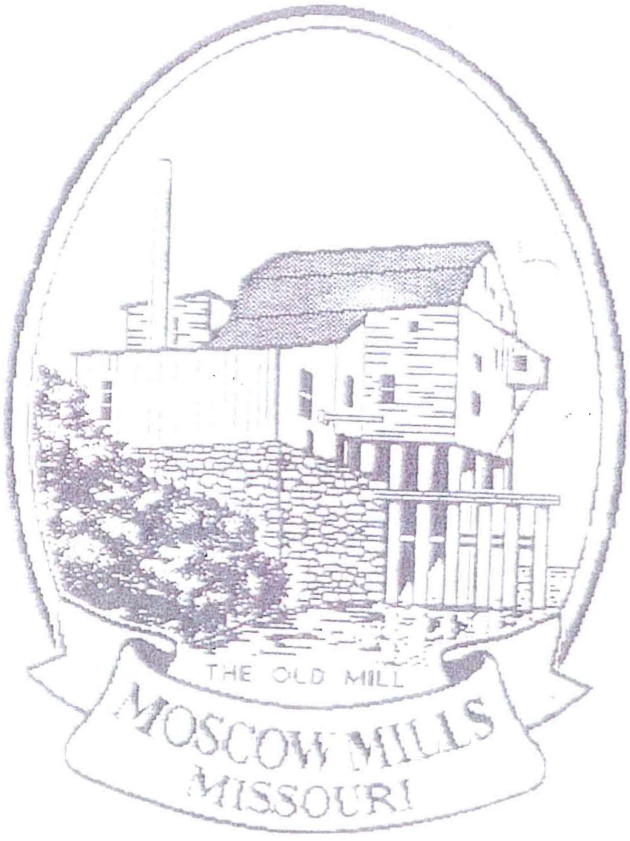
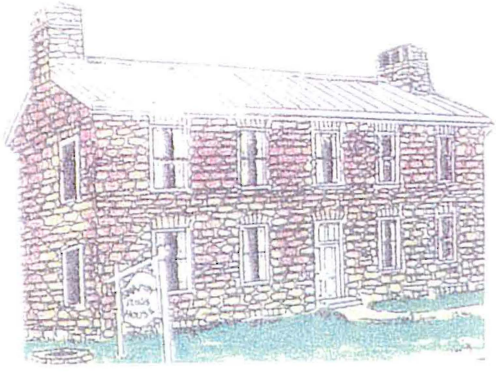
CITY OF MOSCOW MILLS, MISSOURI

COMPREHENSIVE DEVELOPMENT PLAN





KBR ENGINEERING, INC. / CONSULTING ENGINEERS
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CERTIFICATION

I, Linda McNeil, Clerk for the City of Moscow Mills, MO. do hereby certify that the following is a true and exact copy of the Comprehensive Plan as adopted by the Board of Aldermen on March 19, 2003 by Ordinance #189.

Linda McNeil
Linda McNeil, City Clerk

4-03-03
Date

CITY OF MOSCOW MILLS
MISSOURI

COMPREHENSIVE DEVELOPMENT PLAN

Mark Schuette
Mayor

Linda McNeil
City Clerk

John Bruere
City Attorney

Board of Aldermen
Warren Cox Lisa Meyer
Mary Lou Jung Marilyn Rahmier

Board of Planning & Zoning
Kristi Meyer, Chairman

Sherry Clynch Rick Meyer
Art Jenkins Mike Noonan
Sheryl LeJuene Mark Schuette

This report was prepared by KBR Engineering, Inc., under authorization of the Board of Aldermen.

CITY OF MOSCOW MILLS
MISSOURI

COMPREHENSIVE PLAN
FOR
DEVELOPMENT

KBR ENGINEERING, INC./
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CITY OF MOSCOW MILLS
MISSOURI

COMPREHENSIVE DEVELOPMENT PLAN
(February 2002)

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FORWARD

Government at all levels is becoming more complex whether it be a local unit of government experiencing rapid growth, remaining static, or experiencing a declining population and economic base. Municipal leaders are faced with the challenge of meeting the increased demands (physical, social, and economic) of an ever changing society. These demands consists of the provision of adequate utilities, facilities, and services by local units of government to the taxpayer in the most economical and efficient manner possible.

Many municipalities have tried to meet these demands without a plan for future development and have failed. Without a plan, inadequate and inefficient utilities, facilities, services, poor traffic circulation, and decreasing property values (due to mixed land uses) generally result. A negative economic effect is felt by the entire municipality. The basic objective of a plan is to provide local governmental leaders with a guide to correct or avoid these problems by evaluating existing and future needs. Thus, the plan becomes an official public document adopted by a local government as a policy guide to decisions about the physical development of the community.

CHAPTER I

INTRODUCTION

AUTHORIZATION

The City of Moscow Mills authorized KBR Engineering, Inc./Consulting Engineers to prepare this Comprehensive Development Plan. This report has been a joint effort of the Mayor, City Council, City Staff, City Attorney and the City's Consultant, KBR Engineering, Inc. This document was prepared after its contents had received considerable study, review, and appraisal by KBR Engineering, Inc., and representatives of the City of Moscow Mills.

The City of Moscow Mills is authorized by State Statutes to prepare a city plan for the physical development of the municipality. The City Council may adopt the plan as a whole or it may adopt separate parts of the plan. Upon the adoption (after a public hearing) the City should submit a copy of its adopted plan to the County Recorder to be recorded. The Planning Commission may from time to time desire to review and amend the plan, or parts thereof, as needed.

Since this reports only made recommendations and the City Council has the final authority concerning growth policies of the City, it is suggested that the City Council also adopt the Plan as a guide for community growth and development.

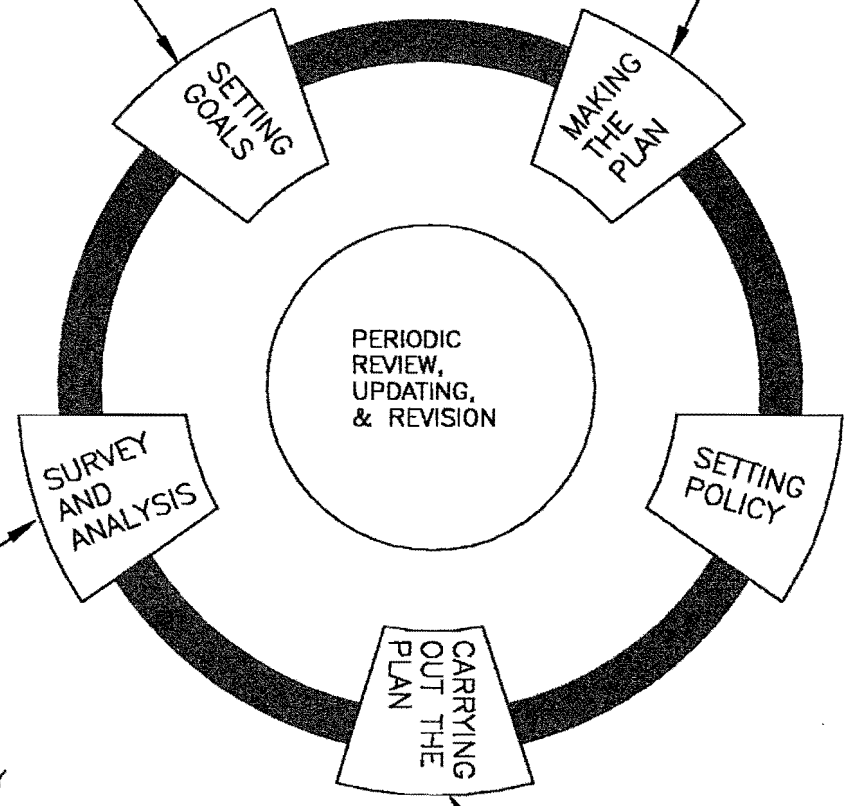
PURPOSE

A Comprehensive Plan is an official public document adopted by a local government as a policy guide to decisions about the physical development of the community. The Comprehensive Plan includes the consideration of past, present, and future population and

THE COMMUNITY PLANNING PROCESS

1. TYPE OF COMMUNITY DESIRED
2. IEVEL OF PUBLIC SERVICES DESIRED AND SO FORTH

1. LAND USE
2. COMMON FACILITIES
3. UTILITIES
4. STREETS & CONSTRUCTION
5. SPECIAL
   DOWNTOWN PLAN
   PROJECT PLAN



. STUDIES & PROJECTIONS OF
   PEOPLE
   JOBS
   INCOME
2. STUDY & EVALUATION OF
   HOUSING, SHOPPING, INDUSTRY
   PARKS, RECREATION, SCHOOLS
   UTILITIES
   STREETS & CIRCULATION
   NATURAL RESOURCES
   SPECIAL PROBLEMS

1. LEGAL & ADMINISTRATIVE TOOLS
   ZONING ORDINANCE
   SUBDIVISION REGULATIONS
   HOUSING CODES
   OFFICIAL MAP
   CAPITAL IMPROVEMENT PROGRAM
   FEDRAL, STATE AID PROGRAMS
2. DECISIONS & PROJECTS BY:
   PRIVATE DEVELOPMENT GROUPS
   PUBLIC AGENCIES
   INDIVIDUALS

CITY OF MOSCOW MILLS
PLANNING AREA

KBR ENGINEERING, INC.
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economic trends; private uses of the land; community facilities; environmental influences; and community development.

UTILIZATION OF THE PLAN

The City of Moscow Mills' Comprehensive Plan is designed to equip both the private and public sector with sufficient information to protect existing interests and to guide future development. The City Council of Moscow Mills should find this Plan a useful tool guiding future development. This Plan should be adopted and used as a legislative policy instrument by the City Council rather than becoming just another unused document.

CHAPTER II

HISTORY OF MOSCOW MILLS

EARLY YEARS

The City of Moscow Mills is situated on the western bank of Cuivre River, three miles south of Troy in Lincoln County, Missouri. The History of the City dates to March 17, 1821, when it was laid out by John Geiger, Morgan Wright, James Duncan and Shapley Ross, the original proprietors. Henry Martin was the first merchant of the new City, having opened a stock of general merchandise soon after the town was established. He continued in business successively for several years. At the time Martin did business in Moscow Mills, Adolphus Foster and Thomas McCune also carried on a small business. William Hammer was the next settler in the town and he also engaged in merchandising. He was also the first postmaster in town. He remained in business until 1884 when he retired. Next came A. M Bouldin, who opened a grocery store, C. L. Branders and James Anderson, who opened general stores and John Horton who operated a saloon in 1885. The City also had a hotel, blacksmith and millers and dealers in grain.

Primarily the region was an agricultural one. The grist and saw mill owned by Wing and Son had long been one of the greatest factors of Moscow's success. It was established about the year 1820 by Jeremiah Groshong. There was a large grain elevator attached to the mills. The first bridge was built across Cuivre River in 1852; however, it was undermined by the strong undercurrents and subsequently fell in 1860. A steel replacement was construction in 1885 at a cost of $3,000.

For the next 100 years the City still remained primarily an agricultural community.

In 1980 the City had two groceries, two gas stations, a lumber yard, grade school, three churches and a handful of other small businesses supported by a population of about 484 people.

GEOGRAPHIC LOCATION

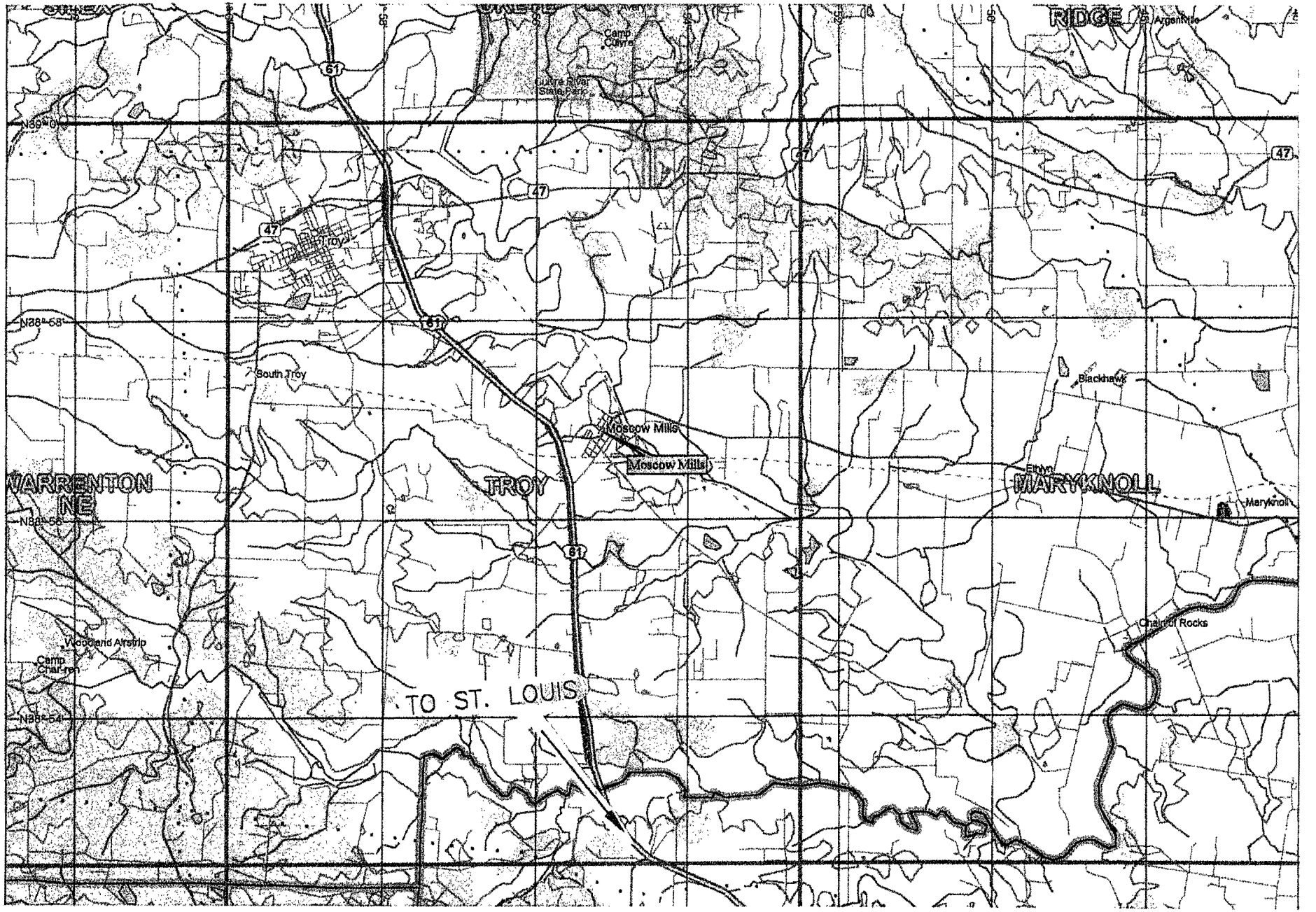
The City of Moscow Mills is located in southern Lincoln County along Highway 61, approximately 12 miles north of Interstate 70. The City is 250 miles east of Kansas City and only 45 miles northwest of St. Louis.

CLIMATE

The climate of Moscow Mills is quite variable making for pleasant seasonal contrast. Air from the northern part of the continent frequently invades the area while warm and humid air from the Gulf of Mexico is also common.

The most rainfall occurs in the month of June. The normal average precipitation to be expected each month is as follows:

January	1.69 Inches
February	1.81 Inches
March	2.58 Inches
April	3.99 Inches
May	4.15 Inches
June	4.29 Inches
July	4.26 Inches
August	3.27 Inches
September	3.67 Inches



REGIONAL LOCATION MAP

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October	4.20 Inches
November	2.37 Inches
December	1.89 Inches

A normal annual total precipitation is 31.51 Inches. The normal total for the winter is 5.48 inches. The evaporation which can be expected during the months from April through October is about 40 inches.

The warmest weather is in the month of July. Temperatures of over 100°F have occurred in June, July, August, and September. During December, January, and February, 20 or more days can be expected with temperatures below freezing. Statistically on the average, 5 days per year have temperatures below 0°F.

GEOLOGY AND SOIL DATA

Relief, or topography, refers to the lay of the land. Relief may be characterized by degree or percent of slope and by length, shape, and uniformity of the slopes that make up the landscape. Relief is an important factor in determining the pattern and distribution of soils on a landscape because of its influence on drainage, runoff, and erosion.

The development area consists of flat and rolling prairie which is part of the transition zone between the prairie and the Ozark Mountains. The center of the area is occupied by Crooked Creek and its tributaries flowing east to Cuivre River. The entire planning area is in the Cuivre River watershed.

There are no foreseeable obstacles that would hinder and impede the successful completion of the proposed developments in the proposed planning area other than the flood planes along Crooked Creek, Butcher Creek and Cuivre River.

The elevation ranges from 540 feet above sea level to 460 feet, a variation of 80 feet. Small areas in the development area have an elevation of more than 540 feet.

The soils in the area include loess covered river hills. Bedrock is near the surface in the western and southern portions of the area. Approximately 30% of the conventional collection system may be affected by this shallow rock.

Pond reservoir areas hold water behind a soil embankment. Soils suitable for pond reservoir areas have low seepage, which is a factor of permeability and depth to permeable material. Presence of excess stones or organic material in a soil are among the factors that are unfavorable. Examination of a proposed area for a treatment facility (discussed later) indicates that the soil types in the area are acceptable for construction.

ECONOMIC, DEMOGRAPHIC, AND LAND USE

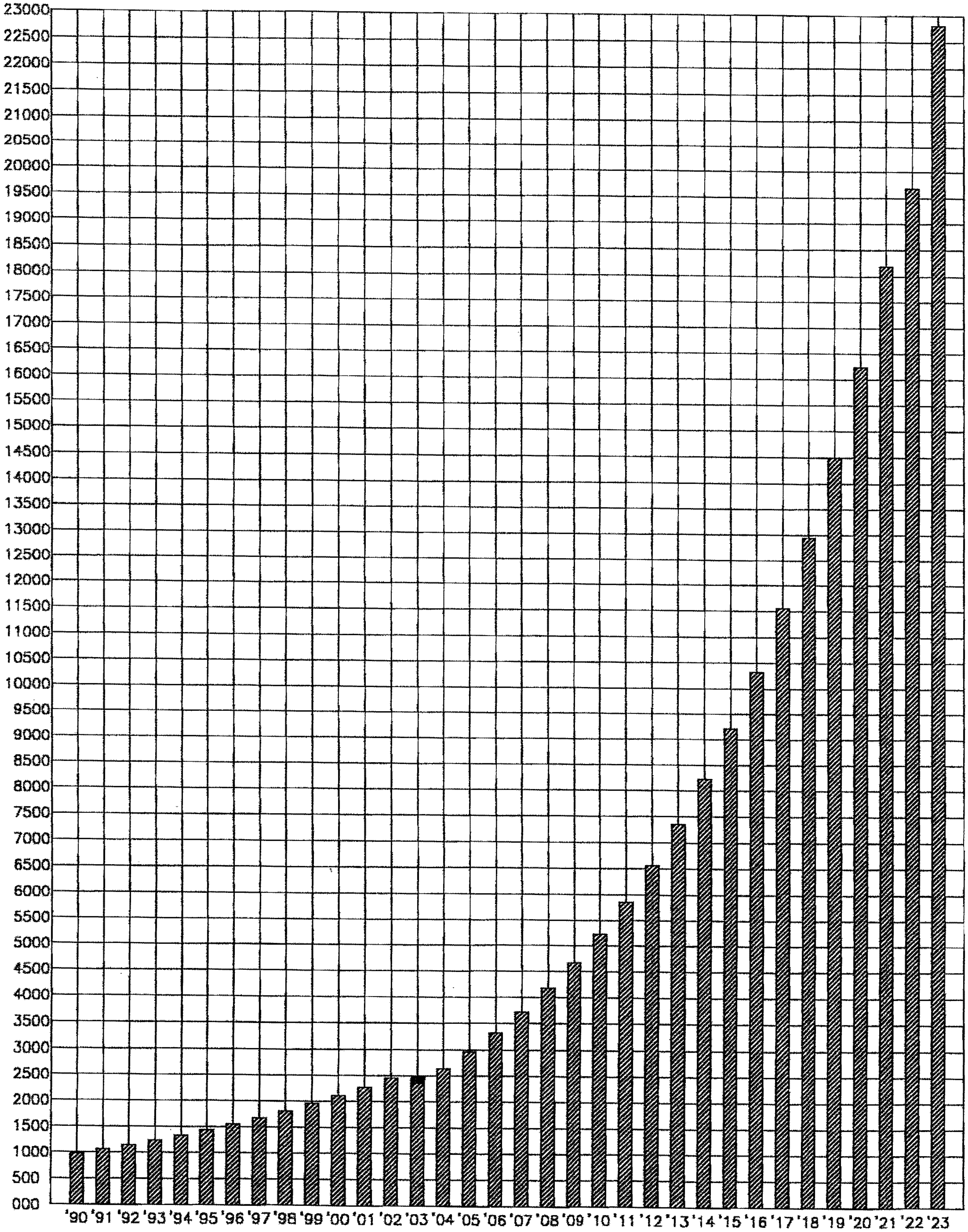
The City of Moscow Mills is a pleasant rural community which has municipal water and sewer services. However, new developments to the south of the City currently have no City services. The Highway 61 corridor has some commercial establishments; namely, at present there is a car repair shop, antique shop, junkyard and other small businesses in the area. Some commercial businesses can be attributed to consumers from the surrounding rural area. Currently there are two major planned developments south of the City, however not enough capacity in the water and wastewater systems to serve these developments.

POPULATION TREND

The City's population remained steady for most of her life until the 1990's. The population has been growing at an accelerated rate of 12% and would most likely grow

much faster if City facilities were available. The following chart demonstrates this growth and gives us a projection of 19,684 people in 2022.

CITY OF MOSCOW IV S POPULATION TREND



AGRICULTURAL DATA

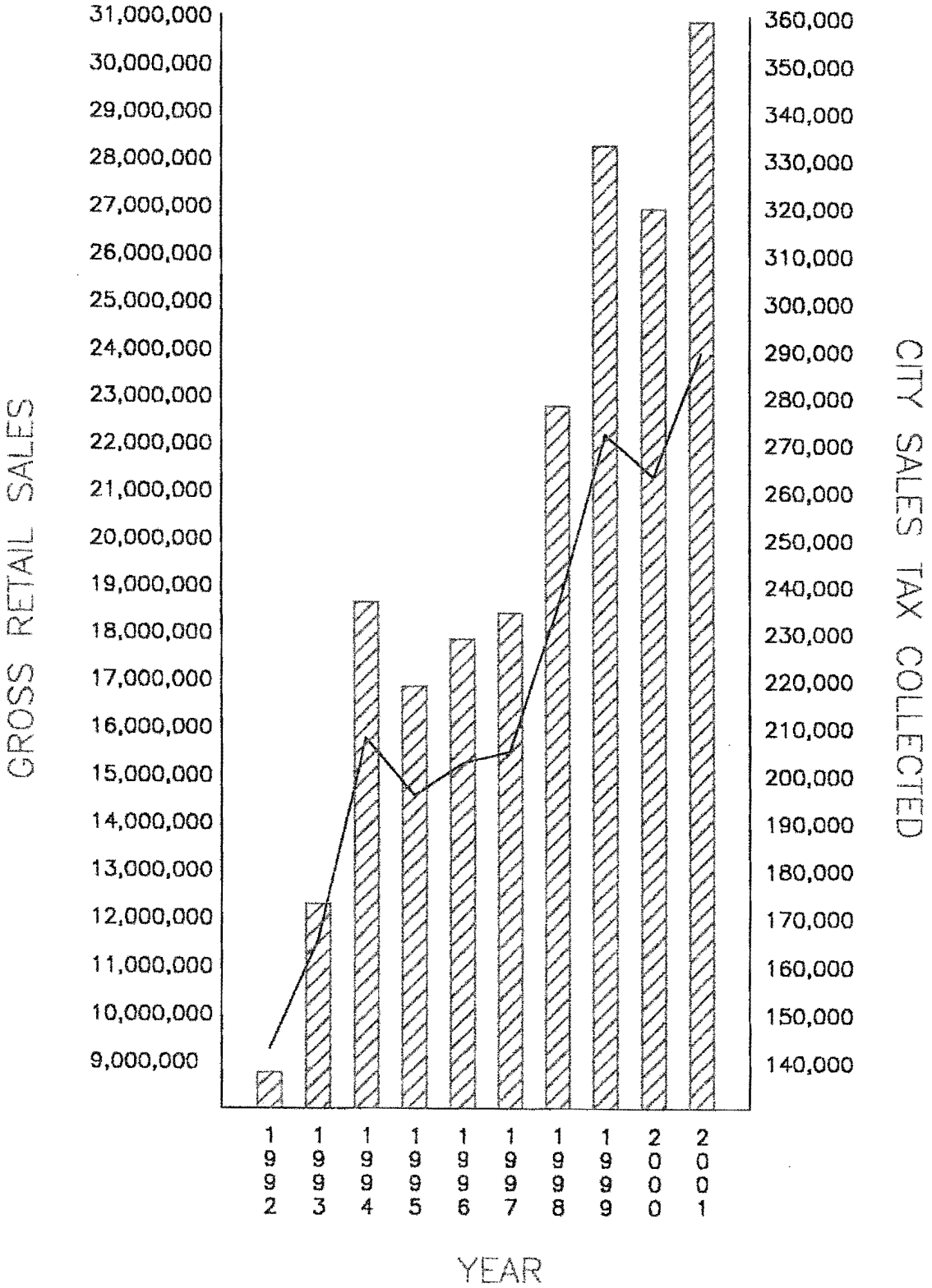
Historically, Moscow Mills has been primarily an agricultural community; but as the population grows with workers from the St. Charles and St. Louis area the community she is becoming a suburb of the larger St. Louis Metropolitan Area. With this change agriculture is becoming much less important to the Lincoln County area. Following are the agricultural data for Lincoln County from the 1997 census of agriculture prepared by the U. S. Census Bureau:

	1997	1992
Number of Farms	989	1,013
Land in Farms (acres)	262,362	253,281
Average Size of farm (acres)	265	250
Value of land		
Average per Farm ($)	438,117	286,317
Average per acre (4)	1,654	1,145
Farms by Size:		
1 to 9 acres	37	56
10 to 49 acres	218	225
50 to 179 acres	357	336
180 to 499 acres	233	250
500 to 999 acres	95	101
1,000 acres or more	49	45
Total Cropland:		
Farms:	895	916
Acres	187,747	189,045

SALES TAX REVENUES / COMMERCE

Commerce and sales taxes collected are also greatly affected by the booming population. As a result of the population growth and the new businesses that have moved into Moscow Mills, the sales tax revenues have increased accordingly. The following chart shows recent statistics of Gross Sales and Sales Tax Revenues.

CITY OF MOSCOW MILLS, MISSOURI
SALES TAX REVENUES



CHAPTER III

CURRENT SITUATION

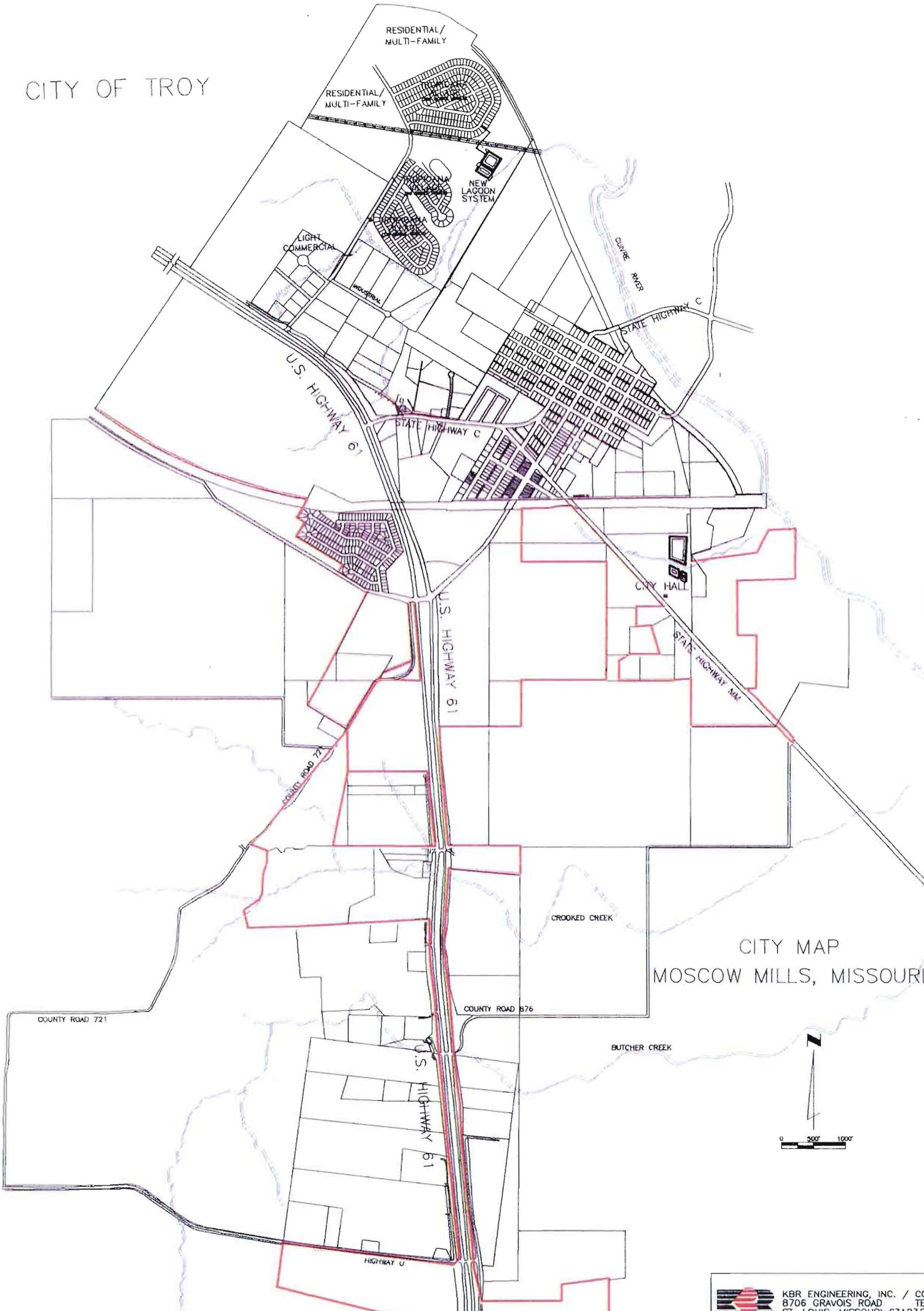
Over the past 10-years the City of Moscow Mills has experienced rapid growth. Formerly a sleepy rural farming community, Moscow Mills is growing into a suburb of the ever-expanding St. Louis Metro area. This is very similar to the growth St. Charles County experienced in the 1970's and 1980's.

Since 1990, as the City expanded water and wastewater infrastructure, housing and commercial developments sprouted almost simultaneously. Now the City's water and wastewater facilities are at capacity once again. Two large developments are planned in the City as soon as facilities are expanded to allow for this new growth. Other developments will likely follow.

In 1996, Moscow Mills expanded northward to the City Limits of Troy. The annexation encompassed the Tropicana Village Development which included 250 new single-family homes, 450 mobile homes and a large commercial area along Highway-61. Many new businesses have opened or relocated to this area including a gas station, a new car dealership, Missouri Baptist College and other smaller businesses.

The City accommodated this development with a new elevated water tank and a new wastewater facility.

Currently, there are other Planned Developments for Moscow Mills including a 250 single-family home subdivision along the highway 61 business corridor called Shennandoah Estates on the southwest side of town and a large $80,000,000 retail development at highway 61 and 'U' called Crossroads Center. MoDOT has committed



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CITY MAP
CITY OF MOSCOW MILLS

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$3,500,000 for a new interchange at the intersection.

CONSIDERATIONS FOR DEVELOPMENT

The purpose of this Comprehensive Development Plan is to establish policy guides for decisions about the physical development of the community.

Here we will look at each of the issues affecting development in the City of Moscow Mills. Namely, these considerations are:

* Land Use / Zoning
* Commerce
* Infrastructure
* Finance

I. Zoning

In order to plan for the future physical development of Moscow Mills, an understanding of the existing pattern of land use is necessary. Therefore, an Existing Land Use Survey and an Analysis of Moscow Mills was made to classify uses, to analyze trends in land use development, and to reveal development problems that could provide a deterrent to future land development and have adverse affect on future property values.

The existing land use survey was made in January 2002 and the respective illustrated on a base map of Moscow Mills. The following table presents a detailed tabulation of each land use in the following categories: number of acres, percent of developed land, and percent of the total land devoted to each land use. This study is a basic requirement prior to preparing a Comprehensive Plan for future development.

development.

The land use classifications used in Moscow Mills are:

(1) Residential - land which is occupied by single or multi-family units.

(2) Commercial - land which is occupied by retail and service establishments;

(3) Industrial - Land which is occupied by warehouse, mining, manufacturing, and processing establishments.

(4) Public - Land which is occupied by educations, and governmental facilities or land which is owned by federal, state, or local units of government.

(5) Semi-Public - Land which is occupied by privately owned uses that are generally open to public occupancy, such as churches, lodge halls, and similar uses.

(6) Agriculture or Undeveloped - Land which is occupied by crops or pasture or land which is not being utilized by one of the above uses.

(7) Transportation - land which is occupied by streets, highways, and railroads.

CHAPTER IV

LAND USE / ZONING

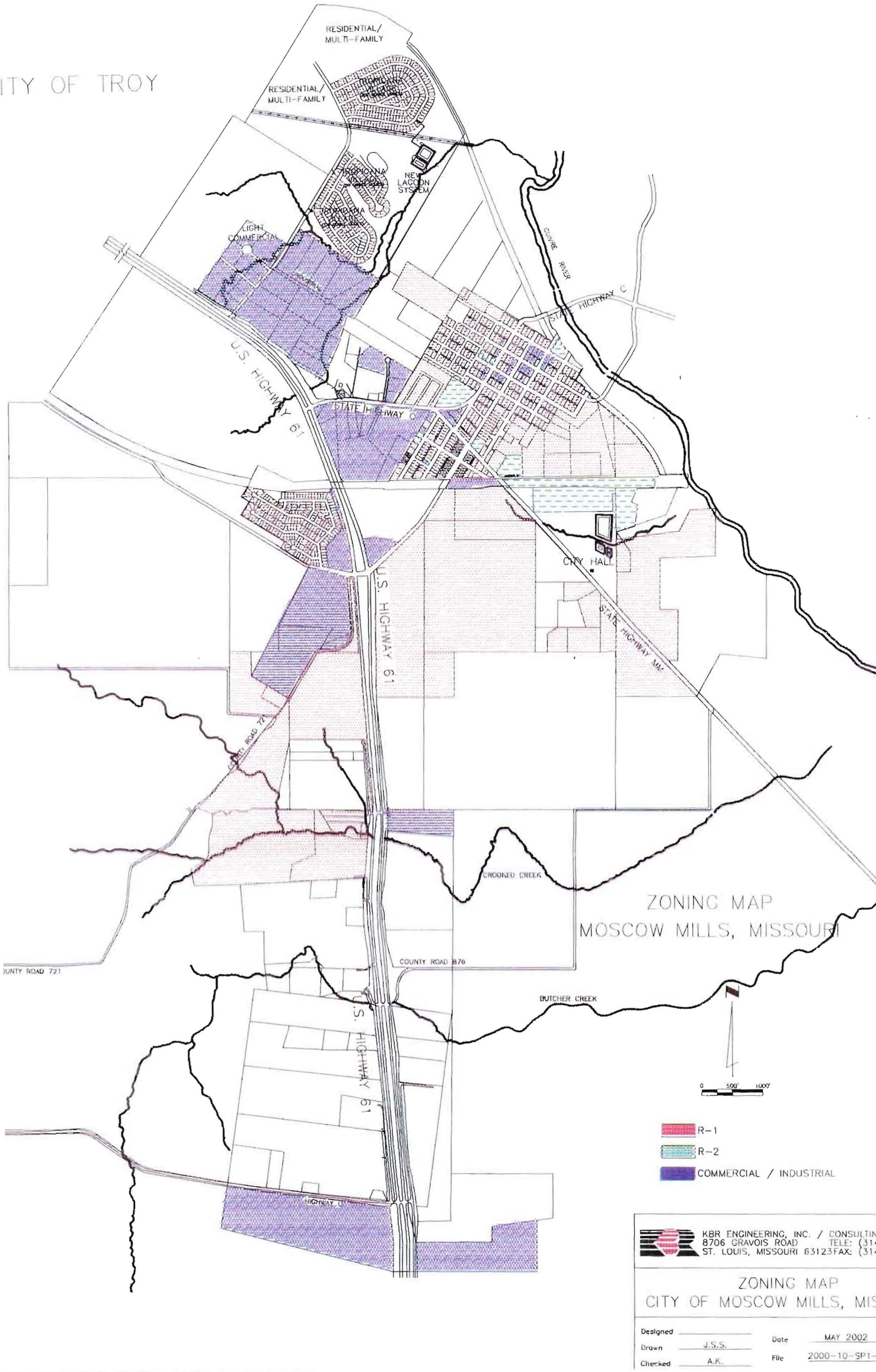
A long - range development Plan consists of written proposals based on public policy and maps showing the future location of land use, streets and highways, public buildings and utilities. These are the elements that, when combined constitute a Comprehensive Plan.

The Plan for Moscow Mills is a comprehensive guide for future growth and development. It is comprehensive in the sense that it considers the total development of the community, including the use of private and public lands, location of the streets and public facilities and the public utility system. The Plan for Moscow Mills is also "long-range" in nature since proposals are shown over the next 20 years.

The Plan is, by necessity, flexible and is presented in a "generalized" manner. It cannot be so rigid, precise or inflexible as to ignore differing needs, changing conditions or new possibilities. As conditions change, new problems and opportunities will emerge; therefore, the Plan may have to be modified to take advantage of these opportunities and solve the problems.

LAND USE PLAN

A land use plan is the predetermination of the proper use of the land, based on existing conditions and discernable alternatives with sufficient latitude for adaptability to varying and changing conditions. In general, the Land Use Plan for Moscow Mills indicates intensity of land use and the location of each use in proper relationship to each other. This Plan is essential to the future design, size and location of streets, utilities, schools, parks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PLAZA
NEW
LAGOON
SYSTEM
LIGHT
COMMERCIAL
CUIVRE RIVER
STATE HIGHWAY C
U.S. HIGHWAY 61
STATE HIGHWAY C
CITY HALL
U.S. HIGHWAY 61
STATE HIGHWAY MM
LOWELL ROAD 72
CROOKED CREEK
ZONING MAP
MOSCOW MILLS, MISSOURI
COUNTY ROAD 721
COUNTY ROAD B76
BUTCHER CREEK
U.S. HIGHWAY 61
HIGHWAY D
0
500'
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R-2
COMMERCIAL / INDUSTRIAL
KBR ENGINEERING, INC. / CONSULTIN
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ST. LOUIS, MISSOURI 63123 FAX: (314
ZONING MAP
CITY OF MOSCOW MILLS, MIS
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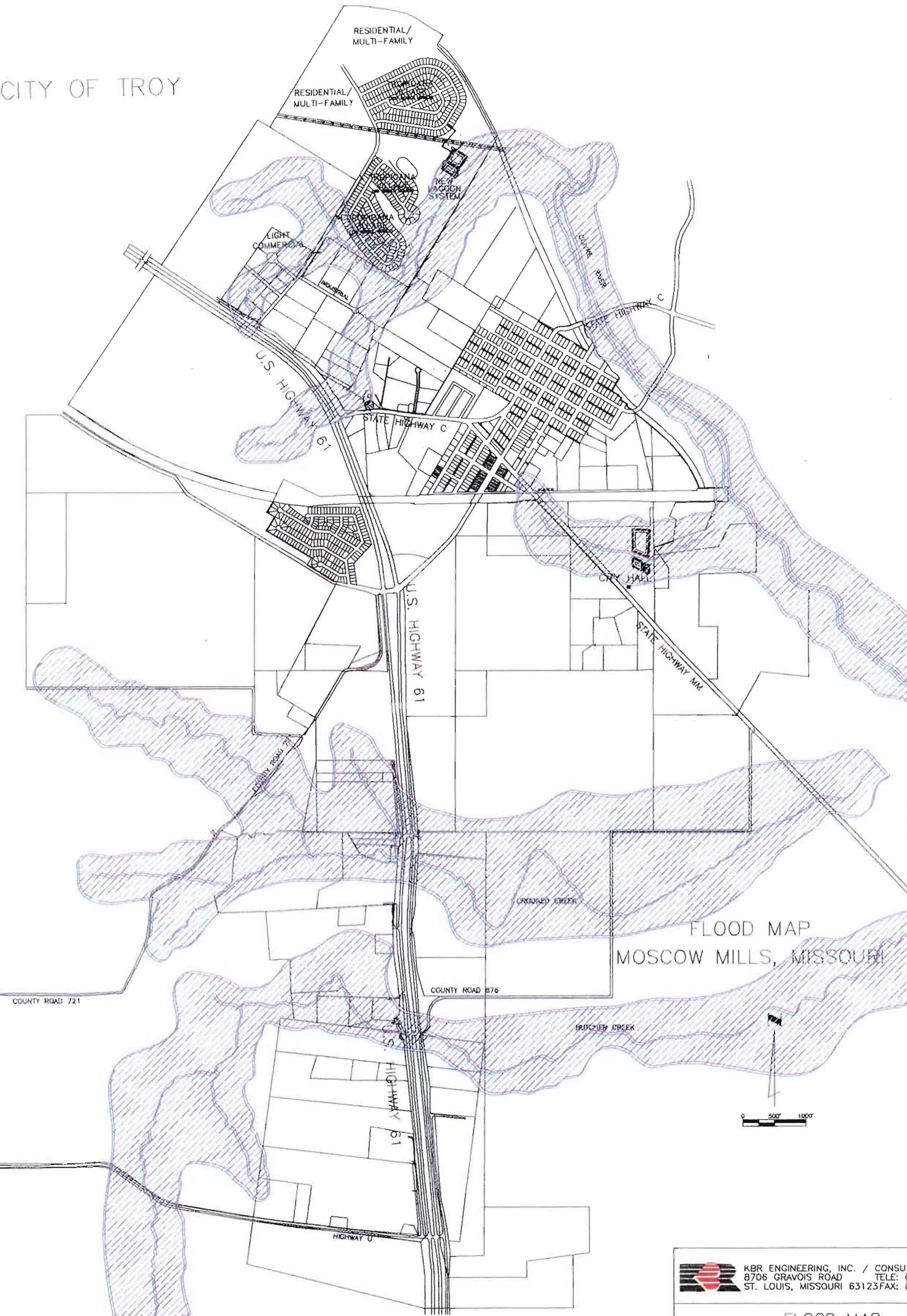

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FLOOD MAP
CITY OF MOSCOW MILLS, M

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and municipal buildings.

I. LAND USE OBJECTIVES

Planning decisions must be based on a set of land use objectives. The general objectives for Moscow Mills may be stated as follows:

* A diversity of land uses should be encouraged, and the quality of uses rather than the quantity should be stressed.
* The uses must meet present and future population demands, economic needs and opportunities, and the goals and aspirations of the people of the community.
* The uses should be related, whenever possible, to natural land characteristics such as soils, drainage and slope.
* Density and distributions of population should be guided to provide more intense activity near the center of the community.
* These general objectives must be related to each other to achieve or preserve:
    1. Public health, safety, convenience, welfare and amenities;
    2. Accessibility to land uses and developed areas within the community;
    3. Efficiency in the development of land, design and public utilities and in the general compatibility of adjacent land use types.

II. PROPOSED CITY LAND USE

The Land Use Plan for Moscow Mills is shown on map at the end of this report. The future land use map is a graphic illustration of the proposed future land use pattern.

The following discussion will concern itself with the anticipated spacial distribution, quantity and quality of the proposed land uses.

III. RESIDENTIAL LAND USE

One of the more important principles of urban planning involves the separation of residential land areas from conflicting uses. Residential areas should be convenient to industrial and commercial areas, but should be protected from the traffic smoke, noise, fumes, dust and other operating nuisances often generated by them.

Land Use control through intelligently enforced zoning, subdivision and other codes and ordinances is essential.

The City also must guard against the construction of housing in areas where soils have severe restrictions for urban development.

Although the 2022 population is projected at 19,684, the residential areas shown on the Land Use Map would accommodate approximately 38,000 people. This assumes that:

* The City will expand its residential areas west along Elm Tree Road and south along Highway MM and Himmel Road
* Utilities will be expanded to areas as they develop;
* Community facilities and services will be expanded to meet increased needs;
* Present corporate limits will be altered during the planning period;

Single-family units will be located along Elm Tree Road, Hampel Road, Himmel Road and Highway MM. Single-family residential land use is expected to increase by about 12,600 acres with the majority of the initial development in the western sectors of the City. The plan has reserved a total of about 9,000 acres for single-

sectors of the City. The plan has reserved a total of about 9,000 acres for single-family residential to insure a diversity of location and prevent a monopoly of this land by any one individual.

Multiple-family units will be concentrated between Elm Tree Road and Adelhardt Road. The amount of multi-family use proposed is nearly seven times the existing. Several factors account for this increase: much of the area is presently devoted to single -family used and many of these lots would not be converted to multi-family; with the limited land resources, higher densities may be necessary to house the anticipated growth; and the proximity of the Interstate will probably increase the demand for rental units.

IV. COMMERCIAL AND SERVICE

The use of land for commercial purposes should be arranged for the convenience of the customer. This can be achieved when "convenience goods" stores and various business and professional services are clustered in a Central Business District. The addition of stores that attract shoppers such as clothing stores, appliance stores, etc., would greatly increase the competitiveness of Moscow Mills business district.

As the population increases, the demand for commercial uses is also expected to increase. The Land Use Plan provides for a four-fold increase in this category. The consolidation of commercial uses along Highway 61 should facilitate future demand for commercial space.

V. COMMERCIAL

Sufficient land should be available for schools, fire stations and other public buildings. These facilities should be located in order to provide the maximum benefit for the lowest cost. Future sites should be acquired prior to development, if possible, to reduce costs and to assure the orderly development of surrounding land uses.

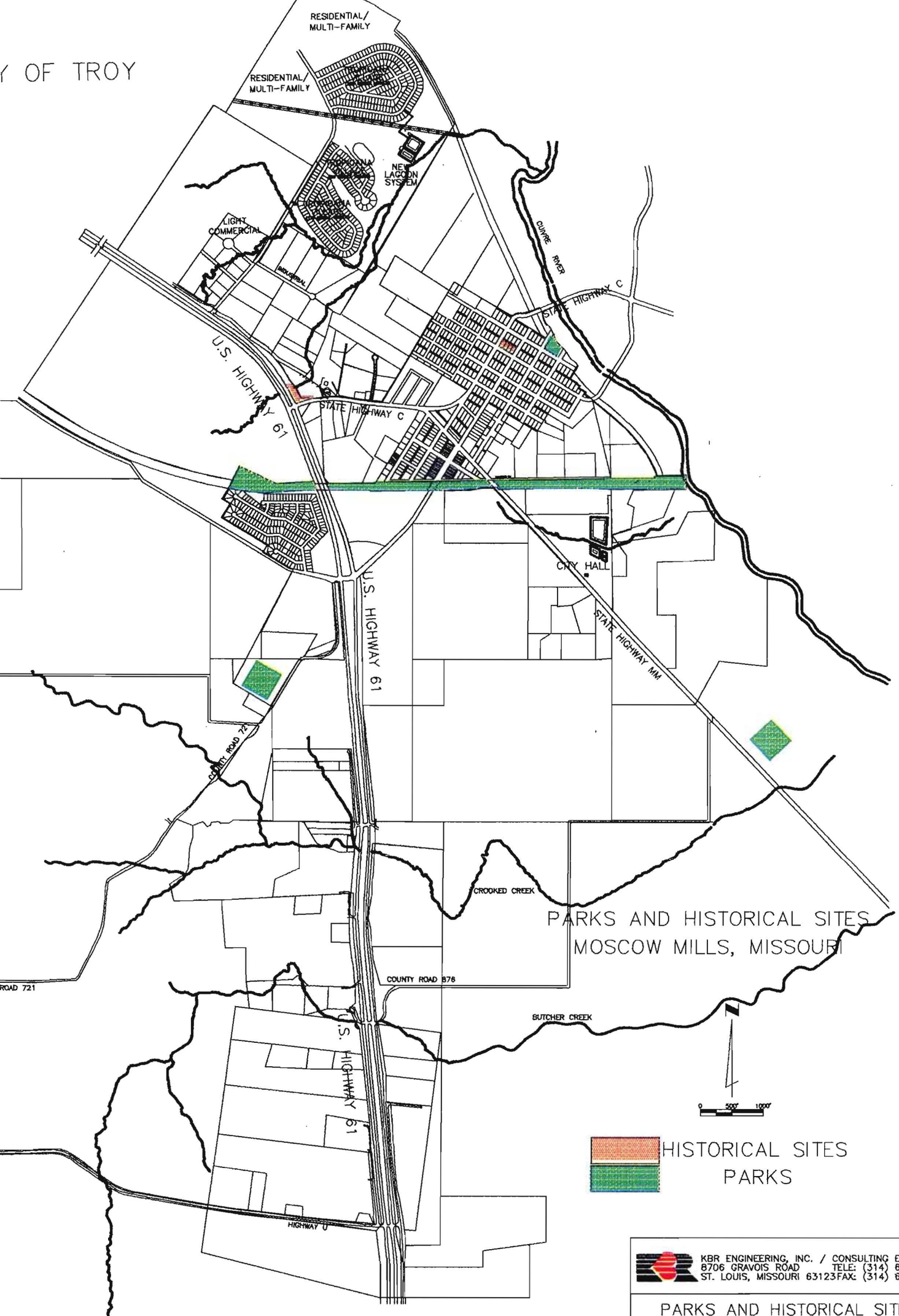
The Plan provides for about a 50 percent increase in lands devoted to governmental uses. The majority of this increase is the result of the proposed water and wastewater facilities. Land devoted to semi-public uses is not included in this estimate.

VI. PARKS

The only park land within the present corporate limits is the Mill Site Park at Front Street and Market. It is a 3-acre park with few facilities for children. Other park facilities should be considered for the City. These parks could be funded with city general funds or funded through community organizations in concert with local government. The National Recreation & Parks Board standard recommends 10 acres of parks per 1,000 people. In the coming years the City will need about 18 more acres of parks. See the following Park Map for potential sites.

VII. INDUSTRIAL

Significant growth of industrial property within the present corporate boundaries is not anticipated nor would it be highly desirable. The land reserves in the City should be devoted to residential, governmental and commercial uses to avoid intermixture of incompatible uses.



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PARKS AND HISTORICAL SITE
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VIII. AGRICULTURAL

As the land devoted to urban use increases, the amount of land devoted to agriculture will decline. Should all the land indicated in the Plan be developed, the amount of agricultural land would decrease. But, as stated earlier, over the past years, agriculture has become a much less predominate part of the local economy. This trend is expected to continue.

IX. TRANSPORTATION PLAN

The City's local streets are in fair condition. Nearly 10 years ago the City purchased new street paving equipment and has systematically improved the overall quality of the streets. Major improvements have become necessary along Highway 61 due to increased traffic and the number of accidents. We recommend that the City continue to contact MoDOT and lobby for overpasses at Highway U (already planned by MoDOT) and at Highway C. As new developments sprout traffic will continue to grow and accidents will be more numerous. Chapter VII discusses this in more detail.

CHAPTER V

WATER TREATMENT FACILITIES

BACKGROUND

The City of Moscow Mills has been rapidly expanding during recent years and is expected to continue to expand in the future. Several developers have expressed interested in building residential and commercial projects in and around the City in the next year or so. The expansion projects are putting pressure on the City's current infrastructure and it's future improvement plans. In particular, the City's expansion is putting a strain on it's existing water treatment capacity. It seems that there are continuing demands and requests from developers to approve new projects within the City on a weekly basis. The corridor along Highway 40-61 between Chesterfield and Troy (including Moscow Mills) is growing and expanding at a tremendous pace. The City Officials would like to respond in a positive way to these requests and in a timely manner, but they are somewhat restricted by their available financing.

TOPOGRAPHY

The City of Moscow Mills currently covers three (3) different watersheds (north, middle and south). The City's existing water treatment plant and one (1) of it's two (2) elevated tanks is located in the middle watershed, in the old City along Jefferson Street. The second elevated tank is located in the northern watershed in the Tropicana Village subdivision. Since the majority of the City's future expansion is to be located in the southern watershed, City Officials are proposing that any new water treatment/storage facilities be located in this watershed along the high ground at the intersection of Highway

40-61 and U. By locating it at the higher elevations of the southern watershed this will reduce the required height of the new elevated storage tank thus reduce it's cost.

PROPOSED OUTLINE

The proposed plan to handle the current and future water treatment / storage needs of the City of Moscow Mills is outlined as follows:

1. Existing Water Treatment / Storage Facilities

In 1989, the City of Moscow Mills constructed and put into operation a new water treatment plant with a capacity of 200 gpm, or 288,000 gpd. Along with the new water treatment plant a new 100,000 gallon elevated water storage tank was constructed on the treatment plant site. The ground elevation of the 100,000 gallon elevated tank is 537.87 (USGS), with the maximum water elevation being 652.37 (USGS). In 1999, the City erected a new 250,000 gallon elevated storage tank in an area located in it's Tropicana Village subdivision. The ground elevation for the new tank is 536.37 with the maximum water elevation being 652.37. With their two (2) elevated storage tanks the City has a maximum existing storage capacity of 350,000 gallons.

To supply their existing water treatment plant with raw water the City has three (3) wells. Well No. 1 is located along Highway C and was put into operation in 1961. It has a capacity of approximately 100 gpm and is sparingly used by the City. The second well is located inside the existing WTP building and was put into operation in 1979 and has a capacity of approximately 150 gpm. The third well is located behind the Moscow Meadows Trailer Park and was put into operation in 1992 and

The City's original water distribution system was constructed in 1961 and consists of 2, 4, and 6 inch cast iron pipe. The distribution system has been expanded several times since 1961 to serve areas annexed by the City. In the 1980's a 6 inch PVC line was extended to the Moscow Meadows mobile home park which was annexed by the City. In 1997, a new 8 inch PVC line was extended to the Tropicana Village subdivision, just north of the original City, because the City annexed the area in 1996. The subdivision developer installed various lengths of 6 and 8 inch PVC water lines within the subdivision itself.

The original treatment plant consisted of a 200 gpm tray aerator mounted on top of a 10'-0" diameter x 17'-0" high steel chlorine contact tank. A 225 lb/day chlorination supplies the chlorine to the contact tank. The contact tank has a 30 minutes contact time at a 200 gpm flowrate. From the chlorine contact tank the water is pumped, via a 200 gpm high service pump (two pumps are installed), through five (5) 5'-0" diameter pressure filters and then into the 100,000 and 250,000 gallon elevated storage tanks. From the elevated tanks, the water is distributed to the City. The high service pumps, pressure filters and chlorination equipment is housed in an existing 22' x 40' wood framed metal building.

In 2000, the City upgraded their existing treatment plant into increase it's capacity to approximately 300 gpm. The improvements included installing a new 200 gpm tray aerator mounted on top of a 10'-0" diameter x 17'-0" high steel chlorine contact tank. A new 25 lb/day chlorination located in a new 6' x 6' prefabricated fiberglass chlorination house supplies chlorine to the new contact tank. The contact tank has a 40 minutes contact time at the 150 gpm design flowrate. From the contact tank

a 40 minutes contact time at the 150 gpm design flowrate. From the contact tank the water is pumped, via anew 150 gpm high service pump, through three (3) 6'-0" diameter pressure filters then into the City's distribution system and elevated tanks. The new high service pump and pressure filters are located in the original 22' X 40' treatment plant building. The new 6' x 6' prefabricated fiberglass chlorination house is located adjacent to the original treatment plant building.

The way the treatment plant is presently operated is as follows:

The existing 225 gpm well pump No. 2 supplies water to the original treatment process that includes the five (5) 5'-0" diameter pressure filters, 200 gpm high service pump, tray aerator and CL_2 contact tank.

The existing 150 gpm well pump No. 2 supplies water to the new treatment process that includes the three (3) 6'-0" diameter pressure filters, 150 gpm high service pump, tray aerator and CL_2 contact tank.

Both systems discharge to the 6-inch ductile iron finished water line that leaves the plant and connects to the City's distribution system and elevated tank. The result is a combined water treatment capacity of approximately 300 gpm.

2. Proposed New Treatment / Storage Facilities

Leave the existing 300 gpm treatment plant in service and at the same time construct a new 500 gpm, pressure filter, treatment plant at the intersection of Highway 40-61 and State Highway U in the extreme southern section of Moscow Mills. Both treatment plants operating in tandem will be sufficient to meet the City's anticipated future water needs. The new plant will consist of the following:

A. Five (5) - 8'-0" diameter pressure filters which equates to a filtration rate of 2 gpm/ft² at the design flowrate of 500 gpm. With one filter out of service the filtration rate will be 2.5 gpm/ft² at a flowrate of 500 gpm.

B. One (1) - 500 gpm tray aerator which will be mounted atop the new steel chlorine contact tank.

C. One (1) 200,000 gallon steel chlorine contact tank. The state requires a chlorine contact time of 30 minutes at the plants design flow of 500 gpm. So a minimum of 15,000 gallons will be required for CL_2 contact. The new tank will have a 20'-0" high internal weir that will separate the contact area of the tank from it's high service pump draw-down area. The chlorine contact volume will be 16,000 gallons while the pump draw-down volume will be 4,000 gallons.

Two (2) -500 gpm split case high service pumps.

D. One (1) - 100 lb/day chlorination with a vertical manifold which will allow four (4) - 150 lb chlorine cylinders to be used simultaneously. Based on a 5 mg/l capacity, which should be more than enough to provide for a minimum free chlorine residual of 0.2 to 0.5 mg/l at the distant points in the distribution system, the City's average daily chlorine demand would be as follows:

$$5 \text{ mg/l } (CL_2) \text{ X } 0.830 \text{ mgd x } 8.34 = 35 \text{ lbs/day}$$

A 100 lb/day chlorination should be more than sufficient to meet the City's anticipated chlorine demand.

The new chlorination will be located in a separate room with it's vents discharging to the outside atmosphere.

E. Construct a new 20' X 10' x 6' SWD concrete backflow equalization tank. The new equalization tank will equalize the 750 gpm backflow rate for each filter. This will prevent the surcharging of the cities wastewater collection system. The filter backwash rate per filter will be 750 gpm for 15 minutes duration time. The City will probably have to backwash each filter once a month, by doing one a day for a week. The backwash water will either be pumped to the City's collection system or flow into the system by gravity. It will ultimately be treated at the City's wastewater treatment facility.

F. One (1) - new 500,000 gallon elevated tank with an estimated height of 100 feet. The new elevated tank will be constructed on the site of the new WTP. As an alternative the City might want to construct two (2) 250,000 gallong elevated tanks in lieu of one (1) 500,000 gallon tank. They can construct one (1) 250,000 gallon elevated tank now and the second tank later when it becomes necessary.

G. Construct a new 10,000 lineal foot long, 8-inch PVC water main along Highway 61, with one (1) - 200 foot long highway bore, to connect the new water treatment plant to the City's existing water distribution system.

H. Construct a new 60'-0" long X 30'-0" wide wood framed building to house the filters, pumps and chlorinator.

I. Drill two (2) - new wells each capable of supplying 500 gm of raw water to the new plant. Included will be approximately 3000 LF of 8-inch PVC raw water line for each well to connect them to the new plant.

In conclusion, the proposed Plan, as outlined here, will leave the City of Moscow Mills with two (2) Water Treatment Plants and either three (3) or four (4) elevated tanks with a total storage capacity of 850,000 gallons. The combined treatment capacity of both water treatment plants will be at least 800 gpm which should be sufficient to meet the City water needs for at least the next 20 years.

CITY OF MOSCOW MILLS

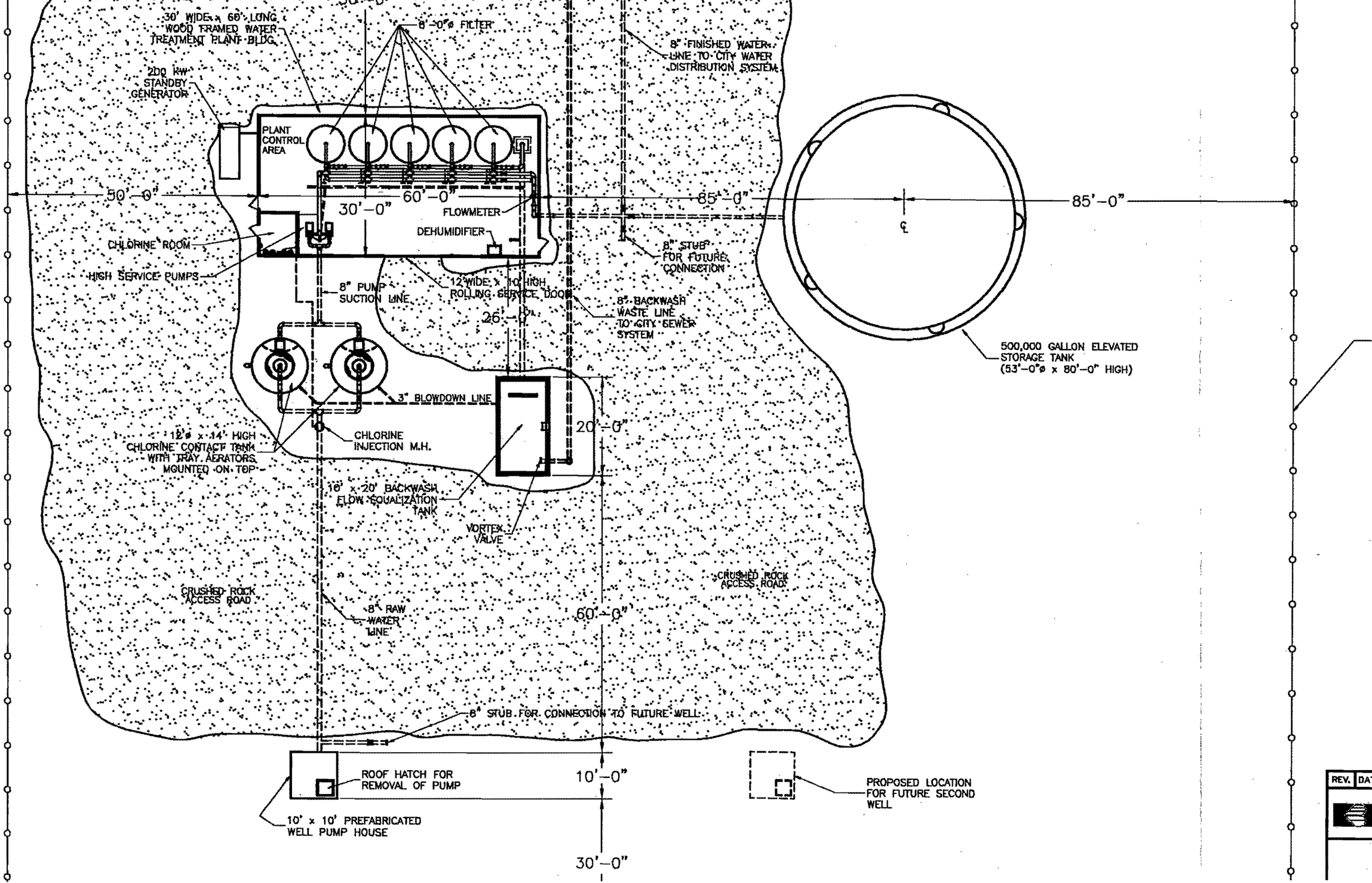
MISSOURI

New Water Treatment Plant, Storage Tank & Well

Cost Estimate

	Description	QTY	Unit Cost	Total Cost
1.	Furnish and Install New **8'-0" dia. Pressure Filters**	5 EA	$ 16,500	$ 82,500
2.	Furnish and Install New **500 gpm Tray Aerator**	1 EA	$ 9,000	$ 9,000
3.	Furnish and Install New **20,000 gallon steel Chlorine Contact Tank**	1 EA	$ 47,000	$ 47,000
4.	Furnish and Install New **500 gpm High Service Pumps**	2 EA	$ 5,000	$ 10,000
5.	Construct **New Backwash Pump Station** including Two (2) - 70 gpm Submersible Pumps and 30,000 Gallon Wet Well.	Lump Sum	$ 45,000	$ 45,000
6.	Furnish and Install New **50 lb/day Chlorinator**	1 EA	$ 5,000	$ 5,000
7.	Furnish and Install New **8-inch PVC Watermain**	10,000 LF	$ 4	$ 40,000
8.	Furnish and Install New **4-inch PVC Forcemain**	5,000 LF	$ 4	$ 20,000
9.	Construct New **Highway Bore Crossing**	200 LF	$ 350	$ 70,000

	Description	QTY	Unit Cost	Total Cost
10.	Construct New **60' X 30' Wood Framed Building with Concrete Slab**	1 EA	$ 39,000	$ 39,000
11.	**Electrical**	Lump Sum	$ 15,000	$ 15,000
12.	**Drill New Wells** each capable of Producing 500 gpm each	2 EA	$ 75,000	$ 150,000
13.	Furnish and Install New **8-inch PVC Raw Water Line**	6,000 LF	$ 8	$ 48,000
SUB-TOTAL ESTIMATED CONSTRUCTION COST FOR NEW PLANT				$ 555,500
14.	Construct a New **500,000 Gallon Elevated Storage Tank**	1 EA	$ 650,000	$ 650,000
Total Estimated Construction Cost				$1,205,500
Other Project Cost:				
	5% Contingency		$ 60,275	
	Land		$ 25,000	
	Survey		$ 5,000	
	Design, Plans & Specifications		$ 70,600	
	Resident Surveillance		$ 7,500	
TOTAL ESTIMATED CAPITAL COST				**$1,373,875**


30' WIDE x 60' LONG WOOD FRAMED WATER TREATMENT PLANT BLDG.
8'-0"ø FILTER
8" FINISHED WATER LINE TO CITY WATER DISTRIBUTION SYSTEM
200 KW STANDBY GENERATOR
PLANT CONTROL AREA
50'-0"
60'-0"
30'-0"
FLOWMETER
DEHUMIDIFIER
85'-0"
85'-0"
℄
CHLORINE ROOM
HIGH SERVICE PUMPS
8" STUB FOR FUTURE CONNECTION
8" PUMP SUCTION LINE
12' WIDE x 10' HIGH ROLLING SERVICE DOOR
26'-0"
8" BACKWASH WASTE LINE TO CITY SEWER SYSTEM
500,000 GALLON ELEVATED STORAGE TANK (53'-0"ø x 80'-0" HIGH)
3" BLOWDOWN LINE
20'-0"
12'ø x 14' HIGH CHLORINE CONTACT TANK WITH TRAY AERATORS MOUNTED ON TOP
CHLORINE INJECTION M.H.
10' x 20' BACKWASH FLOW EQUALIZATION TANK
VORTEX VALVE
CRUSHED ROCK ACCESS ROAD
CRUSHED ROCK ACCESS ROAD
8" RAW WATER LINE
60'-0"
8" STUB FOR CONNECTION TO FUTURE WELL
ROOF HATCH FOR REMOVAL OF PUMP
10'-0"
PROPOSED LOCATION FOR FUTURE SECOND WELL
10' x 10' PREFABRICATED WELL PUMP HOUSE
30'-0"
SCALE
REV.
DATE
PROP

CHAPTER VI

WASTEWATER COLLECTION & TREATMENT

TOPOGRAPHY

The City of Moscow Mills covers (3) three different watershed areas. To collect and centralize the wastewater flow generated in these watersheds in to one treatment point seems to be uneconomical and not feasible. However, the centralizing process can be a accomplished using the (2) two, north and south, watersheds approach.

EXISTING NORTHWEST WASTEWATER TREATMENT (NORTHERN WATERSHED)

The capacity of the existing Northwest Wastewater Treatment Facility (located in the Tropicana Village Subdivision) is sufficient to handle all anticipated future wastewater flows from the City's northern watershed (all areas north of the old City Limits). The northwest facility is presently operated as a two -cell aerated lagoon with a treatment capacity of approximately 4,000 population equivalent. However, if need by the northwest facility can be expanded to a maximum treatment capacity of 12,000 population equivalent by the installation of final clarifiers and the conversion of the existing two-cell treatment process into an activated, extended aeration process. The possibility of expansion was originally designed and constructed into the northwest facility.

HIGHWAY MM/CROOKED CREEK WASTEWATER TREATMENT FACILITY (SOUTHERN WATERSHED)

The area south of the old City of Moscow Mills is in the process of getting requests for wastewater treatment/collection services from various commercial and residential developers.

The overall topography of the area slopes along Crooked Creek towards Highway MM. The exception is a small area adjacent to the old City's existing 3-cell aerated treatment lagoons (middle watershed). Pumping the wastewater generated by the southern watershed area to the northwest treatment facility is not feasible because of the distance and the difficulty in obtaining the required easements.

Pumping the wastewater to the existing 3-cell aerated lagoon located just south of the old City along Highway MM is also not feasible because the facility is at it's capacity (1200 PE) and consequently can not handle any additional waste loads. Therefore, the city should begin the process of designing and eventually constructing a new wastewater treatment facility at the intersection (or close by) of Crooked Creek and Highway MM. The new facility will be identical to the northwest facility, it being an extended aeration facility with a treatment capacity of 12,000 population equivalent. The new facility can initially be constructed as a 2-cell aerated lagoon with a capacity of 4,000 PE with the capability of later begin expanded to a 12,000 PE extended aeration treatment process by the addition of final clarifiers.

The existing 3-cell aerated lagoon that presently treats the wastewater generated by the old City of Moscow Mills will be eliminated by constructing a new lift station on-site and pumping the wastewater to the proposed new southern wastewater treatment facility located at the intersection of Crooked Creek and Highway MM.

Finally, a real estate developer is in the process of developing a 400 single-family home sub-division on 100 acres, called Shenandoah Estates, which will be located just west of Highway 61, on the south side of Crooked Creek. Because the City of Moscow Mills does not have the financing in place to construct the proposed new Highway

MM/Crooked Creek Treatment Facility, however no City services are available to service this development. Once the City is able to construct the new wastewater treatment facilities, the entire area, including the old City, and everything south from Front Street to Highway U (north-south) and Highway MM to County Road 721 (ease-west) will be connected to the proposed new Treatment Facility.

HIGHWAY MM/HENRY LANE WASTEWATER COLLECTION SYSTEM (MIDDLE WATERSHED

A newly annexed area between Main Street on the north and Henry Lane on the south (along Highway MM) is a separate watershed from both the north and south watershed discussed earlier. This area is adjacent to the old City's existing 3-cell aerated lagoon system which will be eliminated and reverted back to residential use. The newly annexed area will have new gravity sewers installed to convey it's wastewater to a new lift station from which it will be pumped to the proposed new Highway MM/Crooked Creek wastewater treatment facility (southern watershed)

CONCLUSION

The purpose of the above-mentioned wastewater treatment / collection facilities is to serve the City of Moscow Mills present and future needs based on a rapidly increasing population. The proposed improvements fit the topographical features of the area and allows for a feasible approach to the current and future wastewater treatment needs for at least the next 20+ years. Furthermore, the proposed improvements will have direct economic advantages for the City of Moscow Mills through an increased tax base. Specifically the proposed Plan will include the following:

1. The northern wastewater treatment facility (northern watershed) will cover the area between the old City of Moscow Mills north to the Troy City Limits and the Cuivre River west to County Road 707. The area is zoned both residential and commercial. The existing Northwest Treatment Facility is presently operated as a 2-cell aerated lagoon with a capacity of 4,000 population equivalent. The facility can be expanded to an activated sludge, extended aeration system with a treatment capacity of 12,000 PE with the construction of final clarifiers.

2. The Highway MM / Crooked Creek Wastewater Treatment Facility (southern watershed) will cover an area which will include the old City south to Highway U and Highway MM west to County Road 721. The area is zoned both commercial and residential. The proposed new facility will be constructed with two (2) cells, Cell No. 1 will be aerated and Cell No. 2 will be the sludge holding lagoon. It will be operated as an activated sludge, extended aeration system with final clarifiers. The new facility will have a treatment capacity of 12,000 population equivalent. The facility will be constructed at (or around) the intersection of Crooked Creek and Highway MM. If need be the facility can be originally constructed as a two (2) cell aerated lagoon system with a capacity of 4,000 population equivalent. At a future date this concrete final clarifiers can be constructed to convert the system to an extended aeration system with a capacity of 12,000 PE. The system can be originally piped to easily incorporate future expansion.

In conclusion, the proposed Master Plan will eventually leave the City of Moscow Mills with two (2) main wastewater plants. One plant will be located in the Northern watershed (existing northwest facility), the second will be located in the southern watershed

(proposed Highway MM / Crooked Creek Facility), each with a potential of 12,000 population equivalent. This will give the City a maximum potential treatment capacity of 24,000 population equivalent. This capacity will be able to meet the City's needs for at least the next 25 years. Any sludge generated by the extended aeration facilities will be stored on site in the 2nd cell of each lagoon and will eventually be land applied.

CITY OF MOSCOW MILLS
MISSOURI

WASTEWATER COLLECTION & TREATMENT IMPROVEMENTS
PHASE I
COST ESTIMATE
(April 2002)

1.	Tri-Plex Lift Station		
	Lift Station & Valve Vault	$ 62,000	
	Standby Generator & Trans. Switch	$ 20,000	
	Excavation & Backfill	$ 5,000	
	Electrical	$ 13,000	100,000
2.	10" Force Main (PVC)		
	10" PVC Forcemain including Excavation		
	(7,000 LF @ $12)	$ 84,000	
	Air Release Valves (2 EA @ $1,900)	$ 3,800	87,800
3.	New 2-Cell Lagoon Earthwork		130,000
4.	Site Piping Trenchwork		25,000
5.	Lagoon Fencing		19,000
6.	Crushed Stone Paving		15,000
7.	Manholes		22,000
8.	Lagoon Piping (DIP)		66,500
9.	Blower Building		20,000
10.	Blower		35,000
11.	U. V. Disinfection Unit		56,700

12.	Diffuser (Air) System	162,000
13.	Electrical	36,000
TOTAL		**$ 775,000**

distribution for proper sludge removal.

airlift to lift and aerate sludge for gravity return. Pumped return designs are also easily accommodated

integral clarifying zone. Proven, reliable, performance.

ayer design are available

maintained, or serviced individually from the surface so there is no downtime.

approach.

g Sludge-Age
cess - Produces
residual biosolids
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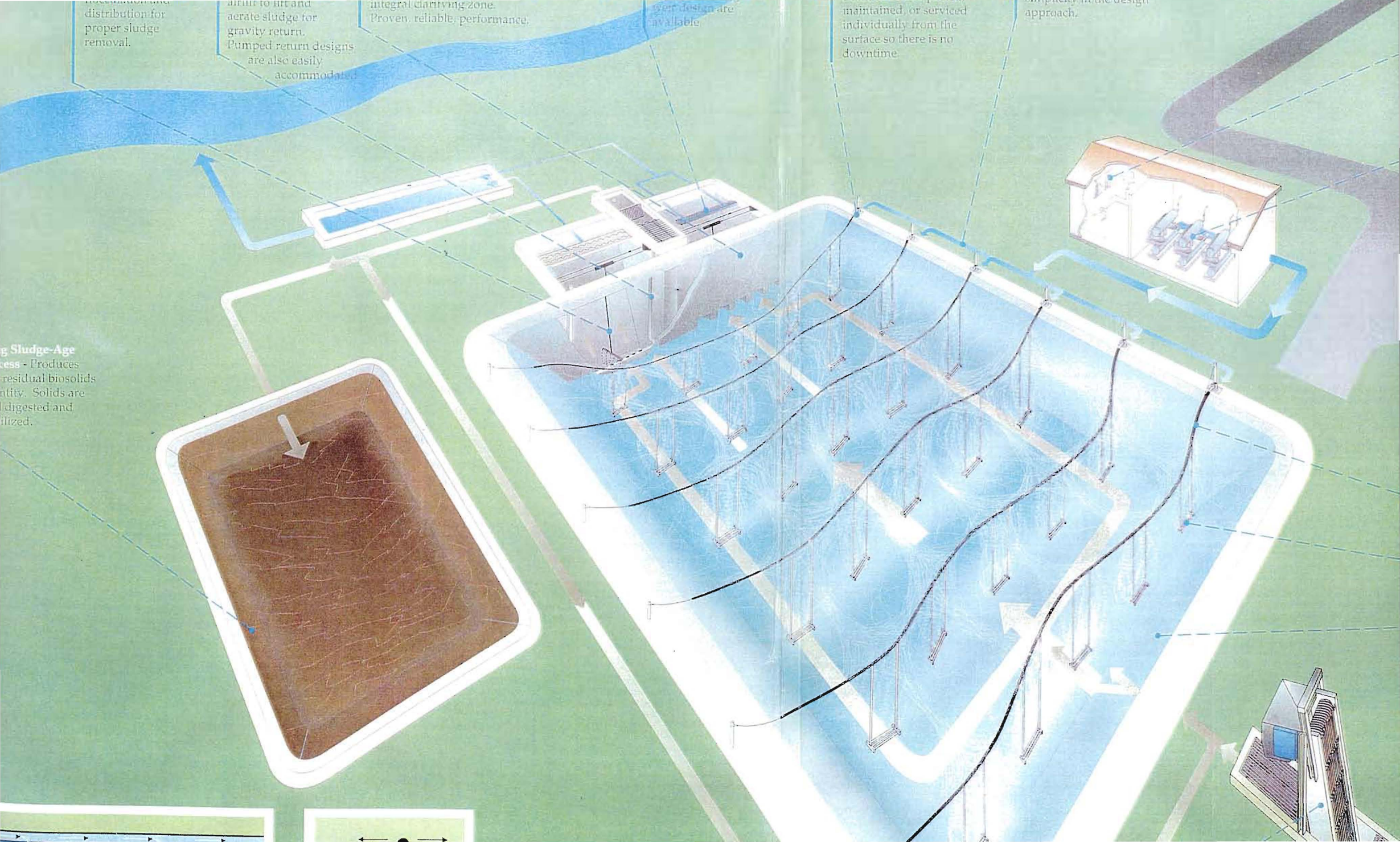


CHAPTER VII

TRANSPORTATION

The road circulation system of any area studies must be evaluated and analyzed in the regional and local perspective. A community is tied to the region by the available modes of transportation and the strength of these ties is directly related to the quality and quantity of the transportation system. The adequacy of these systems to meet existing needs and future demands are analyzed in this section.

HIGHWAYS

Moscow Mills is served by four highways - U. S. Highway 61, State Highways "C" , "MM", and "U". U. S. Highway 61 links Moscow Mills to the St. Louis Metropolitan Area to the south and northern Missouri and Iowa to the North. Highway "C" provides alternate access to St. Charles County as well as the rural countryside between Moscow Mills and the Mississippi River. Highway MM extends from Highway C in the center of town along a rural and residential area dead-ending at a gravel road (Scott Road). Highway "U" travels west from highway-61 on the south end of Moscow Mills to western Lincoln County.

AIRPORTS

The nearest airport providing regularly scheduled commercial flights is Lambert International Airport in St. Louis. Charter and rental service, landing and hanger facilities, and related functions are available at the Spirit of St. Louis Airport in Chesterfield, Missouri. There are some airports scattered around the area that are mainly just grass landing strips that are rarely used. One is located on Meyer Road and a few more are scattered between Troy and Bowling Green.

WATERCOURSES

The only navigatable watercourse in the area is Cuivre River. At the time of the City's founding, Cuivre River was a major trade route. However, Cuivre River is currently used primarily for recreation as it is not passable by larger modern commercial vessels.

STREET CLASSIFICATION AND STANDARDS

The following is a classification of streets which has been applied to evaluate existing conditions and has been used as the basic unit for the standards established:

1. Expressways and Interstates are usually constructed on new or expanded right-of-ways and have limited or controlled access, grade separations and medians. They are designed for high volumes and high speeds. With few exceptions, traffic is inter- or intra-regional. Highway 61 fits into this classification.
2. Major Streets or Arterial Streets serve primarily through traffic, but also provide secondary access to abutting properties. They carry the major flow of through traffic and large volumes of local traffic. They are two lanes, and parking lanes may be provided depending upon local restrictions. State Highway "MM", "C", and "U" fit this classification.
3. Collector Streets connect residential areas and important generators of local traffic such as shopping areas or schools. Their primary function is to collect and carry traffic to major streets or expressways. Parking is generally allowed on these streets in urban areas and they provide access to all abutting properties. Rural extensions of urban collectors may be classified as collectors or county highways because of the volume traffic usually carried. Main street and the Tropicana Village

Road fits into this classification.

4. Local Streets are primarily used for access to residential, business or other abutting properties. These streets serve to collect intra-residential traffic and carry it to major or collector streets. In addition, they carry inter-residential traffic. Parking is generally allowed on these streets.

Standards are developed to provide a "measuring device" by which a community can determine how its facility compares to reasonable specifications which are based on nationally accepted specifications that have been adjusted to meet local problems and demands. The street standards for Moscow Mills are based on local recommendations that were adjusted through discussions with city highway engineers. The suggested street standards are depicted at the end of this Chapter. The City should adopt these standards as a minimum requirement for new developments. Standards for expressways were not included since these are constructed by the Federal and State governments.

The standards proposed must be revised when conditions change, and they cannot be treated as a final solution. They must be a plied and adjusted to the needs that are to be fulfilled or the magnitude of the problem to be solved.

PRESENT STREET SYSTEM

Moscow Mills was originally designed in a gridiron pattern with streets are right angles and with blocks 400 feet in length by 300 feet in width, resulting in excessive street area. The system was designed for the horse and buggy. Street right-of-ways are generally 50 feet wide, and no consideration of the function (classification) was made; thus, the system is now inefficient.

EXPRESSWAYS

Presently, Moscow Mills is not served by any expressways; however, Highway 61 has been improving over the years. One interchange is planned in the study area itself. An interchange near the intersection of the Highway "U" will provide access to new residential areas west of Highway 61, provide better access to Highway MM to the east and ease ingress and egress for the proposed Crossroads Development. An interchange at Highway "C" should be sought also as these intersections are already accident prone due to traffic growing volumes.

COUNTY HIGHWAYS

These highways are currently designated as collectors because they carry traffic between urban areas as well as traffic generated by the land uses fronting the road. Most of the County highways are asphaltic overlay with a rigid base and they require periodic maintenance by the State Highway Department; the frequency of repair can be related to the volume and type of traffic carried.

LOCAL STREETS

The remainder of the streets and roads in the City of Moscow Mills are basically utilized for inter-residential traffic. Most of these streets are paved with asphaltic overlay and require frequent repairs; therefore, they are relatively expensive to maintain.

Local streets should have a minimum right-of-way of 50 feet. Most of the existing streets within the City are above this standard. It is recommended that the few narrow streets be widened, or possibly eliminated, to rectify this problem.

LOCAL STREETS

Street Widths	Miles Paved
75'	2.05
60'	1.56
50'	6.76
Total	9.85

TRAFFIC CONGESTION POINTS

The maximum efficiency of a transportation system is associated with traffic congestion points and designed peak volume of the highways. Traffic congestion points are hazardous and indicate areas where improvement may be needed.

GRADE CROSSINGS

The major obstacles to traffic flow are the Highway 61 intersections of Highway U, Highway C, Elm Tree/Main Street and Tropicana Village crossings. The intersection of Main and Highway 61 is a prime example of the congestion that results when traffic flow is stopped. Grade crossings on State highways and local streets generally create delays for traffic as well as create potential for hazards to public safety.

STREET CONGESTION

Highway 61 is often heavily congested in the evening when industries in the nearby areas change shifts. The highway has a dual function in the City in that it serves as a collector and an arterial street for local traffic and that it serves as a collector and an arterial street for local traffic and also carries through traffic. This results in a mixture of local and inter-regional truck and car traffic. There are no alternate routes; thus, traffic volumes increase rapidly and congestion occurs. The trucks and through traffic must reduce speed in the City. This in turn makes it difficult for traffic from local streets to cross

or get on Highway 61, especially in left turn movements.

This situation should be partially alleviated when the Highway "U" Intersection is completed because it will divert crossing traffic from other intersections. However, new interchanges at the other major intersections will still be necessary in the future.

CIRCULATION PROBLEMS

- A large percentage of collector streets are below recommended minimum right-of-way standards and, as a result, the existing collector streets are inefficient.
- Mixture of inter- and intra-regional and local traffic on Highway 61 resulting in traffic congestion; specifically at the intersection of Main and Elm Tree, Tropicana Village Road, Highway U and Highway C.
- Maintenance of excessive local streets with the City;
- Blocking of north-south movement of traffic by the Highway 61.

The lack of efficient collector streets is the major problem that must be solved.

MAJOR STREETS - ARTERIAL

State Highways MM, C, and U traverse the width of the planning area generally in an east-west direction and carry both local & thru traffic. These are the most heavily traveled local roadways in the area. These highways are paved with asphalt on a rigid base, and the pavement width is about 30 feet wide.

We recommend improving Elm Tree Road and Mette Road and Main Street to the standards of Highways C, U & MM. With these improvements, Highway U, Mette Road, Highway MM, Main Street, Elm Tree Road and Sand Run Road would make an Arterial Traffic loop around the City easing traffic congestion at intersections along Highway 61 and

greatly improve public safety. See Transportation Plan that follows this chapter.

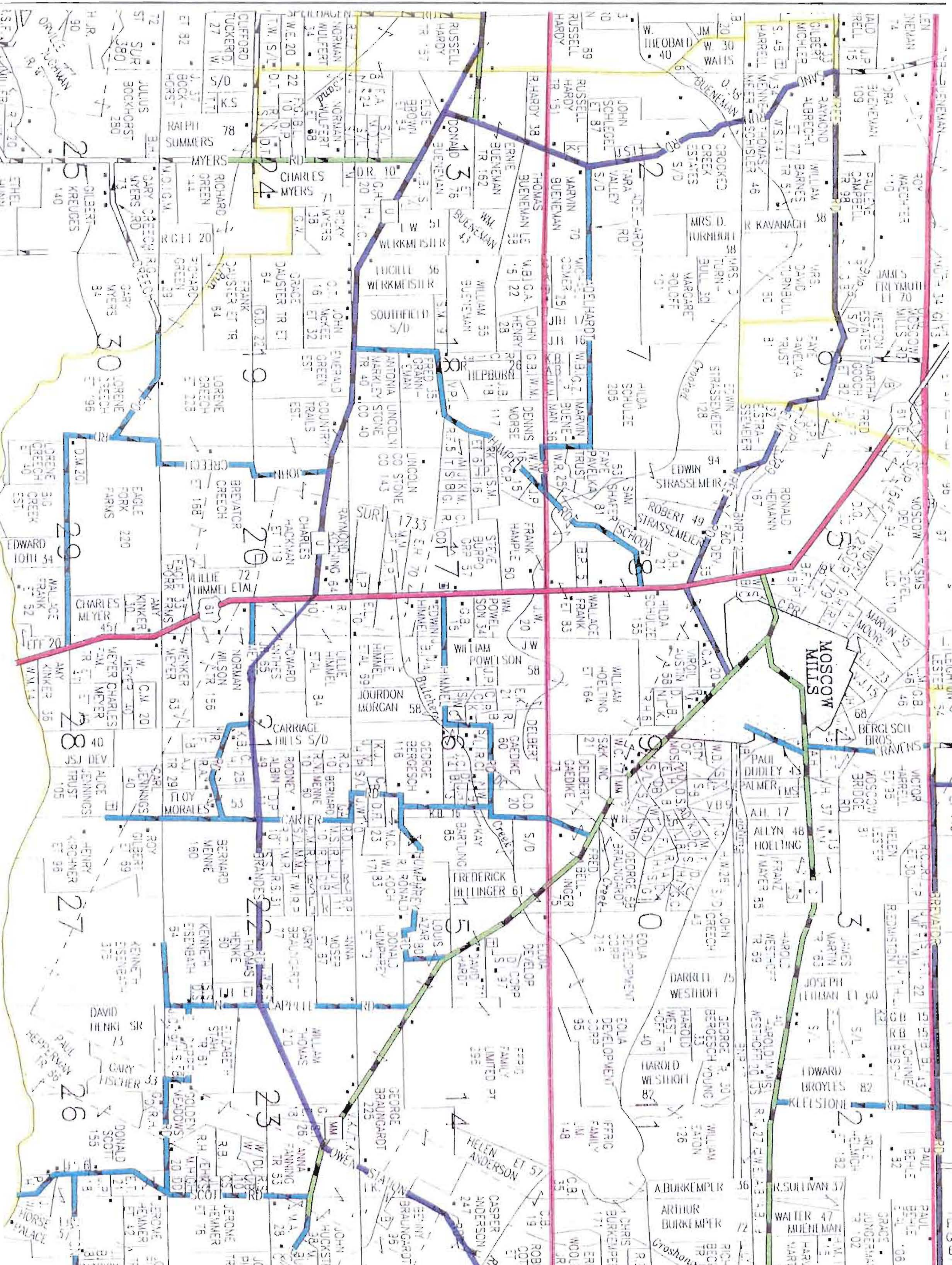
COLLECTOR STREETS

The collector streets in the study area are Main Street, Elm Tree Road, Himmel Road, Mette Road and Hampel Road. These roads were designated as collectors because they carry traffic between rural communities as well as traffic generated by the land uses fronting the road. Much of these roadways are gravel country roads at this time. Only Main Street and parts of Elm Tree Road, Mette Road and Himmel Road are above the minimum standards for collector road. The remainder of these roadways are below the recommended standards. A substantial percentage of the roads in the study area need additional right-of-ways and improved paving to adequately perform their functions.

LOCAL STREETS

The remainder of the roads and streets in the City are basically utilized for inter-residential traffic. Most of these streets are covered with 2" asphaltic overlay and have been regularly maintained.

Local streets should have a minimum right-of-way of 50 feet. Approximately 20 percent of the existing streets within the City are below this standard. It is recommended that these streets be widened, or possibly eliminated to rectify this problem



NING AREA

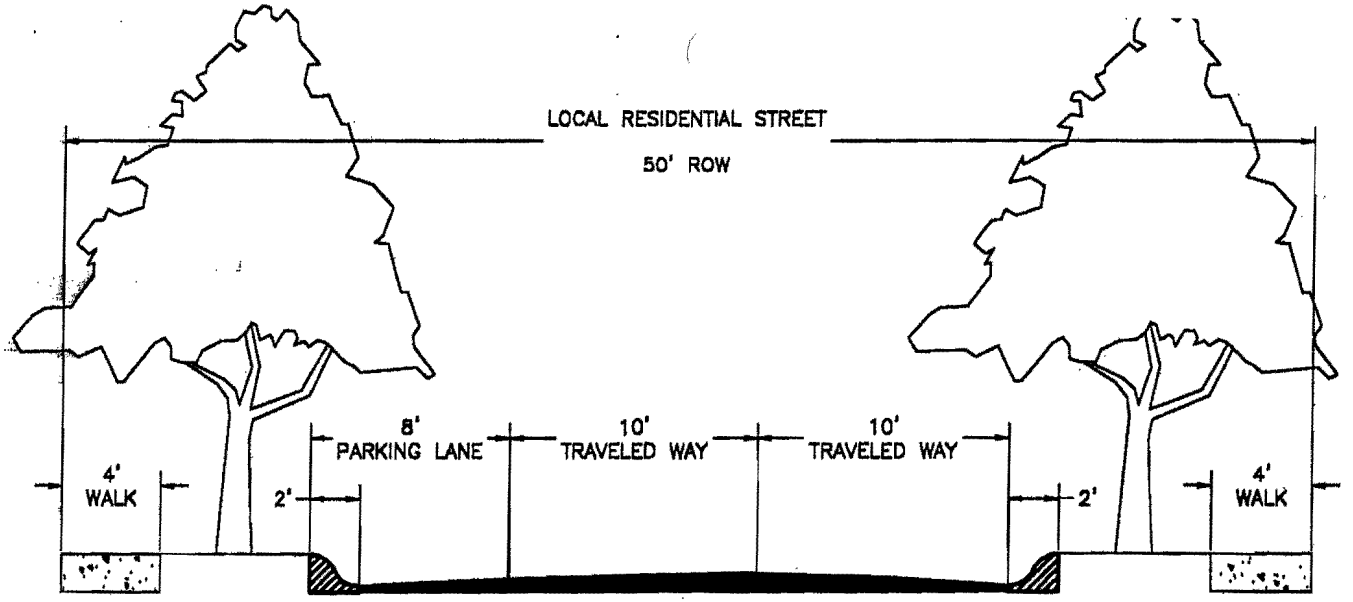
ESSWAY

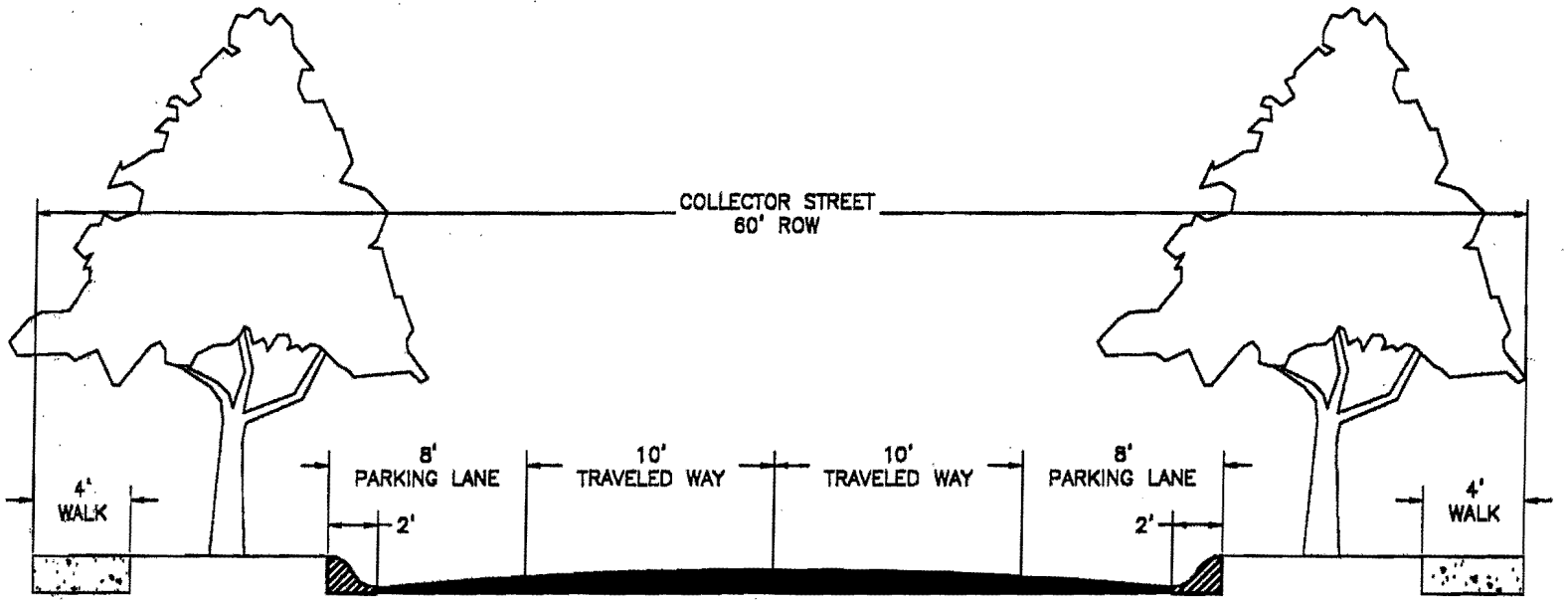
COLLECTOR

RIAL

LOCAL

KBR ENGINEERI
8706 GRAVOIS
ST. LOUIS, MO


LOCAL RESIDENTIAL STREET
50' ROW
4'
WALK
2'
8'
PARKING LANE
10'
TRAVELED WAY
10'
TRAVELED WAY
2'
4'
WALK


COLLECTOR STREET
60' ROW
4'
WALK
2'
8'
PARKING LANE
10'
TRAVELED WAY
10'
TRAVELED WAY
8'
PARKING LANE
2'
4'
WALK

CHAPTER VIII

COMPREHENSIVE PLAN FOR DEVELOPMENT

The purpose of the Comprehensive Plan for Development is to determine land use needs for the future and to properly located these uses in relation to one another. The Comprehensive Plan should be viewed as a statement of official policies regarding future growth. Land use studies which were studied and projected on a twenty year basis were:

- Residential
- Commercial
- Industrial
- Public
- Semi-Public
- Agricultural and Undeveloped

Goals sought to be accomplished by this plan are:

- educated all citizens about local plans for future land development goals of the community;
- a balanced and orderly expansion of the City's tax base;
- coordination of development policies and land use locations with the major thoroughfares to achieve an efficient movement of people, goods, and services;
- detection of residential, commercial, or industrial land uses from unwarranted and harmfully conflicting uses; and
- preservation of valuable past development; continuation of present workable uses; and reservation of sufficient space to meet future needs.

LAND DEVELOPMENT POLICIES

The following are land development policies for the City and for specific land use categories. These policies were used to guide the formation of the Comprehensive Plan for Development and should continue to be used by the City in future decisions.

GENERAL DEVELOPMENT POLICIES

To provide for proper future development in Moscow Mills, Moscow Mills' Comprehensive Plan should:

- reserve and designate sufficient space for various land use requirements to meet 2002 estimates;
- contain development rather than permit scattered development along highways and major arteries;
- in conjunction with compact development, take steps to insure that the various land uses do not become congested, and insure adequate room for expansion, parking, landscaping, and fresh air;
- increase tax base by reviewing policies that would maintain and expand the tax base, such as annexations; central area commercial expansion, public water and sewer and fire protection policies, provision of industrial tracts inside the City; and enforcement of city zoning and other codes pertaining to development;
- designate only those areas of the City for future development which have topographic conditions suitable for such;
- follow the Comprehensive Plan for Development as closely as possible.

RESIDENTIAL

In order to provide for proper residential development, the Comprehensive Plan and City should:

- allocate proper areas for desirable future residential development;
- designate areas for both single or multi-family dwellings;
- prevent mixed and conflicting land uses (such as commercial and industrial areas; and
- strive to prevent major thoroughfares from carrying high volumes of fast moving traffic through residential areas.

FUTURE RECOMMENDED RESIDENTIAL DEVELOPMENT AREAS

The recommended future residential growth areas in Moscow Mills are shown on the proposed Land Use Map below. It is anticipated that a considerable portion of the new residential growth will first occur within the western & southeastern sections of the City. Namely, along Elm Tree Road to the west and along Himmel Road ad Highway MM to the southeast.

Other existing platted areas of the City's expansion area should be encourage to develop in what might by referred to as a "filling in process."

COMMERCIAL CENTRAL BUSINESS AREA

For Moscow Mills' Central business District to maintain its character the Comprehensive Plan should maintain a compact and contiguous central commercial area.

COMMERCIAL - HIGHWAY ORIENTED BUSINESS

Development policies concerning highway-oriented business should:

- insure that development takes place along major streets and only in specified areas;
- require that the future commercial uses by developed in a planned and orderly manner; and
- prevent the intermingling of incompatible land uses.

FUTURE RECOMMENDED COMMERCIAL DEVELOPMENT AREAS

The Highway-C Business Corridor has all needed facilities and is capable of expanding the strip mall area between Highway 61 and Highway MM. The Highway-61 Business Corridor will be growing rapidly with recent development at the northern end and with the planned Crossroads Development at Highway U. With the availability of public sewers and water supply, and the strong growth in population, this area is primed for development.

FUTURE RECOMMENDED INDUSTRIAL DEVELOPMENT AREA

At the present time, the major industrial site is located on Highway C close to Highway 61. In allocated future industrial areas, the Comprehensive Plan should:

- located industrial uses where they will have convenient access to a major thoroughfare and/or the railroad, preferable both;
- insure that the sites have access to needed utilities and facilities;
- designate industrial areas which will be adequately removed by buffer strips to avoid undesirable conditions for the surrounding land use areas;
- indicate only areas for industrial use which have fairly level land, free from flooding,

stale soil conditions and sites suitable for easy preparation;

- discourage access on residential streets; and
- require that enough land be provided for off-street parking, for landscaping and for adequate buffers.

PUBLIC AND SEMI-PUBLIC

Public and semi-public land development policies should:

- stipulate that schools and parks be located in close relationship with residential areas; and
- provide a central area for the location of future community centers and governmental buildings.

FUTURE RECOMMENDED PUBLIC-SIMI-PUBLIC DEVELOPMENT AREAS

Moscow Mills needs at least 18 additional acres to be developed as future recreational land. The City has designated the area adjacent to the new elementary school, next to the old elementary school and at the community building on Highway C. Also, in future developments, neighborhood parks are recommended.

ZONING ORDINANCE

The Zoning Ordinance is one of the best legal tools for implementing the Land Use Plan. The ordinance helps to insure:

- that the land uses of a community are properly located with respect to one another;
- that adequate space is available for each type of use; and
- that density of development in each area is kept high enough to be serviced adequately by existing (or a minimum) expansion of utilities. We highly recommend

that the City authorize the City Attorney to draft a Zoning Ordinance for the Board of Aldermen to consider for adoption.

SUBDIVISION REGULATIONS

Subdivision Regulations may be used to require land subdividers to maintain certain specified standards. The Missouri Law states that subdividers may be required to submit all subdivision plats to the City Council for approval before any lots can be sold. A proposed set of Subdivision Regulations should be prepared by the City Attorney and considered.

CODE ENFORCEMENT

The housing code and the building code an be used to help implement the land Use Plan. The housing code sets forth minimum standards regarding space per occupant, structural conditions, sanitary facilities, lighting, ventilation and maintenance of a dwelling. The building code establishes standards for construction materials, proper plumbing, adequate electrical installations and safety from fire.

CAPITAL IMPROVEMENTS PROGRAM

A Capital Improvements Program is a combined planning-financial operation. It presents a schedule or timetable of major projects to the accomplished during a prescribed period. In this instance, the prescribed planning period ranges from the present to twenty years in the future.

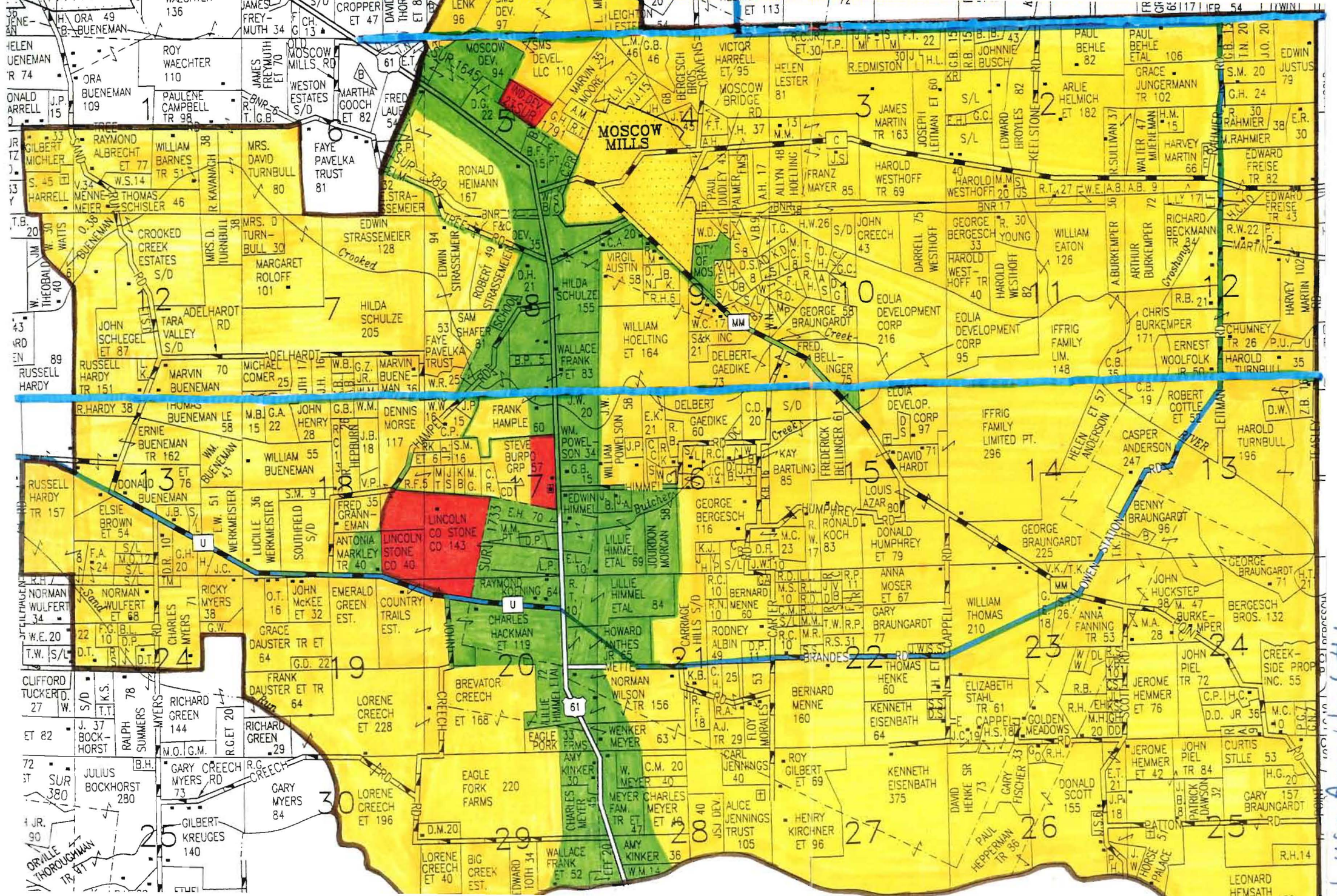
Project Priority	Schedule	Cost Estimate	Method of Payment
Water Facilities		1,272,875	
Wastewater Facilities		775,000	

PUBLIC EDUCATION AND SUPPORT OF THE PLAN

Since the citizens undertake much of the development in a City, it is essential that they are properly informed. Only if they understand and support the plan will it be implemented properly. The Planning Commission should hold public hearings and present the plan. Questions ad suggestions from the public should be encouraged. Public groups such as civic clubs and church groups should be used to help inform the public. Developers interested in the Moscow Mills area should also be informed of the City's goals and plans for future development.

UTILITY EXTENSIONS

Areas which have access to water, sewers and other public utilities are more desirable and will develop more rapidly than areas not having access to these utilities. The City, therefore, has an excellent opportunity to guide future development in accordance with the Comprehensive Plan. Utility extensions should be made only in areas planned for development. This is an indirect but very effective method of implementing the Comprehensive Plan.



KBR ENGINEERING
8706 GRAVOIS
ST. LOUIS, MO

COMMERCIAL

RESIDENTIAL

ARY LINES

RIAL

Land use Amended #1

APPENDIX A

FIVE YEAR IMPROVEMENT PROGRAM
(2003 - 2008)

FIVE YEAR IMPROVEMENT PROGRAM
(2003 - 2008)

The Capital Improvements Program depicted at the end of this report represents an austerity budget for the City. The public water supply, storage and treatment facilities and the wastewater collection and treatment facilities are the only part that should be implemented during the program's time period. The City Hall is included so that specifications, finances, location and community reaction can be evaluated by 2008. At this point, construction could progress on this phase of the program if it is then deemed desirable.

PARKS AND RECREATIONAL PROGRAM

Presently the City's financial situation will not permit investment of municipal funds in a public park system. An alternative solution is to encourage and promote the formation of a non-profit corporation whose function is to establish and maintain a public park system.

The non-profit corporation could also apply for Federal grants, accept donations of time, land and money, and sponsor fund-raising events. The major advantage of this alternative is that the donation of land and money is tax deductible. The donations and funds raised could be used as the local share when applying for Federal programs.

The corporation could sponsor the annual park-a-thon event as a fund-raising enterprise. The profits would be used to maintain the park system and any surplus funds could be used to expand the parks or accumulate fiscal reserves. Other communities in the region have created park systems via a locally-sponsored, fund-raising events.

The estimated cost of the City park program could be as much as $100,000, the majority of which would be used for improvements and equipment. Many of the improvements and equipment could be constructed by local people, such as ball diamonds, tot lots, basketball courts and installation of lights on the ball fields. The total cost of the program could be reduced as much as 75 percent by utilizing locally donated skills.

Federal programs can be an important source of funds and should be investigated by the corporation as one means to assist financing the park program. These programs are applicable to the establishment of the regional parks depicted in the Land Use Plan as well as the City parks. Besides sponsoring local parks, the corporation could function as the representative of the City and its environs in promoting these regional parks. The following three programs may be applicable.

Urban Beautification Applicants must be local public bodies authorized to undertake urban beautification and improvement programs. Improvements must be significant and important to the comprehensively planned development of the locality. The grants may be used for park improvements as water and sanitary facilities, paths, walks, landscaping, recreational equipment, lighting, etc. The Federal grants may not exceed 50 percent of the

recreational equipment, lighting, etc. The Federal grants may not exceed 50 percent of the amount by which approved activities during the applicant's fiscal years exceed the usual expenditures for comparable activities.

Historic Preservation Grants Historic Preservation Grants can be made to special public bodies having authority to acquire and restore historic sites. Acquisition and restoration must be in accordance with the comprehensive plan of the area. The site must meet the criteria in the National Register maintained by the Secretary of Interior. The grant cannot exceed 50 percent of the cost of acquiring and restoring the historic site.

Open Space Program Grants can be made to municipal or other public bodies established by State or local law. Grants will be made for the provision and development of open space land as part of a comprehensive area development plan. The program provides 50 percent matching grants for acquiring, developing and preserving open space land for permanent public use. Grants may be used to obtain title to lands for recreation, conservation of natural resources, historic or scenic purposes. Development of walks, paths, landscaping and sanitary facilities may be paid for by these funds.

Sewage Treatment Improvements Rulings by the State require that when improvements are made to a sewage treatment plant, the treatment process must be converted from primary to secondary methods. The design capacity of the City's sewage treatment plant will be surpassed during the planning period, requiring expansion of the existing plant or construction of another facility. It is estimated that conversion from primary to secondary treatment would cost and $775,000. Another sewage treatment plant (design capacity 6,000) would require $120,000. As the result of the current bonded indebtedness of the sewer and water fund, it is recommended that the City consider the following program.

Raise the monthly sewer rate by $5.00 and place half of the proceeds from the increase in a fund to convert the existing facility from primary to secondary treatment; and deposit the other half in a fund for the construction of a new treatment facility. This would yield additional funds by 2005. The availability to State funds would be an important variable to consider relative to the future fiscal needs for these projects.

Water System Improvements

City is currently extending and improving the water distribution system within the municipality and will be extending water lines beyond the corporate boundaries. The improvements suggested in the Plan are necessary to improve the system's efficiency and provide the maximum possible benefits. Construction of the necessary phases should commence when demand is warranted and adequate funds are available. The program recommended for construction is a long-term project that may extend beyond the planning period.

The program recommends raising the City's water rates by 25 percent to establish a water improvement construction funds. It is recommended that the rates of customers

outside the corporate boundaries by fifty (50%) percent higher than the rates of customers within the City. These funds could also be used to finance additional improvements to the water distribution system. This rate change alone could add $21.00 per year in additional funds.

Street Improvements

Subdivision regulation requirements relative to acquisition of rights-of-way and type of improvement to be provided by the subdivider should offset the cost of most of the proposed street program. Motor fuel tax funds and municipal funds currently reserved for street improvement should be sufficient to defray the remainder of the cost.

Summary

The five-year Capital Improvements Program presented can be converted to an austerity program. The sewage treatment facility must be converted from primary to secondary methods and a fiscal program should be considered to provide a construction funds for an additional treatment plant. The water improvement program will be a significant factor encouraging growth and development of the City, via annexation of the unincorporated areas receiving water from the City. Funds are not available at this time to finance a housing or a park program. The creation of the park commission to oversee and finance parks seems to be the only reasonable method to provide park amenities. It is further recommended that this park commission should pursue state funds for improvements.