

HARDIN INDUSTRIAL PARK

MASTER PLAN

JANUARY 2006



**interstate
engineering, inc.**

Engineering Planning Surveying

TABLE OF CONTENTS

TABLE OF CONTENTS	i
LIST OF TABLES	ii
LIST OF FIGURES	iii
PROJECT OVERVIEW	1
Introduction	1
Project Purpose	1
Project Goals	1
Public Involvement Process	1
MARKET IDENTIFICATION	2
PHYSICAL SITE ANALYSIS AND LAND PLANNING	5
Phase I Environmental Site Assessment (ESA)	5
Historical Recognized Environmental Conditions	5
De Minimis Conditions	5
Recognized Environmental Conditions	5
Critical Issues Analysis	6
Land Use Planning	7
Preliminary Opportunities and Constraints	7
Land Use Alternatives	9
Design Guidelines – Landscape	10
Purpose	10
Objectives	10
Street Frontage	10
Parking Lots	11
Storage Areas	12
Remaining Property Area	13
Noxious Weeds	14
Irrigation	14
Maintenance	14
WATER SYSTEM PLAN	15
General	15
References	15
Existing Water System	15
Raw Water	15
Raw Water Collection and Transmission System	17
Water Treatment Plant	18
Distribution System	19
Storage Reservoirs	20
Industrial Park Water System	21
General	21
WASTEWATER SYSTEM PLAN	25
General	25
References	25
Historical Population Summary	25
Population Projections	25

Collection System	30
Wastewater Lift Station	30
Force Main	30
Cost Estimate	31
LIGHTING, POWER, AND COMMUNICATIONS SYSTEM PLAN	32
Lighting	32
Electrical Power Distribution	35
Communications	38
TRANSPORTATION PLAN	40
Regional Roadway Network	40
Local Roadway Network	41
Multi-Modal Transportation Facilities	42
Alternatives Development and Analysis	43
Existing Traffic Volume	44
Trip Generation & Projected Traffic	45
Recommended Transportation System	50
STORMWATER MANAGEMENT PLAN	53
Detention Ponds	53
Storm Sewer	56
Floodplains	56
Cost Estimates	57

LIST OF TABLES

Table 1 - Surface Water Right - Statement of Claim	16
Table 2 - Ground Water Right – Ground Water Certificate	17
Table 3 - Old Station Low Service Pumps	18
Table 4 - New Intake Low Service Pumps	18
Table 5 - High Service Pump Station	19
Table 6 - Water Distribution System	19
Table 7 - RMP & RME Water Rights	22
Table 8 - Historical Population Summary	26
Table 9 - City of Hardin Population Projection	26
Table 10 - Service Population Estimation	29
Table 11 - Wastewater Flow Generation	29
Table 12 - Pipe Flow Capacities	30
Table 13 - Industrial Park Build-out Land Use	45
Table 14 - Trip Generation Rates	46
Table 15 - Preliminary Detention Pond Size	55

LIST OF FIGURES

Figure 1 - Opportunities and Constraints	8
Figure 2 - Point of Diversion – City of Hardin	16
Figure 3 - Water Treatment Plant	19
Figure 4 - Existing Water Distribution System	20
Figure 5 - RP Intake Facility	23
Figure 6 - Hardin Industrial Park Water Master Plan	24
Figure 7 - Hardin, MT Facility Plan - Planning Area	27
Figure 8 - Area Not Included in the Facility Planning Area	27
Figure 9 - Conceptual Land Use Plan	28
Figure 10 - Industrial Park Wastewater Collection System	31
Figure 11 - Hardin Industrial Park Lighting Plan	34
Figure 12 - Hardin Industrial Park Electrical Power Distribution Plan	36
Figure 13 - Hardin Industrial Park Communications Distribution System	39
Figure 14 - Regional Vicinity Map	40
Figure 15 - Existing Access Network	42
Figure 16 - Street Network Alternative #1	43
Figure 17 - Street Network Alternative #2	44
Figure 18 - Build-out Daily Trips	47
Figure 19 - Roadway Assignment of Daily Trips (Hardin Industrial Park Trips Only)	48
Figure 20 - Expected 20-Year Daily Traffic	49
Figure 21 - Expected 50-Year Daily Traffic	50
Figure 22 - Recommended Intersection Configurations	52
Figure 23 - Major Drainage Features	54
Figure 24 - Detention Pond Concept	56

PROJECT OVERVIEW

Introduction

Project Purpose

The City of Hardin annexed approximately 800 acres of land, zoned it as Industrial, and established a Tax Increment Finance District (TIFD) on the lands. The intent is to eventually develop the properties as the Hardin Industrial Park. Most of the annexed lands are currently utilized for agricultural or residential purposes, with a few industrial or commercial uses.

This master plan was created to assist with development of the annexed property. The master plan documents physical site analysis and land use planning activities conducted during development of the master plan. In addition to physical analysis and land use planning, potential market identification, transportation planning, stormwater management planning, and utility assessment were also conducted.

This document is intended to help guide development of the annexed lands. It provides guidance for development of infrastructure necessary to serve potential development of the annexed lands.

Project Goals

The goal of this plan is orderly development of annexed lands. With a comprehensive master plan, regardless of the order of development, sound infrastructure planning and construction decisions can be made.

Public Involvement Process

The master plan was developed with significant opportunities for input from the general public and from property owners within the TIFD. Opportunities for input included a group on-site visit, two public meetings, and a project web page. All property owners within the TIFD received mailed invitations to the on-site visit and public meetings. Meetings were also advertised in the newspaper and on the project web page.

Public input on the development of the master plan was possible through several avenues. In addition to the opportunity to comment orally at the public meetings, written comment forms and contact information for the consultant team were also made available. The project web site also provided a means of submitting comments via e-mail directly to the consultant team.

MARKET IDENTIFICATION

The probability of real estate development at any particular location is based upon the economic advantages and disadvantages attributable to that location. The advantages of the proposed industrial park in Hardin, Montana include the following:

1. Public utilities, including water, sewer, natural gas and electricity,
2. Fiber Optic Cable,
3. Transportation – Interstate and rail,
4. Proximity to coal,
5. Low labor costs,
6. Adjacent industries, whose outputs may be used by other industries,
7. Potential for economic incentives, such as tax increment financing,
8. Water from the Bighorn River,
9. Relatively low real estate prices, and
10. A pro-development community.

The challenges facing development of the area include:

1. The remoteness of Hardin relative to markets and suppliers,
2. A lack of existing industry, resulting in a lack of highly skilled workers,
3. The lack of existing industry reduces the opportunity for symbiotic relationships,
4. The lack of institutions of higher learning, in particular ones involved in research,
5. The assumed difficulty of attracting highly skilled workers to the area, and
6. The small population base makes Hardin unattractive for large retailers or service providers.

Even though Hardin can offer significant advantages to some businesses, there are significant challenges to large scale economic development in Hardin. In today's world, higher education and highly skilled labor are major driving forces of economic development. The lack of institutions of higher education could also be an opportunity. The State of Montana is currently increasing its investments in 2 year colleges and vo-tech education facilities. The effort is designed to train workers for the types of jobs available in Montana. Previously, there was a coal research program at MSU-Billings, but it was terminated. There may be a need to develop a coal technology center somewhere in Montana, and it might make sense for the community of Hardin to look into the possibility of creating a vo-tech program for coal and other technologies that might work in the area. Having a trained labor pool in the area or having the means to train workers for a new large business in the area is a big asset.

Large commercial subdivisions in Billings, which are all much smaller than the proposed Hardin Industrial Park, have taken up to 25 years to fully develop. The community of Hardin should be realistic about the time required for significant development to occur. Marketing efforts should be equally realistic. Large companies do not relocate on a

regular basis, and marketing to companies that are not currently looking to move is a waste of time and money. Rather than spend a great deal of money for media advertising, a “guerilla” marketing approach should be considered. “Guerilla” marketing means low-cost, using already available resources that might include things such as a large, professional sign on the interstate, a web-site, a color marketing brochure, working with area and state economic development agencies, and making only limited contacts with targeted companies that might be especially attracted to the advantages that are unique to Hardin (i.e. Coal).

The strategy should be for Hardin to keep its “powder” dry. Rather than making large expenditures upfront for marketing or even infrastructure, Hardin should wait until a good prospect is identified, and then use the money available to make an attractive proposal based upon the particular needs of the prospect. In other words, Hardin should install only the infrastructure necessary to fulfill existing commitments, saving resources until a specific need and use is identified. Revenues generated by the newly formed tax increment district could be used in the future to install additional infrastructure, to create a low-interest revolving loan fund, or to create other incentives for new businesses.

The planning efforts being undertaken now greatly increases the likelihood of future development occurring in Hardin. Companies that are seeking to expand or relocate to new areas go through several planning phases. In the first phase of the facilities siting process companies go through a quick sorting process. Businesses usually attempt to narrow the selection process to a few locations that seem to offer the best opportunities. They typically do not expend a great deal of resources in the early selection process, relying upon readily available data to determine their short list of prospects for further consideration. The planning and documentation that is being prepared as part of this report will provide prospects with the information required by them to determine if they want to further consider Hardin for a new or relocated facility. Without readily available data on the community and the industrial park, companies will often simply eliminate a prospect, rather than go to the trouble of compiling the data themselves.

Preparation and planning could include such things as preparing minor subdivision plats that would allow properties to be conveyed and developed on a fast track basis. Ideally, minor plats would forego the requirement to install infrastructure until the first parcel was sold. This would reduce upfront costs and would allow the flexibility to reconfigure lots once a particular need was identified. Furthermore, the proceeds from the sale of the lot(s) could be used to pay for some or all of the necessary improvements. The platting process would also help to establish the available utility capacities, the municipal requirements for the development, and an estimated cost of providing the infrastructure, both for the City and the developer or buyer.

Additional planning might include zoning and development standards for different portions of the industrial park to insure the highest and best use and orderly development of the parcels. For instance, the area near the interchange should probably be down zoned to prevent industrial uses to locate in this area. Motels, restaurants, retail and office uses would be most appropriate near the interchange, and a heavy industrial user in

this area would discourage the aforementioned developments. Also, landscape requirements and other site development criteria would likely be different for different portions of the park. Again, the goal of planning is to remove as much uncertainty and delays as possible and to be able to easily provide as much detailed information as possible. The easier it is for a prospect to gather the information needed, the better the chances are that serious consideration will be given to a proposal.

Areas of opportunity for development would include the following:

1. Tourist and traveler related businesses near the Interchange,
2. Coal related businesses,
3. Other energy related businesses, possibly related to methane,
4. Businesses that use one of the outputs from existing businesses,
5. Industries that require large amounts of water,
6. Light manufacturing that would benefit from low prevailing wage rates,
7. Businesses that might be shunned by other communities (i.e. a private prison),
8. Industries requiring a large property with City services,
9. Start-up businesses that might benefit from an attractive package of incentives, and
10. Businesses that serve the Billings, Sheridan, Buffalo and Gillette areas.

PHYSICAL SITE ANALYSIS AND LAND PLANNING

Phase I Environmental Site Assessment (ESA)

Maxim has completed a Phase I Environmental Site Assessment of the Hardin Industrial Park located in Hardin, Montana. The Phase I Environmental Site Assessment was performed in general conformance with the scope and limitations of ASTM Practice E 1527-00. Any exceptions to, or deletions from, this practice are presented in the appropriate sections of this report and in Section 9.0.

Historical Recognized Environmental Conditions

The following historical recognized environmental conditions, as defined in ASTM, were identified for the site during this investigation:

1. Underground storage tanks were removed from the farmstead located in the southeast quarter of Section 11 approximately 15 years ago. No samples were collected during the tank removal.
2. The west half of the southwest corner of Section 12 was historically utilized as an industrial sugar processing facility.
3. The gas station on the site in the northwest quarter of Section 14 was identified as a LUST facility.

De Minimis Conditions

The following *de minimis* conditions, as defined under the ASTM standard, were identified during this investigation:

1. Drums of used oil, used oil filters, and an area of staining were present on the west side of the shop at the farmstead in the southeast corner of the southwest quarter of Section 12.

Recognized Environmental Conditions

The following recognized environmental conditions, as defined in the ASTM standard, were identified during this investigation:

1. Two leaking ASTs, three leaking drums, and a large area of oil staining was present outside the southeast corner of the Quonset building in the north half of the northeast quarter of Section 14.

Based upon the foregoing assessment, the ESA has provided evidence suggesting that potential recognized environmental conditions may affect the site. Further investigation of the site appears warranted. Specifically, Maxim presents the following recommendations:

1. A subsurface investigation should be conducted in the vicinity of the former underground storage tank basin in the southeast quarter of Section 11 to determine if contamination from the former UST is present in the soil and/or groundwater.
2. Drums, located adjacent to the farmstead in the southwest quarter of Section 12, not utilized for site operations and their contents, should be removed from the site and disposed in accordance with applicable regulations. Following the removal of the drums and used filters, soil contaminated with oil should be excavated and removed from the site. Maxim further recommends that soil samples be collected to confirm that all the contamination has been removed from the site following the completion of the excavation.
3. The larger area of staining, emanating from leaking drums and ASTs was observed outside the southeast corner of the Quonset building (located in the northeast quarter of Section 14) should be excavated, removed from the site, and properly disposed off site. Following the removal of the contaminated soils, Maxim further recommends that soil samples be collected to confirm that all the contamination has been removed from the site.

Critical Issues Analysis

The City of Hardin is currently developing plans to construct an Industrial Park located immediately north of Hardin in Big Horn County, Montana. This industrial park will be constructed to promote development of both small to large scale industrial projects.

From May through July 2005, a study was conducted to identify potential critical issues related to the proposed industrial development. Available cultural, historic, wildlife, and vegetation habitat information was collected for the area and a field investigation was conducted to identify sensitive site characteristics. The results of this study did not indicate any critical issues that could impede development of the Industrial Park. The site is primarily comprised of irrigated agriculture and developed properties with no native grasslands or woodlands, no identified sensitive plant species, no threatened and endangered species within the park boundaries with only an estimated three percent of the area containing wetlands.

While some potential wetlands were identified within the park boundaries, these wetlands were limited in extent and could easily be avoided on most tracts as development occurs. Likewise, while some bald eagle nests are present within one mile of the Industrial Park boundaries, they currently are located outside of the Project area far enough that building restrictions would not be required.

Maxim's recommendations for future actions include the following:

1. *Continue consultation and discussion with the United States Army Corps of Engineers (USACE).* Consult with the USACE prior to submission of the nationwide wetland permits (NWP) to identify the correct wetland determination and the method of submittal that allows for the easiest permitting and shortest review period possible. Frequent communication will ensure USACE deems the application complete with minimal comments.
2. *Determine the need for appropriate permits relevant to individual developments and industries.* Due to the wide variety of industries that may utilize the site and the virtually unlimited potential for project design, the nature of permits required for development cannot be known at this time. However, a variety of permits, including those described in this document, may be required prior to construction or operation of proposed facilities. Permitting needs may be identified in conjunction with or subsequent to final project design.
3. *Contact landowners regarding any interests in property held by United States Department of Agriculture Natural Resources Conservation Service (NRCS) and Farm Service Agency (FSA) regarding interests in the area.* The NRCS and FSA will not disclose easement locations or program enrollment until a final project layout has been identified. The NRCS will conduct a NEPA investigation (generally a checklist EA) for disturbances within Conservation Reserve Program (CRP) or other lands formally set aside (i.e., enrolled in a Federal program) for resource conservation prior to approval.
4. *Continue consultation and discussion with the United States Fish and Wildlife Service (USFWS) and Montana Fish Wildlife and Parks (MFW&P).* Consultation will be required if any aspect of the project becomes a state or federal action (e.g., permit issuance). This consultation will help identify potential effects to wetlands and wildlife (especially bald eagle nest sites) in the vicinity of the proposed project and identify the need or potential benefits of wildlife monitoring. Frequent communication will ensure that necessary mitigation measure or construction plans are developed and agreed upon so as not to delay project developments.

Land Use Planning

Preliminary Opportunities and Constraints

On June 23, 2005, the Design Team met at the Industrial Park area of an on-site reconnaissance visit. During the visit, the Design Team met with land owners to discuss the project and to answer any questions. After the meeting, the Design Team placed their initial reactions on what is called an opportunities and constraints diagram. This diagram

also shows potential land uses based upon the context of the location and existing known uses and tracts of land. The purpose of the map was to place into graphic form the Design Team’s initial reactions to their site visit. The graphic is not binding or regulatory, nor does it dictate any uses shown on the plan. It is, rather, one tool of many to help predict possible infill patterns to plan for future transportation and utility infrastructure needs.

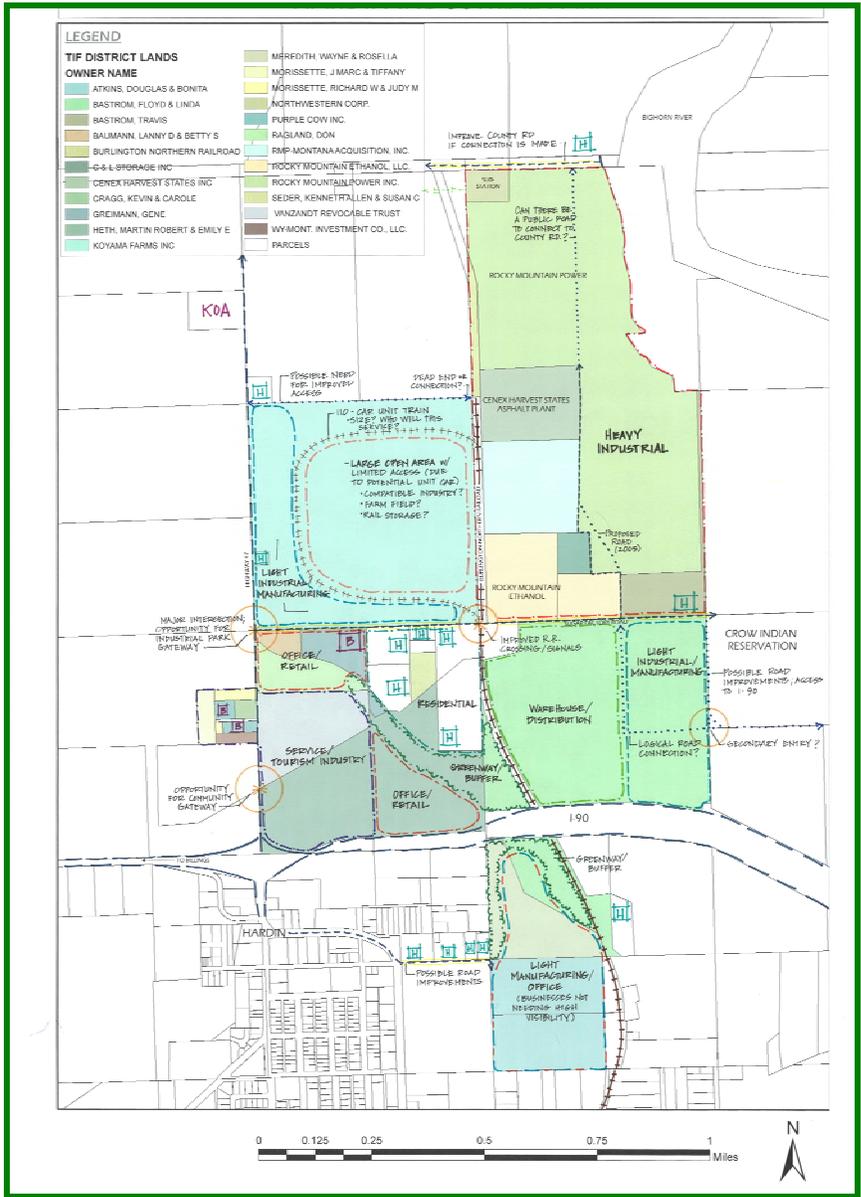


Figure 1 - Opportunities and Constraints

Land Use Alternatives

Land use planning is used by communities as one tool to predict possible development scenarios based upon logical planning principals, research of similar industrial parks and identifying potential market companies. Because much of the land included in the tax increment finance district is privately owned, there is no guarantee what the outcome of the final development. Possible land use scenarios were used by the planning team to assist in predicting the future needs of transportation systems, water and sanitary sewer infrastructure and telecommunications needs. The land use plan may assist the City of Hardin and the Two Rivers Port Authority in marketing strategies to attract new business. The land use plan may also assist in producing development standards to protect existing and future investments.

First, the planning team researched industrial parks across the region. North Dakota has been particularly active in developing industrial parks in communities with similar sizes and economic conditions as Hardin. The City of Hardin, by far, has the most land area dedicated to an industrial park. Other regional communities only have an average of 116 acres in their industrial parks.

Most industrial parks researched have access to rail and interstate highways. Ties to the agriculture and ranching industries were typically the anchor businesses for these rural areas. In Spearfish, South Dakota, the average parcel size is 3 to 4 acres, with the largest tract at 17 acres and the smallest tract at 0.61 acres.

Hardin's Industrial Park currently carries a zoning classification of "General Industrial District." Note, that zoning is different than land use. In creating possible land use scenarios, the planning team evaluated existing conditions and known future uses. The land use strategies were based upon the principal that the more public, transient conditions should be concentrated closer to the interstate interchange. This will help concentrate tourism services closer to the core of the existing restaurants, gas stations and motels on the south side of the interstate.

Compatibility with the existing residential parcels was important in developing land use. Office buildings and complexes with uses based upon a typical work day would be the most compatible around these areas. Also, office buildings typically do not need prominent street or highway frontage, so this type of use was planned for the inner core area near the residential homes.

Large tracts of land with efficient roadway access are common criteria for attracting warehouse and distribution facilities. These types of facilities operate on a 24/7/365 schedule. This type of land area exists on the far east side of the industrial park. Additionally, institutional facilities also need large tracts of land with simple access. Either types of land use may work in this area.

Light industrial and manufacturing facilities include businesses of welding shops, bottling plants, contractor's offices and shops, vehicular sales or truck terminals. The

typical sizes for these types of parcels vary from very large to very small. Many do require some sort of street frontage, but may not require the full interstate or prominent frontage that tourism services may provide. These land use types may occur in clustered areas, feeding on adjacent industries around them.

Heavy industrial land uses require special needs for infrastructure, including water, sewer and transportation systems. Three very large companies exist in the industrial park, each benefiting from each other's presence. The north and west side of the industrial park should benefit from adding additional industries of this type. Access to the river as well as access to the new City scale will provide additional benefits for these types of industries.

Any remaining lands that include existing residential areas, wetland areas and known permanent agricultural uses were determined as an agriculture and open land (with residential) designation. The tract of land immediately south of the interstate may be a good opportunity to provide multi-family housing that would be compatible with existing residential properties to the west.

The land use plan gives the governmental authorities a guideline onto base sound decisions for future infrastructure planning and strategies for marketing their community to potential businesses. Additionally, the land use plan may give private property owners ideas on how their property may build out and plan for future value of the land. Either way, the land use plan is schematic and unrigid. Any potential business looking to locate in Hardin may use this plan as a way to gauge build out costs and desirable compatibility with the Community.

Design Guidelines – Landscape

Purpose

To create an aesthetically pleasing industrial park that helps to attract business and economic development for the City of Hardin and the surrounding region.

Objectives

1. To provide a professional, attractive and uniform appearance to the Industrial Park.
2. To develop the parcels in an environmentally sustainable manner.
3. To control microclimatic conditions such as wind, snow drifting, and the heat island effect.
4. Reduce the maintenance needs for both the City and Property Owners.
 - A. Street Frontage
 1. Street Trees. Property that is adjacent to public street rights-of-way shall have a deciduous trees planting at a rate of 50 feet on-center.

2. Utilities and Easements. Plant stock shall not conflict with overhead or underground utilities or block any recorded easements.
3. Recommended Deciduous Tree Species. Species acceptable for street frontage planting include, but are not limited to: Black Ash, Green Ash, American Linden, Littleleaf Linden, Common Hackberry, Bur Oak, Thornless Honeylocust, American Elm (Dutch Elm Disease Resistant).
 - a. Species Prohibited. Acer (Maple), Populus (Cottonwoods and Aspen) and Salix (Willow) species are prohibited as street trees due to their weak wood and growth habits.
 - b. Other species may be used with special review and approval from the City of Hardin.
4. Plant Size. Minimum size of plant stock at the time of planting is 2 inch caliper, measured 6 inches from the base of the tree.

B. Parking Lots

1. Screening. All parking lots located adjacent to a residential development must be screened with a fence, hedge, berm or wall.
2. Internal Landscaping. Any parking lot with 15 or more spaces shall have interior parking lot landscaping.
 - a. Internal parking lot landscaping shall be proportionately dispersed to define aisles and limit unbroken rows of parking to a maximum of 135 feet.
 - b. The minimum size of the landscape bed shall be 6 feet wide by 15 feet long.
 - c. The landscape bed shall contain at least one deciduous tree from the recommended list on A3.
 - d. The ground cover on the landscape bed must contain shrubs, ornamental grasses or lawns.
 - i. A fescue-blend sod is a low-water alternative and is locally available.
3. Perimeter Landscaping. Any parking lot with 15 or more spaces shall have perimeter landscaping.
 - a. Minimum Area. Parking lot perimeters must be landscaped for a minimum distance of 10 feet from the perimeter with either a landscape bed or lawn.
 - b. Perimeter Trees. Deciduous trees (including ornamental trees) and coniferous trees must be provided around the perimeter of the parking lot.

- i. Provide one deciduous tree or two ornamental trees or one coniferous tree for every 10 parking spaces.
- c. Recommended Deciduous Tree Species. In addition to the species listed in A.3, Quaking Aspen and Norway Maple.
 - i. Other species may be used with special review and approval from the City of Hardin.
 - ii. Plant Size. Minimum size of plant stock at the time of planting is 2 inch caliper,
- d. Recommended Ornamental Tree Species. Acceptable species include, but are not limited to: Ohio Buckeye, Toba Hawthorn, Amur Chokecherry, Princess Kay Plum, Shubert Chokecherry (tree form), Japanese Tree Lilac and Ash.
 - i. Other species may be used with special review and approval from the City of Hardin.
 - ii. Minimum size of plant stock at planting is 1-1/2 inch caliper or a 10 foot height.
- e. Recommend Coniferous (Evergreen) Tree Species. Acceptable species include, but are not limited to: White Spruce, Black Hills Spruce, Colorado Spruce, Scotch Pine, Austrian Pine, Mugo Pine and Rocky Mountain Juniper.
 - i. Other species may be used with special review and approval from the City of Hardin.
 - ii. Minimum size of plant stock at planting is 6 foot height.
- f. No tree shall be planted closer than 3 feet from the pavement edge. Coniferous trees shall be planted at least 10 feet from the pavement edge.
- g. Snow Removal. Arrange perimeter landscaping to allow for adequate snow removal and storage without damaging the plant stock.

C. Storage Areas

- 1. Adjacent to Residential Properties. Storage areas adjacent to residential properties must be screened with a 6-foot high, solid panel fence or wall.
- 2. Adjacent to Public Streets. Storage areas adjacent to any public street should be screened with either a solid-panel

fence, wall or 4-foot high berm with a coniferous tree planting.

- a. Maximum Slope Allowed. Berms shall not exceed a 4:1 slope and shall have a full coverage of lawn or native grasses.
- b. Recommended Coniferous Tree Species. Acceptable species are listed in 3.e.

D. Remaining Property Area

1. Area Defined. Any remaining property area not covered under sections A, B or C and not in agricultural production shall maintain a landscaped cover.
2. Existing Vegetation. Preserve and protect any healthy native woody and herbaceous vegetation where possible and incorporate into the overall landscape.
3. Landscape Cover. Remaining areas that do not have healthy, established ground cover or are not in agricultural production, shall be seeded with native grasses or lawns at minimum.
 - a. Native grasses can be seeded with a drill-type seeder with a minimum spacing of 3-1/2". The seed mix should have a minimum of 3 species of seed varieties. Contact the local NRCS, Extension Office or the City of Hardin for a recommended seed mix.
4. Landscape Beds. Shrubs, perennials and ornamental grasses shall be massed (grouped) in common locations and placed in a separate landscape bed from lawns and native grasses.
 - a. Beds shall be maintained to control weeds through the use of a weed barrier fabric and 3 inches of mulch.
 - b. Xeriscape (low water and native) plant stock is encouraged to be used in landscape beds where feasible. Contact the Extension Service for a list of xeriscape plant materials.
 - c. Minimum Size. The minimum size of shrubs is 5 gallon containers. The minimum size for perennials and ornamental grasses is one gallon containers.
 - d. Mature Size. Design landscape beds with the mature size of plant stock in mind. Pay special attention to street intersections to avoid creating blind spots within vision triangles.

E. Noxious Weeds

1. Noxious weed control is the responsibility of the property owner. Noxious weeds must be controlled by chemical or mechanical means.

F. Irrigation

1. Required. All lawns and landscape beds must be irrigated with a permanent, automatic irrigation system. Other irrigated areas typically occur adjacent to office buildings, public entrances and high pedestrian traffic areas.
2. Water Conservation. The irrigation design should utilize water conservation strategies.
 - a. All irrigation systems must be connected to an electric controller with automatic programming capabilities. Where feasible, scheduling for the watering shall occur between the hours of 10:00 PM and 6:00 AM to maximize water efficiency.
 - b. The incorporation of a rain sensor is recommended to conserve water by automatically disabling the irrigation system when rain is detected.
 - c. Irrigated lawn areas must be on a separate zone from any landscape beds.
 - d. Drip irrigation is a low-water alternative for landscape beds and establishment of woody plant materials in native grass areas.

G. Maintenance

1. Responsibility. The property owner is responsible for maintaining the landscaping in accordance with these provisions. Any dead or dying plant material must be immediately replaced.
2. Lawn Areas. Lawns shall be mowed on a regular basis and shall not exceed a leaf height of 5 inches.
3. Native Grasses. Native grasses should be mowed 2 to 3 times per year to maintain species diversity and to help control noxious weeds. (End-May, Mid-July and Mid-October.)
4. Garbage. The property boundary shall be kept free from any loose garbage or debris.
5. Snow Removal. Promptly remove any snow accumulation from public sidewalks as per the City of Hardin Municipal Code.

WATER SYSTEM PLAN

General

This section presents an analysis of the City of Hardin’s current water supply, treatment, storage and distribution systems to meet the current demands of the City of Hardin and to provide water in sufficient quantity and quality to the Hardin Industrial Park. In addition to providing for today’s demands, this section looks at statistical growth trends for the City of Hardin and projects future population to the year 2025 and the ability of the current water system to meet those needs.

There are four key primary elements in the City of Hardin’s Water system, the source or supply of raw water, the treatment system, the distribution system and the storage system. This section will examine each of these key components and their ability to serve the City of Hardin and the Hardin Industrial Park now and into the future.

References

The following references have been used in the preparation of this section:

1. Water and Sanitary Sewer Master Plan for the City of Hardin and Surrounding Growth Areas – 1986, Big Horn Engineering & Surveying, Inc.
2. Storm Drainage, Erosion Control & Flood Mitigation Master Plan for the City of Hardin and Surrounding Growth Areas – 1986, Big Horn E Engineering & Surveying, Inc.

Existing Water System

Raw Water

Raw water for the City of Hardin is taken from the Big Horn River under an existing water right. Specific information regarding the City’s water right is shown in Table 1.

Table 1 - Surface Water Right - Statement of Claim

Item	Description
Water Right Number	43P 426 00 - Statement of Claim
Version	1
Status	Active
Priority Date (yyyymmdd)	19680917
Type of Historical Right	File
Maximum Flow Rate	15 CFS (6,735 Gallons Per Minute)
Maximum Volume	10,860 Acre Feet
Owner	Hardin, City of; 406 N. Cheyenne Avenue
Source Name	Big Horn River
Source Type	Surface
Means of Diversion	Pump
Township & Range	1S33E
Section	24
Quarter Section	NESE
Government Lot	8
County	Big Horn

An official copy of the General Abstract Water Right 43P 426 00 and other water rights may be found in Appendix B.



Figure 2 - Point of Diversion – City of Hardin

The City of Hardin has two additional water rights. These rights are groundwater rights and the information concerning these rights is found in Table 2. An official copy of the General Abstract for each of these groundwater rights may also be found in Appendix B. These wells are for water used at the City’s wastewater treatment plant.

Table 2 - Ground Water Right – Ground Water Certificate

Item	Description	Description
Water Right Number	43P 29773 00 - Ground Water Certificate	43P 29774 00 - Ground Water Certificate
Version	1	1
Status	Active	Active
Priority Date (yyyymmdd)	198007071000	198007071001
Type of Historical Right		
Maximum Flow Rate	15 GPM	12 GPM
Maximum Volume	5 Acre Feet	5 Acre Feet
Owner	Hardin, City of; 406 N. Cheyenne Avenue	Hardin, City of; 406 N. Cheyenne Avenue
Source Name	Groundwater	Groundwater
Source Type	Groundwater	Groundwater
Means of Diversion	Well	Well
Township & Range	1S33E	1S33E
Section	24	24
Quarter Section	SENE	SENE
Government Lot	7	7
County	Big Horn	Big Horn
Well Depth	24	23

Raw Water Collection and Transmission System

The City of Hardin has a new raw water intake and pump station in addition to the original raw water intake and pump station. The old raw water intake and pump station was constructed in the 1920’s. The original system was improved on over the years and consists of the following components.

- A concrete intake in the Big Horn River bank and 600 feet of 18-inch diameter vitrified clay suction line connecting to the old pump station.
- Major pumping components in the old pump station include:

Table 3 - Old Station Low Service Pumps

Rating (Gallons Per Minute)	Power
525	15 HP
1400	40 HP
650	10 HP
Total Capacity – 2,575 GPM	Firm Capacity – 1,175 GPM

The old raw water intake station pumps water through a 12-inch diameter asbestos cement and steel main which runs approximately 6,000 feet to the water treatment plant.

The new raw water intake and pump station was constructed in the spring of 1982. The new system consists of an earth bermed concrete intake and pump station which is located approximately 300 feet west of the old intake structure.

Table 4 - New Intake Low Service Pumps

Rating (Gallons Per Minute)	Power
1,400	40 HP
2,800	50 HP
Future	Future
Total Capacity – 4,200 GPM	Firm Capacity – 1,400 GPM

Raw water from the new intake pump station (low service pump station) is pumped to the water treatment plant via an 18-inch diameter asbestos cement Class T35 water main. This new main parallels the existing 12-inch steel and asbestos cement water main.

Water Treatment Plant

The City of Hardin’s water treatment plant (see Figure 3) consists of two sedimentation basins with a baffled mixing area at the inlet end and sawtooth weirs at the outlet end, four rapid sand filters with a theoretical rated capacity of 700 gallons per minute each, a baffled clear well located beneath the filters and high service pumps located adjacent to the clear well. The existing sand filters were upgraded in 1978 with an air scour backwash system. Currently, the filters are running between 500 to 750 gallons per minute per filter. The filters have not been run at their theoretical flow rate of 750 gallons per minute due mainly to the limitations of the high service pumps which is about 1,400 gallons per minute, or 2 million gallons per day. Although not tested, when additional high service pumping capacity is installed, the true plant capacity can be tested and is expected to be in the 3 to 4 million gallon per day range. There are four high service pumps in the water treatment plant. The high service pumps pump water from the clearwell. The high service pumps and capacity are shown below.



Figure 3 - Water Treatment Plant

Table 5 - High Service Pump Station

Rating (Gallons Per Minute)	Power
1,400	125 HP
900	60 HP
700	60 HP
700	60 HP
Total Capacity – 3,700 GPM	Firm Capacity – 1,260 GPM

Distribution System

The water distribution system in Hardin is shown in Figure 4. The system is composed mostly of 6-inch diameter mains with an intermingling of larger diameter mains. The distribution system piping ranges in size from 4-inch diameter to 16-inch diameter as shown below.

Table 6 - Water Distribution System

Diameter & Pipe Type	Length (Feet)	Volume (Cu. Ft.)
6-inch Asbestos Cement	66,136	12,986
8-inch Asbestos Cement	22,794	7,957
10-inch Asbestos Cement	5,069	2,765
12-inch Asbestos Cement	1,461	1,148
12-inch PVC	716	562
16-inch PVC	14,364	11,500
TOTAL	110,540	26,568

These water distribution system mains store over 340,000 gallons of treated potable water in addition to the water stored in the City's storage reservoirs which will be discussed later.

The City of Hardin's existing water distribution system was modeled using data provided by the City of Hardin. The modeling software employed was originally developed by the University of Kentucky and known for years at KYPipe. The software has undergone extensive upgrades and enhancement and is now known as Pipe2006[©].

Figure 4 is an illustration of the City of Hardin's current water distribution system. It should be noted that the location of the City's storage reservoirs is west of the location shown in Figure 4. The reservoirs were moved so as to remain on the aerial photo.

An example of the Pipe2006[©] output is attached to the end of this section.



Figure 4 - Existing Water Distribution System

Storage Reservoirs

Finished water storage is provided by two 500,000 gallon storage reservoirs. These reservoirs are located west of the City on the hill. Two 16-inch transmission mains connect the reservoirs to the City. Each of the reservoirs is 50-feet in diameter and approximately 35-feet tall.

Industrial Park Water System

General

The design of a water distribution system for an industrial park is determined for a large part by the usage of the lands within the park. In the case of the Hardin Industrial Park, much of the land within the park is undeveloped. A concept plan for the park was developed for this Master Plan and is contained elsewhere in this report.

Given the fact that land use and specific water demands are not available, fire flow was used as the determining factor in the development and preliminary design of the water distribution system within the Industrial Park. 15 model scenarios were developed in the analysis of the water distribution system.

One of the options available to the City of Hardin was to connect to the finished water portion of the Rocky Mountain Power plant's water treatment plant. 125 to 150 gallons per minute would be available to the City of Hardin from this treatment plant. This volume of water is not nearly enough to satisfy the consumptive needs within the Industrial Park, let alone fire fighting needs and was dismissed as a viable source. However, a connection to the RMP water treatment plant can be made with the proper pressure reducing / pressure regulating valves so that a joint use can be accomplished.

RMP has requested that the City of Hardin purchase and operate the raw water intake and the water treatment plant. The City of Hardin retained the services of two independent consulting engineering firms to complete independent cost estimates for these facilities so that the City could make an informed decision as to whether or not to purchase these facilities. The analysis was completed by HKM Engineering, Inc. and Morrison-Maierle, Inc. in October of 2005. The independent cost estimated confirmed the asking price for the intake facility and the water treatment plant was fair and appropriate.

Two additional water rights are on file as owned by RMP. These rights are shown in Table 7.

Table 7 - RMP & RME Water Rights

Item	Description	Description
Water Right Number	43P 106372 00 – Statement of Claim	43P 10631 00 - Statement of Claim
Version	1	1
Status	Active	Active
Priority Date (yyyymmdd)	19371031	19371031
Type of Historical Right	USE	USE
Maximum Flow Rate	4000 GPM	94 GPM
Maximum Volume	4914.7 Acre Feet	
Owners	RMP Montana Acquisition, Inc. 918 E Divide Ave. Bismarck, ND 58501 Rocky Mountain Ethanol LLC 7 E. Airport Rd., Ste. B Billings, MT 59105	RMP Montana Acquisition, Inc. 918 E Divide Ave. Bismarck, ND 58501 Rocky Mountain Ethanol LLC 7 E. Airport Rd., Ste. B Billings, MT 59105
Source Name	Big Horn River	Groundwater
Source Type	Surface	Groundwater
Means of Diversion	Pump	Well
Township & Range	1S33E	1S33E
Section	12	12
Quarter Section	W2SW	NESWSW
Government Lot		7
County	Big Horn	Big Horn
Well Depth		
Purpose	Industrial	Stock
Volume Amount	4914.7	24.85

It should be noted that Maximum Volume allocated to Water Right 43P-106372-00 is less than the amount of water that can be continuously withdrawn from the Big Horn River on a 24/7/365 (full year) cycle. The calculated full year withdrawal is 6,452.5 acre feet. The calculated continuous withdrawal rate is 3,046.7 gpm. Most of the water produced at the RMP facility will be used on-site. RMP has indicated that there will be between 125 and 150 gallons per minute of potable water available that could be used in the industrial park if necessary.



Figure 5 - RP Intake Facility

Modeling was carried out using the water flow available from RMP of the industrial park. A 500,000 reservoir was included in the model to provide storage and fire protection. Normal day to day use of water within the Industrial Park could be met with this supply; however, a major fire within the park depleted the supply. A major fire is defined as a 3,000 gallon per minute, 3-hour duration event. At 150 gpm from the RMP facility the result was a shortage of 13,000 gallons. This assumed a zero use within the industrial park during the event. Daily average demands during the event would deplete the system earlier.

Final design selected by the City of Hardin is to construct a 12-inch diameter main from the water treatment plant across the interstate and looping the system back to the west side of the City with a 10-inch main. This looped distribution system will support the 3,000 gpm, 3-hour fire and provide sufficient water for development within the industrial park. Additionally, the 10-inch loop will open up additional lands on both the north and south sides of the interstate for housing and additional development. Figure 6 is a schematic of the selected system.

The estimated cost for the water system improvement is \$2,905,000. A detailed cost estimate may be found in Appendix A.

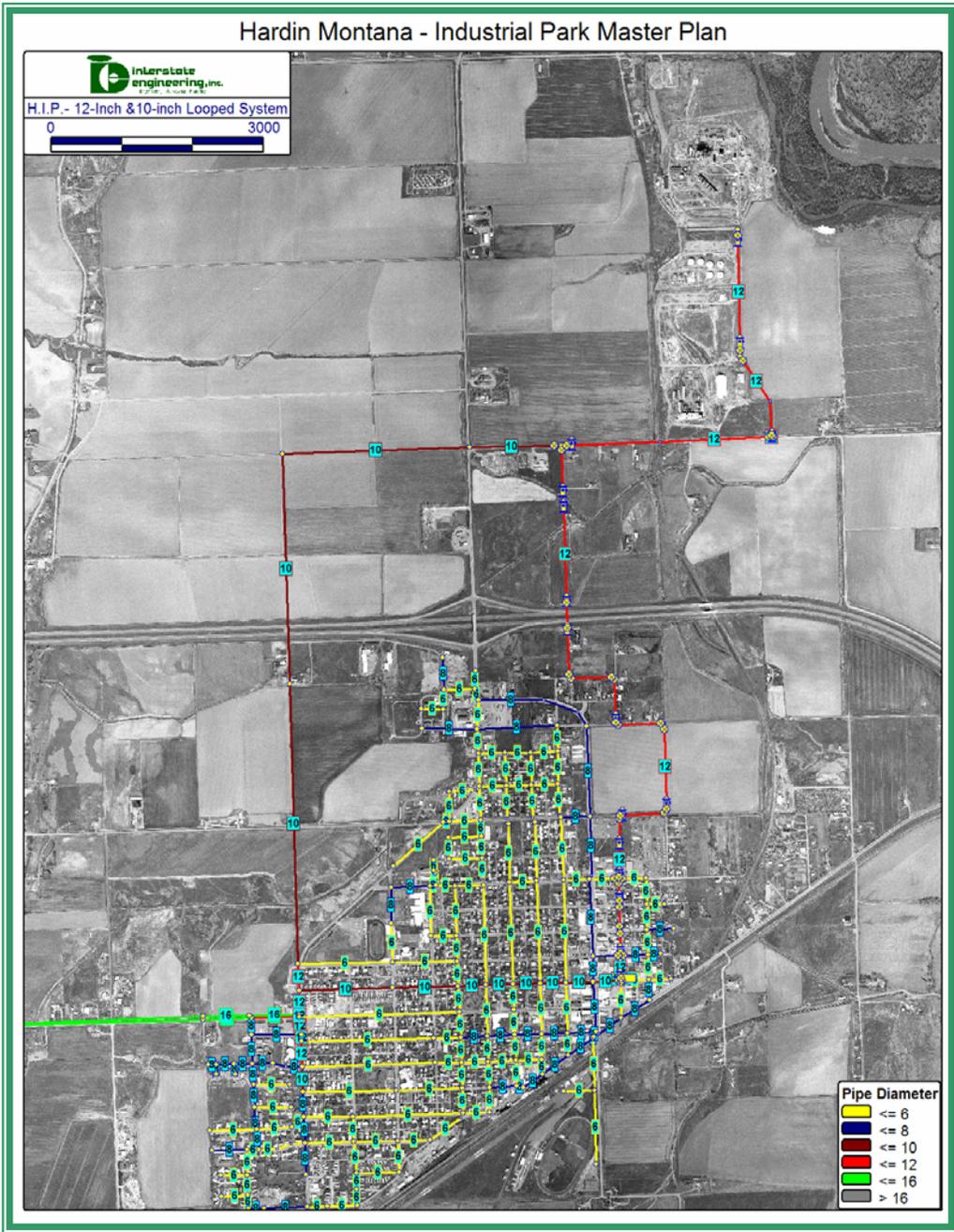


Figure 6 - Hardin Industrial Park Water Master Plan

WASTEWATER SYSTEM PLAN

General

This section presents an analysis of the City of Hardin's current wastewater collection, treatment and disposal systems and their ability to serve the Hardin Industrial Park. In addition to providing for today's wastewater disposal demands, this section looks at statistical growth trends for the City of Hardin and projects future population to the year 2025 and the ability of the current water system to meet those needs.

There are three key primary elements in the City of Hardin's wastewater system, the collection system, wastewater lift stations, and the treatment system. This section will examine each of these key components and their ability to serve the City of Hardin and the Hardin Industrial Park now and into the future. A wastewater system facility plan was recently completed for the City of Hardin. The Facility Plan indicates there is sufficient capacity in the existing wastewater treatment facility for flows expected to be generated from the Industrial Park. Additionally, the City of Hardin completed the construction of a new 12-inch force main from the main lift station to the treatment facility in 2004.

References

The following references have been used in the preparation of this section:

1. Water and Sanitary Sewer Master Plan for the City of Hardin and Surrounding Growth Areas – 1986, Big Horn Engineering & Surveying, Inc.
2. Storm Drainage, Erosion Control & Flood Mitigation Master Plan for the City of Hardin and Surrounding Growth Areas – 1986, Big Horn Engineering & Surveying, Inc.
3. Wastewater Facility Plan – 2003, Morrison-Maierle, Inc.

Historical Population Summary

Population Projections

The population projections in Table 9 are taken from the Facility Plan referenced above.

Table 8 - Historical Population Summary

Population Center and Data	1920	1930	1940	1950	1960	1970	1980	1990	2000
Big Horn County									
Population	7,015	8,543	10,419	9,824	10,007	10,057	11,096	11,337	12,671
Decade Percent Change	--	22%	225%	-6%	25%	0.5%	105%	25%	12%
City of Hardin									
Population	1,312	1,169	1,886	2,306	2,789	2,733	3,330	2,940	3,384
Decade Percent Change	--	-11%	61%	22%	21%	-2%	21%	-11%	15%
Percent of County Population	19%	14%	18%	23%	28%	27%	30%	26%	27%

Table 9 - City of Hardin Population Projection

Population Center and Data	2000	2005	2010	2015	2020	2025
Big Horn County Projected Population ¹	12,671	13,170	13,690	14,260	14,890	15,547 ³
City of Hardin Projected Population ²	3,384	3,556	3,696	3,850	4,020	4,198 ³
¹ Provided by the Census and Economic Information Center, Montana Department of Commerce. Projections by NPA Data Service, Inc. ² Assumes Hardin comprises approximately 27 percent of the population of Big Horn County based on historical data since 1960. ³ Population calculated by extension of existing data.						

These population projections include most of the lands within the Hardin Industrial Park. The Planning Area used in the preparation of the Facility Plan¹ is shown in Figure 7. However, the lands annexed into the City of Hardin through the creation of the Tax Increment Finance District include lands that are outside the Facility Plan Planning Area. These lands are shown in Figure 8.

¹ Wastewater Facility Plan – 2003, Hardin, MT; Morrison-Maierle, Inc., 2003.

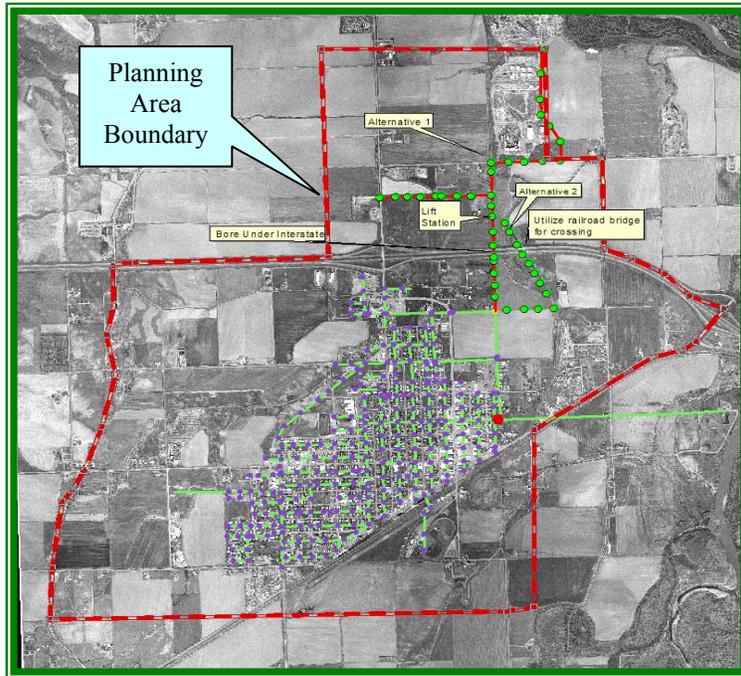


Figure 7 - Hardin, MT Facility Plan - Planning Area



Figure 8 - Area Not Included in the Facility Planning Area

The Facility Plan does not discuss the development population within the Industrial Park in detail, only mentioning the Power and Ethanol plants. During the preparation of this

master plan, the population within the Industrial Park was estimated using the conceptual land use plan transportation trip generation as an indicator of population.

The following table has been developed using the Conceptual Land Use Plan and the Transportation Plan to estimate the potential build-out population that will require sanitary sewer service in the Industrial Park. Figure 9 shows the conceptual land use plan with numbers labeled for each general land use area. These numbers are the same as shown in the use code column of Table 10. Once the potential population has been determined, factors for wastewater generation per usage type are developed, and those values are used to estimate the wastewater quantity. This is an important planning step for the Industrial Park wastewater system because of the flows, with the exception of the Detention Facility will rely on a wastewater lift station and force main.

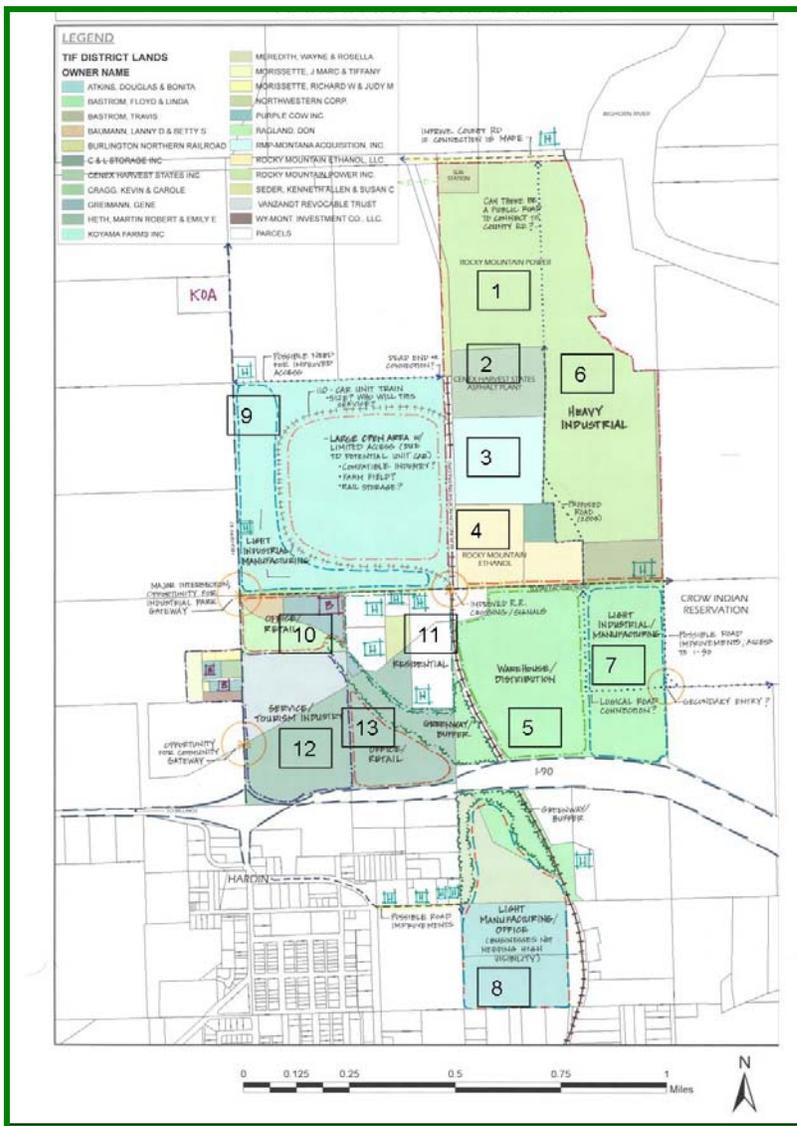


Figure 9 - Conceptual Land Use Plan (numbers are codes for general land use areas that were used to develop population estimates)

Industrial process water from Rocky Mountain Power will be disposed of on site. The Facility Plan states that Rocky Mountain Ethanol will not be allowed to discharge their industrial waste into the City wastewater system. However, wastewater generated by employees using restroom and shower facilities in these industries will be included in the wastewater flow calculations.

Table 10 - Service Population Estimation

Use Code	Land Use	Trips/Day	Trips/Employee/Day	Service Population
1	Rocky Mount Power	258		60
2	CHS Asphalt	130	.82	159
3	Heavy Industrial	262	.82	320
4	Rocky Mountain Ethanol	155		60
5	Warehousing/Distribution	4006	3.89	1030
6	Heavy Industrial	697	.82	850
7	Light Industrial/Manufacturing	1944	3.02	644
8	Detention Facility		500 Beds – 50 employees	550
9	Light Industrial/Manufacturing	1944	3.02	644
10	Office/Retail	4184	3.32	1260
11	Residential		5 Homes @ 2.5/Home	14
12	Hotel	1225	14.34	85
13	Office/Retail	1652	2.32	497
TOTAL DESIGN SERVICE POPULATION				6,173

Table 11 - Wastewater Flow Generation

Land Use	Service Population	Flow, gpd/ person or Unit	Total Flow Gallons / Day
Rocky Mount Power	60	35	2,100
CHS Asphalt	159	6	954
Heavy Industrial	1170	15	17,550
Rocky Mountain Ethanol	60	35	2,100
Warehousing/Distribution	1030	6	6,180
Light Industrial/Manufacturing	1288	6	7,728
Office/Retail	1757	15	26,355
Residential	14	254	3,556
Hotel	85	100	8,500
TOTAL ESTIMATED 24 HOUR WASTEWATER FLOW			75,023

The average design daily flow in gallons per minute is 52 gpm. Using a build-out population of 6,000 (includes all workers, employees and hotel/motel guests), the maximum flow rate, or peak flow approximately 208 gallons per minute. The minimum flow rate would be approximately 15 gallons per minute².

² Figure 2-6, Wastewater Engineering: Collection, Treatment, Disposal, Metcalf & Eddy, Inc., 1972.

Collection System

Collection mains within the Hardin Industrial Park must be sized to accommodate design flows. However, given a 50-year build-out time frame, care must be exercised so as not to over-build and cause maintenance problems.

Table 1 - Pipe Flow Capacities

Pipe Diameter (inch)	Minimum Slope (Percent)	Flow Capacity (GPM)	
		(Percent Full)	
		75	94
8	0.4%	312	369
10	0.28	474	560

Given the calculations that show a maximum daily flow of just over 200 gallons per minute, a 10-inch diameter trunk main is recommended for the Hardin Industrial Park. Even though some additional maintenance, such as increased cleaning, may be required in the early years, this expense will be much less than constructing a new wastewater collection system in the future.

Wastewater Lift Station

Preliminary survey information indicates the need for a wastewater lift station. This lift station will be located south of Sugar Factory Road near the interstate. Wastewater will be collected in a concrete wet well and periodically pumped across the interstate through a force main and into the City's existing wastewater collection system.

Installation of twin force mains is recommended to allow for uninterrupted wastewater service to the industrial park in the event of failure of one of the force mains and to also allow for increased growth within the industrial park beyond that which is predicted in this Master Plan. The lift station should be equipped with a standby electrical generator or be capable of being fed from two directions.

Force Main

Two alternative routes were evaluated for the force mains associated with the Hardin Industrial Park. These routes are shown in Figure 10. Alternative 1 required a bore under the interstate, while alternate 2 would install the force main adjacent to the railroad tracks where the railroad spur crosses under the interstate. Alternative 1 connects the force main to the existing manhole at the east end of 13th street, while alternate 2 would connect to a new manhole that would be located approximately ¼ mile east of manhole 13. Alternative 2 was selected as the preferred alternative since it provides better service for the southern end of the industrial park lands.

Cost Estimate

The cost estimates presented in this section are based on the wastewater collection system shown in Figure 10.

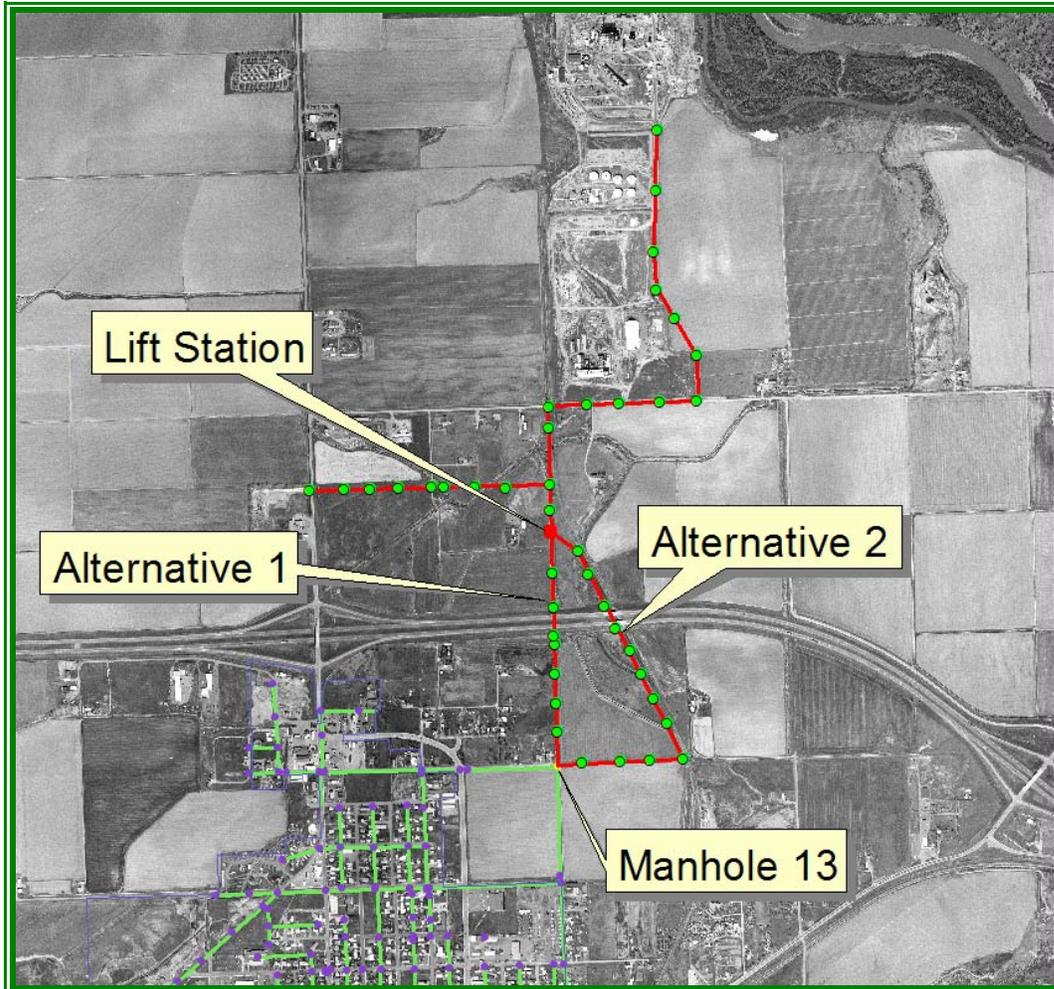


Figure 10 - Industrial Park Wastewater Collection System

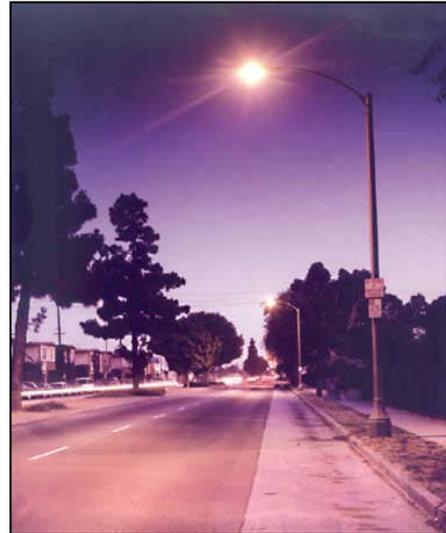
Estimated costs are presented for both alternatives. Each alternative is complete with the trunk mains shown in Figure 10, the lift station and force main. Alternative No. 1 is estimated at \$1,652,000 and alternative 2 at \$1,717,000. Worksheets containing detailed breakdown of costs are contained in Appendix A.

LIGHTING, POWER, AND COMMUNICATIONS SYSTEM PLAN

Lighting

Roadway, street, and parking lot lighting are proposed for the Industrial Park primarily for security and safety reasons. Proposed design will be in compliance with State Highway requirements, Illumination Engineering Society of North America Standards and City of Hardin Standards.

Currently, a staggered layout pattern is proposed with Type II luminaries on 40 ft. poles. Spacing will vary throughout the industrial park depending on the area and usage type; intersections will typically have closer spacing. Figure 11 shows the lighting plan for the Hardin Industrial Park.



Formation of a lighting district for the industrial park is proposed for monthly energy usage costs and maintenance costs. The districts would be created under state law and officially called Special Improvement Light Maintenance Districts (SILMDs). Each light district pays its own costs based on the number and type of lights in the district. Funds for each light district are accounted for separately by district and can only be used in that district. Funding for a district is collected by assessing properties in the district. Each property is charged its pro rata share of the district's cost based on the number of area square feet compared to the district as a whole. The charges are included on the tax statements sent each fall. The charges are estimates and are applied to the next calendar year. These assessments pay for the lights, installation, energy, maintenance, and administration. The Public Service Commission would then determine energy charges.

The Lighting Ownership Options are:

- City or District owned lighting
 - Advantage: City or District control of maintenance costs.
 - Advantage: Lower long term cost.
 - Disadvantage: Higher upfront cost to City or District.
 - Disadvantage: City or District is responsible for service and maintenance.

- Power Utility owned lighting leased to the City or District
 - Advantage: Minimal upfront cost.
 - Advantage: The Utility Company maintains lighting system.

- Disadvantage: Higher cost to City or District long term.
- Disadvantage: No Control of when luminaries get upgraded.

Current proposal is the use of High Pressure Sodium for roadway and street lighting and Metal Halide in parking lots and similar spaces. In the interest of minimizing light pollution and aesthetics, current proposed fixtures are of the cutoff type.

There are many luminary types that offer both Metal Halide and High Pressure Sodium lamping; below are the luminaries that are currently being proposed in the Hardin Industrial Park.



Commercial Areas



Commercial/Industrial Areas



Residential Areas

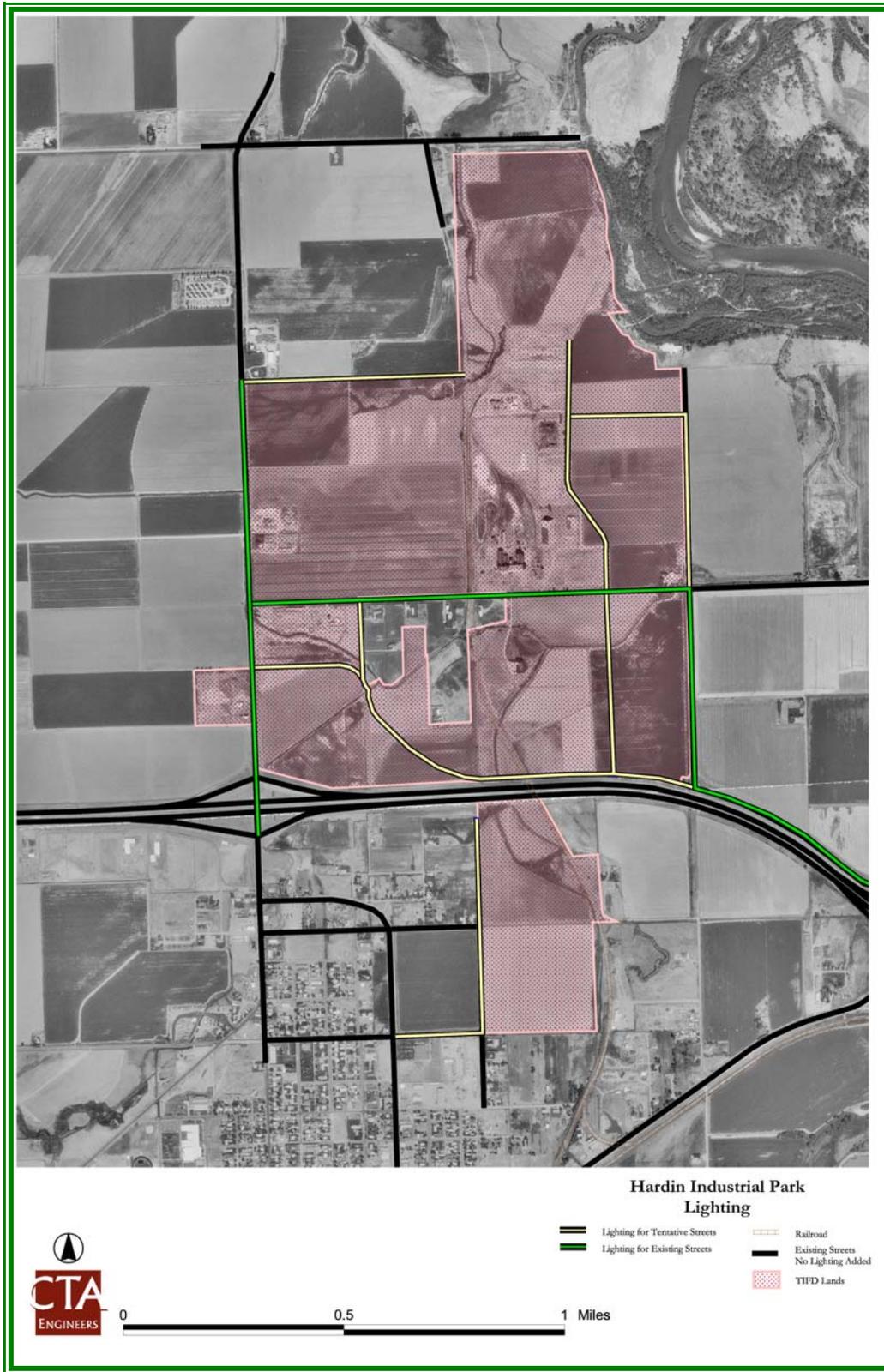


Figure 11 - Hardin Industrial Park Lighting Plan

Electrical Power Distribution

There is an existing power substation north of the new Coal Fired Power Plant. Currently, it is proposed that this substation along with a possible addition be used to serve the industrial park area north of the interstate. The area south of the interstate can be served from the City of Hardin Substation; however, underground conduit systems are currently proposed along the railroad under Interstate I-90 for the possibility of serving power from the north side of the interstate as well. This will be possible when the railroad tracks are replaced. Figure 12 shows the overall power distribution plan for the Hardin Industrial Park.



There is an existing 69KV line serving the City of Hardin that runs through the center of the proposed Industrial Park along the railroad tracks. Relocating this type of line underground is expensive, mainly due to the high level of voltage. Options are to relocate it underground or have it relocated on higher pole structures. Relocating it higher is much less in cost, but is not desirable from an aesthetic standpoint. If relocated underground, it's recommended that it at least be in quarter to half-mile sections; most of the cost is in the termination points at each end. For this particular line, relocating it higher versus underground is preferable by the utility and would save considerably in cost. For these reasons, the current proposal is to raise this line up through the Industrial Park area.

Northwestern Energy and Bighorn Electric Cooperative both currently have overhead medium voltage distribution in the proposed industrial park area. Northwestern Energy is serving north of Sugar Factory Road and Bighorn Electric Cooperative is serving south of Sugar Factory Road. Either electric company is a potential power provider for the proposed Industrial Park.

The industrial park electrical distribution backbone can be an overhead or underground system, with each having its advantages and disadvantages.

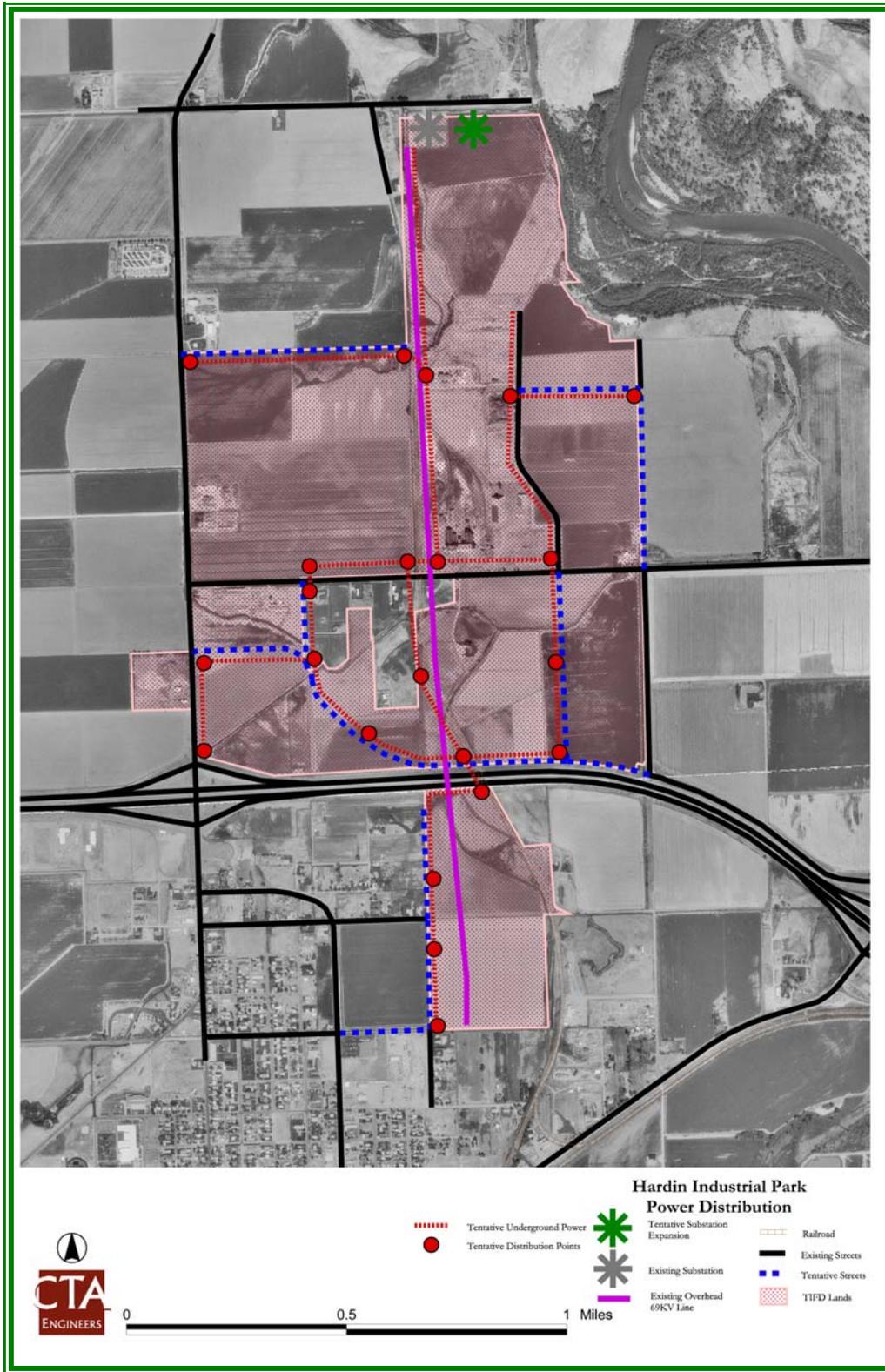


Figure 12 - Hardin Industrial Park Electrical Power Distribution Plan

- Underground Distribution Option

- Advantage: Does not distract visually from the area environment.
- Advantage: Protected from weather and animals.
- Advantage: Does not impede large equipment moving about the area.
- Disadvantage: Cost is nearly 2 times overhead distribution.
- Disadvantage: More difficult to locate faults.
- Disadvantage: Possibility of lines being dug up.

- Overhead Distribution Option

- Advantage: Less cost than Underground.
- Advantage: Easier to locate and fix faults than Underground.
- Disadvantage: Visually distracting to the area environment.
- Disadvantage: More susceptible to weather and ice loading.
- Disadvantage: Does impede large equipment moving about the area along with creating an increase in electric shock hazard when these types of equipment are being operated.

New Industrial Park Electrical Distribution backbone is currently proposed to be located underground at 12.47 KV. Cost for the underground system is approximately 2 times an overhead line cost. However, for safety reasons and aesthetic appeal, the underground system is the desired choice by most potential Industrial Park users. Above ground sectionalizing cabinets will be strategically located for ease of serving potential Industrial Park users.



New Industrial Park Electrical Distribution can be City owned or Utility owned. It is more typical for the Utility Company to at least own the distribution equipment and cabling; however, it would allow the City or owner some control to at least own the pathway system.

Communications

A City owned Telecommunications Pathway System is currently proposed. This comes with an upfront cost but allows any service provider to supply service without additional trenching and disruption to the park and allows the City some revenue and control of the system.

A Telecommunications Pathways and Space distribution center is currently proposed near the center of the Industrial Park. This central location should allow for most every user to be within a 1-1/2 mile radius making a cost effective and flexible means of providing telecommunications infrastructure service to the industrial park. The distribution center would house the service provider's equipment for high-speed communications. From the distribution center, a conduit distribution system will be provided to Interstate I-90 for Utility provider's service connections. Figure 13 shows the layout of the proposed Hardin Industrial Park communications distribution system.

Qwest is currently serving the Hardin area; however, Project Telephone, Bresnan, and other companies could potentially serve users in the Industrial park with the backbone conduit system in place.

The Industrial Park Infrastructure Pathway is proposed to be an underground distribution system in PVC conduit designed to accommodate telephone service, fiber service for Internet access, fiber service for point-to-point connections within the Industrial park, and point-to-point communication for Intra company networking. Distribution is proposed to utilize Vault Distribution Points with provisions for connection to potential Industrial Park users.

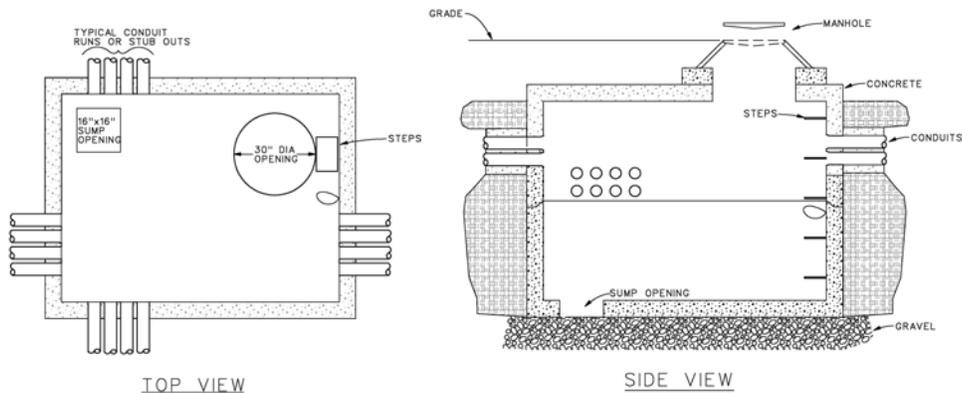




Figure 13 - Hardin Industrial Park Communications Distribution System

TRANSPORTATION PLAN

Adequate transportation connections are critical to successful development of the Hardin Industrial Park. The lands chosen for inclusion in the TIFD are well-connected to motorized and rail transportation services.

Regional Roadway Network

The Hardin Industrial Park is primarily located north of Interstate 90 and is situated between two interstate interchanges serving the City of Hardin. State Highway 47 (MT 47) is located on the western edge of the TIFD and connects to I-90 at the west Hardin interchange.

Interstate 90 is an east-west interstate highway providing excellent access to the City of Hardin. The City of Billings is located approximately 45 miles to the west of Hardin on I-90. I-90 through Hardin is the designated “Camino Real” trade route connecting Canada, the US and Mexico. This NAFTA trade route is heavily utilized by trucks.

MT 47 provides a convenient route to I-94, traveling north from Hardin to connect to I-94 just east of the Town of Custer. I-94 is only about 28 miles from Hardin via MT 47.

The location of Hardin in relation to the regional highway network is shown in Figure 14.

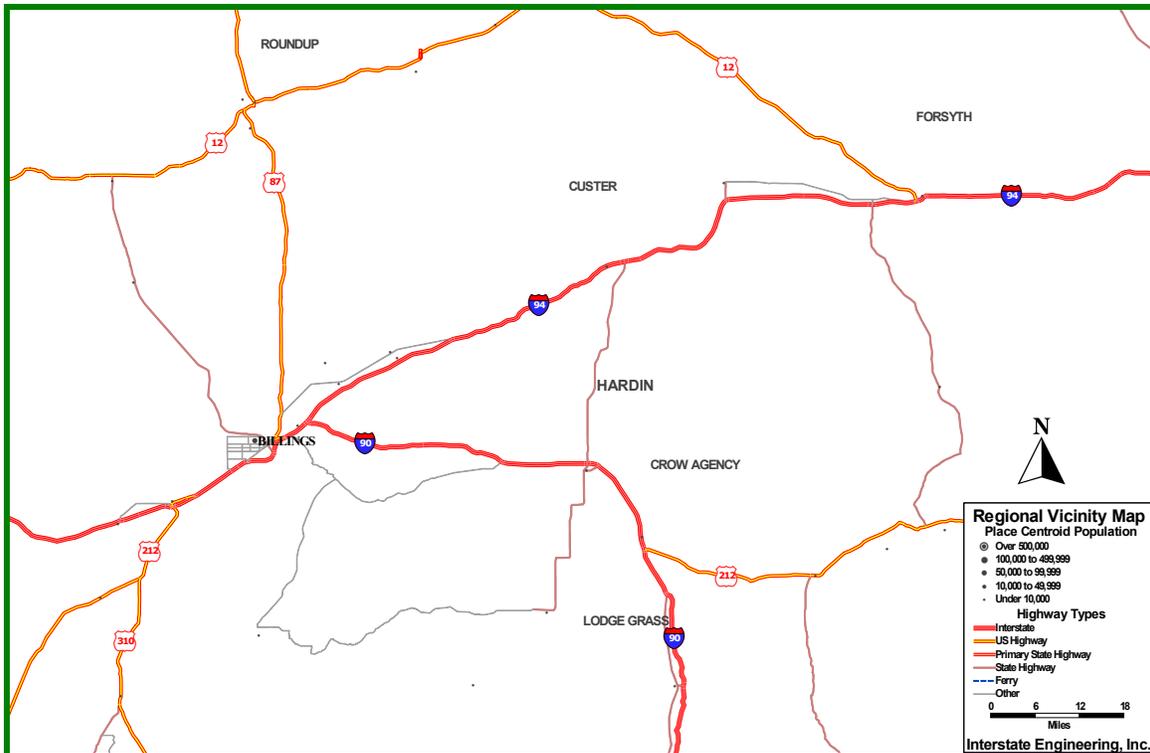


Figure 14 - Regional Vicinity Map

Local Roadway Network

A good system of city streets and county roads provides access to and within the Hardin Industrial Park lands. Sugar Factory Road intersects MT 47 about ½ mile north of I-90. From MT 47, Sugar Factory Road runs east through the heart of the TIFD lands, turns south to becoming a frontage road adjacent to I-90, and ends at the east Hardin interchange with I-90. Sugar Factory Road is paved throughout its length between the two Hardin interchanges and has a surface width of approximately 24 feet.

County Road 157 is an east-west road that provides access to the northern extent of TIFD lands. County Road 157 intersects MT 47 about 1-1/2 miles north of I-90 and extends east from MT 47 about ¾ miles, ending where it enters private property near the Big Horn River. County Road 157 is a 24 foot wide gravel surface roadway.

TIFD lands south of I-90 are currently accessed by 13th Street East, about 1/4 mile east of North Center Avenue.

The existing local roadway network providing access to and within TIFD lands is shown in Figure 15.

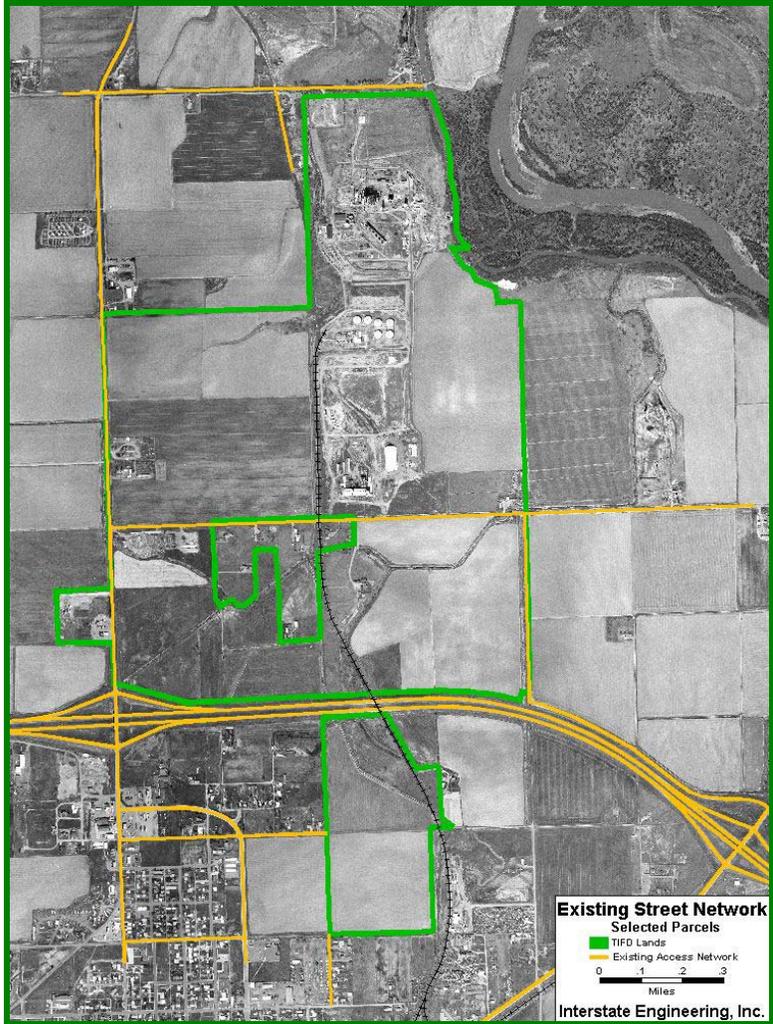


Figure 15 - Existing Access Network

Multi-Modal Transportation Facilities

The Hardin Industrial Park is bisected by a short spur of the old Chicago, Burlington & Quincy (CB & Q) Railroad that used to run from Hardin north to Custer. The remaining piece of that route begins at the Burlington Northern Santa Fe (BNSF) Railway main line in Hardin and runs north about two miles, ending within the industrial park prior to reaching County Road 157.

The short remaining spur is currently owned by BNSF and will be purchased by Rocky Mountain Ethanol. It will be reconstructed to be used by Rocky Mountain Ethanol for shipments of raw materials and product to and from the ethanol plant. Although it will be owned by Rocky Mountain Ethanol, the spur will be available to other users. Current plans by Rocky Mountain Ethanol also include construction of a large circular siding to the west of the spur for storage and loading/unloading of complete unit trains.

Alternatives Development and Analysis

Two different land use alternatives were developed for TIFD lands early in the master plan development. Based on the land use alternatives, two different street network alternatives were developed to provide land access. The street network alternatives were developed to take advantage of existing streets and roads, and to provide the motorized transportation “backbone” necessary to serve the industrial park. Also considered were utility infrastructure needs and preferred routing of utilities (primarily water and waste water utilities). The two street network alternatives are shown in Figures 16 and 17.

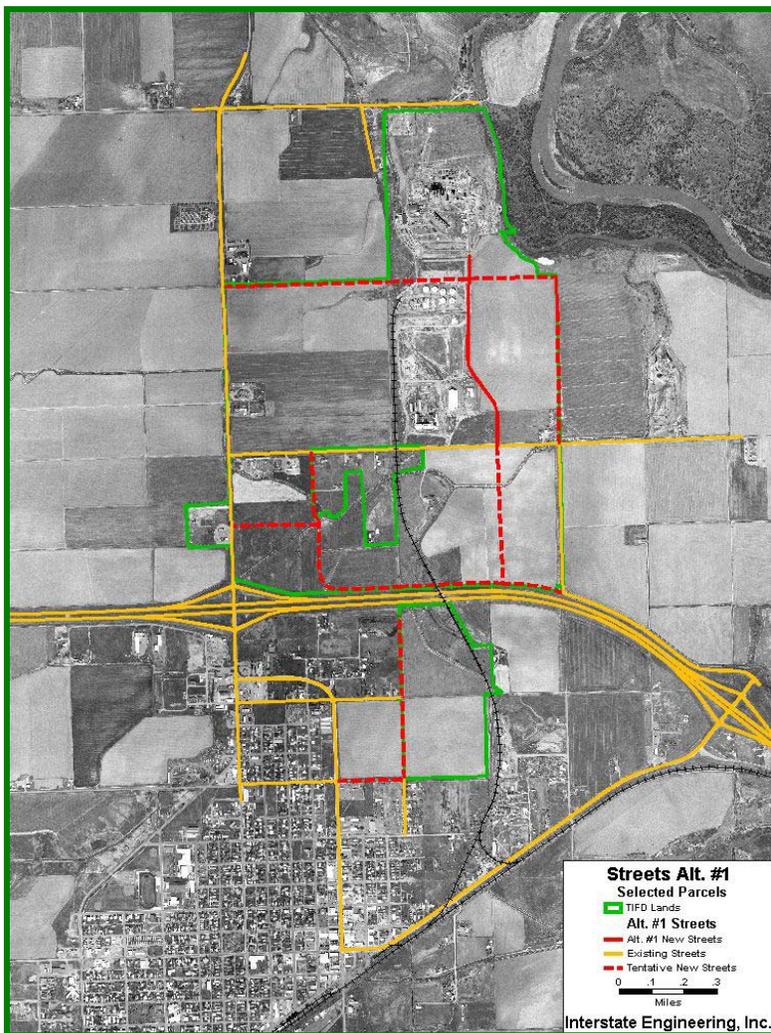


Figure 16 - Street Network Alternative #1

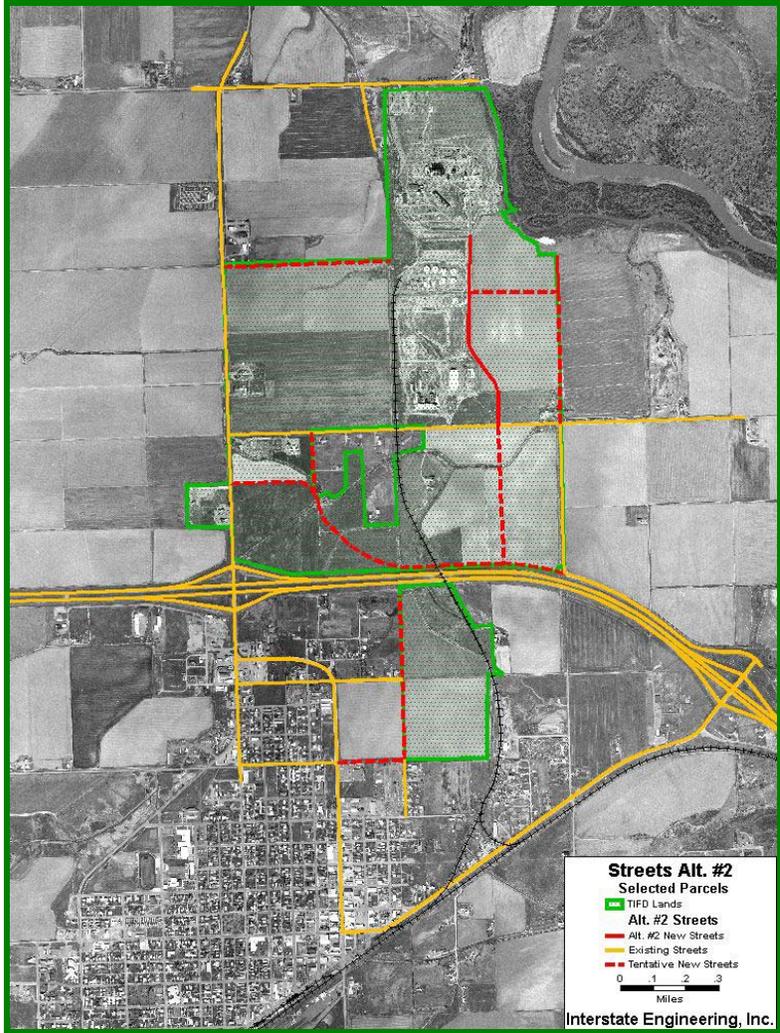


Figure 17 - Street Network Alternative #2

Based on comments received at the first public meeting, Street Network Alternative #2 was selected as the preferred alternative for industrial park master planning.

Existing Traffic Volume

Existing streets within and adjacent to the TIFD carry fairly light traffic. MT 47 on the western edge of the TIFD currently carries about 800 vehicles per day (vpd) in the vicinity of the industrial park. This segment of MT 47 is slated for reconstruction by the Montana Department of Transportation (MDT) and they have developed a 20-year forecast volume for the highway of 1,000 vpd. Their forecast does not consider significant development within the industrial park.

Traffic count data for I-90 is available from automatic traffic recorders (ATR's) at two locations near Hardin. An ATR located on I-90 just east of the I-90/I-94 interchange

(west of Hardin) shows current traffic is about 7,000 vpd. An ATR located south of Lodge Grass (east of Hardin) indicates average daily traffic of about 3,800 vpd. The difference in traffic between these two count stations is likely largely due to traffic entering and leaving the highway at Hardin. US Highway 212 east of I-90 carries about 800 vpd.

Trip Generation & Projected Traffic

Based on the land use plan developed for the TIFD lands, traffic projections were formulated for planning area streets and roadways. The process of estimating future roadway traffic begins by estimating vehicle trips generated by each different land use, a process called trip generation. For purposes of this master plan, build-out land use intensities were utilized to estimate ultimate traffic potential. Based on the land use plan, the build-out of the Hardin Industrial Park is summarized in Table 13.

Table 13 - Industrial Park Build-out Land Use

Land Use Type	Intensity
Light Industrial / Manufacturing	100 Acres
Office Retail	530,000 sq.ft.
Service / Tourism	150 Room Hotel(s) 60,000 sq.ft. Casino 24 Fueling Position Truck Stop(s) 4,000 sq.ft. Restaurant
Institutional	500 Bed Detention Center
Heavy Industrial	265 Acres
Warehousing / Distribution	70 Acres

To estimate vehicle trips for each land use or parcel, the Institute of Transportation Engineer’s reference *Trip Generation, 7th Edition* was utilized. That reference compiles traffic studies from various land uses and allows estimates for similar land uses of varying sizes. For this project, Table 14 shows various land uses and trip generation rates utilized for this master plan. Where only hourly trip rates were available, daily trips were estimated assuming that the peak hour trips represent 10% of the daily trips. Where trip rates were available only based on the square footage of building area, a floor area ratio of 0.30-0.35 was utilized to estimate the building sizes.

Table 14 - Trip Generation Rates

ITE Land Use Code	Land Use Description	Daily Trip Rate	AM Peak Hour Trip Rate	PM Peak Hour Trip Rate
110	General Light Industrial	6.97/1,000 sq.ft. 51.80/acre	0.92/1,000 sq.ft. 7.51/acre	0.98/1,000 sq.ft. 7.26/acre
120	General Heavy Industrial	1.50/1,000 sq.ft. 6.75/acre	0.51/1,000 sq.ft. 1.98/acre	0.68/1,000 sq.ft. 2.16/acre
130	Industrial Park	6.96/1,000 sq.ft. 63.11/acre	0.84/1,000 sq.ft. 8.55/acre	0.86/1,000 sq.ft. 8.84/acre
140	Manufacturing	3.82/1,000 sq.ft. 38.88/acre	0.73/1,000 sq.ft. 7.44/acre	0.74/1,000 sq.ft. 8.37/acre
150	Warehousing	4.96/1,000 sq.ft. 57.23/acre	0.45/1,000 sq.ft. 10.03/acre	0.47/1,000 sq.ft. 8.86/acre
152	High-Cube Warehouse		0.12/1,000 sq.ft	0.66/1,000 sq.ft.
170	Utilities		0.80/1,000 sq.ft. 2.49/acre	0.76/1,000 sq.ft.
571	Prison		0.42/employee 0.10/bed	0.23/employee 0.05/bed
710	General Office Building	11.01/1,000 sq.ft.	1.55/1,000 sq.ft.	1.49/1,000 sq.ft.
750	Office Park	11.42/1,000 sq.ft. 195.11/acre	1.74/1,000 sq.ft. 25.65/acre	1.50/1,000 sq.ft. 28.28/acre
770	Business Park	12.76/1,000 sq.ft. 149.79/acre	1.43/1,000 sq.ft. 18.86/acre	1.29/1,000 sq.ft. 16.84/acre
946	Gas Station w/Convenience Mart	152.84/fueling position	10.64/fueling position	13.33/fueling position
310	Hotel	8.17/room	0.56/room	0.59/room
473	Casino/Video Lottery Establishment			13.43/1,000 sq.ft.

Figure 18 shows total daily traffic expected from various land use parcels throughout the Hardin Industrial Park TIFD. It should be noted that industrial park trips were based on build-out of the industrial park land uses, a condition that is not likely to occur for about 50 years in the future.

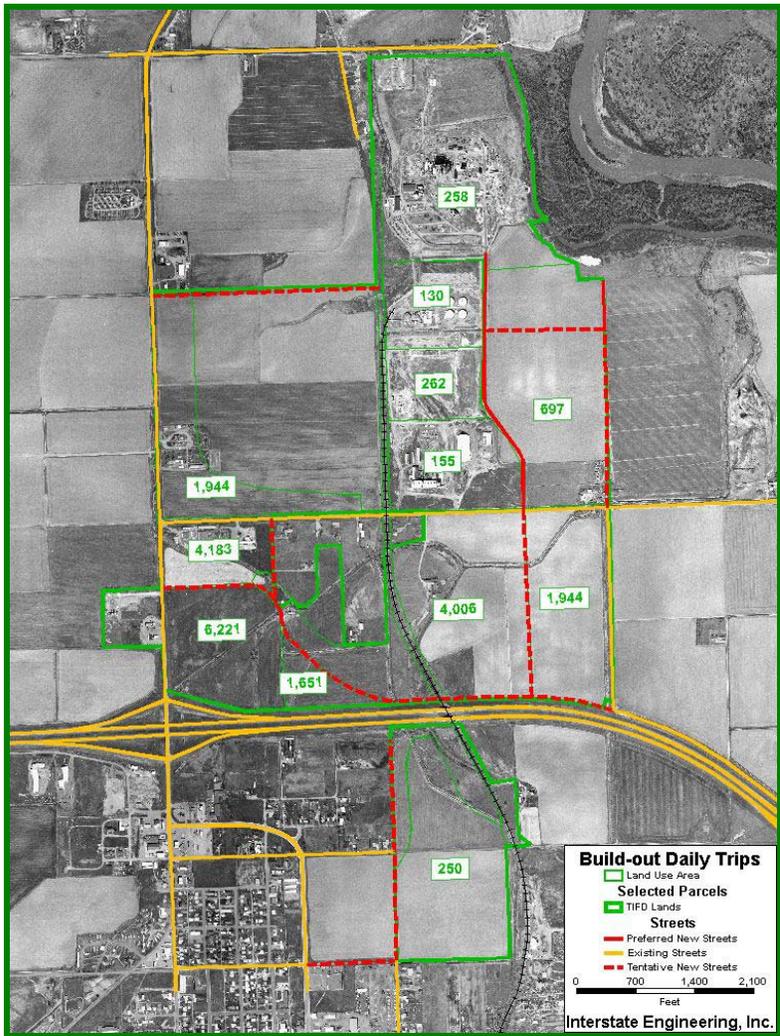


Figure 18 - Build-out Daily Trips

Once daily trips to and from each land use area were determined, trips were assigned to proposed streets based on most likely routes taken to and from each land use. Resulting daily traffic due to only Hardin Industrial Park related traffic is shown in Figure 19. The figure shows industrial park-related daily traffic at build-out. As the figure indicates, MT 47 between I-90 and Sugar Factory Road will become a major carrier for industrial park traffic, carrying about 16,000 vpd. Industrial park traffic on Sugar Factory Road itself is expected to be about 5,500 vpd. When added to expected background traffic, total build-out traffic on MT 47 is expected to reach volumes of about 19,000 vpd.

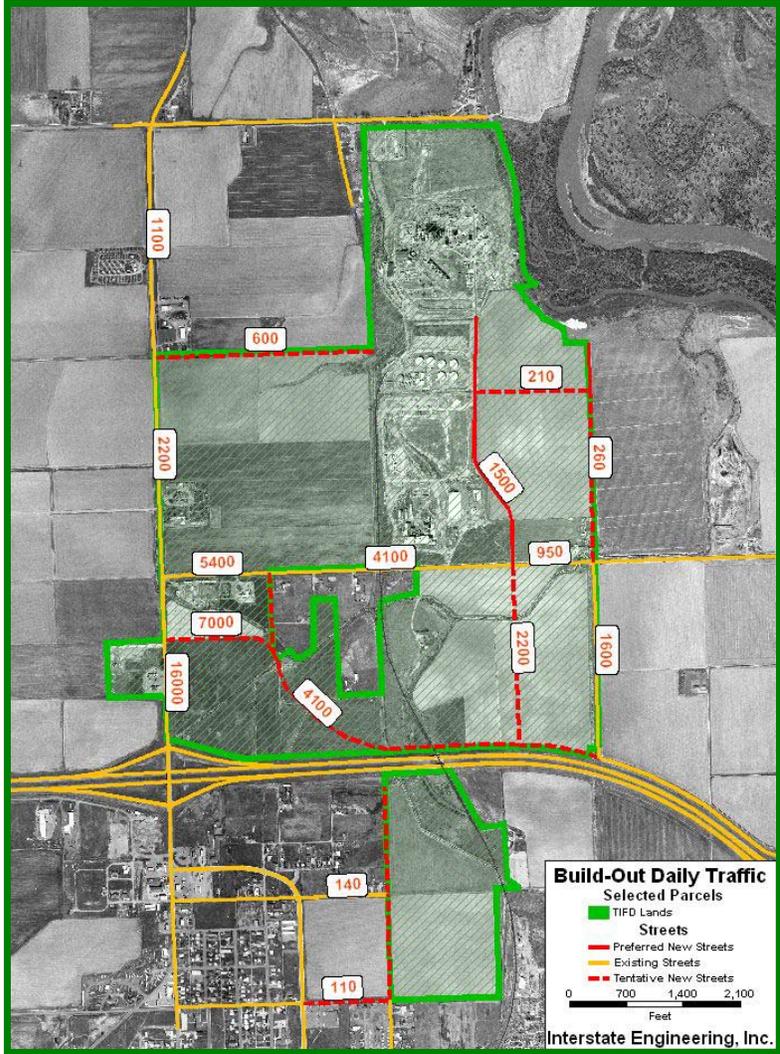


Figure 19 - Roadway Assignment of Daily Trips (Hardin Industrial Park trips only)

Streets and highways are typically constructed with a life-expectancy of 20 years. For purposes of this master plan, we have interpolated industrial park development and developed traffic volumes expected in about 20 years. 20-year total traffic volumes for industrial park streets are shown in Figure 20.

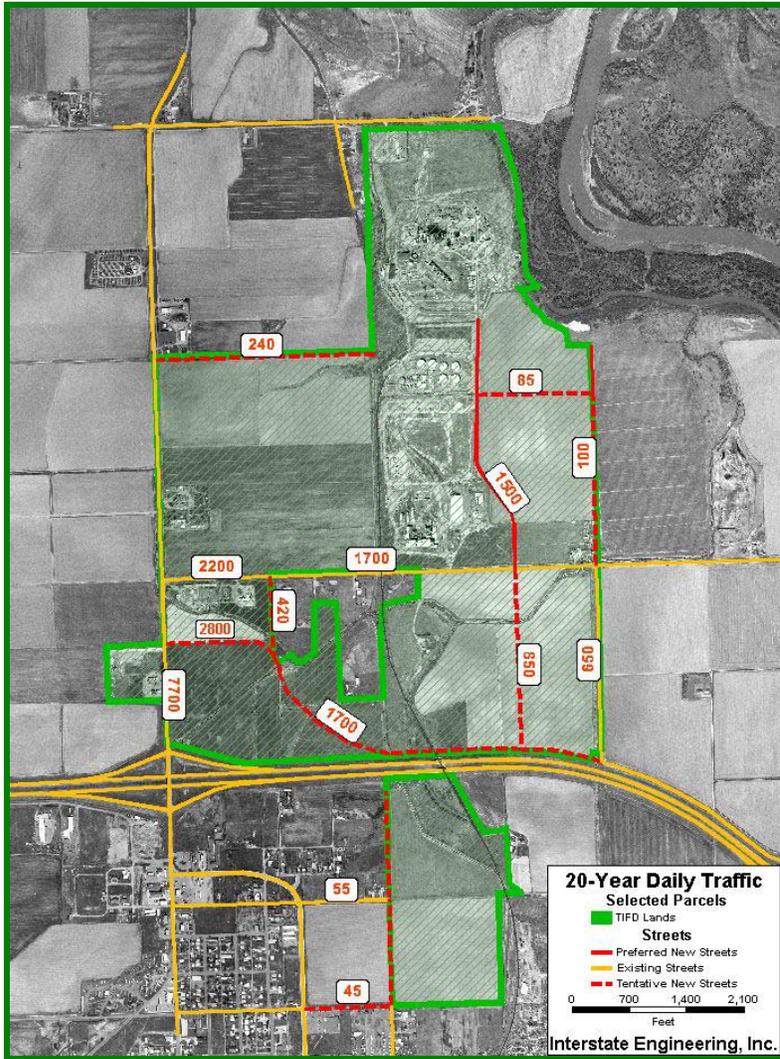


Figure 20 - Expected 20-Year Daily Traffic

Build out of the Hardin Industrial Park will bring significantly more traffic to area streets. Expected daily traffic at build-out of the industrial park (50-years) is illustrated in Figure 21.

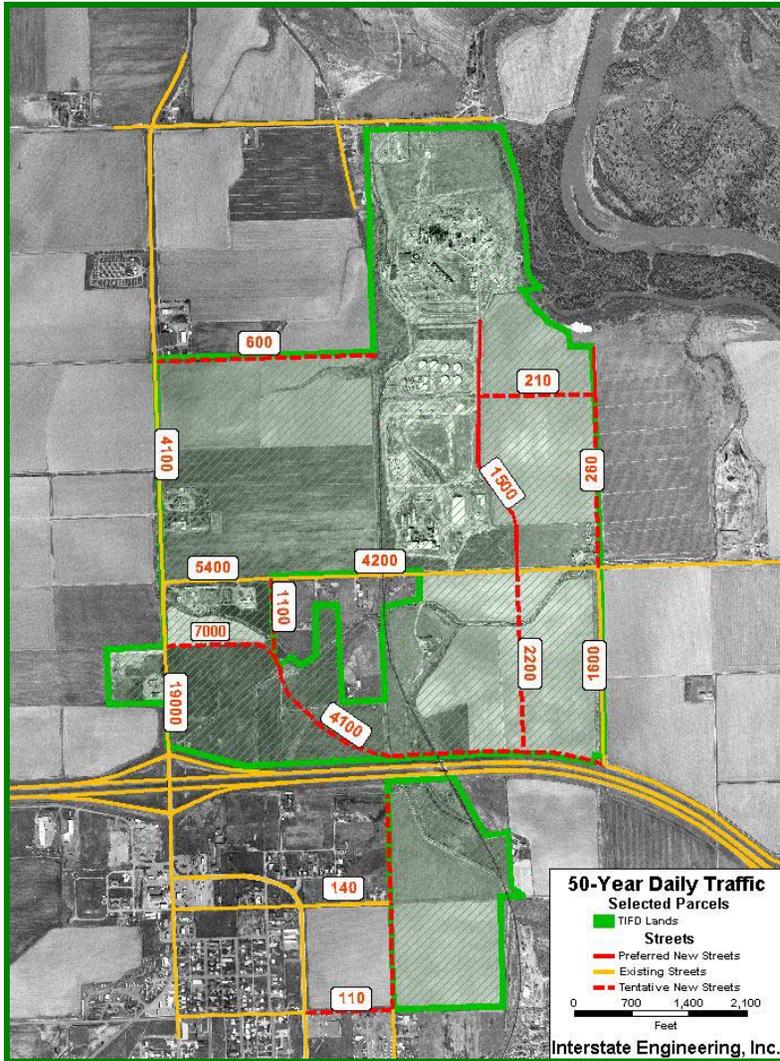


Figure 21 - Expected 50-Year Daily Traffic

Recommended Transportation System

The transportation system for the industrial park will need to serve a diverse variety of needs. As a mix of industrial and commercial land uses, the system will need to handle a mix of automobile and truck traffic. The commercial and tourism-related uses anticipated for the area near the west Hardin interchange could generate significant volumes of traffic.

While build-out of the industrial park lands will not occur for quite some time (potentially as long as 50 years), transportation system planning should anticipate full build-out. Facility construction, however, can be structured to meet near-term future needs.

Based on projected build-out traffic volume, most streets planned for the industrial park can be constructed to carry one lane of traffic in each direction. To easily accommodate separate left turn lanes or to allow for on-street parking, interior industrial park collector streets should be built with a 40-foot asphalt section with curb and gutter (results with a 44-foot section measured from back-of-curb to back-of-curb). Right-of-way for interior industrial park streets should be 60 feet wide to accommodate the recommended street section. With the heavy truck traffic expected on industrial park streets, concrete pavement should be used for intersections and intersection approaches to prevent asphalt “pushing” that can occur with truck stopping and turning maneuvers. While not necessary with initial construction, as development occurs adjacent to interior streets, sidewalks should be provided for pedestrian circulation along both sides of all streets.

The exception to this generalization is that portion of MT 47 north of I-90. Projected to carry over 19,000 vpd, this facility will eventually need to be constructed to accommodate two lanes of traffic in each direction plus auxiliary lanes for turning traffic. Because high traffic volumes are not expected to occur for quite some time, a reconstruction project on MT 47 should provide one lane of traffic in each direction plus auxiliary lanes for turning traffic, especially left turn traffic. The ultimate width of this facility should be considered when acquiring or preserving right-of-way, or when approving construction of structures near the highway. Right-of-way for this section of MT 47 should be 100 feet wide to accommodate the anticipated future width of the highway.

Based on projected build-out traffic volumes, intersection configurations have been developed for key industrial park intersections. Intersection configurations should be utilized when acquiring or preserving right-of-way or when reconstructing or building industrial park streets. Figure 22 shows lane recommendations for intersections within the industrial park.

In addition to considerations of traffic volume and congestion, the type of traffic mix must also be considered. The large volume of truck traffic expected with development of industrial and warehousing uses brings special design needs to this area. Streets and intersections should be designed to accommodate large trucks on a regular basis. For this area, a WB-67 (interstate semi-trailer) design vehicle should be used for all intersections. Left turn bays, acceleration and deceleration lanes should also be designed with considerations for trucks (longer acceleration lanes, longer storage bays, etc.).

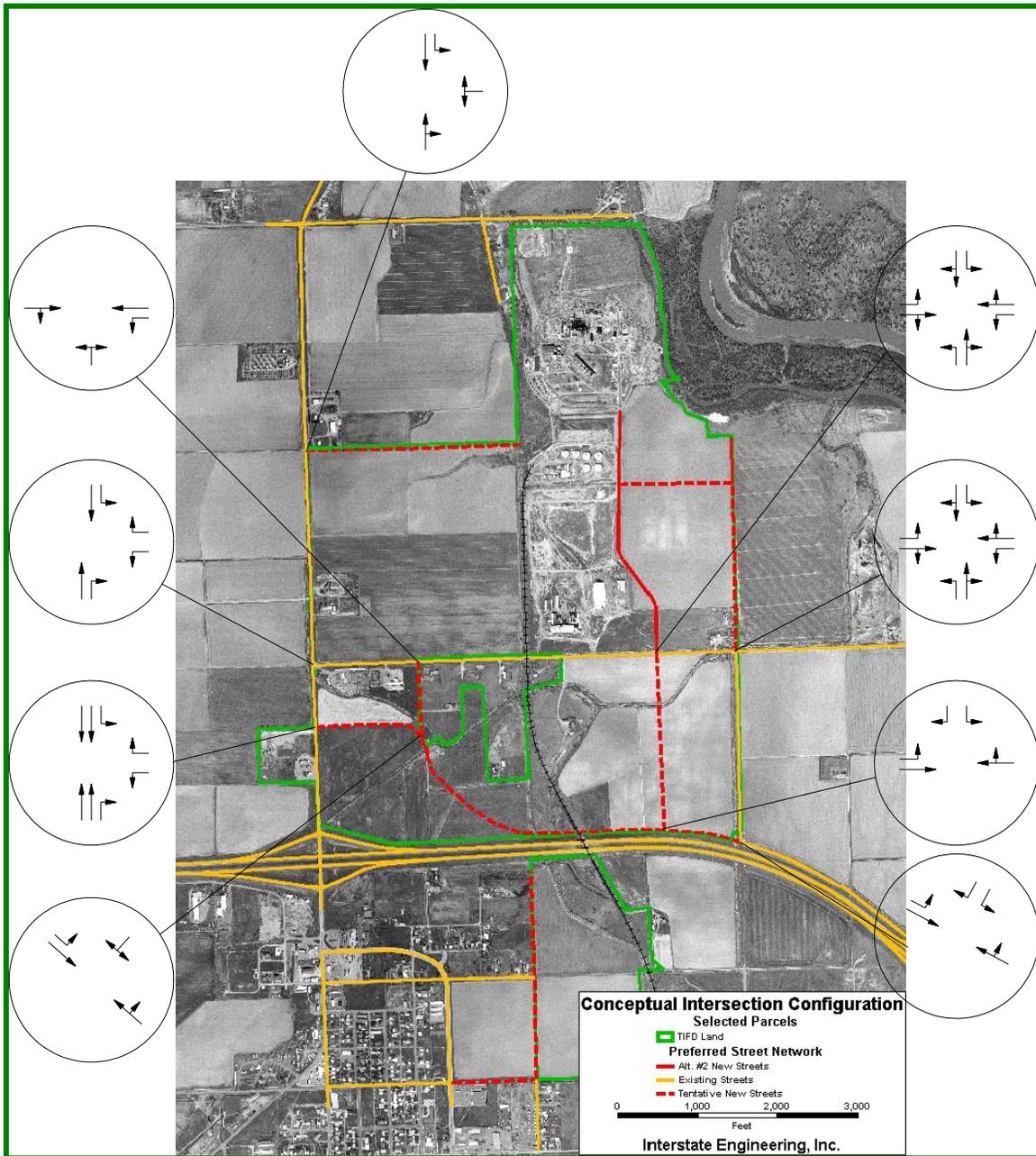


Figure 22 - Recommended Intersection Configurations

Construction of industrial park streets is expected to cost about \$150 per lineal foot. Including major facility infrastructure, the planned street network is expected to cost a total of about \$6,530,000. Details of transportation infrastructure costs are contained in Appendix A.

STORMWATER MANAGEMENT PLAN

As with most commercial/industrial areas, the Hardin Industrial Park is expected to develop with a fairly high amount of impervious surface. The large areas of impervious surface (roofs, streets, parking lots, etc.) will significantly increase stormwater runoff quantity. Water quality could also be an issue as runoff from streets and parking lots, as well as from material storage areas could contain pollutants.

Rather than allowing each parcel to develop individual stormwater management plans and facilities, it is more efficient and functional to develop an overall plan or plans and utilize regional facilities for stormwater management. Key elements in a master stormwater management plan are stormwater detention ponds, storm drain channels, and storm sewer mains.

Detention ponds provide significant benefits where stormwater runoff quantity and quality are concerned. They function to reduce peak runoff rates from rainfall events, allowing stormwater conveyance systems downstream of ponds to be smaller. Detention ponds also provide significant water quality benefits, releasing “cleaner” runoff than without detention.

Lands within the TIFD north of I-90 naturally drain to Whitman Coulee and then to the Big Horn River, or drain to the Big Horn River directly. TIFD lands south of I-90 drain to an unnamed drainage, flow north under I-90 adjacent to the railroad underpass, then discharge to Whitman Coulee. To reduce infrastructure costs, avoid impacts to wetland areas, and preserve green space within the industrial park, stormwater management will take maximum advantage of existing natural drainageways.

Detention Ponds

An examination of topography and features within the TIFD lands indicates that six regional detention ponds can be planned that will serve the majority of the industrial park. Only limited areas would not be tributary to one of the six ponds. Those non-tributary areas will need to develop individual detention facilities as part of site development.

A single pond is planned for TIFD lands south of I-90, while five separate ponds are planned for TIFD lands north of I-90. Of the five ponds located north of I-90, all but one drain to Whitman Coulee, while the remaining pond drains directly to the Big Horn River. Figure 23 shows locations of planned detention ponds and major drainage conveyances.

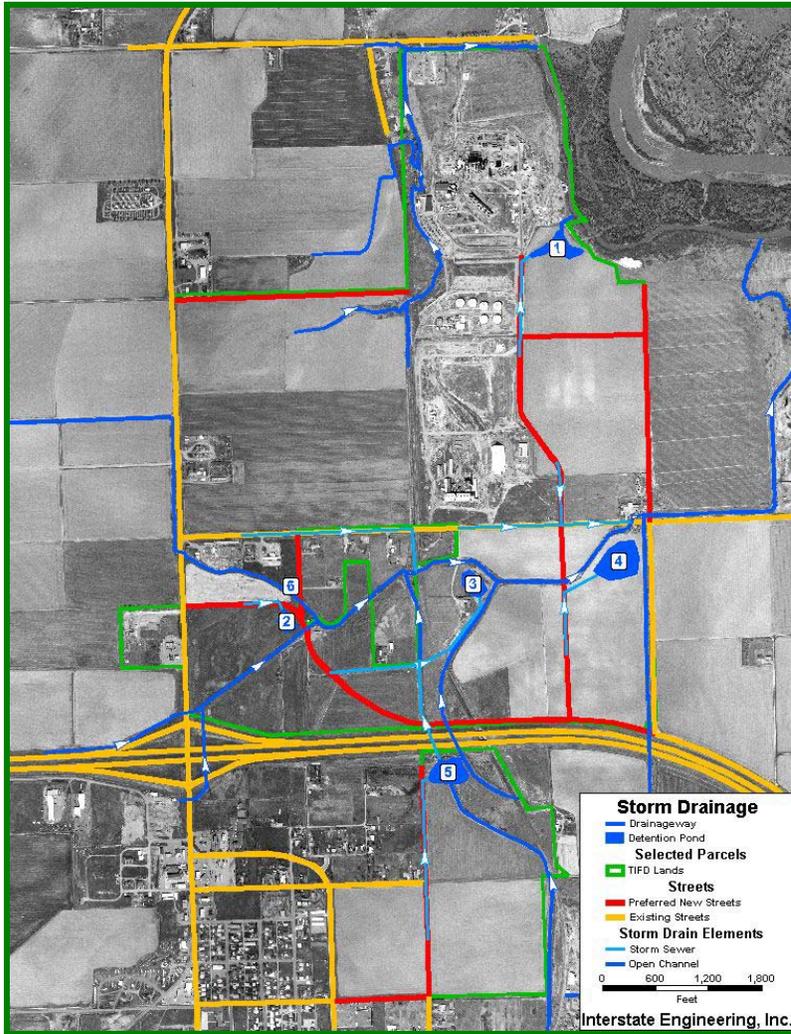


Figure 23 - Major Drainage Features

Hydrologic modeling of historic (undeveloped) conditions indicates that runoff from major storm events typically is about 0.5 cubic feet per second (cfs) per acre of land. Detention ponds should be sized and designed to maintain historic runoff rates. The HEC-HMS hydrologic model was utilized for planning purposes to calculate major basin runoff and provide preliminary sizes for detention facilities. Separate models were developed for each proposed detention pond. Modeling results are summarized in Table 15.

Table 15 - Preliminary Detention Pond Size

Pond	Tributary Basin Size (Ac)	Developed Pond Inflow (100-year storm)	Pond Volume (AF)	Pond Release (100-year storm)
1	150	100	4.6	66
2	35	70	2.7	32
3	76	108	2.2	70*
4	100	140	5.1	50
5	65	63	2.1	32
6	12	27	1.1	6

*Includes Pond #5 release flows.

Preliminary geotechnical investigations were conducted for construction of infrastructure to support the on-going development of the Rocky Mountain Power facility. Those investigations revealed that groundwater levels are very shallow in the north portion of the industrial park, often within 6-7 feet of the surface. The presence of shallow groundwater limits the storage area of ponds such that a relatively large surface area is necessary to achieve required volumes. For an example, to provide the 4.6 acre-feet of storage in the north pond, preliminary designs indicate that a surface area of nearly 2 acres will be required.

For the Hardin Industrial Park, the stormwater management plan will take some advantage of the shallow groundwater levels and create permanent ponds where detention ponds are planned. By over-excavating, groundwater will rise in the excavated basins to the level of surrounding groundwater. The elevation above the groundwater levels will be utilized for short-term storage of stormwater runoff. The permanent pools will be incorporated into green space as a permanent water feature to provide industrial park amenities. In this fashion, pedestrian walkways can be constructed around the ponds and landscaping can be included to provide a pleasant place for employees. An example of this concept is illustrated in Figure 24.

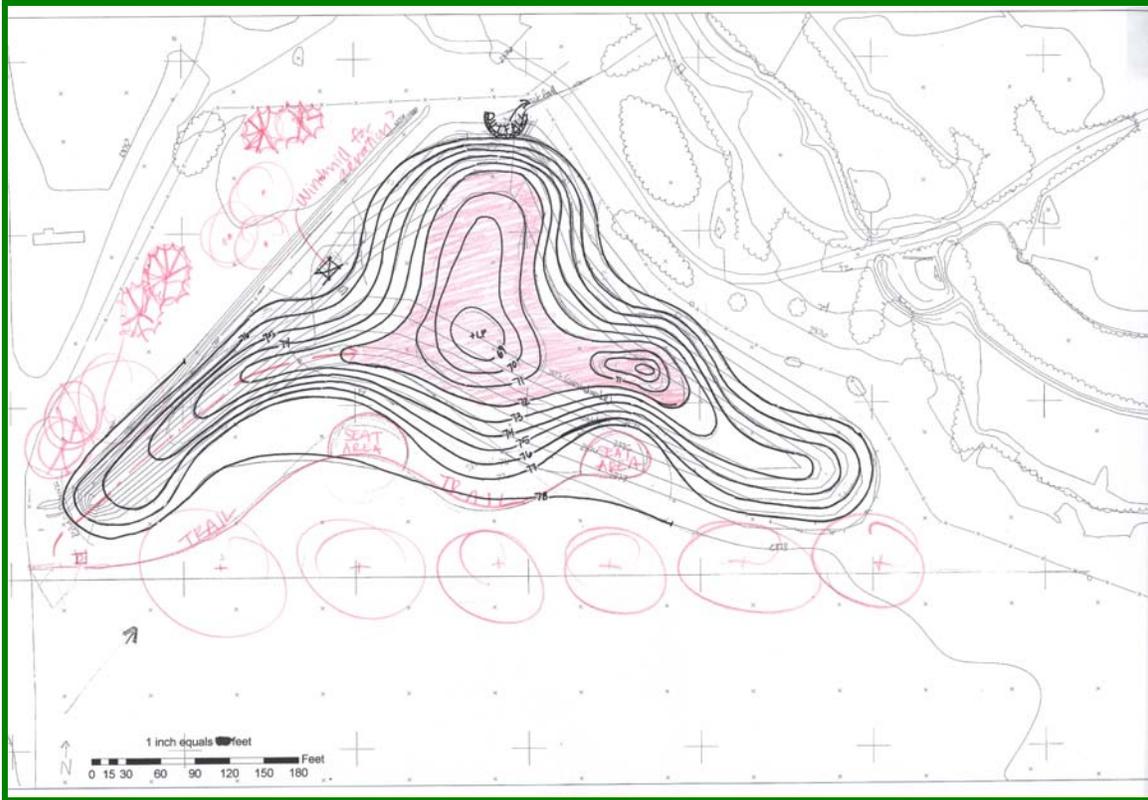


Figure 24 - Detention Pond Concept

Storm Sewer

Master planning for storm sewer infrastructure focuses mainly on planned streets. While street surfaces themselves can generate a significant amount of runoff, storm sewer mains located within streets will also function to convey parcel runoff to regional detention facilities. As development occurs within each major basin, a basin drainage plan should be developed for storm drainage infrastructure utilizing concept drainage developed with this master plan.

Floodplains

The Whitman Coulee drainage traverses the Hardin Industrial Park. Although not a regulatory floodplain, the drainageway has an upstream basin area of over 32 square miles. Preliminary modeling indicates that the drainageway could carry 1,200-1,500 cfs during a 100-year rainfall event.

This master plan anticipates preserving this drainageway as an open channel. With development of parcels adjacent to this drainageway, additional study should be conducted to refine flow potential of this drainage and to preserve adequate space for a drainage channel sufficient to convey the 100-year runoff without flooding adjacent lands.

Cost Estimates

With over 13,500 feet of storm sewer, 7,000 feet of improved drainage channels, and 35 acre-feet of stormwater detention, costs for storm drainage infrastructure is expected to reach about \$1,401,000. Details of storm drainage infrastructure costs can be found in Appendix A.

APPENDIX A
COST ESTIMATES

APPENDIX B

ABSTRACT WATER RIGHT

STATE OF MONTANA
DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION
1424 9TH AVENUE P.O.BOX 201601 HELENA, MONTANA 59620-1601

GENERAL ABSTRACT

Water Right Number: 43P 106371-00 STATEMENT OF CLAIM
Version: 1 -- ORIGINAL RIGHT
Version Status: ACTIVE

Owners: ROCKY MOUNTAIN ETHENOL LLC
7 E AIRPORT RD STE B
BILLINGS, MT 59105

RMP MONTANA ACQUISITION INC
918 E DIVIDE AVE
BISMARCK, ND 58501

Priority Date: OCTOBER 31, 1937
Enforceable Priority Date: OCTOBER 31, 1937

Type of Historical Right: USE

Purpose (use): STOCK

Maximum Flow Rate: 94.00 GPM

Maximum Volume:

Source:

Source Name: GROUNDWATER
Source Type: GROUNDWATER

Point of Diversion and Means of Diversion:

<u>ID</u>	<u>Govt Lot</u>	<u>Qtr Sec</u>	<u>Sec</u>	<u>Twp</u>	<u>Rge</u>	<u>County</u>
1		NESWSW	12	1S	33E	BIG HORN

Diversion Means: WELL

Period of Diversion: JANUARY 1 to DECEMBER 31

Purpose (Use): STOCK
Volume: 24.85 AC-FT
Period of Use: JANUARY 1 to DECEMBER 31
Place of Use:

<u>ID</u>	<u>Acres</u>	<u>Govt Lot</u>	<u>Qtr Sec</u>	<u>Sec</u>	<u>Twp</u>	<u>Rge</u>	<u>County</u>
1			NESWSW	12	1S	33E	BIG HORN

Remarks:

RMP MONTANA ACQUISITION INC RECEIVED 2/3 INTEREST FOR TRACT 2 - DEBRUYCKER RETAINED 1/3 INTEREST FOR TRACTS 3 AND 5 OF FACTORY SUBDIVISION.
NOTICE OF WATER RIGHT TRANSFER RECEIVED 12/23/92.
NOTICE OF WATER RIGHT TRANSFER RECEIVED 07/11/94.
WATER RIGHT OWNERSHIP UPDATE RECEIVED 07/30/01.
OWNERSHIP UPDATE RECEIVED
OWNERSHIP UPDATE ID # 1145 RECEIVED 02/08/2002.
OWNERSHIP UPDATE ID # 3293 RECEIVED 06/13/2002.
OWNERSHIP UPDATE ID # 9872 RECEIVED 02/24/2003.

STATE OF MONTANA
DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION
1424 9TH AVENUE P.O.BOX 201601 HELENA, MONTANA 59620-1601

GENERAL ABSTRACT

Water Right Number: 43P 106372-00 STATEMENT OF CLAIM
Version: 1 -- ORIGINAL RIGHT
Version Status: ACTIVE

Owners: ROCKY MOUNTAIN ETHENOL LLC
7 E AIRPORT RD STE B
BILLINGS, MT 59105

RMP MONTANA ACQUISITION INC
918 E DIVIDE AVE
BISMARCK, ND 58501

Priority Date: OCTOBER 31, 1937
Enforceable Priority Date: OCTOBER 31, 1937

Type of Historical Right: USE

Purpose (use): INDUSTRIAL
SUGAR PROCESSING PLANT AND POWER GENERATION
THIS WATER RIGHT IS INCIDENTALY USED FOR FIRE PROTECTION.

Maximum Flow Rate: 4,000.00 GPM
FLOW RATE IS USED 3,400 GPM FOR INDUSTRIAL AND 600 GPM FOR POWER GENERATION.

Maximum Volume: 4,914.70 AC-FT
THE CLAIMED VOLUME IS 3,939.7 ACRE FEET PER YEAR FOR INDUSTRIAL AND 975 ACRE FEET PER YEAR FOR POWER GENERATION.

Source:

Source Name: BIGHORN RIVER
Source Type: SURFACE WATER

Point of Diversion and Means of Diversion:

<u>ID</u>	<u>Govt Lot</u>	<u>Qtr Sec</u>	<u>Sec</u>	<u>Twp</u>	<u>Rge</u>	<u>County</u>
1		NWSENW	12	1S	33E	BIG HORN

Diversion Means: PUMP

Period of Diversion: JANUARY 1 to DECEMBER 31

Purpose (Use): INDUSTRIAL
Volume: 4,914.70 AC-FT
Period of Use: JANUARY 1 to DECEMBER 31
Place of Use:

<u>ID</u>	<u>Acres</u>	<u>Govt Lot</u>	<u>Qtr Sec</u>	<u>Sec</u>	<u>Twp</u>	<u>Rge</u>	<u>County</u>
1			W2SW	12	1S	33E	BIG HORN

Remarks:

THE FOLLOWING ELEMENTS WERE AMENDED BY THE CLAIMANT ON 02/27/87: PURPOSE AND POINT OF DIVERSION.

RMP MONTANA ACQUISITION INC RECEIVED 2/3 INTEREST FOR TRACT 2 - DEBRUYCKER RETAINED 1/3 INTEREST FOR TRACTS 3 AND 5 OF FACTORY SUBDIVISION.

NOTICE OF WATER RIGHT TRANSFER RECEIVED 12/23/92.

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OWNERSHIP UPDATE RECEIVED

OWNERSHIP UPDATE ID # 1145 RECEIVED 02/08/2002.

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