum of 50 feet, and the minimum centerline radius should be 150 feet.

9.2.3 Thoroughfare Routing

Over the years, the City of Rockdale has developed and expanded in a linear east-west fashion along U. S. Highway 79. The Union Pacific Railroad has aided in that type of development, since it parallels U.S. Highway 79 through the City, and, through a limited numbers of crossings, has prevented easy flow of traffic and contiguous development in a north-south direction.

Now TxDOT is planning a Relief Route around the north side of the City, approximately two miles north of, and generally parallel to, U.S. Highway 79. This will tend to exacerbate the situation of east-west development and movement within the City unless convenient major north-south thoroughfares and collector streets are constructed.

Several farm-to-market roadways cross through the City, but these are either angular in direction or have major reverse curves or intersections to prevent smooth flow of traffic.

U.S. Highway 77 is located on the eastern edge of the City. Although traffic on this highway flows in a north-south direction, the situation still exists inside the City whereby nearly all traffic must collect into U.S. Highway 79, or into some narrow streets performing as collector streets, in order to be dispersed in other directions.

These situations cause numerous circulation problems. Many unnecessary miles are traveled each day as a result, and it is very difficult for police and fire departments to effectively perform their duties. Public works and utility personnel experience lengthy travel problems. Access to schools, industrial areas, solid waste disposal sites, and many others are greatly hampered due to lack of direct routes upon which to travel.

Therefore, it is recommended that the City include in its Thoroughfare Plan a system of thoroughfares and major connecting roadways that will tend to alleviate the above described circulation problems. These new thoroughfares and roadways should adhere to the original land and property line patterns, wherever possible.

Highways 487 and 908 should be constructed southward from the proposed Relief Route to connect to Main and Ackerman Streets. These Roadways will provide convenient connections to the proposed Relief Route and a direct north- south connection into the downtown area.

It is anticipated that the F.M. Roadways will provide access to the abutting properties along the proposed Relief Route as well.

Major thoroughfares should be fairly straight and continuous and should be located approximately one (1) mile apart in each direction. Collector streets should be located about halfway between major thoroughfares and should be

fairly straight and continuous.

By constructing major thoroughfares and collector streets in this manner, the basic and orderly planning of the City can be accomplished. Communities, within the City, with boundary extremities approximately one-half (1/2) mile apart can be formed. The grid pattern for major water mains will be developed. Elementary schools and neighborhood parks can be planned so that smaller children will not be crossing major thoroughfares for these activities. This type of layout can provide convenient breaks for changes in zoning. The listing of the benefits of a well-conceived thoroughfare plan could be voluminous.

Since each highway, thoroughfare, and street location depends on others shown on the Plan, it is recommended that all issues presented herein be considered and kept in mind prior to granting any variances.

9.2.4 Thoroughfare Alignments

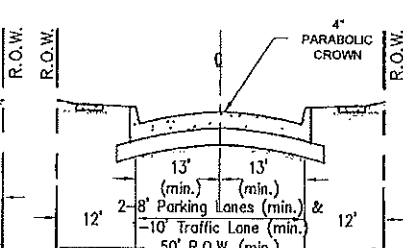
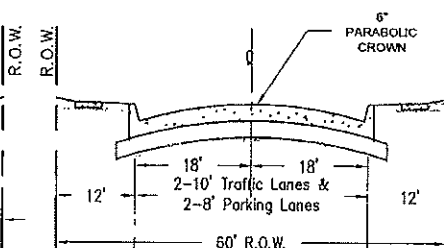
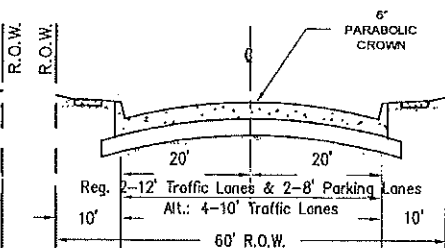
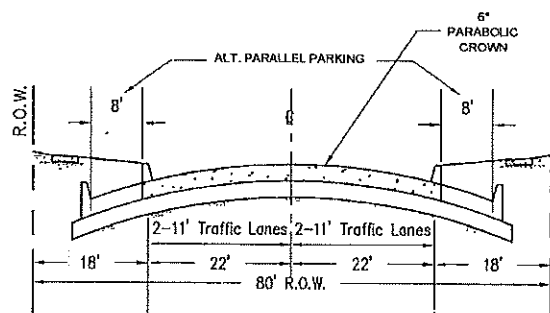
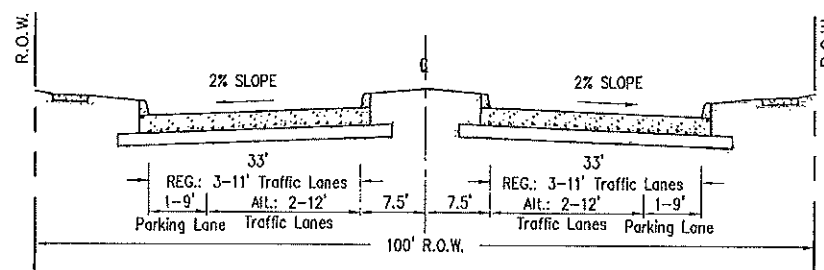
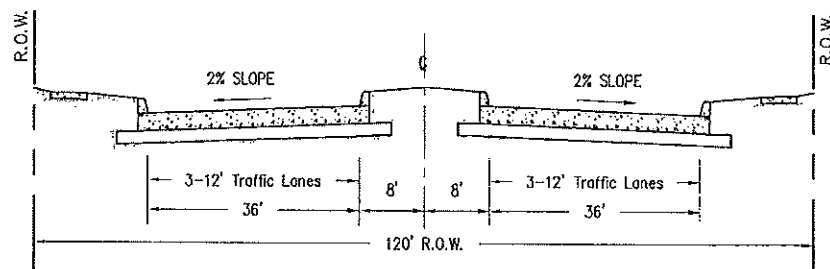
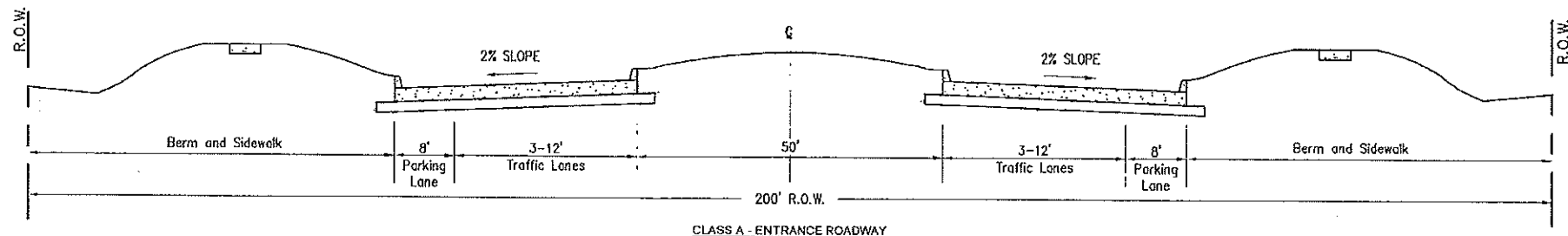
The recommended Thoroughfare Plan is shown in Figures No. 2 and No. 3. There are many alignments for thoroughfares and collector streets which are very critical to make the Plan functional. It is imperative that these alignment situations be protected in order for the Thoroughfare Plan to function properly.

9.3 SECTION III – CONCLUSIONS AND RECOMMENDATIONS

Following are conclusions and recommendations from this report which will greatly affect the future traffic patterns and thoroughfare planning for the City of Rockdale and which should be adhered to as future developments occur in and around the City.

1. It is recommended that the City adopt this Thoroughfare Plan as its official plan, so that future developments will adhere to it, so that rights-of-way, extensions, and connections for future highways, roadways, major and secondary thoroughfares, and collector streets can be acquired, dedicated, and/or preserved, and so that the recommended street sections can be developed accordingly.
2. It is further recommended that the City take immediate steps to extend Murray Avenue from Scarbrough Street to Ackerman Street.
3. Streets in Rockdale should be developed in classifications of highways, Entrance Roadway, major thoroughfares, secondary thoroughfares, collector streets, and minor streets, according to their intended use and traffic-carrying capabilities.
4. Major thoroughfares have the principal purpose of conveying traffic across the City from one sector to another, should be located approximately one mile apart, and should be fairly straight and continuous.
5. Collector streets collect traffic from neighborhoods and convey the traffic to major thoroughfares, should be located about halfway between thoroughfares and around schools, and should be fairly straight and continuous, if at all possible.
6. The principal purpose for minor streets is to serve abutting residential properties, and they should be purposely narrow and curvilinear to discourage through traffic.
7. It is recommended that extreme care be exercised in locating future roadways in and around the City of Rockdale so that environmentally sensitive areas can be protected as much as possible.
8. Street improvements in the city plan should be considered in a future bond election.
9. Public works should create a design criteria manual that includes streets, sidewalks, drainage, signs, water and wastewater design specifications.

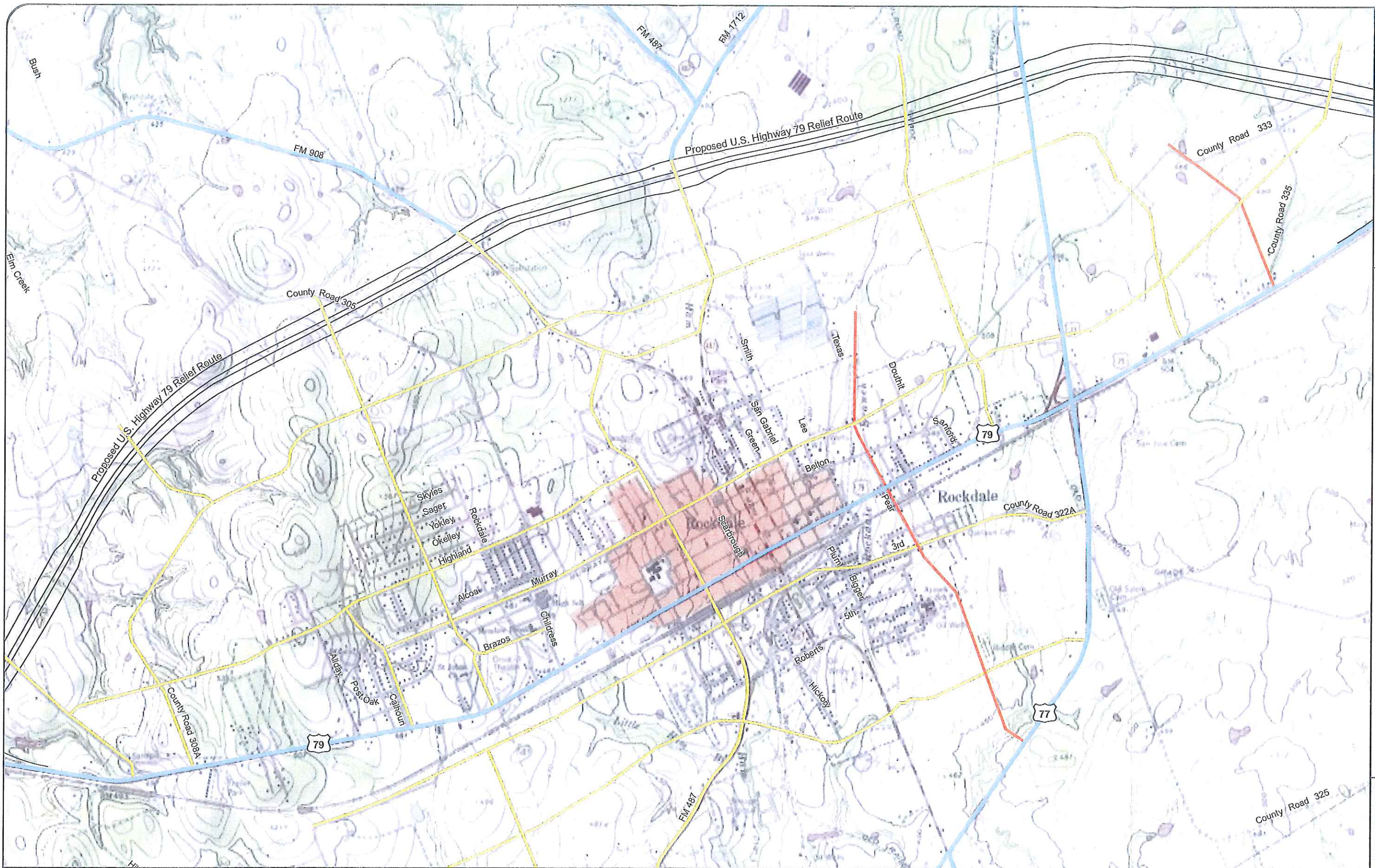
10. Conduct street survey to define minor, collector and thoroughfare streets in order to control traffic flow for street sign placement. (i.e. stop, yield)



CITY OF ROCKDALE, TEXAS STREET AND THOROUGHFARE CROSS SECTIONS

NOT TO SCALE
Figure No. 1

THE HOGAN CORPORATION
Engineers • Planners • Consultants
Austin / Dallas, Texas



Existing Highway

Class C
Major Thoroughfare
Min. 100' ROW

Collector Street and
Secondary Thoroughfare
Min. 50' ROW

U.S. Highway 79
Relief Route

0 2,000 4,000
Feet



CITY OF ROCKDALE
Master Plan Update (September 2010)
Thoroughfare Plan

FREESE AND NICHOLS, INC.
10814 LULLVILLE ROAD
BUILDING 4, SUITE 100
AUSTIN, TX 78759
PHONE: 512.617.3100

FIGURE
No. 3

PROJECT NO. R0010316
DATE CREATED August 2010
DRAWN & COORDINATE SYSTEM
MADE3 State Plane (feet) Texas Central
FILE NAME ThoroughfarePlan.mxd
PREPARED BY JM

Section 9A: Airport Action Plan

9A.0 AIRPORT ACTION PLAN

9A.1 Purpose

The purpose of the planning effort is to use developed methods to objectively evaluate and assess the needs of the H.H. Coffield Regional Airport from an aviation use, development, and implementation perspective. Further, the planning will assist City leadership to sort through the difficult questions and then use that information to guide local decisions regarding airport infrastructure investment. The potential need for infrastructure and additional facilities will be analyzed while looking to the future to determine what the Airport can do to improve the local and regional economy.

9A.2 Objectives

Goal 9A. The Airport is intended to be an integral part of the Comprehensive City plan. The overall goal is planning that enhances the Airport through coordination and cooperation with the City, Milam County and TxDOT Aviation.

Objective 9A.1: Airport planning for the H.H. Coffield Regional Airport and its surrounding properties should be integral to the existing and future operations and facilities.

Objective 9A.2: Airport Planning should minimize off-site impacts, particularly those affecting neighboring areas.

Objective 9A.3 Airport Planning should be developed to cater to designated business markets and regional industries.

Objective 9A.4 Development of the Airport and its properties should occur in a coordinated and comprehensive manner taking maximum advantage of available assets.

Objective 9A.5: Airport Planning and development should be conducted to achieve the best use of the site. Specific users and uses should be evaluated on a case-by-case basis for general conformity. The best use should be interpreted in terms of the following factors: use of physical site assets, economic benefit, jobs created and salaries, fiscal impact and contribution to overall City objectives.

Objective 9A.6: The Airport Planning process and project deliverables should be flexible enough to accommodate a range of potential aviation and non-aviation users.

Objective 9A.7: City and regional economic goals should be an important consideration in conducting Airport Planning and preparing a development strategy for the H.H. Coffield Regional Airport. Planned airport development should be evaluated relative to both long- and short-term costs and benefits.

Objective 9A.8: The development of the Airport should contribute to the positive image and commercial activity of the City and Milam County. The aviation situation at the H.H. Coffield Regional Airport is unique and has opportunity in a number of aviation industry segments.

9A.3 History

In July, 1987 Episcopal Bishop Maurice Benitez was joined by Mayor Bill Avrett and Councilmen Fred Marshall and Wallace Jones to officially present the city of Rockdale with a gift of the then privately-owned H.H. Coffield Municipal Airport. A businessman and entrepreneur, H.H. “Pete” Coffield, upon his passing named the Episcopal Foundation of Texas, a private not-for-profit foundation, the property recipient with the intention of creating a community airport. The news of that day indicated that community was gratefully proud of one of their own and that one of the primary purposes for the gift was to colocate a business/industrial park with the airport, assisting with overall economic development activities.

9A.3 Airport Funding

Federal Planning

The H.H. Coffield Airport (RCK) is part of the U.S. national transportation system, but is not part of the Federal Aviation Administration’s National Plan of Integrated Airport Systems (NPIAS). RCK is not a part of NPIAS because we are within 20 miles of an existing NPIAS airport. Of the nation’s nearly 5,200 public-use airports, the NPIAS comprises nearly 3,400 airports which are considered significant to the capacity of the national airspace system. Because of NPIAS non-participation, the City as sponsor is ineligible to receive federal funding for airport improvements under the Airport Improvement Program (AIP). Funds to pay for NPIAS improvements originate with the AIP program. AIP is a user-fee based program, funded through the Airport and Airways Trust Fund and originated through the Airport and Airway Improvement Act of 1982, as amended. This grant-in-aid program provides the funding to execute most federal, state and local airport planning. This planning effort, along with

planning done by TXDOT may be used to consider RCK participation in the NPIAS.

State Planning

RCK is eligible to receive funding through TXDOT and other state agencies. The Texas Airport System Plan Update identifies RCK as a Basic Service Airport in the Texas system of airports. RCK is eligible thru the TxDOT Routine Airport Maintenance Program (RAMP) which matches (50/50) up to \$50,000 annually.

9A.4 RECOMMENDATIONS

1. Execute RAMP grants to sustain and improve airport.
Ongoing:
 - a. Sealing cracks in runway
 - b. Repairing "sinkholes" in runway
 - c. Maintaining runway lighting
2. Obtain updated TxDOT plan for airport to add T-Hangers.
3. Construct taxi ramps to future hanger group.
4. Construct a new hanger group south of existing hangers.
5. Work with local land owner to obtain land for airport expansion.
6. Add turn arounds at ends of runway.

Section 10: City Services

10.0 CITY SERVICES

10.1 GOALS AND OBJECTIVES

GOAL 10: Provide the highest level of City services possible to meet the current and future needs of its residences and businesses.

Objective 10.1: Locate and adequately equip libraries, parks, recreational facilities and police stations that will provide protection of life and property as efficiently and economically as possible.

Objective 10.2: Develop a digitized geographical information system including occupied lots, unoccupied lots, utility locations, updated road locations, and accurately identify the city limits and extra territorial jurisdiction (ETJ).

Objective 10.3: Maintain and update the Rockdale web page to allow citizen access to City Forms, Building Code, Zoning Code, and City Calendar, news, and other pertinent information.

Objective 10.4: Identify new opportunities for and work with the citizens and other applicable organizations to provide high quality parks and recreation facilities that meet current and projected park and recreation needs.

Objective 10.5: Initiate and develop recreational programs needed by the community that private associations or private interests are not able to provide.

Objective 10.6: Utilize as much of the City's drainage corridors and floodplain areas as possible for open space, private parks, and other uses that are compatible with the flood hazard. Develop a system of walking trails throughout the community and coordinate a hike and bike trail.

10.2 OVERVIEW

City Services are one of the fundamental factors that define the quality of life for the citizens of Rockdale. City Services comprise the very functions necessary for people to live together in a civilized community. The breadth and quality of services available make the difference between an ordinary versus an outstanding place to live. The Rockdale City Library provides access to recreational reading, information, and learning opportunities which helps enrich the quality of life for all citizens of the community. Our parks and recreation

facilities allow us to enjoy the outdoors and enjoy our neighbors. Our police department protects our lives and property. American Medical Response is the primary provider for emergency medical services within Rockdale. Fire services are provided to Rockdale through the Rockdale Volunteer Fire Department.

10.3 EXISTING CONDITIONS

10.3.1 Library

The main objective of the library is to provide resources and services necessary to meet the evolving educational, recreational and informational needs of the public, thus enhancing individual and community life. We welcome resident and non-resident patrons to all library resources, microfilm readers, microfilm printer, computers, copy equipment, etc. The library currently works closely with the Milam County Genealogical Society and is a member of the Central Texas Library System and TexShare through the Texas State Library & Archives. In the past, the library has received Texas Book Festival Grants, Tocker Grants, and TIF grants. In addition to its classic and reference collection, the library has a special area for children and for young adults, computers, audio books, city government documents, and large print books. The library also offers reading programs for preschool and school-age children. Materials, services, and programs shall be planned to satisfy the needs of individuals and members of groups with concern given to all ages, backgrounds, interests, abilities and levels of education. The library will continue to search for methods of service that will satisfy the needs of those who have not traditionally been library patrons, while providing the best possible service to library patrons. Today with its extensive collection of books, the children's library, public computers, as well as art and furniture placed throughout the building for the public to enjoy, the library has become a remarkable state-of-the-art hub of literary activities. The Milam County Genealogical Society Research Center, which opened in 2003, provides extensive genealogical and historical information. It will be necessary for the library to monitor the conditions of the community to respond to future needs.

10.3.2 Parks and Recreation

INTRODUCTION

The City of Rockdale's purpose in developing this City Plan for parks, recreation and open space is to guide the future development of parks and recreational

facilities in the community and to put the role of parks, leisure and open space into the overall plans for the future of the community. The City Plan for Parks, Recreation and Open Space was developed with input from city staff, the Parks Board, the Rockdale Municipal Development District and the Planning and Zoning Commission.

The City Plan for Parks, Recreation and Open Space is comprised of the following sections:

- Introduction
- Goals and Objectives
- Public (City and School) Parks and Facilities
- Privately Owned or Operated Facilities
- Recreational Facility Standards
- Public Demand
- Analysis
- Prioritization of Needs
- Plan Implementation
- Conclusion

GOALS AND OBJECTIVES

Goal 1: The City should incorporate more facilities for community functions and activities into its plans for Parks and Recreation

Objective 1: The City should use objective measures, such as those developed by the National Recreation and Park Association to determine the adequacy of recreational facilities.

Objective 2: The City, the school district and private interests should cooperate and coordinate the use of facilities to a void, where possible, duplication of facilities.

Goal 2: The City should assess the need to provide opportunities for special populations.

Objective 1: Evaluate the design of current parks to identify the needs of underserved special populations, such as the elderly, the very young, disabled and at-risk youth.

Objective 2: Develop a park providing opportunities for passive recreation

Objective 3: Develop a system of walking trails

Objective 4: Provide sponsored recreation programs directed at youth-at-risk

Objective 5: Provide programs and facilities to accommodate disabled persons

Goal 3: The city should develop open spaces and conservation areas in accord with its land use plan.

Objective 1: Develop a network of trails to tie together its parks and to provide easy access for their users.

Objective 2: Provide safe, pedestrian access to recreational facilities for all of Rockdale's residents.

Objective 3: Utilize, as appropriate, utility right-of-way and rights-of-ways for trails, linkages and greenbelts

Goal 4: The city should identify and designate important natural resource areas that can be acquired and held as "Open Space" or "Preservation" areas.

Objective 1: Encourage developers to dedicate flood plain land for walking trails.

Objective 2: Include "Open Space" in park design, where practical.

Objective 3: Preserve unused land in its natural condition as a legacy to future generations.

Objective 4: Promote the community-wide benefits of conserving natural resources by incorporating conservation measures and demonstrations into the design of parks and recreation facilities.

Objective 5: Develop a preserve for native plants and animals, combining conservation efforts, education and awareness programs, and opportunities for passive and naturalistic recreation.

Goal 5: The city should develop and implement a plan for publicizing its parks, events and recreation facilities.

Objective 1: Create a brochure describing the City's attractions.

Objective 2: Develop and execute an advertising campaign to promote awareness of the City's facilities and to encourage visitors to the community.

Objective 3: Utilize the City's and Chamber of Commerce's websites to promote park facilities and events.

Goal 6: The city should coordinate its planning process with the schools, county, state, Municipal Development District, Chamber of Commerce and other interested parties.

PUBLIC (CITY AND SCHOOL) PARKS AND FACILITIES

Fair Park. Fair Park is located at 200 Walnut Street. Current amenities include barbecue grills, bleachers, folding chairs, concession stands, electrical hookups for campers/RVs, horseshoe pits, livestock pens, livestock show arena, pavilion, restrooms, rodeo arena and stage. Fair Park is home to the Rockdale Fair and Rodeo. The New Salem building and the George Hill Patterson Community Center are located at Fair Park. The rental fee schedule can be found on the City web site; www.rockdalecityhall.com



Figure 1-Fair Park

George Hill Patterson Community Center. The George Hill Patterson Community Center is located at 609 Mill Street and contains 6200 square feet of space. The center includes adjustable lighting, adjustable seating, air conditioning, folding chairs, conference room, dance floor, kitchen, paved parking, podium, projection screen, restrooms, sound system, folding tables and water fountains. The center can host events such as wedding, family reunions, or meetings. The rental fee schedule can be found on the City web site; www.rockdalecityhall.com



Figure 2-Patterson Community Center



New Salem Building. The New Salem Building is located at 308 Walnut Street. The building contains a meeting room, cooking kitchen, and multipurpose room.

Figure 3-New Salem Building

Post Oak Place Park. The park on Post Oak Place is an undeveloped park. The park primarily serves the neighborhood. No amenities are located in the park on Post Oak Place.



Figure 4 Post Oak Place Park

Moultry Park. Moultry Park is located at the end of Moultry Street. The park contains a baseball field, basketball court, picnic area, playscape and restrooms.



Figure 5-Moultry Park

Softball field. The City owns a softball field located adjacent to the wastewater treatment plant on Beverly Drive. The softball field is currently not utilized. The field has restrooms.



Figure 6-Softball Field

Skate Park. The Skate Park is located at the intersection of Mill and Wilcox Streets. The Park has a bowl and a half pipe ramp.



Figure 7-Skate Plaza

Sumuel Park. Sumuel Park is located at the corner of Fourth Street and Martin Luther King, Jr. Drive. The park has barbecue grills, BBQ pit, a half-court basketball court, butterfly garden, picnic area, playscape and shade cover. The park will have a splash pad funded through a Texas Parks and Wildlife Grant.



Figure 8-Sumuel Park

Veterans Park. Veterans Park is located at the corner of Brazos Street and Mistletoe Lane. The park includes three playscapes, swings, picnic tables, tennis courts, walking trail, butterfly garden and a pavilion. The pavilion is available of a first-come, first-served basis. Veterans Park also contains the municipal swimming pool, which is open during the summer months for residents of all ages. A Frisbee Golf course is planned for the park.



Figure 9-Veterans Park

Bridge Park. Bridge Park is located in the 700 Block of East Cameron Avenue. The park is currently under development. The park will have a Pavilion and walking trails.



Figure 10-Bridge Park

	Fair Park	Moultry Park	Skate Park	Softball Field	Sumuel Park	Veterans Park	Elementary School	Intermed . School	Jr. Hi. School	High School	Bridge Park
Barbecue grills	X				X	X					
Baseball field		X							X (Backst op only)	X	
Basketball court		X			X		X	X			
Bleachers	X					X					
Butterfly Garden					X	X					
Football field									X (Practic e field)	X	
Frisbee Golf Course						X					
Horse Exercise Track	X										
Horseshoe Pits	X										
Lighting	X		X	X		X					
Park Benches					X						
Pavilion	X					X					X
Picnic Area		X			X	X					
Playscape		X			X	X					
Restrooms	X	X			X	X					
Rodeo Arena	X										
¼ mile Running Track										X	
Shade Cover			X		X	X					

Skateboard ramps			X								
Soccer field								X (Practice field)		X (practice field)	
Softball field				X						X	
Stage	X										
Swimming Pool						X					
Swings					X	X					
Tennis Courts						X			X		
Volleyball Court						X					
Walking trail						X					X
Water fountains			X		X	X					

Table 1-Public (City and School) Outdoor Recreation Facilities

Rockdale Senior Citizens Center. Senior citizens in Rockdale are served by the Rockdale Senior Center. The Senior Center offers a variety of activities and programs including very low impact aerobics, cards, dominos, bingo and parties.



Figure 10-Rockdale Senior Citizens Center

PRIVATELY OWNED OR OPERATED FACILITIES

Rockdale Country Club. The Rockdale Country Club is a privately-owned golf course located approximately 3.3 miles from the city. The golf club has a nine-hole golf course, a driving range, club house and a swimming pool. The club offers memberships and play on the golf course and driving range is open to the public.



Wolf Park. Wolf Park is located at 106 Main Street. Wolf Park is owned by the Rockdale Chamber of Commerce. The park contains park benches and a pavilion and hosts special events.

Figure 11-Rockdale Country Club



Figure 12-Wolf Park

Girls softball field. The girls softball fields are located at the end of Bushdale Road. There are four fields, a playground and a concession stand. League ages are from four (4) years old to fifteen (15) years old.



Figure 13-Girls Softball Fields

Baseball fields. There are five boys baseball fields located at the end of Copeland Street. The fields are of various sizes for different ages of boys. Three of the fields are lighted for nighttime play. The fields are home to the Rockdale Youth Baseball Little league. Boys ranging in age from 4 years old to 14 years old are eligible to play. The fields are located on city-owned property but the maintenance and operation of the facilities are by volunteers.



Figure 14-Baseball Fields

The table below shows the privately owned recreational facilities and their amenities:

	Boys Baseball Fields	Girls Softball Fields	Rockdale Country Club	Senior Citizens Center	Wolf Park
Bleachers	X	X			
Concession Stand	X	X	X		
Driving Range			X		

Golf Course			X		
Indoor Recreation				X	
Park Benches					X
Pavilion					X
Swimming Pool			X		

Table 2-Privately Owned or Operated Recreational Facilities

RECREATIONAL FACILITY STANDARDS

The National Recreation and Park Association (NRPA) recognizes the importance of establishing and using park and recreation standards as:

- A national expression of minimum acceptable facilities for the citizens of urban and rural communities;
- A guideline to determine land requirements for various kinds of park and recreation areas and facilities;
- A basis for relating recreational needs to spatial analysis within a community-wide system of parks and open space areas;
- One of the major structuring elements that can be used to guide and assist regional development; and
- A means to justify the need for parks and open space within the overall land-use pattern of a region or community.

The NRPA has developed guidelines, but not requirements, for the kinds of park and recreational facilities that a community should have to accommodate a wide variety of recreational opportunities. The table below shows the NRPA guideline for each type of recreational facility and how closely Rockdale meets that guideline (ice hockey and beach areas which are included in the NRPA guidelines have been omitted):

Activity/Facility	Recommended Space Requirements	Recommended Size and Dimensions	Recommended No. of Units per Population	No. of Units in Rockdale
Badminton	1620 sq. ft.	Singles-17' x 44' Doubles-20' x 44'	1 per 5000	No city owned, no school or privately owned
Basketball				
<ul style="list-style-type: none"> • Youth 	2400-3036 sq. ft.	46-50'x84'	1 per 5000	<ul style="list-style-type: none"> • No city owned. 3 outdoor

Activity/Facility	Recommended Space Requirements	Recommended Size and Dimensions	Recommended No. of Units per Population	No. of Units in Rockdale
<ul style="list-style-type: none"> High School Collegiate 	<p>5040-7280 sq. ft.</p> <p>5600-7980 sq. ft.</p>	<p>50' x 84'</p> <p>50' x 94'</p> <p>With 5' unobstructed space on all sides</p>	<p>1 per 5000</p> <p>1 per 5000</p>	<p>basketball courts at the elementary school, 1 outdoor basketball court at the intermediate school.</p> <ul style="list-style-type: none"> 1 outdoor basketball court at Moultry Park; ½ outdoor basketball court being built at Sumuel Park. No city-owned, no school or privately owned
Handball (3-4 wall)	800 sq. ft. for 4-wall	20' x 40'— minimum of 10' to rear of 3-wall court. Minimum 20'	1 per 20,000	No city-owned, no school or privately owned

Activity/Facility	Recommended Space Requirements	Recommended Size and Dimensions	Recommended No. of Units per Population	No. of Units in Rockdale
		sides.		practice field located at the junior high school.
Soccer	1.7-2.1 acres	195' to 225' x 330' to 360' with a minimum 10' clearance on all sides	1 per 10,000	No city owned. 1 practice soccer field at the intermediate school. 1 practice field located at high school.
Golf-driving range	13.5 acres for minimum of 25 tees	900' x 690' wide. Add 12' width for each additional tee.	1 per 50,000.	No city owned. 1 privately owned (Rockdale Country Club)
¼ mile running track	4.3 acres	Overall width—276', Length—600.02'. Track width for 8 to 4 lanes is 32'.	1 per 20,000	No city owned. 1 school owned.
Softball	1.5 to 2 acres	Baselines-60' Pitching distance-46' (women 40'). Fast pitch field: radius from plate-225' between foul lines. Slow pitch-275' (men); 250' (women)	1 per 5,000 (if also used for youth baseball)	1 city owned (unused). 1 school owned (for girls), 4 privately operated and maintained fields (for girls).
Multiple recreational court (basketball,	9,840 sq. ft.	120' x 80'	1 per 10,000	No city owned, indoor or outdoor. 5 indoor multiple

Activity/Facility	Recommended Space Requirements	Recommended Size and Dimensions	Recommended No. of Units per Population	No. of Units in Rockdale
volleyball, tennis)				courts located at the schools (1 at elementary school, 1 at intermediate school, 1 at junior high school and 2 at the high school) which are not suited for tennis.
Trails	N/A	N/A	1 system per region	No city owned.
Archery range	Minimum 0.65 acres	300' length x minimum 10' wide between targets. Roped clear space on sides of range minimum 30'. Clear space behind targets minimum of 90' x 45' with bunker.	1 per 50,000	No city owned, school owned or privately owned.
Combination Skeet and Trap Field (8 stations)	Minimum 30 acres	All walks and structures occur within an area approximately 130' wide by 115' deep. Minimum cleared area is contained within 2 superimposed segments with 100-yard radii (4 acres) Shot-fall danger zone is contained within 2 superimposed segments with 300-yard radii (36 acres).	1 per 50,000	No city owned or privately owned.
Golf				
<ul style="list-style-type: none"> Par 3 (18 hole) 	50-60 acres	Average length vary	-----	No city owned or

Activity/Facility	Recommended Space Requirements	Recommended Size and Dimensions	Recommended No. of Units per Population	No. of Units in Rockdale
<ul style="list-style-type: none"> 9-hole standard 	Minimum 50 acres	600-2700 yards Average length-2250 yards	1 per 25,000	privately owned. No city-owned. 1 privately owned (open to public)
<ul style="list-style-type: none"> 18-hole 	Minimum 110 acres	Average length-6500 yards	1 per 50,000	No city-owned or privately owned.
Swimming Pools	Varies on size of pool and amenities. Usually ½ to 2 acre site	Teaching-minimum of 25 yards x 45' even depth of 3 to 4 ft. Competitive-minimum of 25 meters x 16 meters. Minimum of 27 square feet of water surface per swimmer. Ratios of 2:1 deck vs. water Diving board depth-3.4 meters.	N/A	1 city-owned pool that is 72 feet long, and 25' at its narrowest and 53 feet at its widest point. No diving board is at the pool. 1 privately owned swimming pool (Rockdale Country Club).

Table 3-NRPA Standards Comparison

ANALYSIS

This analysis shows that Rockdale is deficient in many areas of recreational facilities. The City currently does not have a formal recreational program other than operating the swimming pool during the summer months. The Girls Softball Association and the Rockdale Little League provide recreation for youths during the summer months and

the Rockdale Independent School District provides extra-curricular activities, such as sports, during the school year.

The City of Rockdale is seriously deficient on adult recreational facilities. The only facilities to accommodate adult recreation are the swimming pool, tennis courts and walking track at Veterans Park; the basketball court at Moultry Park; and, the basketball court at Sumuel Park. All of these parks are active parks (parks with facilities that support physical exertion or exercise). No organized adult softball leagues exist in Rockdale at the current time. No public (City or School) passive parks exist in Rockdale for residents who want to read, play chess/checkers, relax or just enjoy nature. Wolf Park is a privately-owned passive park that holds special events. Rockdale has a walking trail for residents who want to walk at Sumuel and Veterans Parks. There are no linear parks in the community that utilize drainage areas or other undevelopable spaces for parks.

None of the parks have irrigation systems. Consequently, the turf in each park has sparse areas of vegetation.

There is no park specifically dedicated to very young children. Parks designed around very young children can help improve the playing experience of those children since they are not competing with older children for the use of the equipment.

No dog park exists in Rockdale for pet owners. Dog parks are becoming popular places not only for residents to exercise and socialize their pets but to also socialize with other pet owners.

None of the parks have a particular "theme" to assist in development or purchase of parks equipment or facilities. The development of a theme for each park can assist in compatible designs and target specific populations of the community.

The swimming pool is more than fifty (50) years old. The pool was constructed, as were most swimming pools at the time, in the "bathtub" style (generally rectangular with vertical walls). The modern concept is to have a water park with various components such as zero-entry (where one wades into the pool rather than steps off the side into the pool), water spray equipment, a large swim area, water slides, aqua activators, and water dumping features. Some water parks also have a lazy river feature or a surfing feature. Many water parks are built around a theme such as an ocean theme, pirate theme, sports theme, or nature theme.

Indoor recreational programs are currently limited to the school facilities and programs, the utilization of the Patterson Civic Center and the Senior Citizens Center. The City is working on plans to increase the utilization of the community center. The City is exploring ways to create an amphitheater to the west side of the community center, improve acoustics to the building, enlarging the kitchen and redesigning the entrance

to the building, improving the lighting, adding storage space, improving the aesthetics to the building, adding a cover to the patio on the west side of the building, adding a gazebo, adding a water feature on the west side that may include artistic designs, sculptures or lighting, adding walkways and improving the landscaping.

The City staff has also been working on plans to increase the utilization of the community center. A playscape, play equipment, a beach volleyball court, horseshoe pits, washers pits, park benches, water fountains, a barbecue area, decorative lighting, and a six foot fence should be added to the eastern side of the community center.

The Rockdale Fair Association (RFA) has constructed many facilities and improvements at Fair Park for use by the public. The facilities include the New Salem Building, livestock buildings, a show arena, fencing, pavilion, walk-in cooler, restrooms, concession area improvements, road and landscaping improvements. The RFA has raised funds for these improvements through holding the annual fair and rodeo. The RFA has plans for additional improvements to Fair Park including restrooms, purchase of land, a new storage building, moving the ticket booth and repairing the fencing.

PUBLIC DEMAND

Rockdale's park usage consists of City residents, residents in the ETJ and visitors. The challenge of park planning is to balance the needs of these groups so as to focus resources on the central city while promoting the construction of public neighborhood parks in new developments.

The City's Subdivision Ordinance requires a fee for purchase of future park land or, at the City Council's discretion, dedication of land in lieu of a fee. Plats of ten (10) acres or less are excluded from park fees. The area of land to be dedicated must not be less than eight percent (8%) of the total area proposed within the subdivision, inclusive of adjoining street rights-of-way. No more than fifty percent (50%) of a park land dedication may be within the 100-year floodplain. Should new subdivisions of ten (10) acres or more be built in Rockdale, the acquisition of new parks will help maintain property values in the area; however, new parks also mean that the operating expenses of the City for park maintenance will increase.

The limited range of recreational opportunities has somewhat affected the City's citizens and the local economy. Because there are not many choices in Rockdale, its residents are tempted to travel to Taylor, Hutto or Round Rock for recreational diversity. This represents a flow of dollars away from Rockdale, depriving its businesses of access to local customers.

Rockdale businesses also are competing for skilled employees, some of whom place value on the recreational opportunities afforded by the area in which they would live.

Likewise, Rockdale wishes to attract new businesses; parks and recreational facilities may help to convince some businesses to choose one community over another.

PRIORITIZATION OF NEEDS

The following priorities have been established by the Parks Advisory Board to provide guidance for future projects and to quantify the parks, recreation and open space needs of the community.

Rockdale Master Park Plan Project Priorities

BRIDGE PARK

Improvements listed below are recommended to be accomplished within the next 2 to 5 years

- Walking Trail connecting with Depot
- Benches
- Pavilion
- Grills

FAIR PARK

Improvements listed below are recommended to be accomplished within the next 2 to 5 years

- Walking trail (to link to Skate Park via Patterson Community Center & Park)
- Horseshoe and Washer Pits
- Picnic Area
- Benches
- Restrooms
- Water Fountains
- Lighting/Electrical Improvements
- Landscaping

MOULTRY PARK

Improvements listed below are recommended to be accomplished within the next 8 years

- Restroom renovations
- Covered basketball court
- Renovate ballfield
- Install lighting
- Landscaping
- Install water fountains

PATTERSON COMMUNITY CENTER & PARK

Improvements listed below are recommended to be accomplished within the next 5 to 10 years

- Walking Trail linking Fair Park and Skate Park
- Exercise Stations along walking trail for both handicap and non-handicap use
- Covered Playscape
- Barbeque Pits
- Picnic Tables
- Amphitheater w/ADA accessible stage

Gazebo (ADA accessible)
Benches
Water Fountains
Landscaping
Outside Lighting
Frisbee Golf connecting with Skate Park

POST OAK PLACE PARK

Improvements listed below are recommended to be accomplished within the next 6 years

Passive Park
Landscaping
Benches

SAN ANTONIO & ARANSAS PASS (SAP) WALKING TRAIL

Improvements listed below are recommended to be accomplished within the next 5 to 10 years

Walking Trail

SKATE PARK

Improvements listed below are recommended to be accomplished within the next 2 to 5 years

Skate ramps
Walking trail connecting to Patterson Community Center & Park/Fair Park
Covered Picnic Tables
Lighting
Landscaping
Frisbee Golf course connecting with Patterson Community Center & Park

SOFTBALL FIELD

Improvements listed below are recommended to be accomplished within the next 5 years

Improve/repair field (sod, fences, backstop)
Landscaping

SUMUEL PARK

Improvements listed below are recommended to be accomplished within the next 6 years

Splash Pad
Install Lighting
Install Parking
Landscaping

VETERANS PARK

Improvements listed below are recommended to be accomplished within the next 2 to 5 years

Frisbee Golf course
Sand volleyball
Improve walking trail
Install exercise stations
Small splash pad
Install lighting

Upgrade pool
Improve tennis courts
Expand parking
Landscaping

OTHER PRIORITIES

Improvements listed below are recommended to be accomplished within the next 10 to 15 years

Indoor Recreation – Acquire land or vacant building for indoor recreation facility.
Acquire land to designate as open-space adjacent to Fair Park/Patterson Community Center.
Provide summer recreation programming and offer more tournaments by hiring summer recreation director.
Construct a dog park.
Construct a soccer field.
Construct a young childrens park.

PLAN IMPLEMENTATION

The current economic climate has caused the City to cut back on the parks maintenance staff and severely limits the City's ability to maintain or operate new facilities. Because of the severely limited resources, priorities are critical to determining what improvements, if any, can be undertaken. Many cities construct park improvements through annual appropriations in the City's General Fund or through the issuance of General Obligation Bonds approved by voters. Because of the current economy, it is not seen in the immediate future that General Fund appropriations will be available to construct or improve many of the items listed under the Prioritization of Needs.

Another source of funds for parks, recreation and open space projects are funds by private individuals and organizations. Individuals or organizations could be approached to see if they would be willing to purchase a particular piece of equipment or furnishing for a park, dedicate land for a park, provide funds to be used for a park or provide labor to construct park facilities. Sumuel Park is an example of private individuals and organizations providing the land and funds for equipping the park.

Grants from the State of Texas or the federal government have been sharply reduced. It is not anticipated in the near future that grants from State or federal agencies will be available. Should the economy improve and such grants become available, the City should pursue those grants and solicit private funds for the matching portion of the grant(s).

CONCLUSION

Over time, the City expects to make steady progress toward addressing its parks, recreation and open space needs. Should new housing and new businesses develop, the City will have additional resources which may be applied towards these needs. This Parks, Recreation and Open Space Plan should be reviewed every five years to make any additions, deletions or changes as necessary due to the changing economic, political and social environment of the community.

10.3.3 Police

The City of Rockdale is located on the boundary of the fastest growing areas of the state. There is affordable housing in the city and surrounding county which is likely to attract residents from the larger cities, who are looking to escape the big cities, while remaining in a reasonable distance for commuting to work and shopping. It's imperative that we increase salaries to maintain a strong proactive police force and reduce turnover.

In 2018 the City began construction on a new police facility.

10.3.4 Medical Care

Rockdale is fortunate to have professional health care facilities that provide quality care for all ages. The current Medical System, which includes the local hospital and three outpatient medical clinics, is focused on providing patient centered care to the community and surrounding area. The hospital and clinics offer numerous services and specialty physician care which includes but is not limited to Cardiology, Gastroenterology, Internal Medicine, Orthopedics, Podiatry, Allergy, Pulmonologist, Sports Medicine and Urology. The hospital has a critical care emergency room and a family care clinic that is staffed 24 hours seven days per week. The hospital contracts with a service that provides emergency life flights to major critical care hospitals, such as Scott & White Hospital in Temple and St. David's Health Care System in Austin, for patients that need more intensive care.

In addition to the hospital clinics, there are facilities in Rockdale that specialize in family care, dental health, physical therapy, Alzheimer treatment and senior citizen residential long term care.

Emergency ambulance service is jointly contracted by the City of Rockdale, Milam County and the City of Cameron. Their responsibility is to provide

emergency or advanced life saving services and to transport patients to the closest health care facility equipped to handle the patient's medical needs.

10.3.5 Digital Information Systems

The City of Rockdale has historically worked with City maps depicting boundaries and infrastructure lines. This may have been sufficient when growth was minimal and changes were made infrequently. Today changes occur on a constant basis. Smart growth and efficient city planning depend on an accurate understanding of existing conditions. Indeed, balancing the fulfillment of human needs with the protection of the natural environment so that these needs can be met not only in the present, but in the indefinite future, will accommodate growth without diminishing present quality of life.

The advent of computers has revolutionized cartography. Most commercial-quality maps are now made using computer software. One type of software (GIS) is a system for capturing and analyzing data spatially referenced to the earth. That is, it is a computer system capable of managing geographically-referenced information. The most common method of data creation is digitization, where a hard copy of a map or survey plan is transferred into a digital medium through the use of a computer-aided design (CAD) program.

A growing demand for GIS in regional and community planning has resulted in lower costs and continual improvements in the hardware and software components of GIS. The City of Rockdale will need to acquire this computer-based mapping capability as soon as feasible and should explore now the products that are available. The quality of our community depends on smart, sustainable development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

10.3.6 All Other City Services

The City of Rockdale currently has a web site, www.rockdalecityhall.com, which provides helpful information about departments, some city policies and the City's Code of Ordinances. Additionally, it lists contact information for key staff, meetings and public notices and links to other community services. The web site should be further developed and upgraded to provide a dynamic source for city forms, government documents and interactive communication with city services, e.g. message boards or virtual forums.

The Street Department is responsible for roadside mowing, tree trimming, herbicide application and other landscaping activities. The department also

maintains roadways including culvert repair, street patching and traffic control signs installations.

The Community Services Department serves all citizens of Rockdale by ensuring that building and development occur in a safe and organized manner. Department responsibilities include:

- Administering building permits and fees
- Administering the Subdivision and Zoning Ordinances
- Enforcing city nuisance ordinances
- Permitting and inspection of building, electrical, plumbing and mechanical activities in the city limits
- Providing advice to the city manager, Planning and Zoning Commission and City Council concerning zoning and planning matters

The department consists of the Building Inspections and Permits Division and The Code Enforcement Division. Each division monitors and enforces the adopted codes and ordinances of the City of Rockdale.

The Utility Department includes Utility Administration, Water Services, Sanitation, Sewer Services, Water Treatment Plants and Wastewater Treatment Plant. The department provides for meter reading, utility billing, initiation and termination of services, maintenance of fire hydrants and effluent disposal systems operation and maintenance. All water wells and water quality maintenance processes are conducted by the Utility Department. The city presently contracts its sanitation and recycling services.

City government in Rockdale includes the departments of Administration, Community Service, Fire Department, Municipal Court, Public Works (Airport, Streets, Parks, Water, Wastewater and Sanitation) and Police. These departments provide for the many functions necessary to maintain the activities of the City. Administrative functions include posting and notification of all meetings and events, open records request, annexation requests, maintaining official city records, among many others. The Municipal Court is involved in the scheduling and prosecution of all Municipal Court proceedings including jury trials. Accounts Receivable and Payable as well as cash management and investments are managed by the City Treasurer. In addition, the City Treasurer generates monthly and annual financial reports.

10.4 RECOMMENDATIONS

1. Encourage the City Council to support the Library's Long Range Plan for future growth and development.

2. Develop hiking trails and scenic viewing trails throughout the community.
3. The City should initiate and develop recreational programs for all citizens, the youth through the elderly. The city's drainage corridors and flood plain areas should be utilized for open space, parks and walking trails.
4. Ensure the salaries of the city staff are as competitive as feasible with other communities in order to retain qualified staff.
5. Provide adequate staffing levels to accommodate high quality service levels and projected growth.
6. Explore various GIS software products in order to complement efficient city planning.
7. Continue to expand the use of the city website for public access of information and documents.
8. Encourage the City, County, School District, Hospital District, Municipal Development District and the Chamber of Commerce to work together to provide quality public services.