Hammons Industrial Park
Area Structure Plan
Bylaw No. 1394-12

Town of Bonnyville, Alberta

Donatville Design Group
RR#2
Boyle, AB
T0A-0M0

2012-08-17

ADMINISTRATION-#95795-v1-120821_Hammons_ASP_referral_version

PDF #97852 v2

TABLE OF CONTENTS

1. INTRODUCTION AND BACKGROUND

The subject lands are found within the corporate limits and within the northwest quadrant of the Town of Bonnyville. The land is also bordered on the north by privately owned properties within the M.D. of Bonnyville No.87.

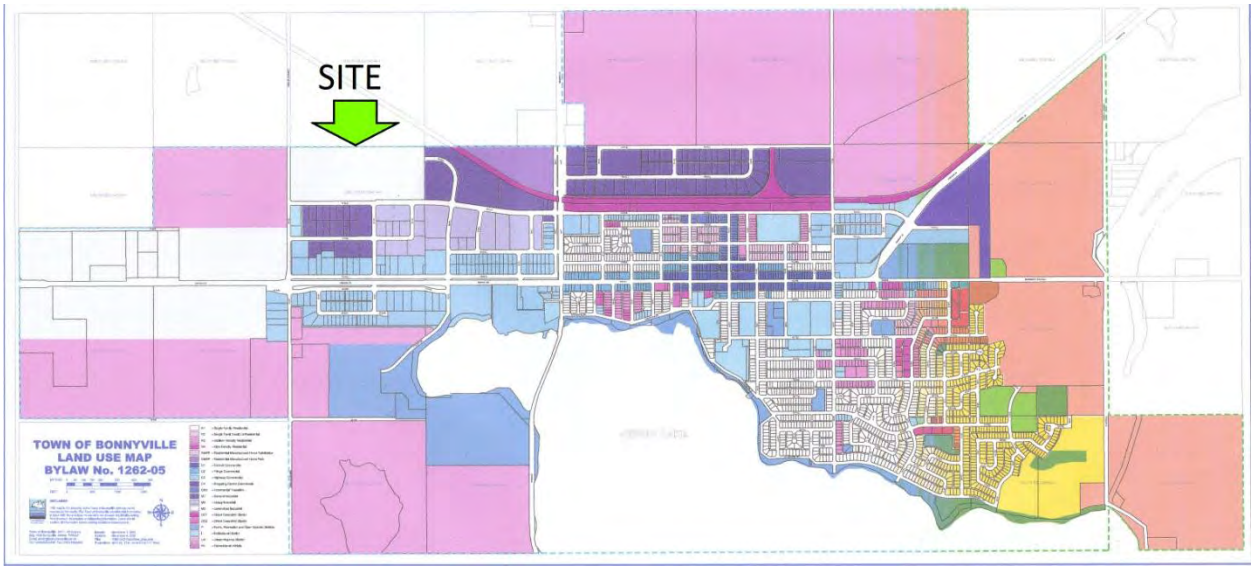
The existing land use zoning for the subject property is M3 – Unserviced Industrial District as per the Town of Bonnyville Land Use Bylaw No. 1262-05.

This Area Structure Plan is produced in support of future subdivision of the lands into smaller industrial lots and a rezoning application to M1 - General Industrial for the full 25.8 ha parcel. The purpose for rezoning the parcels is that servicing to the individual lots will become available as noted in the serving plan within this Area Structure Plan and future uses will be of a general industrial nature.

An Area Structure Plan is required under the Province of Alberta Municipal Government Act RSA2000, Chapter M-26, Part 17, Division. 4, Sec. 633, and the Town of Bonnyville Municipal Development Plan Bylaw 1261-05.

This Area Structure Plan will provide a framework for:

- Future Land Use
- Sequence of Development
- Servicing and Utility Requirements
- Transportation Requirements



Location Plan

2. RATIONALE

The proposed area structure plan and the rezoning of the subject lands is a rational fit with surrounding land use designations.

Existing Town of Bonnyville infrastructure, based on the 2005 Municipal Development Plan Bylaw, allows for full servicing of the Hammons Holdings Ltd. subdivision.

The proposed M1- General Industrial zoning will provide a higher level of amenities as required to attract new industry to the Town of Bonnyville.

The Area Structure Plan addresses constraints, environmental stewardship, and orderly development of the property.

3. EXISTING CONDITIONS

a. LAND BASE AND OWNERSHIP

The Hammons Industrial Park is a 25.8 hectare parcel encompassing the northern undeveloped portion of SW–13–61–W6.

Hammons Holdings Ltd. is the current titled owner for this parcel, and therefore the applicant for the Area Structure Plan and rezoning process.

b. NATURAL AND MAN-MADE FEATURES

The land is undeveloped at present, however there has currently been a two parcel Phase I subdivision approved for the lands.

The owner is in the process of rough grading the existing Phase I area as well as the land required for drainage swales, ditches, and the required storm detention pond site.

The natural drainage is predominantly east to west, excepting a 2 ha portion at the southeast corner.

The topography slopes gently for the whole site excepting localized man-made road grade rough-ins attempted in the past by previous users of the land.

c. EXISTING LAND USE

The existing land use is M3 - Unserviced Industrial. As per the Land Use Bylaw 1262-05, Section 162, the following describes the purpose of this land use district:

> "The purpose of this district is to provide for uses requiring large parcels of land with minimal servicing requirements. Land uses are characterized by the need for outside storage or outside processing, limited building area, generation of low traffic volumes and no significant water and sanitary sewer needs."

A copy of the Town of Bonnyville Land Use Map is attached in the Appendix.

d. ADJACENT LAND USE

Zoning for the adjacent properties and, within the Town boundary, has UR – Urban Reserve District to the immediate west of the subject lands and to the south and east is M1 - General and M2 - Heavy Industrial Districts. To the north are the M.D. of Bonnyville land which has partial industrial development on these lands.

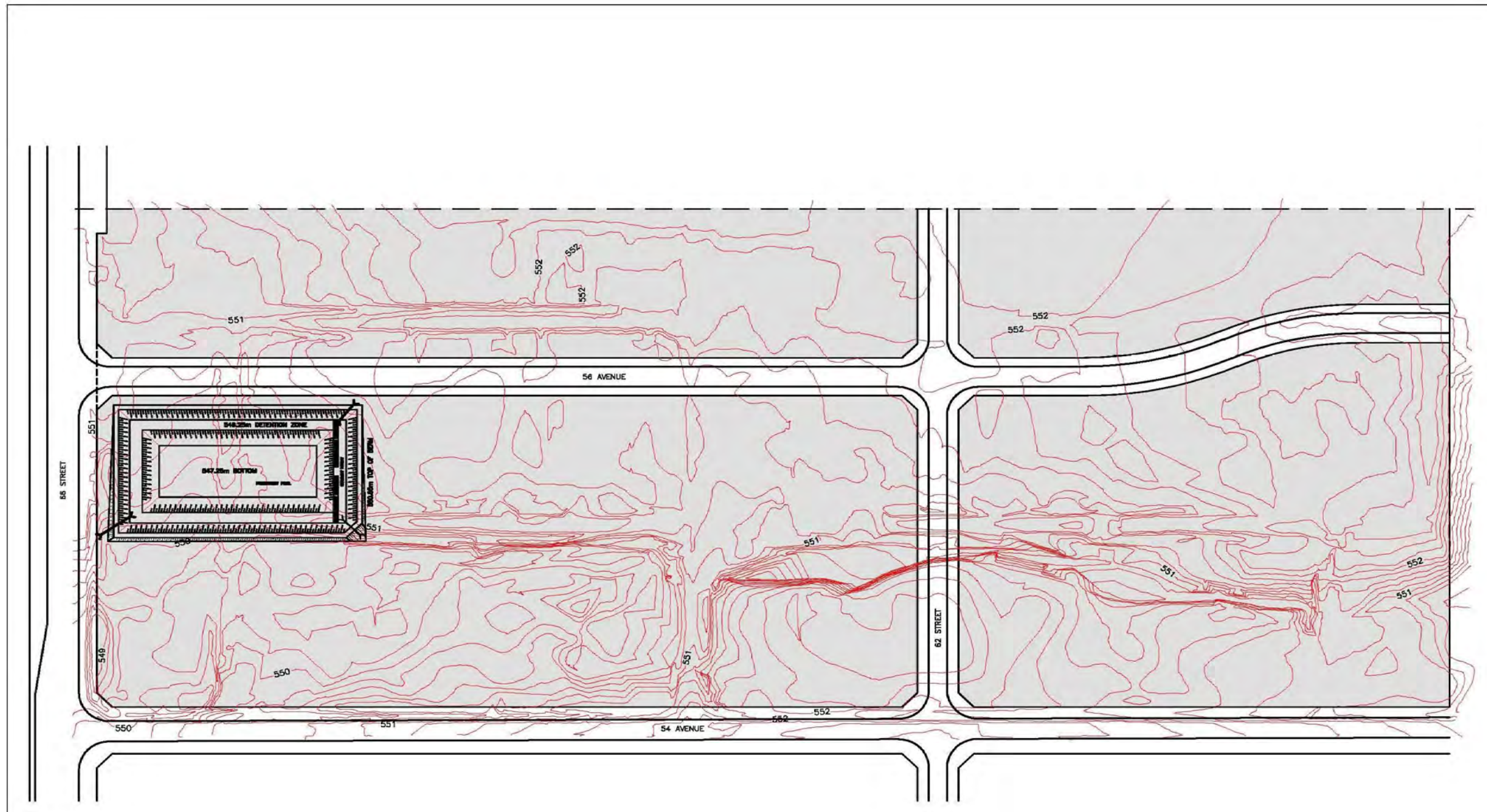


FIGURE 1
OVERALL CONTOUR PLAN
NOT TO SCALE

G.D.	
W.D.	
JULY 16, 2012	
1" =	/
AS SHOWN	

NO. | DATE | DESCRIPTION

REVISION:

BONNYVILLE SUBDIVISION
DALE HAMMONS
OVERALL CONTOUR PLAN

DONATVILLE DESIGN GROUP
DESIGN & CONSTRUCTION MANAGEMENT
RR2 BOYLE, ALBERTA
T0A-0M0 (780)327-9100

4. PLANNING ANALYSIS AND POLICY

a. MUNICIPAL GOVERNMENT ACT (MGA)

The Government of Alberta has provided Statutes within the Municipal Government Act RSA 2000 Chapter M-26, specifically under Part 17 – Planning and Development.

The purpose of Part 17 and the regulations and bylaws is to provide municipalities means whereby plans and related matters may be prepared and adopted.

b. MUNICIPAL DEVELOPMENT PLAN

The Town of Bonnyville, in accordance with the Municipal Government Act RSA 2000 Chapter M-26 Part 17, Div. 4, Section 632, has adopted a Municipal Development Plan under Bylaw No. 1261-05. The Plan provides guidance for the orderly development of the Town of Bonnyville.

Excerpts pertaining to the Planning and Development process as it relates to the Hammons Holdings Ltd. proposal are included in the Appendix.

c. LAND USE BYLAW

The Town of Bonnyville, as per the MGA Pt.17, Div.5, Section 639 has also adopted a Land Use Bylaw No. 1262-05. The Land Use Bylaw provides guidance for permitted and regulated use of land within the Town's boundary.

Excerpts related to the Hammons Holdings Ltd. proposal are included in the Appendix.

5. LAND USE DEVELOPMENT CONCEPT

a. INDUSTRIAL

With the Town of Bonnyville's commitment to strengthen its position as a major service centre for the oil and gas industry in northeastern Alberta, demand for serviced industrial property remains strong.

The Land Use Concept, Figure 1, is the creation of a fully serviced general industrial subdivision for the 25.8 ha site.

The upgrades undertaken by the Town of Bonnyville of the 54 Ave Truck Route, including water and sewer infrastructure, will facilitate the expansion of full servicing for the Hammons Holdings Ltd. site.

b. MUNICIPAL RESERVE

As required in the Municipal Government Act RSA 2000 Chapter M-26, Section 661, and the Town of Bonnyville Land Use Bylaw 1262-05, provisions are made for the creation of Municipal Reserve (MR).

For this proposed industrial subdivision, money in place of MR will allow the Town of Bonnyville to procure appropriately located land for public use within the Municipality.

Hammons Holdings Ltd. purchased these 64.31 acres from the Town in 2006. As part of the purchase agreement, the deferred reserve caveat for additional M.R. Lands was discharged resulting in 6.431 acres being required for Municipal Reserve on this land.

In consideration for a road widening agreement adjacent to 54th Avenue, 0.77 acres have been provided to the Town and are considered a decrease to the required remaining municipal reserve requirements.

The Municipal Reserve required at this time is 5.66 Acres.

Cash in lieu for MR will be considered at a value per acre of what was paid for the purchase of the land. Arrangements for the payment of cash in lieu will be made at the time of future subdivisions of the land.

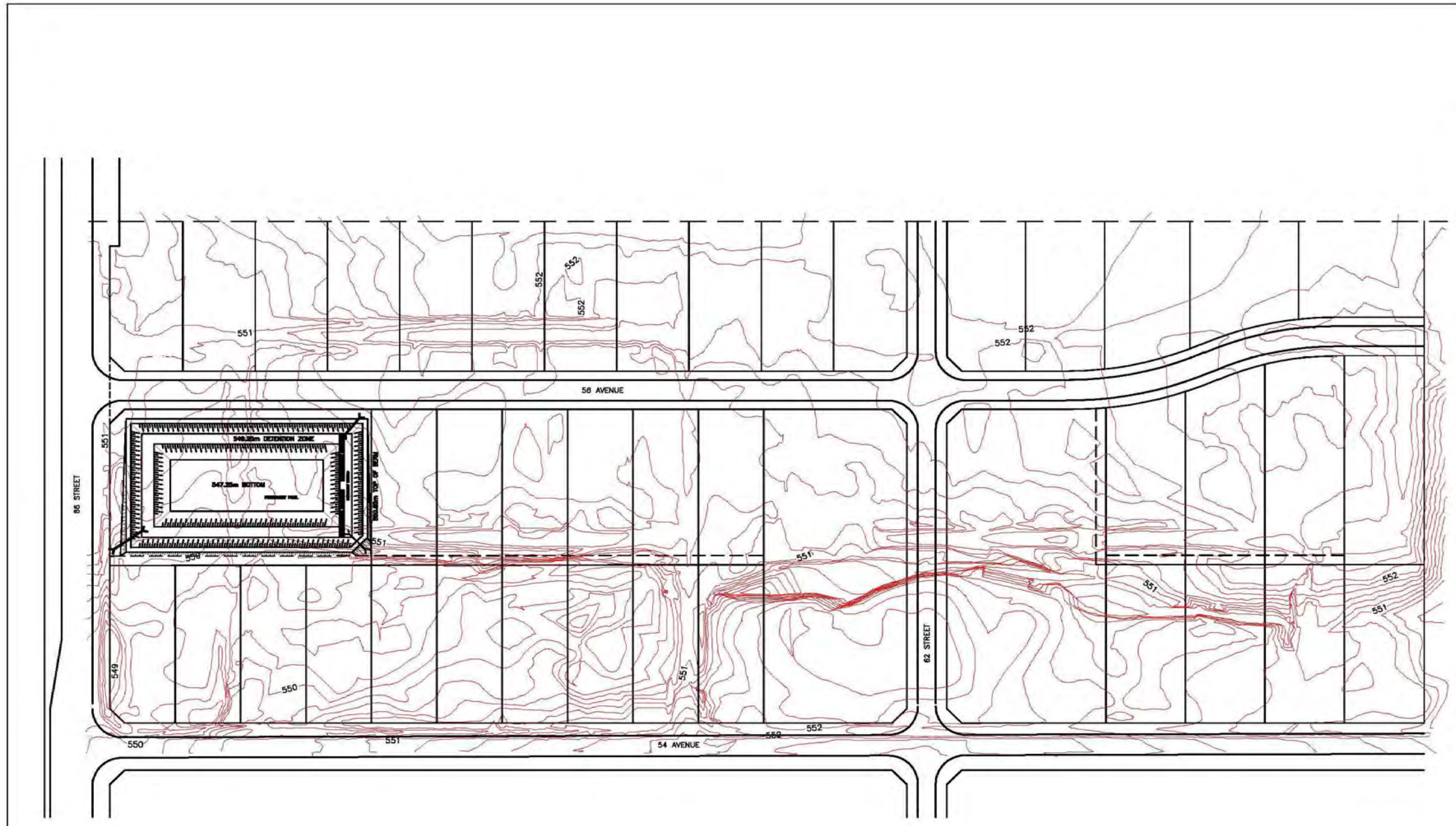


FIGURE 2
CONCEPT PLAN
NOT TO SCALE

6. TRANSPORTATION

a. ACCESS

The 54th Avenue Truck and Dangerous Goods Route provides direct access to the Hammons Holdings Ltd. industrial proposal via 62nd Street.

Additional access will be provided as phasing proceeds; along the west at 66th Street at the proposed 55th Avenue internal roadway, a road allowance provision north on 62nd Street to the existing Town Boundary, and a 4th access point at the east end of proposed 55th Avenue internal roadway.

b. NETWORK

The Town of Bonnyville; within the Municipal Development Plan, has provided transportation network planning to facilitate functional access development within the Municipality.

From the Municipal Development Plan Bylaw 1261-05, Figure 4 – Transportation Network is attached within the Appendix, and highlights in red, the 54th Avenue Truck and Dangerous Goods Route.

Also highlighted, in blue in Figure 4, is the 62nd Street Existing Collector south of this site which ties into the Existing Arterial Roadway, completing the network.

Within this ASP document, Figure 2 – Concept Plan clearly outlines the proposed location of the road network.

7. UTILITY SERVICING

a. WATER DISTRIBUTION SYSTEM

The Town of Bonnyville has upgraded the water distribution system with large diameter mains along 54th Avenue. As well the developer has contributed with individual services to lots along 54th Avenue and a stub north on 62nd Street to service the proposed full build out of the Hammons Holdings Ltd. proposal.

The Developer will provide the funds and construct the water distribution north from the stub along 62nd Street and east/west along 56th Avenue as required. Figure 3 shows the overall layout.

Existing water distribution stubbed at 62nd Street is 300mm. The proposed main running north on 62nd St. is 300mm. Water mains proposed for 56 Ave will be 200mm and will eventually loop with neighboring development.

b. SEWAGE COLLECTION SYSTEM

Upgrades by the Town of Bonnyville also include large diameter sewer collection lines along 54th Avenue. The developer has contributed with servicing along 54th Avenue and a stub north on 62nd Street for expansion and servicing of the proposed subdivision.

Hammons Holdings Ltd. will fund and construct necessary sewer collection lines to service the proposed subdivision as phases proceed. Layout is shown on Figure 3.

Existing sanitary sewer at the south end of 62nd Street at MH 54-1 is 250mm. The proposed sewer will also be 250mm gravity north on 62nd Street and east/west along 56th Avenue. Looping will not be required

c. STORM WATER MANAGEMENT

Hammons Holdings Ltd. undertook a Stormwater Management Report (attached) in 2007. Recommendations by the Town of Bonnyville Consultants have been implemented in the current design as shown on Figure 4.

The Stormwater Management System will be licensed by Alberta Environment and utilize Best Management Practice guidelines to provide pre development flow rates and sediment capture as required.

d. SHALLOW UTILITIES

Overhead electrical power, underground natural gas, and communications utilities will be contracted by local providers as required.

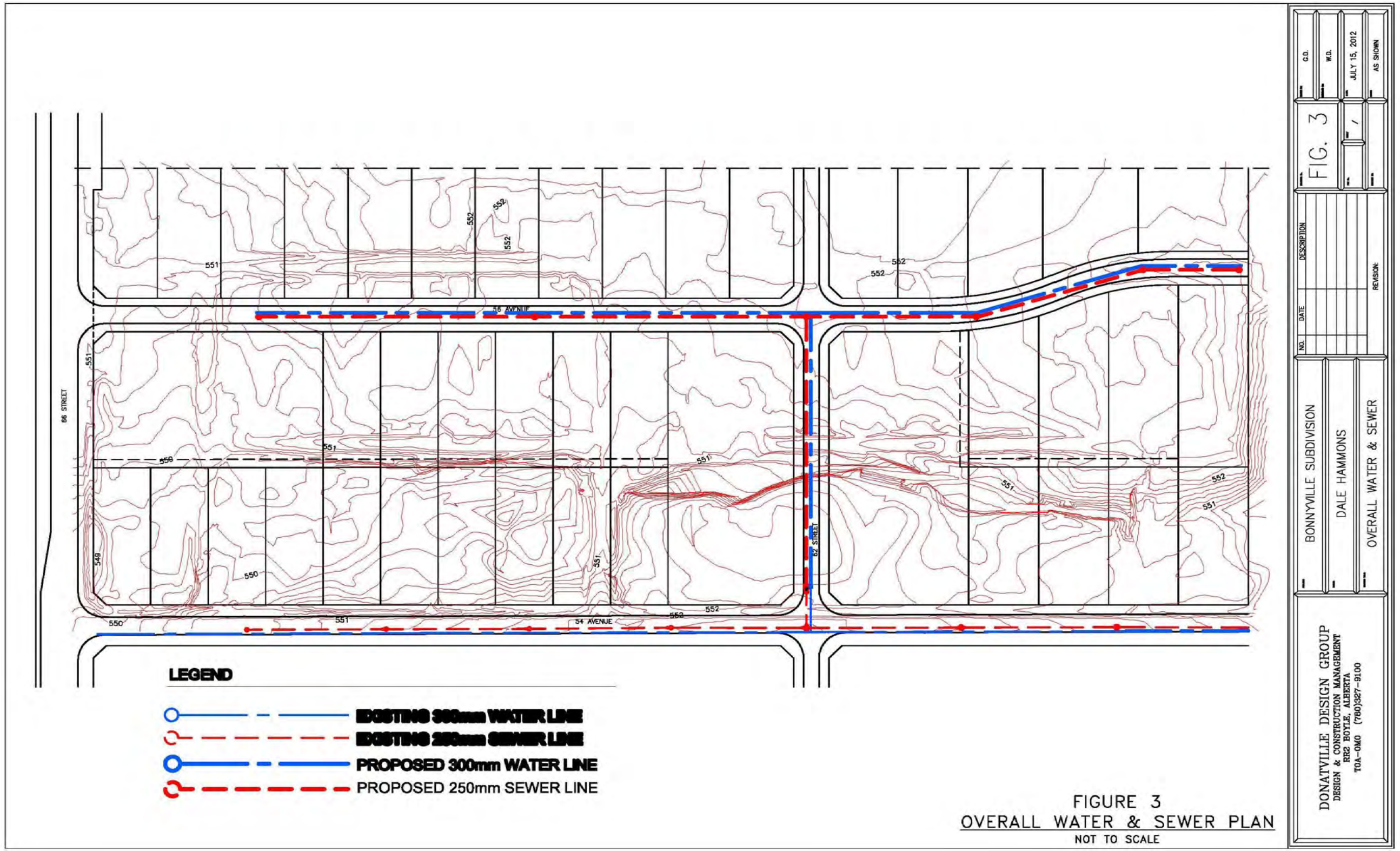


FIGURE 3
OVERALL WATER & SEWER PLAN
NOT TO SCALE

FIG. 3
G.D.
W.D.
JULY 15, 2012
AS SHOWN
NO. DATE DESCRIPTION
REVISION:
BONNYVILLE SUBDIVISION
DALE HAMMONS
OVERALL WATER & SEWER

DONATVILLE DESIGN GROUP
DESIGN & CONSTRUCTION MANAGEMENT
RR2 BOYLE, ALBERTA
T0A-0M0 (780)327-9100

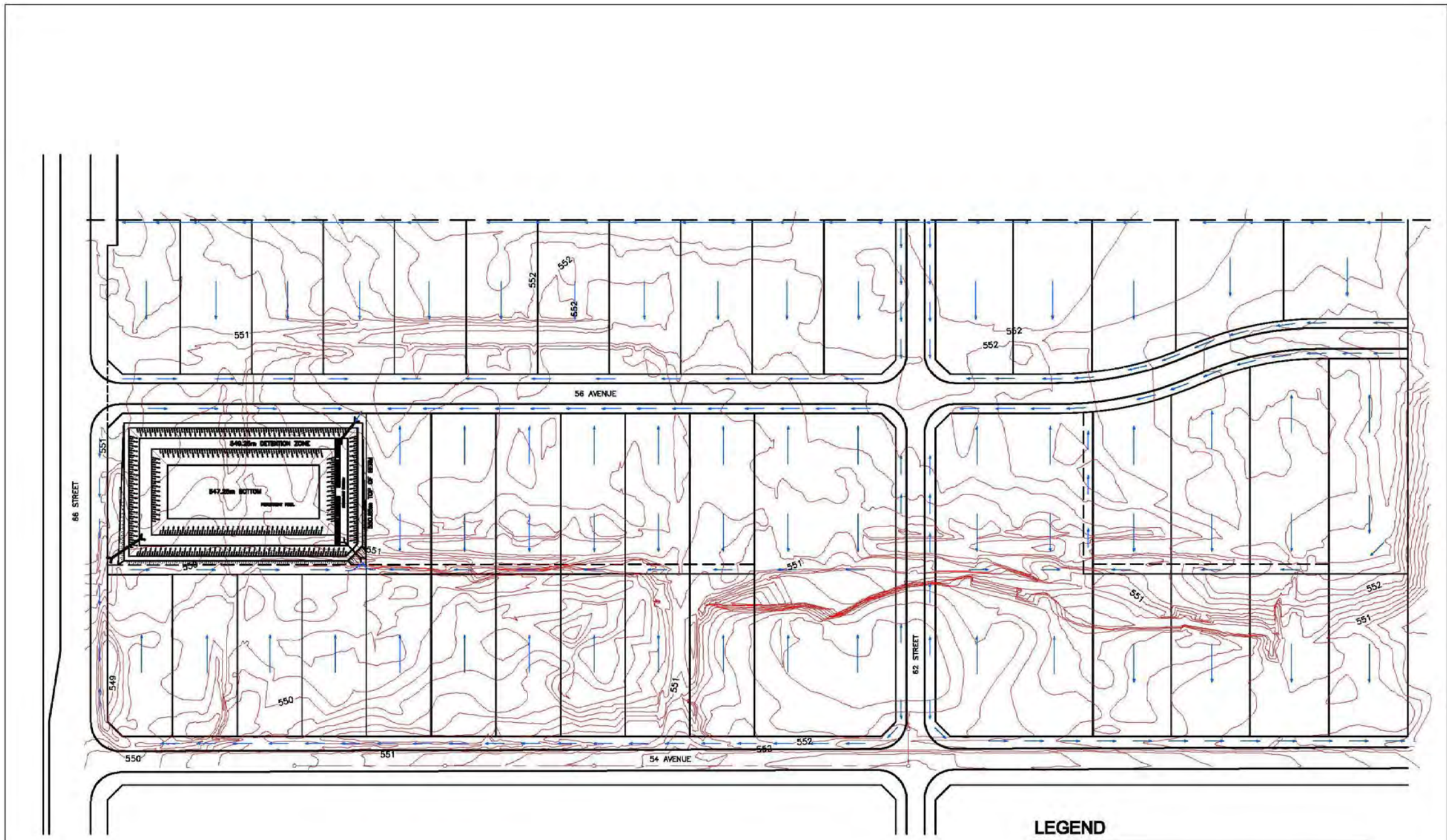


FIGURE 4
OVERALL STORM DRAINAGE PLAN
NOT TO SCALE

FIG. 4

G.D. | W.D. | JULY 15, 2012 | AS SHOWN

NO. | DATE | DESCRIPTION | REVISION:

BONNYVILLE SUBDIVISION
DALE HAMMONS
OVERALL STORM DRAINAGE

DONATVILLE DESIGN GROUP
DESIGN & CONSTRUCTION MANAGEMENT
RR2 BOYLE, ALBERTA
T0A-0M0 (780)327-9100

8. EMERGENCY SERVICES

Emergency Services are addressed within the Town of Bonnyville Municipal Development Plan.

As well, Emergency Services will be accommodated by the proposed all weather access and existing network roads.

Fire fighting has been considered within the proposed Water Distribution System requirement for fire hydrants, and flow volumes.

Communication utilities provided to each lot will enhance emergency response in combination with security electronic monitoring by lot owners as individually needed and as per fire regulations and building codes.

9. IMPLEMENTATION

a. SUBDIVISION APPLICATION

The Town of Bonnyville Land Use Bylaw provides regulations and guidelines for the proposed industrial development. The proposed land use designation for this development area is M1 - General Industrial. The current designation is M3 - Unserviced Industrial. Therefore a rezoning application supported by this Area Structure Plan must be passed by Town Council as an amendment to the existing Land Use Bylaw.

Further subdivision applications will be submitted on this basis, and as supported by this Area Structure Plan. Recommendations by the Town of Bonnyville will be incorporated in the final ASP Report.

b. DEVELOPMENT SEQUENCE

Each stage of development will require a separate Tentative Plan Approval, including individual development agreements under such conditions as may be determined under the M1 - General Industrial designation.

Phasing for the further development of these lands will be determined by the developer and the implementation of phased serving for the individual parcels. Figure 5 of the Area Structure Plan provides a tentative Development Phasing plan for the subject properties.

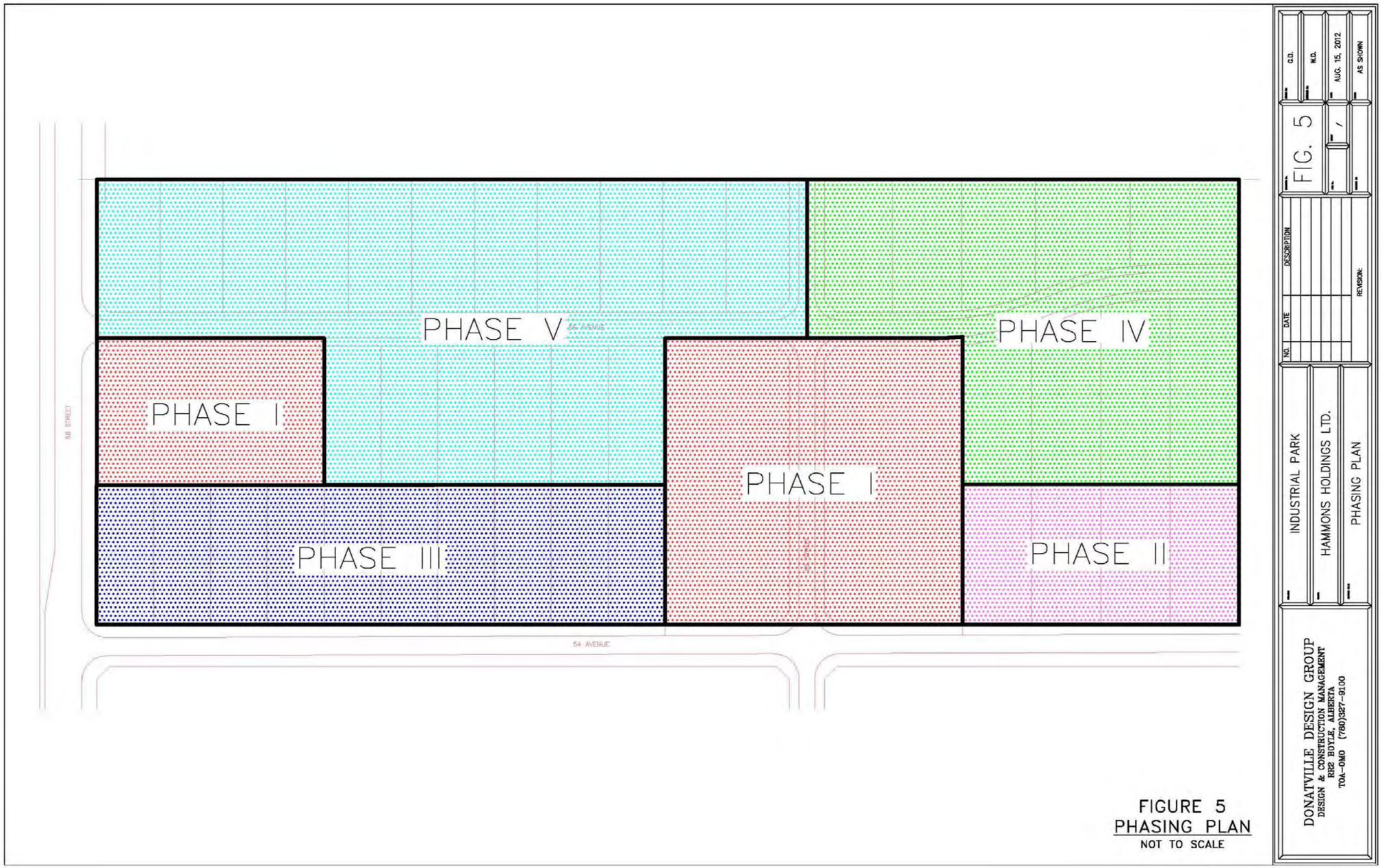


FIGURE 5
PHASING PLAN
NOT TO SCALE

APPENDIX

TOWN OF BONNYVILLE MDP (excerpts)

TOWN OF BONNYVILLE LUB (excerpts)

HAMMONS STORM WATER MANAGEMENT PLAN

2.0 PLANNING FRAMEWORK

2.1 Area Plans

As per Sections 633 through 638 of the MGA, Town Council can adopt Area Structure Plans (ASP), Area Redevelopment Plans (ARP), and other statutory plans for specific areas of Bonnyville. These plans are one way in which the MDP is implemented and must be consistent with the policies contained herein. ASPs must include the proposed land uses, density and sequence of development, and location of major transportation and utility infrastructure. The following area structure plans have been adopted by the Town of Bonnyville:

- Railway Lands ASP (2001) 1194-01;
- Millennium ASP (2002) 1210-02 (this plan is being revised with a new version to be adopted in 2005);
- Ringuette ASP (2004) 1233-03;
- Matichuk ASP (2004) 1241-04; and
- Vincent ASP (2004) 1244-04.

Figure 1 illustrates the land area covered by these plans. Plans are required for the areas noted on Figure 1 prior to development proceeding.

2.2 Land Use Bylaw

As per division 5 of the MGA, the Town of Bonnyville adopted its current Land Use Bylaw (1152-98) in 1998 to regulate and control use and development of land and buildings in the municipality and to implement the MDP. This document divides the Town into Land Use Districts, details specific development requirements, and enables the consideration of development permit applications. This Bylaw is under review and a new version will be adopted in 2005.

2.3 Outline Plans

Subdivision applications are considered by Town Council. Plans of Subdivision or Outline Plans, as they are also known, must be registered with the Province following approval. Division 7 of the MGA outlines the subdivision process. It is at this stage of the planning process that environmental and municipal reserve lands are dedicated.

The following outline plans have been approved by the Town of Bonnyville and are outlined on Figure 1:

- 80-OP-06;
- 82-OP-08;
- 85-OP-06; and
- 85-OP-09.

Highway Access	(d)	Highway access shall be established in consultation with Alberta Transportation.
Service Road	(e)	Access to highway commercial uses shall be via the area's internal service road system.
Site Landscaping Requirements	(f)	Development in the West Approach area shall include a high degree of landscaping to the Town's satisfaction at the developer's expense.

10.5.7 Commercial East Policies

Type of Uses	(a)	Non-intensive, auto-oriented commercial uses such as motels, gas stations, and drive-in restaurants are encouraged to locate in the Commercial East area.
Landmark Development	(b)	All buildings in the Commercial East area should be developed as landmark structures. Distinctive roof forms, decorative structures, and unique geometry are encouraged.
Commercial Land North of 54th Avenue between 46th Street and Highway 28	(c)	The Town will encourage the commercial development of the area east of 46th Street, north of 54th Avenue, and northwest of Highway 28 into commercial uses which require large tracts of land in order to accommodate storage or display facilities which are central to their business operations.
Major Shopping Centre	(d)	The Town will support the development of a shopping centre on the site east of Highway 28 (50th Avenue) and north of 54th Avenue.
Site Landscaping Requirements	(e)	Development in the Commercial East area shall include a high degree of landscaping to the Town's satisfaction at the developer's expense.

10.6 Industrial

10.6.1 Introduction

Industry in Bonnyville consists of oil and gas, agriculture, forestry and related industries. The Town considers industrial uses important for providing employment opportunities and balancing the assessment base. This Plan recognizes and provides for the accommodation of existing industrial uses and new industries that are generally light, clean, and high-tech in nature.

Bonnyville has two industrial areas. Industrial North is bordered by a mobile home park to the west, Muni Cor lands to the south, and undeveloped land to the north and east. If the demand for industrial land increases, the area can expand to the north and east. Development in this area will have to be coordinated with the redevelopment of the Muni Cor Lands, which will likely serve as a buffer between Industrial North and Downtown and Commercial Fringe to the south. An Area Structure Plan and direct control district are in place for the Muni Cor Lands.

Industrial West is a larger but mostly unserviced area as compared to Industrial North. The western end of the Muni Cor Lands will likely provide a buffer between the northeast corner of Industrial West and the

mobile home park. Industrial West could expand into the north half of SE14-61-6-W4 and south further into NW11-61-6-W4 and NE11-61-6-W4, if the demand exists. However, the Town boundary limits additional growth of Industrial West. Prior to development proceeding in the western half of Industrial West, servicing will have to be addressed to the satisfaction of the Town and highway access will have to be determined in consultation with Alberta Transportation. Finally, development aesthetics need to be addressed at the design stage due to this land's location at the western entrance to Bonnyville.

10.6.2 Objectives

The Town's industrial land use objectives are to:

1. Encourage existing industrial uses to maintain and expand their operations;
2. Encourage complementary industrial uses to locate in existing industrial areas;
3. Encourage a broad range of light, clean, and high-tech industrial developments. Educational, service commercial, institutional, and tourism based developments that reflect Bonnyville's economic development objectives are also encouraged;
4. Provide a high amenity base that will attract specific types of industrial and manufacturing uses;
5. Provide for industrial expansion in areas that reduce traffic and related impacts on the Town;
6. Maintain an adequate supply of industrial land within the Town boundaries in order to provide a balanced assessment and employment base; and
7. Discourage noxious heavy industrial developments within the Town boundaries.

10.6.3 General Industrial Policies

Industrial Land Strategy	(a)	The Town shall develop an industrial land strategy.
Industrial/ Service Centre Strategy	(b)	The Town shall develop an industrial/service centre strategy.
Promoting Bonnyville	(c)	The Town and the Chamber of Commerce will continue to promote and market the Town and its potential for industry.
Industrial Economic Development Priorities	(d)	The Town will work closely with various Town groups, including but not limited to, the Chamber of Commerce, tourism groups, agro-economic committees, and Community Futures, to act on the industrial economic development priorities established by the Town.
New Industrial Areas	(e)	New industrial uses are encouraged to locate in industrial parks.
Non-Intensive Commercial	(f)	Non-intensive commercial uses requiring extensive areas of land will be encouraged to locate in industrial areas.

Reduced Service Industrial Area	(g)	The Town encourages the establishment of a large lot industrial area with a reduced level of municipal services, namely gravel roads, minimal street lighting, water supply cisterns, holding tanks for sanitary sewage, and storm drainage.
	(h)	Once municipal water and sewer become available to the Reduced Service Industrial Areas, connection to municipal service shall be required.
Industries not Permitted	(i)	New industries that create air pollution, negative environmental impacts, or noxious odors will not be permitted to locate in Bonnyville.
Design Standards	(j)	A high standard of building design, signage, and landscaping that demonstrates regard for Bonnyville's character is encouraged for industrial developments.
Screening	(k)	Industrial developments shall be separated, screened, and buffered from adjacent land uses and major transportation corridors. All outdoor storage areas of designated industrial parks shall be screened.
Existing Uses Encouraged	(l)	Existing industrial operations are encouraged to expand their operations as they provide significant local employment opportunities.
Intensification	(m)	Land use intensification of existing large industrial parcels is encouraged.
Relocation to Industrial Parks	(n)	The Town encourages existing industrial uses to relocate from highway commercial areas to industrial parks.
Labour Intensive Industries	(o)	Labour intensive industries are encouraged to locate in the existing industrial area in order for the labour force to be in proximity to the Downtown.
Limited Retailing	(p)	Retailing or wholesaling of products directly related to the site's principal industrial use shall be permitted.

10.7 Parks

10.7.1 Introduction

Bonnyville's high quality of life and sense of place are created, in part, by the Town's natural setting, parks, and trails. The Jessie Lake Trail provides public access to the shores of Jessie Lake, linking the Town from north to south and east to west. The arena and agriplex lands are the Town's only large non-school park space and they are presently under redevelopment. Parks and sports fields are approved and being developed in the Millennium and Vincent Area Structure Plan areas. The Town will continue to develop the Jessie Lake Trail and park space as it is dedicated to them at the subdivision stage. It is the Town's desire to create a fully linked open space system that includes trails, public parks, natural open spaces, and school sites. This will likely be initiated through the completion of a Parks Master Plan and a Trails Master Plan.

11.3 Transportation Policies

Environmental Sensitivity	(a)	New transportation facilities that negatively affect environmentally sensitive areas shall be avoided.
Multi-Modal System	(b)	The Town's transportation system should be amenable to alternatives and provide choices including automobile, walking, cycling, and eventually transit.
Network Expansion	(c)	Expansion of the transportation network beyond the Town boundaries should be planned for and be compatible with the provincial and Municipal District of Bonnyville transportation networks.
Highway Bypass	(d)	At such a time considered appropriate by Council, the Town may examine a roadway bypass in consultation with the Municipal District of Bonnyville and Alberta Transportation.
Respect Small Town Atmosphere	(e)	The transportation system will respect the small town atmosphere of Bonnyville and will focus on efficient internal movement of people at a scale consistent with development in Town.
Economic Efficiency	(f)	The transportation system should be developed to provide the required service in a manner that is economically efficient and minimizes servicing costs.
Right-of-Way Requirements	(g)	Road right-of-way requirements will be protected through building setbacks, right-of-way acquisition, and subdivision design.
Road Design	(h)	Road system designs and standards are encouraged to account for long-term need.
Transportation Impact Assessment	(i)	Re-designation, subdivision, and development applications with potential significant impacts on the transportation network shall provide a transportation impact assessment.
Delays in Collector Road Development	(j)	The Town will identify the roads which have high use as a result of delays in the development of planned collector roads and encourage construction of the necessary roads as soon as possible.
Capital, Budgeting, and Business Plans	(k)	Road improvements conducted by the Town shall be incorporated into the Town's Capital Plan Program, Budgeting Plan and Business Plan prior to completion.
Project Phasing	(l)	Capital expenditures on new facilities will be optimized through project phasing.
Road Network	(m)	The street network hierarchy shall be established in accordance with Figure 4.
	(n)	The hierarchy shall facilitate consistency of design and function and be used as a basis for any street improvement program.

Major Arterials	(o)	Major arterials include Highway 28 (50th Avenue), Highway 41 (55th Street), 54th Avenue, 66th and 46th Streets north of 50th Avenue, and 34th Street. Their primary purpose is to move traffic. Direct access to these arterials will be controlled.
	(p)	Access points will be constructed at limited points along Highway 28 (50th Avenue) and Highway 41, and internal service roads will be used to provide access to individual properties along the highways.
Industrial/ Commercial Collectors	(q)	Industrial/commercial collectors include 62nd Street, 52nd Street north of 50th Avenue, 50th Street north of 49th Avenue, 49th Street, and 51st and 49th Avenues. Their primary purpose is property access as well as traffic movement. Limited access for commercial uses is permitted.
Residential Collectors	(r)	Residential collectors include 51st, 49th, 45th, 43rd Avenues and 49th, 46th, 42nd Streets, and 41st Street between 50th and 48th Avenues. Traffic volumes are higher than local streets. Driveways and/or on-street parking may be restricted.
New Collector	(s)	A new north/south collector roadway connecting Lakeshore Drive and 54th Avenue should be constructed in east Bonnyville in the next 10 years.
Downtown Linkages	(t)	The transportation system will focus on providing convenient linkages to the Downtown.
Status of 50th Avenue	(u)	No Downtown enhancement shall risk the highway status of 50th Avenue.
50th Avenue Intersections	(v)	The intersections at 51st, 50th, 49th, and 48th Streets (at 50 Avenue) shall be realigned to provide four driving lanes with left hand turn lanes, and right hand merge lanes.
Truck and Dangerous Goods Route	(w)	The Town's Truck and Dangerous Goods Route shall extend east along Highway 28 (50th Avenue) to 66th Street, north to 54th Avenue, east to 44th Street and northeast along Highway 28.
	(x)	The Town shall improve the intersection of 66th Street and 50th Avenue to accommodate trucks turning.
	(y)	The Town shall upgrade 54th Avenue to a four lane arterial road standard from 44th Street to 66th Street as an extension of the existing Truck Route. Land for the westward extension of the Truck Route will be acquired as subdivision occurs.
	(z)	The Town shall improve Truck and Dangerous Goods Route signage at the Town's main entrances to clearly define its location.
Western Entrance	(aa)	The Town will assist with the investigation and implementation of means to improve the appearance of western Bonnyville along Highway 28 (50th Avenue).

Lakeshore Drive	(bb)	Lakeshore Drive will be kept in a park-like setting though the use of landscaping, adjacent trails and parks, and reduced speed limits.
Billboards	(cc)	Erection of new billboards or reconstruction of existing billboards shall not be permitted on lands adjacent to Highways 28 and 41.
Barrier-Free Curbs	(dd)	The design of new and rehabilitated roads and sidewalks shall include curb cuts to enable barrier-free access.
Pedestrian Crossings	(ee)	Public promotion and enforcement programs shall be developed and implemented to reduce improper pedestrian crossings of arterial roads.
Street Lighting	(ff)	The Town shall prepare a street lighting standards policy.
Cash-In-Lieu	(gg)	At the time of development permit approval when payment in lieu of providing parking spaces is accepted, the money shall be directed to a fund for future development of parking facilities.
Pedestrian Orientation	(hh)	Where parking is located at the rear of buildings, rear entrances and pedestrian walk through areas are encouraged in order to facilitate pedestrian access to the streets. In order to reduce vandalism and increase safety, special consideration should be given to the Principles of Crime Prevention Through Environmental Design (CPTED) as outlined in Appendix 3.
Employee Parking	(ii)	Developers shall be required to provide off-street employee parking either on-site or immediately adjacent to the site.
Parking Lot Design	(jj)	Parking lots shall be landscaped to the satisfaction of the Town with particular attention to buffering parking areas adjacent to sidewalks. The Principles of Crime Prevention through Environmental Design (CPTED), as detailed in Appendix 3, shall be incorporated into parking lot design.
Downtown Parking	(kk)	Downtown parking should be improved through the development of general use off-street parking areas.
Downtown Parking Standards	(ll)	The Town shall prepare a Downtown parking strategy, which shall address the: • density of Downtown; • desire to maintain the current density; • challenges of providing parking at this density; and • maximum size of truck permitted to park Downtown.
Relaxation of Downtown Parking Standards	(mm)	With the exception of properties fronting on 50th Avenue, the Downtown parking standards may be relaxed where shared parking facilities, funds for the construction of parking facilities in other locations, or proximity to large parking facilities occur.

Downtown and Commercial Fringe Parking Standards	(nn)	The Town shall develop parking standards for the Commercial Fringe and Commercial East areas, in part to encourage new developments to provide suitable truck parking.
Parking Requirements	(oo)	The Town shall review the parking requirements of the Land Use Bylaw.
Facility Parking	(pp)	The Town shall develop parking standards for roads and lanes near institutional and recreational facilities.
Handicapped Parking	(qq)	The Town encourages developers/landowners to provide suitable parking for handicapped persons and discourages the use of the handicapped stalls by persons who do not have a handicap.

12.0 SERVICING

12.1 Introduction

12.1.1 Water System

The Town of Bonnyville's water source is Moose Lake, which is located 1.5 km west of the Town's western boundary in the Municipal District of Bonnyville. The Town's water treatment facility is also located at this site.

The water system includes 88 km of water mains and functions well. However, despite available capacity at the plant, the lack of sufficient pressure precludes substantial residential subdivision on the east side of Town. The solution is the construction of a water reservoir on the east side of Town to maintain pressure equilibrium in the system. While two sites have been identified for the reservoir, funding is needed. Funding options include available reserve funds, off-site levies on new development, and a surcharge on the Town's utility bill.

Upgrades to the water system required to achieve the Land Use Concept illustrated on Figure 3 include a reservoir on the eastern side of Town and water trunk lines. Figure 5 depicts the location of water lines in Bonnyville.

12.1.2 Sanitary Sewer System

The Town's sanitary sewer system contains 47km of sewer mains. The sewage treatment facility (lagoons) is located southeast of the Town's southeastern boundary in the Municipal District (MD) of Bonnyville. Four lift stations assist in delivering the wastewater to the plant. They are at the following locations:

- 59th Street and 51st Avenue;
- 54th Street and 52nd Avenue;
- 51st Street and 56th Avenue; and
- 46th Street and 49th Avenue.

Overall, the sanitary sewer system functions well. However, despite available capacity at the plant, Bonnyville's topography precludes substantial development on the west side of Town. One solution is the construction of a trunk sewer line from the sewage treatment plant in the MD of Bonnyville north to the future residential development areas on the east side of Bonnyville, then west to the residential areas on the west side of Town. Other options include constructing a sewage treatment facility on the west side of Town or on-site servicing for this part of Bonnyville.

Upgrades to the sanitary system required to achieve the Land Use Concept illustrated on Figure 3 include sewer trunk lines and lift stations as required. Figure 6 shows the location of the sanitary sewer lines and lift stations in Bonnyville.

12.1.3 Storm Sewer System

Bonnyville consists of four drainage areas: Central, East, North, and West. Most of the Town is contained in the Central drainage area, which drains into Jessie Lake. This area also includes the Town's 11 km of storm sewer mains. The overall system functions well, but is overburdened in some of the older parts of Town.

Figure 7 outlines the four drainage areas, storm sewer lines, and direction of drainage in Bonnyville.

12.2 Objectives

The Town's servicing objectives are to:

1. Ensure that utility systems are upgraded and expanded in an environmentally sensitive and fiscally responsible manner to coincide with future urban growth;

2. Ensure that appropriate utility infrastructure is in place to serve development; and

3. Periodically reassess this infrastructure in relation to anticipated demands.

12.3 General Servicing Policies

Full Municipal Services	(a)	All development, with the exception of the Country Residential development envisioned in the Vincent ASP, shall have full municipal services, which include piped water, sewer, storm drainage, street lighting, and paved roads. These services shall be constructed at the developer's expense to the satisfaction of the Town.
	(b)	Industrial development may be exempt from the above full municipal services requirement at the discretion of the Town. Once services are available, exempted development shall be required to connect to municipal services.
	(c)	Country Residential development in the Vincent Area Structure Plan may be considered on on-site septic systems, provided that percolation tests prepared by a qualified professional engineer demonstrate soil uitability and identify preferred lot sizing.
Master Servicing Plan	(d)	The Town of Bonnyville shall complete a major update to its Master Servicing Plan, in the form of a 20 year Master Municipal Servicing Plan and Financial Strategy, to guide infrastructure investment required to accommodate future development.
Design Standards	(e)	All infrastructure shall be constructed to the Town of Bonnyville minimum standards.
Engineering Standards	(f)	The Town shall prepare revised engineering standards for new development.
Over-sizing	(g)	Services shall be appropriately oversized in order to accommodate growth beyond the existing Town boundaries.

Servicing Costs	(h)	Unless otherwise specified in a Town of Bonnyville Development Agreement, developers shall be responsible for construction and initial maintenance of utility extensions and over-sizing. The Town will endeavour to assist with the recovery of cost from subsequent developments.
Cost Recovery/Off-Site Levies	(i)	Prior to approval of major utility extensions or upgrading, the Town will ensure that all construction and operating costs to accommodate growth will be recovered from benefiting users and/or landowners. In cases where new development will benefit from infrastructure capacity provided through Town investment, the Town will recover a proportionate share of its costs through off-site levies as determined by the Master Servicing Plan.
Infrastructure Monitoring	(j)	The Town will monitor the need to upgrade utility infrastructure throughout the Town to enable the scheduling of improvements, determine the method of financing, and allocate improvement funds.
Annual Replacement Program	(k)	The Town shall continue to invest in an annual water, sewer, and street replacement program.
MIMS	(l)	The Town shall complete the implementation of the Municipal Infrastructure Management System (MIMS).
Storm Water Management Plan	(m)	The Town shall prepare a new community wide Storm Water Management Plan.
	(n)	Prior to the issuance of site grading development permits, a site-specific storm water management plan must be approved by the Town.
	(o)	Developers of proposed multi-family residential developments, large subdivisions, recreational, commercial, and industrial developments shall be required to prepare and implement a site-specific storm water management plan. The cost to prepare the plan shall be borne by the developer and shall include, but not necessarily be limited to, the following: • flooding hazards; • existing drainage features; • storm water related environmental issues (first flush effects, stockpile snowmelt, soil erosion); • minor and major system design criteria (1:100 year event, return period, calculation of flows, rainfall intensity, description of the proposed system); • design criteria for flows originating off-site; • erosion and sediment control; and • operation and maintenance.

Storm Water Improvements	(p)	Developers must ensure that existing systems can accommodate increased post-development flows and that adequate detention is provided within the development area.
Utilities	(q)	All development shall be required to provide the appropriate easements or rights-of-way for required utilities (e.g. telephones, power, and natural gas).
Recycling Facilities	(r)	In recognizing the importance of recycling facilities as part of a waste management strategy, the Town will continue to support the operation of recycling facilities for Bonnyville and neighbouring municipalities.
Servicing Beyond Town Boundaries	(s)	The Town may consider providing urban services to developments outside the Town boundaries in the MD of Bonnyville, provided: • the total costs are borne by the developer in accordance with Town policy; and • the service provision does not interfere with the Town's ability to service within the existing municipal boundaries.
Sale of Town Water	(t)	The Town shall develop a strategy for the sale of town water to area outside of the Town boundaries.

13.0 COMMUNITY SERVICES

13.1 Introduction

Bonnyville has an extensive community service network that can be divided into three broad categories:

- community;
- emergency; and
- social.

In this case, community services means numerous groups that provide service and support, serve children, seniors, youth, as well as arts, cultural, and sports groups. Volunteers make these organizations possible.

Emergency services in Bonnyville consist of the Regional Constable Service, the Bonnyville Regional Fire Authority, Bonnyville Municipal Ambulance, and the RCMP. Each of these services is shared with the Municipal District of Bonnyville.

Social services include Bonnyville and District Family and Community Support Services (FCSS) as well as several other service providers. FCSS' mission is to facilitate preventative social services and community initiatives which contribute to the quality of life and family wellness in the community.

The Town recognizes the results achieved by these services and will continue to support them.

13.2 Objectives

The Town's community services objectives are to:

1. Ensure that a wide range of community services are provided for Bonnyville and area residents;
2. Ensure that an appropriate level of emergency services are provided to meet the demands of growth;
3. Ensure that the provision of social services are affordable and accessible to residents of Bonnyville and area;
4. Provide programs and facilities oriented to the special requirements of youth;
5. Be committed to community based services with a focus on early intervention; and
6. Encourage diversity and equality among all community members.

13.3 Community Services Policies

Community Services	(a)	The Town shall support community, emergency, and social services.
Needs Assessment	(b)	The Town will monitor community needs in relation to social issues and ensure local needs are being met on a continuum of services from prevention to long term intervention.
Daycare Needs Assessment	(c)	The Town shall consider the preparation of a daycare needs assessment for Bonnyville.
Youth	(d)	The development of appropriate programs, facilities, and events for youth will be encouraged.
Rehabilitation Facility	(e)	The Town shall initiate a task force to examine the potential to develop a provincial drug and alcohol rehabilitation facility targeted toward youth rehabilitation.
Emergency Services	(f)	The Town will ensure that emergency services are appropriate and meet the needs of the community.
Regional Disaster Plan	(g)	The Town shall work with regional stakeholders to prepare a Regional Disaster Plan.
Crime Prevention	(h)	The Town will evaluate major development proposals with regard to the Principles of Crime Prevention Through Environmental Design (CPTED) and encourage the use of these principles in new developments, as outlined in Appendix 3.
FCSS	(i)	The Town encourages and promotes volunteerism through the Family and Community Support Services Department.
Parent Child Centre	(j)	The Town shall promote the Parent/Child Centre and Hub Early Learning Centers Concept
Hospital and Extended Care	(k)	The Town will participate in the Regional Health Authority to ensure an appropriate level and quality of hospital services including extended care services for seniors.

4. Anticipate the rate of growth in order to minimize negative financial impacts on the Town of Bonnyville; and

5. Minimize capital expenditures on infrastructure through the promotion of efficient patterns of development.

16.3 Implementation and Monitoring Policies

Plan Conformity	(a)	All future statutory area plans, including revisions to existing statutory planning documents, shall conform to the objectives and policies of this Plan.
Planning Recommend-ations	(b)	The Town shall make recommendations on land use, subdivision and development which are consistent with the goals, objectives and policies of this Plan.
Initial Review	(c)	The Planning and Development Department shall assume primary responsibility for the initial review of all land use, subdivision, and development proposals prior to submission to the Development Authority, as appropriate, and shall ensure the participation of relevant government agencies, private groups, and municipal departments during the review process.
Town Council	(d)	Council shall adhere to the policies and objectives of this Plan.
Council Responsibilities	(e)	Council will be responsible for the following implementation duties: • initiate and oversee planning recommendations, programs, and committees necessary to fulfill the objectives of this Plan; • consult with its administrative staff, committees of Council, and any necessary provincial or federal personnel in the implementation of this Plan; • ensure that the goals and objectives of this Plan are consistent with changing community needs and aspirations; • be committed to public participation in municipal decision making in a manner which does not conflict with the objectives and policies contained within this Plan; • assign specific tasks to various boards, agencies, and ad-hoc citizens committees related to the implementation, monitoring, and review of specific Plan policies.
Staff Responsibilities	(f)	All municipal departments and committees shall implement the appropriate planning and policy statements contained in this Plan in consultation with Council.
Required Area Structure Plans	(g)	Specific areas illustrated on Figure 1 require planning studies prior to re-designation, subdivision, or development approval.

Area Structure Plans (ASPs)

(h) Area structure plans or concept plans shall be prepared for the development of new areas or where existing areas are being significantly altered or expanded, they shall be consistent with this Plan, and shall address the following:

- proposed land uses;
- location of roads and public utilities;
- location of reserve lots;
- sequence of development;
- major physical or manmade constraints to development;
- population density;
- design guidelines and architectural controls; and
- any other matters that the Town considers necessary.

Redevelopment Areas and Plans

(i) Council may designate an area of the municipality as a redevelopment area for the purpose of any or all of the following:

- preserving or improving land and buildings in the area;
- rehabilitating buildings in the area;
- removing buildings from the area;
- constructing or replacing buildings in the area;
- establishing, improving or relocating roads, public utilities or other services in the area;
- facilitating any other development in the area; and
- providing for the imposition and collection of a redevelopment levy.

(j) An area redevelopment plan must describe:

- the objectives of the plan and how they are proposed to be achieved;
- the proposed land uses for the redevelopment area;
- if a redevelopment levy is to be imposed, the reasons for imposing it;
- any proposals for the acquisition of land for any municipal use, school facilities, parks and recreation;
- facilities or any other purposes Council considers necessary; and
- may contain any other proposals that Council considers necessary.

(k) Council shall prepare an Area Redevelopment Plan for Downtown.

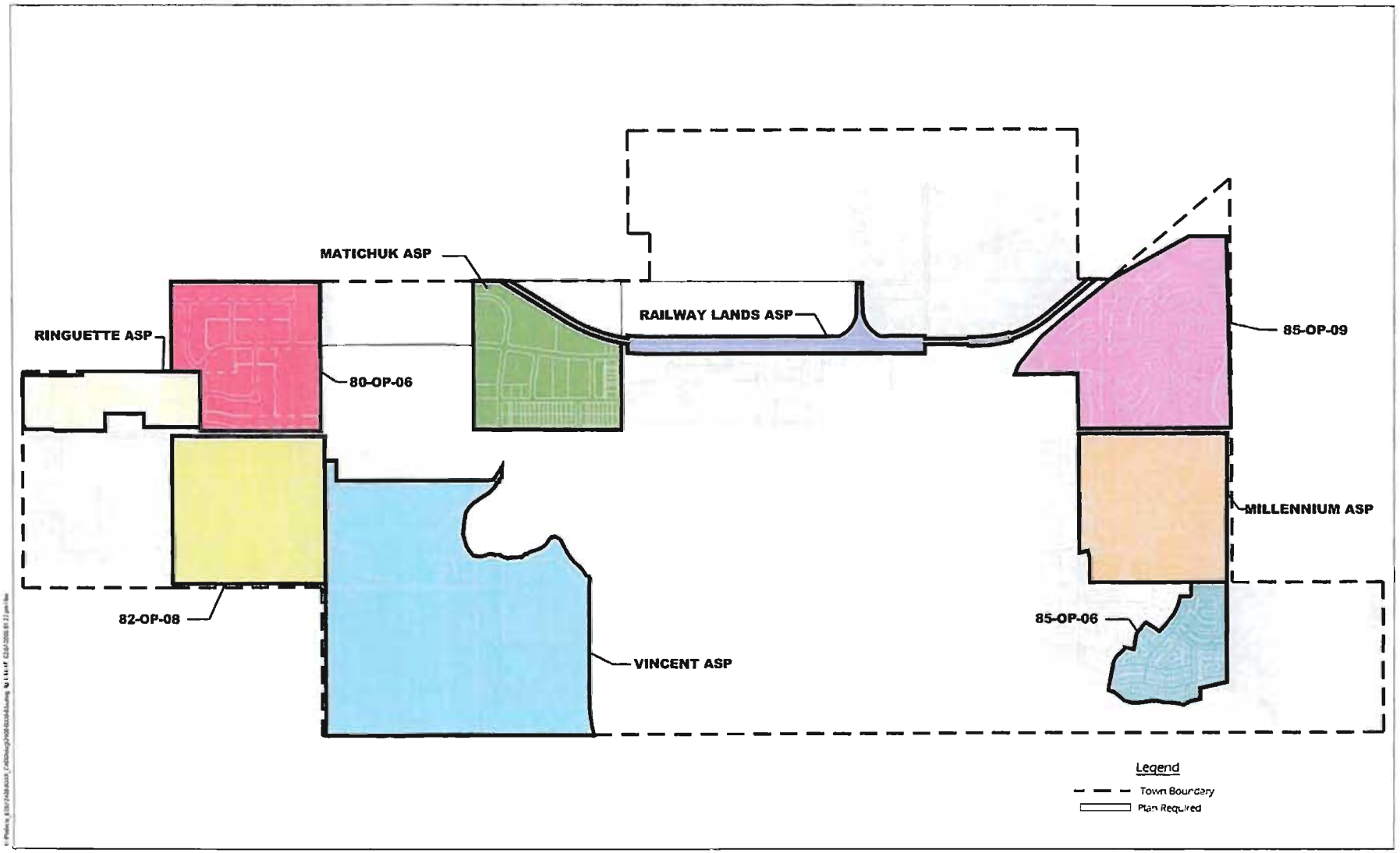
URBAN SYSTEMS

municipal development plan

town of bonnyville

north

Scale N.T.S



area structure and outline plan areas

FIGURE 1

PDF #97852 v2

FIGURE 3 future land use concept

north

Scale N.T.S

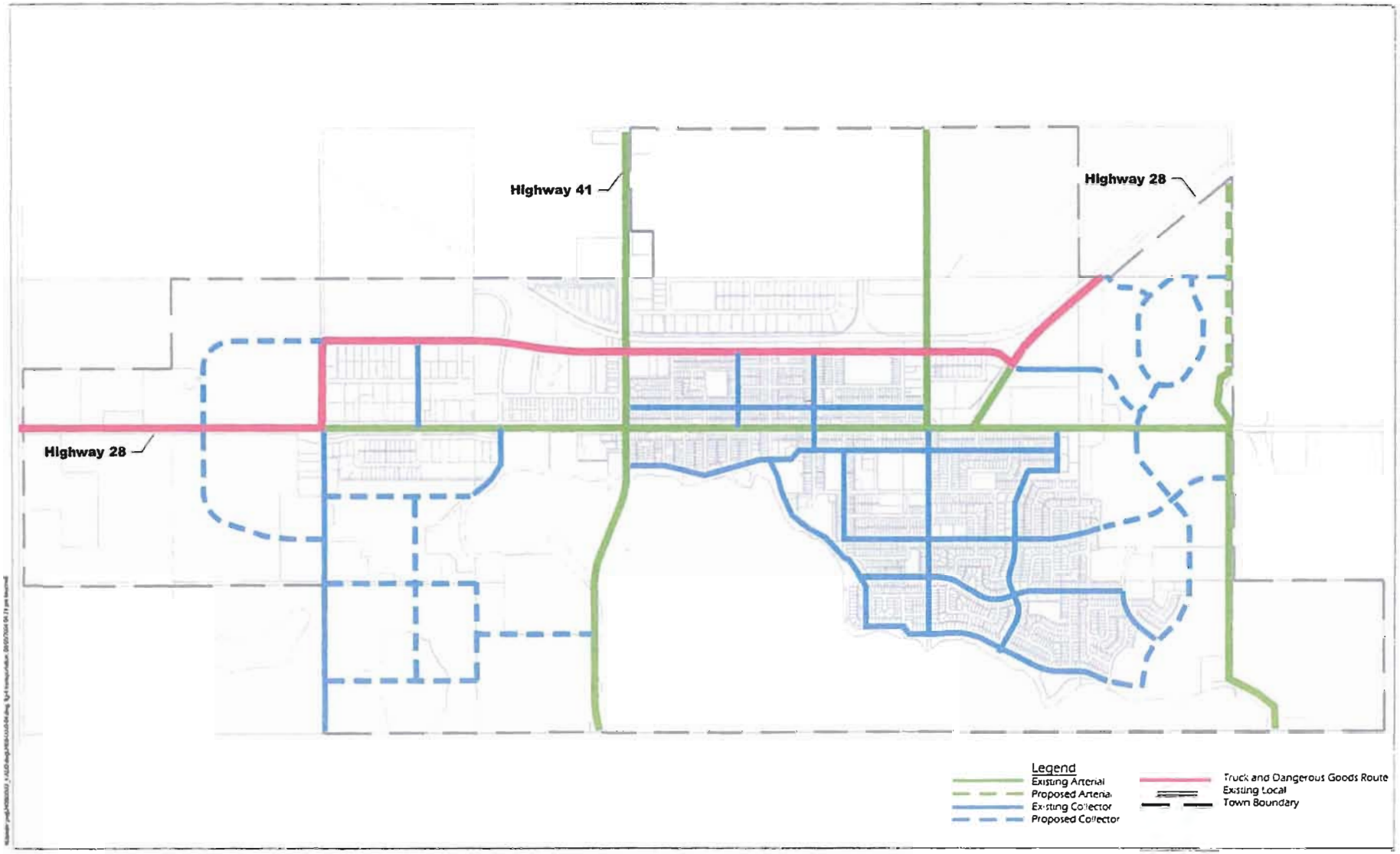
municipal development plan

town of bonnyville

URBAN SYSTEMS

north

Scale: N T S



transportation network

FIGURE 4

URBAN

municipal development plan

town of bonnyville

north

Scale N.T.S

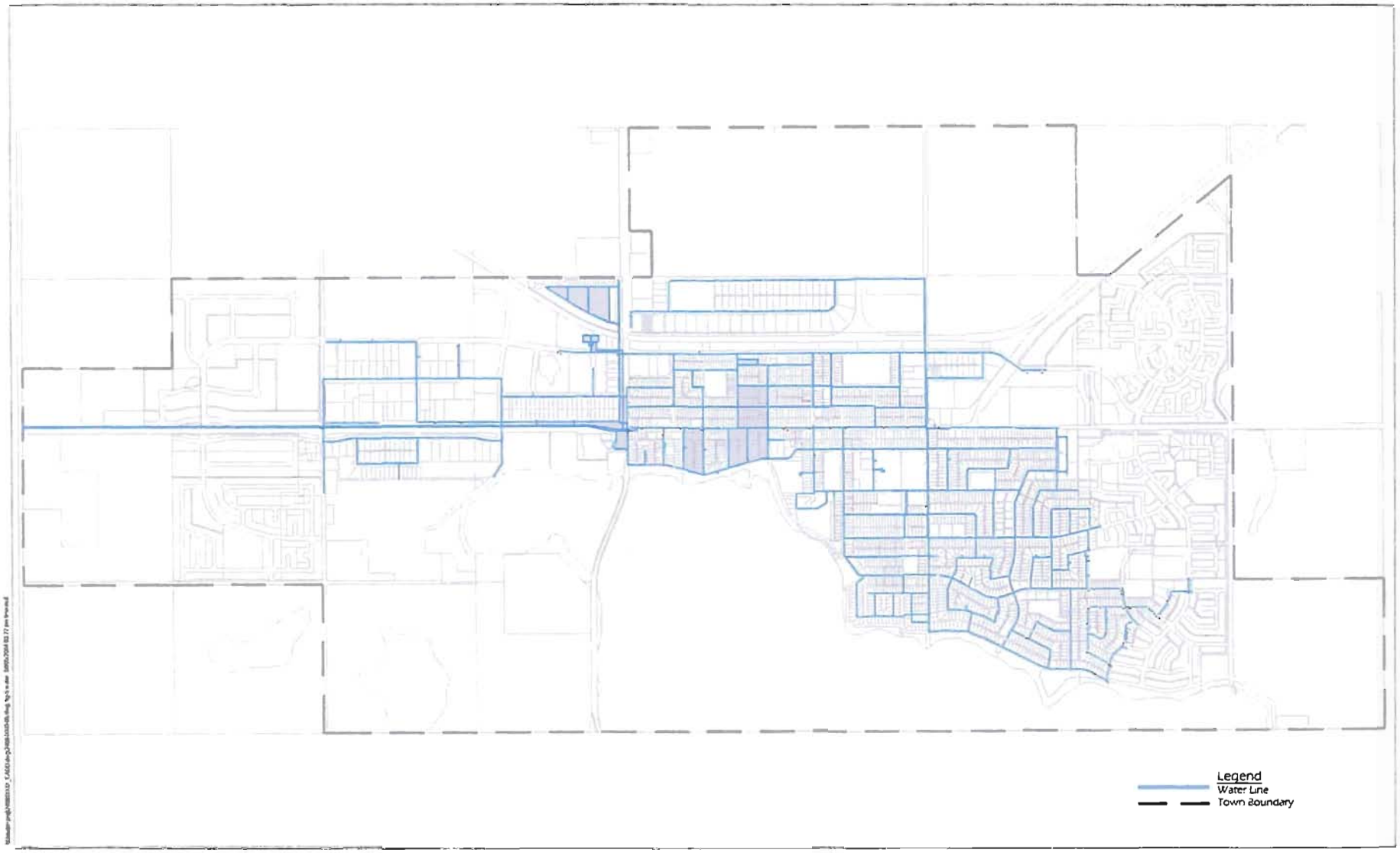


FIGURE 5 water network

URBAN

municipal development plan

town of bonnyville

north

Scale N T S

sanitary sewer network

FIGURE 6

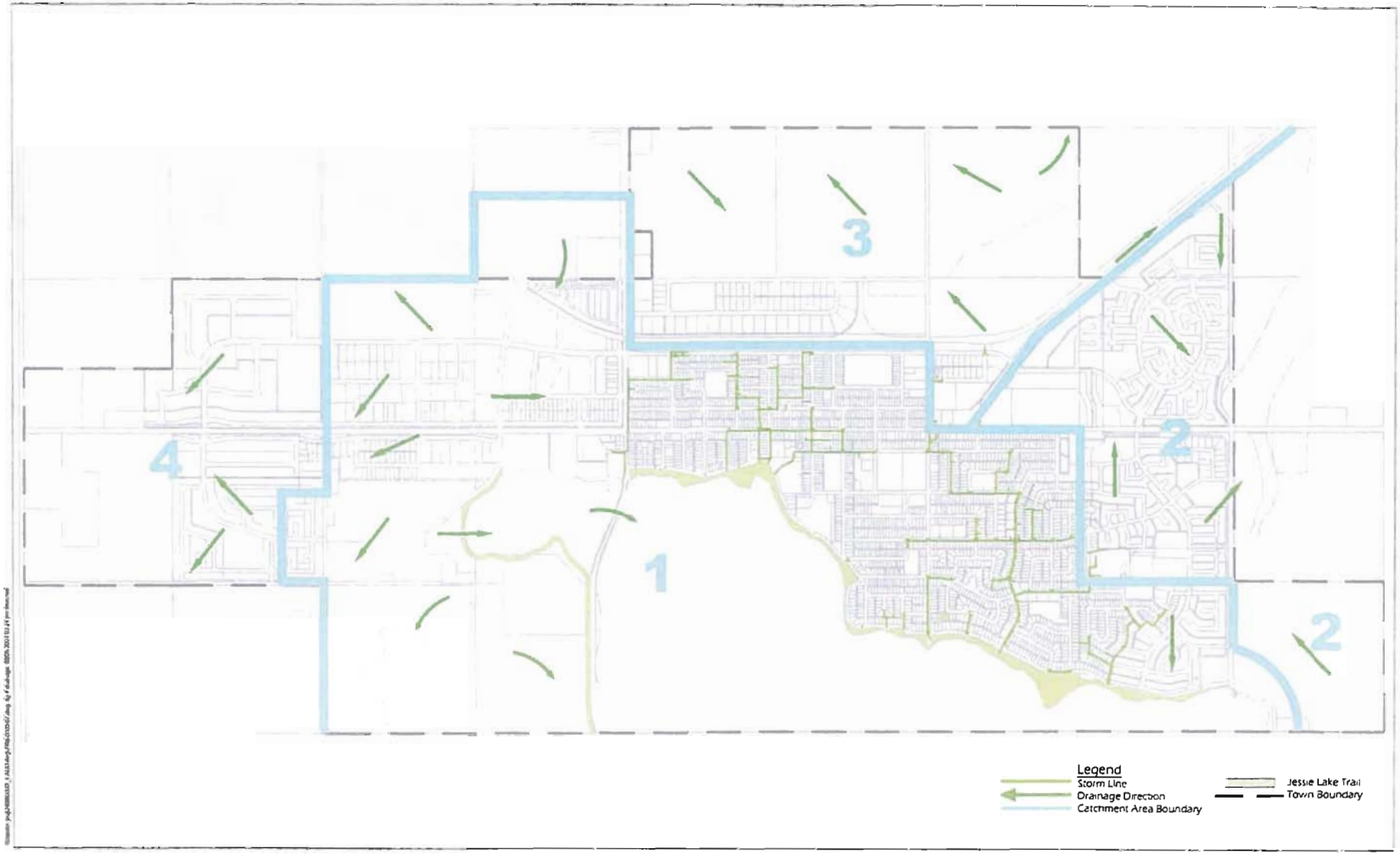
URBAN

municipal development plan

town of bonnyville

north

Scale N.T.S



drainage system

FIGURE 7

BYLAW NO. 1262-05

OF THE

TOWN OF BONNYVILLE

BEING A BYLAW OF THE TOWN OF BONNYVILLE IN THE PROVINCE OF ALBERTA TO ADOPT THE LAND USE FOR THE TOWN OF BONNYVILLE.

WHEREAS pursuant to Section 635 of the Municipal Government Act, RSA. 2000, Ch. M-26 and any amendments thereto, a Council of a municipality shall pass a bylaw in accordance with the Act.

AND WHEREAS the Council of the Town of Bonnyville deems it proper and expedient to pas such a bylaw.

NOW THEREFORE, the Council of the Town of Bonnyville, duly assembled hereby enacts as follows:

1. This Bylaw including the attached Schedule "A" may be cited as the Town of Bonnyville Land Use Bylaw.

2. The purpose of this Bylaw is to regulate and control the use and development of land and buildings within the Town of Bonnyville to achieve the orderly and economic development of land, and for that purpose, amongst other things,
   - To divide the Town into land use districts;
   - To prescribe and regulate for each district the purpose for which land and buildings may be used;
   - To establish the roles and responsibilities of the Development Authority;
   - To establish a method of making decisions on applications for development permits, subdivision applications and the issuance of decisions of such applications;
   - To provide a manner in which notice of the issuance of a development permit is to be given.

3. This Bylaw may be amended by bylaw in accordance with the Municipal Government Act.

4. Land Use Bylaw No. 1152-98, as amended is hereby repealed on the date of final reading of this Bylaw and Land Use Bylaw No. 1262-05 shall come into force and affect on that date.

PART I GENERAL CONDITIONS

SECTION 1: ESTABLISHMENT OF GENERAL CONITIONS

General conditions shall be set forth in Part I of this Bylaw.

SECTION 2: TITLE

This Bylaw is entitled "Town of Bonnyville Land Use Bylaw".

SECTION 3: PURPOSE

The purpose of this Bylaw is to regulate and control the use and development of land and buildings within the Town of Bonnyville to achieve the orderly and economic development of land, and for that purpose, amongst other things:

1. to divide the Town into districts;

2. to prescribe and regulate for each district the purposes for which land and buildings may be used;

3. to establish the roles and responsibilities of the Development Authority and the Development Officer;

4. to establish a method of making decisions on Development Permit Applications including the issuing of Development Permits; and

5. to prescribe a procedure to notify owners of land likely to be affected by the issuance of a Development Permit.

SECTION 4: PREVIOUS MUNICIPAL BYLAWS

No provisions of any other Bylaws with respect to zoning, development control, development schemes and land use classifications shall hereafter apply to any part of the Town of Bonnyville described in this Bylaw. The Town of Bonnyville Land Use Bylaw No. 1152-98, as amended, is repealed.

SECTION 5: TRANSITIONAL PROVISIONS

A Development Permit Application or Subdivision Application which is received in its complete and final form prior to the effective date of this Bylaw shall be processed and any Development Permit issued or decision shall be in accordance with the Land Use Bylaw No. 1152-98 and the amendments thereto.

PART V AMENDMENTS AND ENFORCEMENT

SECTION 50: LAND USE BYLAW AMENDMENT PROCEDURE

1. Application for Bylaw Amendment:

   a) Any amendment to this Land Use Bylaw shall be made by an amending bylaw pursuant to Section 692 of the Municipal Government Act, following a public hearing in accordance with Section 230 of the Municipal Government Act. If the proposed amendment is at variance with adopted statutory plans or an area structure plan is required, the Development Authority shall advise the applicant that an amendment must be made to the statutory plans prior to or concurrently with the amendment to the Land Use Bylaw.

   b) An owner of a site, or his authorized agent, or other person(s) having a legal interest in the site may apply in writing to the Development Authority for an amendment using an Application for Amendment to the Land Use Bylaw, and providing the additional information identified in Section 50(2).

   c) Council may initiate an amendment to this Bylaw by directing the Development Officer to initiate an application.

   d) An applicant may be required to submit an Area Structure Plan for approval by the Town of Bonnyville prior to Council considering the redistricting of the land.

   e) Where an amendment to change this Land Use Bylaw is refused another application with respect to the same lot, for a change in land use designation may not be submitted until at least six (6) months after the date of refusal, unless otherwise directed by Council pursuant to Section 640(5) of the Municipal Government Act.

2. Plans and Information Requirements:

   All applications for amendment to the Land Use Bylaw shall be made to the Development Authority in writing and shall be accompanied by the following:

   a) A certified copy of the Certificate of Title for the lands affected, copies of any restrictive covenant(s) or caveats registered by the municipality and any other documents required by the Development Authority to verify that the applicant has a legal interest in the land for at least the period of time necessary to process the application to a final decision on the amendment.

   b) A statement of the reasons for the request to amend the Bylaw;

   c) A properly dimensioned map of an appropriate scale indicating the site to be amended, its relationship to existing land uses within a 1.0 km (0.6 mi.) radius of the boundaries of the site and any prominent geographic or natural features;

   d) The appropriate fee as amended from time to time by Council Resolution; and

e) Where the applicant is an agent acting for the owner, a letter from the owner(s) verifying the agent's authority to make the application.

3. Advertising Requirements:

a) Pursuant to Section 606 of the Municipal Government Act, on receipt of an Application for Amendment to this Bylaw and prior to second reading of the amending bylaw, the Development Authority shall cause to be published once a week in two (2) consecutive issues of a newspaper circulating in the local municipality, a notice containing:

i) the purpose of the proposed amending bylaw and the purpose of the public hearing;
ii) the address where the proposed amending bylaw may be inspected by the public;
iii) in the case of the public hearing the time, date and place of the public hearing which date shall not be less than five (5) days following the second newspaper publication date.

b) In addition to the notice requirements identified in Subsection (3)(a), the following additional information shall be provided for an amendment to change the district designation of a parcel of land pursuant to Section 692(4) of the Municipal Government Act:

i) the municipal and legal address of the parcel of land;
ii) a map showing the location of the parcel of land;
iii) written notice containing information described in Subsections 3(a) and 3(b) shall be sent to:
- the assessed owner(s) of that parcel of land shown on the assessment roll; and
- each owner of adjacent land at the name and address shown on the assessment roll.

c) Technical Amendment:

Notwithstanding Subsections 3(a) and 3(b), a bylaw referred to in this section may be amended without giving notice or holding a public hearing, if the amendment constitutes a clerical, technical, grammatical or typographical error or does not materially affect the Land Use Bylaw in principle or substance.

4. Public Hearing:

a) Pursuant to Section 230 of the Municipal Government Act, in the public hearing, Council:

i) must hear any person, group of persons or person representing them, who claims to be affected by the proposed bylaw and who has complied with the procedures outlined by the Council, and
ii) may hear any other person who wishes to make representations and whom Council agrees to hear.

b) After considering the representations made to it and any other matter it considers appropriate, the Council may:

i) pass the bylaw;
ii) make an amendment to the bylaw and proceed to pass it without further advertisement or hearing(s); or
iii) defeat the bylaw.

SECTION 51: ENFORCEMENT

1. Right of Entry:

Pursuant to Section 542 of the Municipal Government Act, the Development Authority, a special constable and/or any other designated officer may enter into or upon any land or building within the municipal boundary for the purpose of ensuring compliance with the Land Use Bylaw.

2. Contravention:

a) Where the Development Authority finds that a development or use of land or buildings is not in accordance with the Act, a Development Permit, or this Bylaw the Development Authority may, by notice in writing, order the registered owner, the person in possession of the land or buildings or the person responsible for the contravention or all or any of them to:

i) stop the development or use of the land or buildings in whole or in part as directed by the notice;
ii) demolish, remove or replace the development; or
iii) take such other measures as are specified in the notice so that the development or use of the land or buildings is in accordance with the Act, the Regulations, a Development Permit, Subdivision Approval, or this Bylaw, as the case may be, within the time specified by the notice.

b) Where a person fails or refuses to comply with an Order under Section 51(2)(a) or an Order of the Subdivision and Development Appeal Board under the Act within the time specified, the Council or person appointed by it may, in accordance with the Act, enter upon the land or buildings and take such action as is necessary to carry out the Order.

c) Where the Development Authority, or a person appointed by it, carries out an Order, the Council shall cause the costs and expenses incurred in carrying out the Order to be placed on the tax roll as an additional tax against the property concerned and that amount shall be collected in the same manner as taxes on land.

SECTION 160: M1 – GENERAL INDUSTRIAL

1. Purpose:

The purpose of this district is to provide for a variety of light and medium industrial and manufacturing uses, which are not expected to have negative impacts beyond the boundaries of the site.

2. Permitted Uses:

Animal Hospitals and Shelters
Auction Yards
Automotive & Recreational Vehicle Repair
Automotive & Recreational Vehicle Sales and Service
Buildings accessory to permitted and discretionary uses
Business Support Services
Fleet Services
General Contractor Services
Greenhouses and Plant Nurseries
Industrial Vehicles and Equipment Sales and Service
Manufacturing, Processing, Packaging, and/or Assembly of Goods or Materials
Outdoor Storage
Parking Facilities
Recycling Depots
Veterinary Clinics
Warehousing

Discretionary Uses:

Amusement Establishment, Indoor
Amusement Establishment, Outdoor
Bulk Fuel Storage & Distribution
General Industrial
Public Utility Service
Signs
Surveillance Suites
Temporary Sales Centres
Other uses, which in the opinion of the Development Authority are similar to the above listed permitted and discretionary uses

3. Minimum Lot Size:

As determined by the Development Authority, having due regard to the merits of the proposed development.

4. Minimum Lot Width:

Minimum lot width shall be 30.0 metres.

5. Minimum Setbacks:

a) Front: 7.5 metres
Rear: 3.0 metres
Side: 3.0 metres or 20% of the lot width, whichever is greater

b) Any development immediately adjacent to a residential district shall have a setback of 6.0 metres to all yard setbacks adjacent to the residential district.

6. Maximum Site Coverage:

The maximum site coverage by all buildings shall not exceed sixty percent (60%) provided that provision has been made for on-site parking, loading, storage and waste disposal to the satisfaction of the Development Authority.

7. Maximum Building Height:

The maximum building height shall not exceed 14.0 metres.

8. General Provisions:

a) Storage yards and all outside storage areas shall be screened from all adjacent sites and thoroughfares to the satisfaction of the Development Authority.

b) No industrial activities shall be carried out which would produce glare, heat, noise or vibration so as to be offensive beyond the boundary of the site.

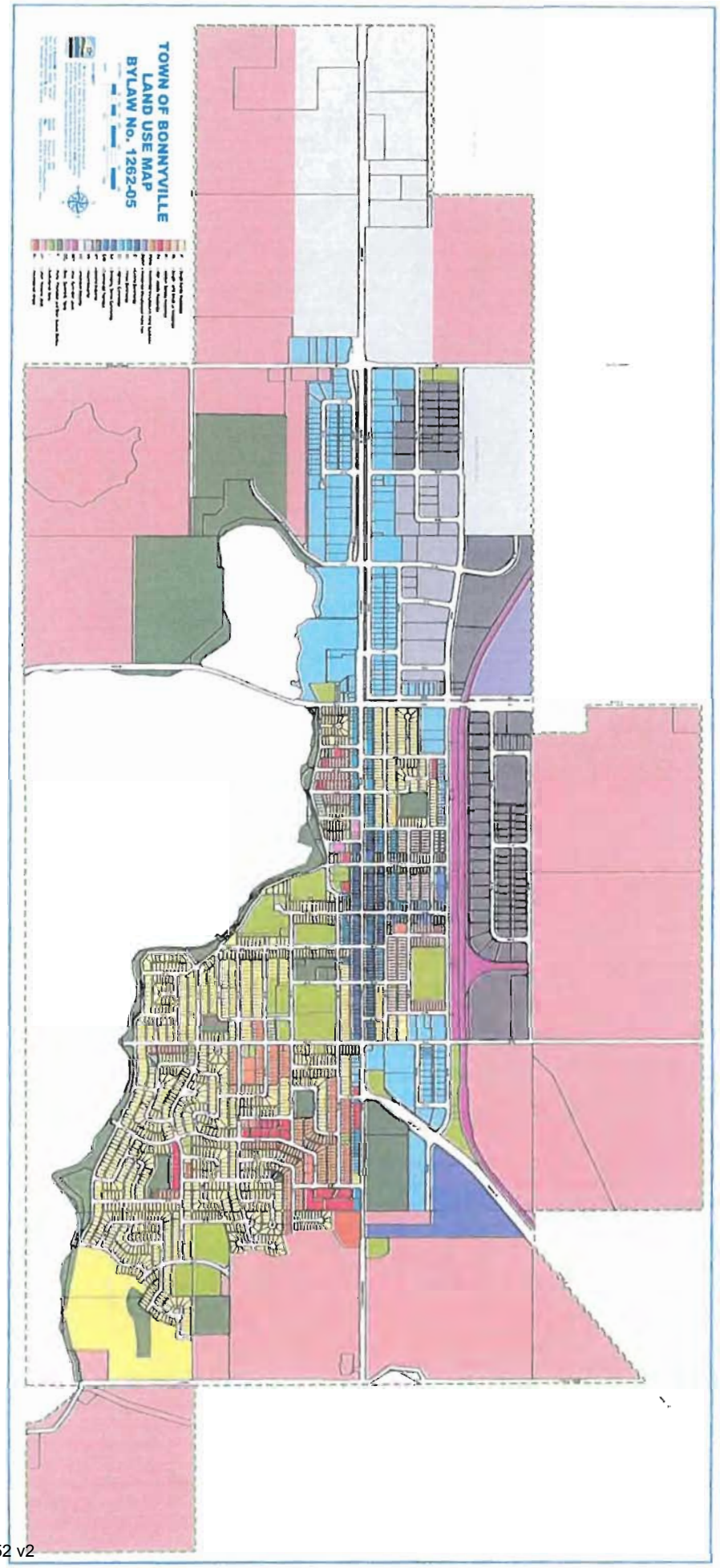
c) Where industrial uses are adjacent to, or visible from residential areas, a solid fence and/or landscaped buffer shall be provided to the satisfaction of the Development Authority.

d) All on-site lighting shall be located, oriented and shielded so as to restrict the unnecessary illumination of adjacent properties.

e) Uses that cause or may cause contamination, damage or disturbance to the surround environment are restricted in accordance with federal, provincial and/or municipal provisions.

9. Other Provisions:

a) Administrative Procedures and Regulations: refer to Part II.
b) General Parcel Provisions: refer to Part VI.
c) Special Land Use Provisions: refer to Part VII.
d) Parking and Loading Regulations: refer to Part VIII.
e) Sign Regulations: refer to Part IX.

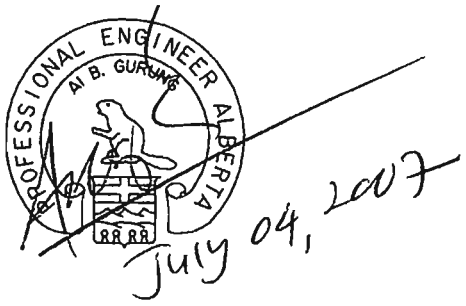

TOWN OF BONNYVILLE
LAND USE MAP
BYLAW No. 1262-05

BONNYVILLE COMMERCIAL DEVELOPMENT

DALE HAMMONS SITE

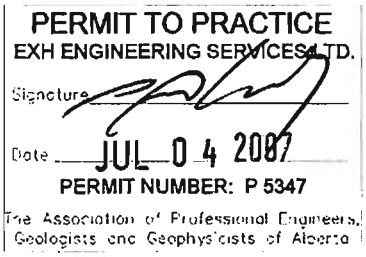
Stormwater Management Report

Prepared by:



Ai B. Gurung, Ph. D., P. Eng.

Reviewed by:



Gerard Kennedy, P.Eng.

JULY 2007

PROJECT NO. 4206100

EXH Engineering Services Ltd.
9335 – 47th Street
Edmonton, AB. T6B 2R7

TABLE OF CONTENTS

NOMENCLATURE

AENV:	Alberta Environment
EXH:	EXH Engineering Services Limited
IDF:	Intensity Duration Frequency
The Site:	Dale Hammons Site
The Project Site:	Dale Hammons Site
WSC:	Water Survey of Canada
$m^3/s/km^2$:	Cubic meters per second per square kilometres
L/s/ha:	Litres per second per hectare

EXECUTIVE SUMMARY

This report presents the detailed hydrotechnical analysis for the Stormwater Management Plan of Dale Hammons Subdivision Site. The Project Site is located in the Town of Bonnyville and its legal location is SW 13-61-6-W4M.

The primary objective of this project is to provide the Engineering Services for Stormwater Management Design of Dale Hammons Subdivision Site. The site will be developed in 2 phases (Phase 1 and Phase 2). This report includes Stormwater Management for Phase 1 only.

EXH Engineering Services Ltd. performed detailed hydrotechnical analysis for the Project Site based on the topographical survey of Dale Hammons Subdivision Site and the topographical map of the surrounding drainage basin. The hydrological data of nearby Water Survey of Canada gauges was also obtained. The maximum 1:100 year pre-development flow rate of 0.7 cubic meters/per second/per square kilometre (7.0 litres per second per hectare) was used for stormwater analysis and design of Dale Hammons Subdivision Site. As the nearest rainfall station to the proposed site is located at Cold Lake Airport, the Rainfall Intensity – Duration – Frequency (I – D – F) relationships for Cold Lake Airport were used in performing the rainfall runoff analysis of the project site. A 1:5 year and 1:100 year 24 hour Chicago Hyetograph for the Cold Lake Airport was used in the analysis and design of minor systems and major systems, respectively.

This work was carried out following the guidelines for the "Planning for the Stormwater Management" and "The Stormwater Best Management Practices of The Stormwater Management Guidelines for the Province of Alberta (Alberta Environment, 1999)". XP-SWMM Model was used in the analysis to determine the adequacy of the components of the Stormwater Management System. The roadside ditches (swales), culverts and stormwater pond were designed to adequately handle the floods generated by design storms. A stormwater retention pond of capacity 4,700 m^3, which includes a permanent pool of volume 3,000 m^3 was proposed at the site.

The outflow from the present site will be discharged to the roadside ditch at street 67 (at the west side of the site), it will then cross street 67, reaching the proposed stormwater pond at the neighbouring property (SE14-61-6-W4M). From the proposed stormwater pond at the neighbouring property the stormwater will be pumped and discharged to Highway # 28, which ultimately discharges to Moose Lake.

1.0 INTRODUCTION

Dale Hammons commissioned EXH Engineering Services Ltd. (EXH) to provide engineering services to design the subdivision and Stormwater Management Plan for the site of Bonnyville Commercial Development. The project site lies in the Town of Bonnyville and its legal location is SW 13-61-6-W4M.

The scope of works for the Stormwater Management component of the engineering services includes hydrotechnical analysis and design of the Stormwater Management System for the subdivision such as designing of the roadside ditches and culverts, and the assessment of the impact of the development on the receiving water body where the stormwater from the project will be ultimately discharged.

This project will be developed in two phases. Phase 1 will be developed first with Phase 2 being developed at a later time. This study includes the analysis and design of the stormwater runoff generated in Phase 1 only.

EXH based the analysis mainly on the data obtained by topographical survey and topographical mapping of the project area. The Project Location Plan, the Drainage Area Map and the Stormwater Management Plan are shown on Drawing # 4206100–LP, 4206100–DA, and 4206100–01, respectively in Appendix A.

2.0 METHODOLOGY

The following methodology was used in the detailed hydrotechnical analysis:

- The existing information for the drainage area reviewed, included:
    - Topographical maps.
    - Hydrological data for nearby Water Survey of Canada (WSC) gauges.
    - Alberta environment (AENV) guidelines.
- Survey work was undertaken on the project site to determine the existing grades at the site.

- Hydrotechnical analysis for the project site was undertaken using the survey information for the project site.
- Hydrotechnical analysis of the culverts, roadside ditches and the stormwater pond was carried out using an XP-SWMM model.

3.0 DESIGN CRITERIA

This work was carried out following the guidelines for the "Planning for Stormwater Management" and "The Stormwater Best Management Practices of the Stormwater Management Guidelines for the Province of Alberta (Alberta Environment, 1999)".

As the nearest rainfall station to the proposed site is located at Cold Lake Airport, the Rainfall Intensity – Duration – Frequency (I – D – F) relationships for Cold Lake Airport were used in the rainfall runoff analysis and design in this project.

Based on the analysis of 1:100 year maximum instantaneous discharge of nearby gauging stations to the site supplied by the Water Survey of Canada (WSC) a pre-development flow rate of 0.07 $m^3/s/km^2$ (0.7 L/s/ha) has been found for the project site. The value of unit area discharge obtained by this analysis is very small. In the Stormwater Management Design of Victor Business Park (EXH, August 2006) EXH used the pre-development flow rate of 0.27 $m^3/s/km^2$ (2.7 L/s/ha). The City of Cold Lake, Master Drainage Plan (UMA, August 2006) found that a pre-development flow rate of 0.2 $m^3/s/km^2$ (2.0 L/s/ha) can be used in the area surrounding the project site.

The results of the regional analysis found by using instantaneous discharge generally reflect actual discharges observed on the nearby gauging stations. However, transferring the discharge based on the results of the regional analysis to the project site may not be always accurate. The results of model analysis, or the similar technique, which represent the actual project site response, produce the most reliable estimation of the pre-development flow rate. Based on communication with the Urban Systems (The consultant of the Town of Bonnyville) a pre-development flow rate of 0.7

$m^3/s/km^2$ (7.0 L/s/ha) has been determined for the project site. This value of the pre-development flow rate will be used in this analysis and design.

Appendix B presents the summary of the maximum instantaneous discharges of nearby gauging stations obtained from WSC and corresponding Pre-development Flow Rate for each stream and a copy of the Communication with Urban Systems Ltd.

4.0 STORMWATER ANALYSIS

The Stormwater Management Plan has been included in Drawing # 4206100–01 in Appendix A. The area of the entire Project Site is 25.8 ha and the area included in Phase 1 is 18.9 ha. It is anticipated that the site will be developed in such a way that the future land use distribution will be as given in Table 1.

TABLE 1: FUTURE LAND USE DISTRIBUTION OF PROJECT SITE

Land Use Type	Percentage Coverage (%)
Commercial Building	10
Gravel Pavement	60
Parks/Grassed Land	30

In the detailed design, a stormwater run-off analysis for Dale Hammons Subdivision Site was conducted using XP–SWMM, which consists of a series of models used for hydrograph, hydraulics and water quality analysis. The hydrologic and hydraulic analyses were conducted based on the existing information in the project area. The two models utilized for this study are RUNOFF and HYDRAULIC. The RUNOFF model incorporates design hyetographs, which are rainfall patterns to develop hydrographs for each sub-catchment area within the project area. Hydrographs developed in RUNOFF are used as input for the HYDRAULIC model.

4.1. XP-SWMM Hydrological Analysis

The percentage imperviousness for different land use types used in hydrological analysis by the XP–SWMM model is given in Table 2. Run-off hydrographs for 1:5 year and 1:100 year 24-hour duration storm events for the minor and major system, respectively, were simulated for the project area using the XP–SWMM RUNOFF mode. Chicago type rainfall hyetographs of 24 hours duration of different return periods have been derived from the rainfall I–D–F data of Cold Lake. The storms used in this analysis are summarized in Table 3. The sub-catchment characteristics such as topography, soil conditions, imperviousness and longest flow paths are included in each sub-catchment's description. The hydrologic and runoff parameters used for this detailed analysis are listed in Tables 2, 3, 4, and 5; details of the input data are also presented in Appendix C.

TABLE 2: PERCENT IMPERVIOUSNESS

Land Use Type	Percentage Imperviousness (%)
Parks/Grasslands/Ponds	30%
Asphalt or Concrete Pavement	95%
Light Commercial Buildings	70%

TABLE 3: SELECTED STORMS FOR ANALYSIS

Storm	Return Period (Years)	Total Rainfall (mm)
Chicago Type, 24 hours, Cold Lake Storm	100	97
	50	88
	25	78
	10	66
	5	56

4.2. XP-SWMM Hydraulic Analysis

The HYDRAULIC model routes the run-off hydrographs through the proposed Stormwater Management System network and also tests the adequacy of each component of the network. The model is capable of simulating various hydraulic components present in this area, such as roadside ditches, culverts and ponds. The strength of the model is its' ability to carry out dynamic simulation based on the actual ground profiles and connections of the system. The run-off hydrographs generated in the hydrologic model for the storms presented in Table 3 were used in the hydraulic analyses to assess the response of the system to different storms.

The XP–SWMM Layout Plan is shown on Drawing # 4206100–01 in Appendix A. Appendix C shows the XP-SWMM results for the detailed stormwater analysis of the Dale Hammons Site. The simulated flows corresponding to storms of different return periods for the project area are summarized in Table 6.

TABLE 4: RUNOFF MODEL PARAMETERS

Description		Parameter Values
Manning's Roughness	Impervious Surface	0.05
	Pervious Surface	0.25
Depression Storage (mm)	Impervious Surface	4.0
	Pervious Surface	10.0
Initial Rate (mm/hr)		76
Final Rate (mm/hr)		2.5
Decay Rate (1/sec)		0.00115

TABLE 5: DESIGN RAINFALL EVENTS	
Rainfall Event	1:5 (Minor system)
	1:100 (Major system)
Duration (hrs)	24

TABLE 6 : MAXIMUM SIMULATED CONDITIONS		
Simulation Method	**Return Period (Year)**	**Simulated Discharge (m^3/s)**
XP–SWMM Modeling (Version 10)	100	0.132
	50	0.131
	25	0.128
	10	0.112
	5	0.111

Note:

- The Rainfall I–D–F of Cold Lake was converted to Chicago Hyetograph for the model simulation.
- The Site has an area of 0.189 km^2 (18.9 ha); corresponding to a pre-development flow rate of 0.7 $m^3/s/km^2$ (7.0 L/s/ha) an outflow of 0.133 m^3/s is allowed from the project site.

4.3. Sensitivity Analysis

Sensitivity analysis was carried out to observe which model parameters are sensitive and need additional information. The key model parameters were varied for 15% and 25% and their responses were observed. The main investigated parameters are the sub-catchment area, percentage of imperviousness, sub-catchment width and average sub-catchment slope. Other investigated parameters include Horton infiltration parameters which relate to a depression storage and Manning's roughness coefficients for both pervious and impervious cases.

The parameters were determined to be "not sensitive" to "extra sensitive". The sub-catchments area and the imperviousness were found to be "extra sensitive". The sub-catchments width as well as the pervious and impervious surface 'n' value were found to be "not sensitive".

The variation of the sub-catchments area from +25% to -25% resulted changes of +25.0 % to -25.0 % of both total and peak flows. Likewise, the variation of sub-catchment's percentage of imperviousness from +25% to -25% resulted changes of -17.1 % to 17.1 % of total flows and -10.2 % to 10.2 % of the peak flows, respectively. See Appendix C for the details of sensitivity analysis.

This sensitivity analysis indicates that sub-catchments characteristics of the Project Site should be investigated further to obtain more accurate information. Nevertheless, the XP-SWMM results obtained from the present analysis provides a good basis for this Stormwater Management System.

5.0 STORMWATER DESIGN

Based on the designed road grade level, a network of stormwater management systems were analyzed using the XP-SWMM model. Each component of the stormwater management system was tested for its adequacy.

The components included are as follows:

5.1. Pond

To match the post development peak flows with the pre-development peak flows a stormwater pond was provided. Based on the detailed XP-SWMM Stormwater Analysis, a stormwater retention pond of 4,700 m^3 was designed, with an additional free board of 0.60 m. A permanent pool of 3,000 m^3 is included within this facility. Catchment data and the Stormwater Management Planning designed parameters are

presented in Table 7. The detailed design of the stormwater retention pond with a 1:100 year water surface elevation is shown in Drawing # 4206100 – 02.

5.2. Outlet Design

The outlet of the stormwater management system consists of an outlet pipe of 300 mm dia. with an orifice of 0.24 m. The outlet flow is limited to 0.132 m^3/s and the velocity will be 2.85 m/s which should prevent erosion. The pipe outlet is accompanied by an emergency spillway of 3 m x 0.3 m. The details of the pond, showing the inlet and outlet pipes and the emergency spillway, are included in Drawing # 4206100 – 02 in Appendix D. The minimum cover provided for the pipes (both inlet and outlet) is 0.30 m. The designed pond inlet elevation (culvert invert) and pond outlet elevation are also given in Drawing # 4206100 – 02.

5.3. 1:100 Year Overland Flow Route

The Project Site will be graded in such a way that all stormwater runoffs generated at the site will flow through the proposed drainage network and will ultimately be collected in the stormwater pond. Drawing # 4206100-01 shows the direction of the runoff through the ditches or culverts before reaching the stormwater pond. Drawing # 4206100-01 also shows direction of the 1:100 year overland flow.

TABLE 7: SUMMARY OF DESIGN INFORMATION

Basin or Parameter Description	Parameter Values
Project Site Area (km^2)	0.189
Pre-Development Flow Rate ($m^3/s/km^2$)	0.7
Detention Pond Volume (m^3) – Without Free Board	4,700
Maximum Allowable Discharge from Pond (m^3/s)	0.133 (or 133 L/s)

Invert Elevation of Permanent Pool (m)	547.62
Permanent Pool Water Level Elevation (m)	549.62
1:100 Year Design Water Level Elevation (m)	550.62
Pond Crown Design Elevation (m)	551.22
Pond Inlets (1 and 2) – 450 mm and 300 mm Diameter Culvert:	
I. Upstream Invert Elevation (m)	550.27
II. Downstream Invert Elevation (m)	550.07
Pond Outlet –300 mm Diameter Culvert:	
I. Upstream Invert Elevation (m)	549.62
II. Downstream Invert Elevation (m) ★ ***Note**: Orifice of 0.24m will also be installed here*	549.17
Emergency Overflow Spillway:	
I. Width (m)	3.0
II. Design Elevation (m)	550.92

6.0 WATER QUALITY

Sediment will predominantly contaminate the runoff. The minimum guidelines for stormwater quality in the Province of Alberta requires removal of 85% of sediments with particle size 75 µm or greater. Depending on the type of land use, stormwater may contain a significant quantity of toxic metals, salts, nutrients, oils and grease, bacteria, and other contaminants.

The levels of various contaminants can be affected by a number of factors, which include the type of land uses, size and intensity of the runoff event, the time interval between events, and the time of year. Stormwater control practices can significantly affect the surface water quality. It is important, to consider the quality of the stormwater in association with the preferred method of control to make certain that no deterioration in either surface water or groundwater results.

The future land use of the site will consist of Commercial Buildings, Gravel Pavement, and the Parks/Grassed Land (Table 1). The quality of the stormwater is a major concern in this project because the outlet from the proposed Stormwater Pond ultimately discharges to Moose Lake. Further, AENV (1999) recommends that if the catchment area of a Project Site is more than 5.0 ha, a provision for a wet pond should be made. Therefore, following the guidelines of AENV (1999), a permanent pool of 3,000 m^3 with a depth of 2.0 m has been proposed for the site. To maintain the circulation requirements of the water in the pond from one of the inlets, a channel with a "Separator Berm" will be constructed so that water reaches the outlet only after flowing through the permanent pool.

7.0 MAINTENANCE CONSIDERATIONS

Although the Stormwater Management Facility is designed to minimize maintenance practices some regular maintenance and inspection practices, as outlined in Table 8, are required.

TABLE 8: TYPICAL REQUIRED MAINTENANCE ACTIVITIES		
Item No.	**Activity Description**	**Schedule**
1	▪ Routine Inspection. ▪ Inspect erosion of channel banks or bottom. ▪ Monitor for sediment accumulation in the sediment catch basins. ▪ Examine to ensure that inlet and outlet. devices are free of debris and operational.	Inspect after major storm, annually or as required.
2	▪ Routine Maintenance. ▪ Repair undercut or eroded areas. ▪ Litter and debris cleanup. ▪ Seed or sod to restore dead or damaged ground cover. ▪ Remove sediment accumulated in the sediment catch basins.	Seasonal or as required.
Source: Modified from WMI, 1997		

8.0 CONCLUSIONS AND RECOMMENDATIONS

This report presents a Stormwater Management Design for Dale Hammons Site. EXH Engineering Services Ltd. provides the following conclusions and recommendations based on the study findings:

- A stormwater retention pond with a capacity of 4,700 m^3 which also includes the permanent pool of volume 3,000 m^3 is proposed at the site.
- The outflow from the site will be discharged to the roadside ditch at street 67, and then it will reach the stormwater pond at the neighbouring property. From there water will be pumped and discharged to Highway #28 and ultimately be discharged at Moose Lake.

- To control post development to pre-development flow, a pond outlet pipe of 300 mm diameter has been provided.
- The water quality issues will be addressed by including a wet pond.

BIBLIOGRAPHY

- Alberta Environment, January 2006, Standards and Guidelines for Municipal Waterworks, Wastewater and Storm Drainage Systems.

- Alberta Environment, January 1999, Stormwater Management Guidelines for the Province of Alberta.

- EXH Engineering Services Ltd. (August 2006), Victor Business Park, Stormwater Management Design.

- National Research Council Canada, undated, Hydrology of Floods in Canada: A Guide to Planning and Design.

- UMA Engineering Ltd. (August 2006) City of Cold Lake, Master Drainage Plan.

- Watershed Management Institute (WMI), 1997, Operation, Maintenance, and Management of Stormwater Management Systems, Prepared for: US EPA Office of Water, Washington, DC.

From: Anton Bester [mailto:ABester@urban-systems.com]
Sent: Thursday, October 20, 2011 4:49 PM
To: Katherine Currie; Lyndon Lay (Bonnyville)
Cc: Nic Abarca
Subject: FW: Dale Hammons Site SWMP Comments

Hello Katherine / Lyndon,

I do apologies for hanging on to this for so long but here is our comment in response to the Dale Hammons Site SWMP. Please give Nic or myself a call if you have any questions. Also feel free to ask the consultants to contact us if they need any clarifications.

One particular point (#5), it reminds me of the North Point and something worthwhile considering. We might want to further discuss this point to ensure we all on the same page moving forward.

Regards,

Anton

From: Nic Abarca
Sent: Tuesday, October 11, 2011 9:46 AM
To: Anton Bester; Mohammed Elenany; Golnaz Azimi (gazimi@urban-systems.com)
Subject: Dale Hammons Site SWMP Comments

Hello all,

Here are my comments regarding the above SWMP:

1. The release rate used in the SWMP was 7 L/s/ha, and was based on a recommendation by Golnaz. From the Master Drainage Plan, a maximum release rate of 7.32 L/s/ha can be deduced for the basin in which the property is located. Because the rate EXH is using for the SWMP is smaller but generally comparable, I think it's valid.

2. The report states that stormwater management was done for Phase 1 only; however there's an inconsistency on the total catchment area draining towards the pond. Phase 1 is 18.9 ha, but the modeling input in the appendix shows 19.4 ha draining into the pond. From Drawing 4206100-01 it looks as though the entire site (both Phase 1 and 2 = 25.8 ha) would drain into the pond. The facility should be sized to control runoff from the entire site, not just Phase 1.

3. It is possible that the pond would also have to control some offsite runoff from the east and the north (currently undeveloped land). They also appear to be using the 54th Avenue ditch to convey runoff from the south end lots, which means that a portion of this road would also drain into the pond. The pond's basin needs to be revised to account for these neglected areas that evidently drain into the facility. If no offsite runoff is to be considered, perimeter ditches should be designed where practicable.

4. Values of percent imperviousness used for modeling are not consistent with either AENV guidelines or with Town of Bonnyville design standards. There's a statement on Page 9 that says: *"the sensitivity analysis indicates that sub-catchment characteristics of the project site should be investigated further to obtain more accurate information. Nevertheless, the XP-SWMM results obtained from the present analysis provides a good basis for the SWMP"*. Because both sub-catchment areas and imperviousness values might actually be larger than what they used, the pond size could be greatly underestimated; this is undesirable for planning purposes.

5. The proposed pond discharges into the *"roadside ditch at street 67, and the it will reach a stormwater pond at the neighboring property"*. This might not be an adequate outlet, because what they refer to as a pond on the adjacent property might actually be just an intermittent slew on private property. The developer might have to upfront the costs associated with adequate stormwater infrastructure to provide an adequate outlet as per the Master Drainage / Master Servicing Plans.

6. Based on AENV guidelines, EXH has designed a wet pond in order to provide water quality enhancements. However, the volume of dead storage (permanent pool) provided in the pond might be insufficient. The permanent pool should be sized to store the volume of runoff from a 25 mm storm over the contributing area, which if considered the entire 25.8 ha, would be at least 6,450 m^3. They only provide 3,000 m^3, which is insufficient even for the 18.9 ha they considered as a catchment area.

That's all I have. Let me know if vou wish to discuss.