BYLAW NO. 1222-21

**BEING A BYLAW OF
MACKENZIE COUNTY
IN THE PROVINCE OF ALBERTA**

TO PROVIDE FOR OFF-SITE LEVIES FOR THE PURPOSE OF NORTH STORM WATER MANAGEMENT PLAN IN THE HAMLET OF LA CRETE

WHEREAS, pursuant to section 648 of the *Municipal Government Act,* RSA 2000, Chapter M-26, as amended, a municipality has the authority to pass an Off-Site Levy Bylaw; and

WHEREAS, the Council of Mackenzie County, in the province of Alberta, has deemed it necessary to establish an Off-Site Levy Bylaw to pay for the capital costs of new storm water management facilities in the Hamlet of La Crete; and

WHEREAS, the Council of Mackenzie County deems it necessary to require agreements to be entered into with owners of the lands within the boundaries of the Benefitting Areas that are to be subdivided or developed in respect of the payment of the Off-Site Levy; and

WHEREAS, Mackenzie County has prepared a La Crete North Storm Design Report;

NOW THEREFORE, the Council of Mackenzie County, in the province of Alberta, duly assembled, hereby enacts as follows:

1. **CITATION**

1.1 This bylaw may be cited as the La Crete North Storm Off-Site Levy Bylaw and referred to herein as “this Bylaw”.

2. **DEFINITIONS**

2.1 For the purposes of this Bylaw the following definitions shall apply:

a) Act – means the *Municipal Government Act*, RSA 2000, Chapter M-26, and amendments thereto;

b) Administration – means Mackenzie County Administrative Staff;

c) Benefiting Lands – means those areas located within Mackenzie County which will benefit from the Off-Site Infrastructure or Improvements subject of this Bylaw;

_____

_____

d) Council – means the Municipal Council of Mackenzie County in the Province of Alberta, as duly elected and defined in the Municipal Government Act, RSA 2000, Chapter M-26 and amendments thereto;

e) County – means the municipal district of Mackenzie County in the Province of Alberta;

f) Developer – means a person or entity who submits a Subdivision or Development Permit Application, pursuant to this Bylaw;

g) Off-Site Infrastructure or Off-Site Improvements – means the projects specified in Schedule "A" of this Bylaw for the purposes of storm water management in the Hamlet of La Crete.

3. APPLICATION

3.1 The total recoverable cost of the Off-Site Infrastructure, subject of this Bylaw is shown in Schedule "A" Section 6.0;

3.2 The Off-Site Levy fee is applicable to any Benefiting Lands as shown in Schedule "A" Figures 1 & 2;

3.3 The Off-Site Levy fee is charged in accordance with Schedule "A" Executive Summary;

3.4 Where it is determined that a development agreement is appropriate for an application for development or subdivision, the developer shall enter into a development agreement with the County and such development agreement shall ensure:

a. that provision is made for the payment of the Off-Site Levies as specified in this Bylaw with reasonable interest on the cost of improvements paid for in whole or in part by the municipality as established under the conditions of approval of the development permit for subdivision approval; or

b. that provision may be made for the deferring of payment of the Off-Site Levies to a future time certain or uncertain.

3.5 In the event that any of the Off-Site Levies imposed by this Bylaw or any other County Bylaw are not paid at the time specified in the development agreement, the County's Chief Administrative Officer is hereby authorized to impose the unpaid sums of money on the lands that are subject of the development agreement, and thereafter collect the same as unpaid taxes in accordance with the provisions of the Act.

4. SEVERABILITY

4.1 If at any time ay provision of this Bylaw is declared or held to be illegal, invalid, or ultra vires, in whole or in part, then that provision shall not apply and the remainder of this Bylaw shall continue in full force and effect and shall be continued as if it had been enacted without the illegal, invalid, or ultra vires provision.

5. REPORTING

5.1 Administration will review the status of Off-Site Levies and provide a report to Council on an annual basis.

6. ENACTMENT

6.1 Schedules “A” forms part of this bylaw.

6.2 This Bylaw shall come into force and effect upon the date of passing of the third and final reading.

READ a first time this 28th day of April, 2021.

READ a second time this 26th day of May, 2021.

READ a third time and finally passed this 26th day of May, 2021.

(original signed)
Joshua Knelsen
Reeve

(original signed)
Lenard Racher
Chief Administrative Officer

Schedule “A”
La Crete North Storm Design Report

La Crete North Storm

Design Report

Mackenzie County

Hamlet of La Crete

November 17, 2020

HELIX Engineering Ltd.

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HELIX ENGINEERING LTD.

DISCLAIMER

This Design Report has been prepared by HELIX ENGINEERING LTD for use in preliminary design concepts for the La Crete North Storm Design Report for the Hamlet of La Crete in Mackenzie County. The information and data contained herein represent HELIX's best professional judgement in light of the knowledge and information available to HELIX at the time of preparation. This Report and the information and data contained herein are to be treated as confidential and may be used and relied on only by HELIX and its employees. HELIX denies any liability whatsoever to other parties who may obtain access to this document for any injury, loss, or damage suffered by such parties arising from their use of, or reliance upon, this study or any of its contents without the express written consent of HELIX ENGINEERING LTD.

CORPORATE AUTHORIZATION

This document entitled "La Crete North Storm Design Report" was prepared by Helix Engineering Ltd.

Nov 19/20

APEGA 'Permit To Practice' # P11731

Randy Glenn, P. Eng

This is a scanned copy of the original.

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EXECUTIVE SUMMARY

Helix Engineering Ltd. has been retained to provide a storm water management plan for an area north of 109 Avenue in the Hamlet of La Crete. In addition, a problem area south of 109 Avenue was identified and our scope included finding a solution. The drainage basin encompasses 217.6 ha of land in a mix of residential and commercial / light industrial land use. The basin includes some developed areas, some infill areas as well as areas of new development.

The servicing strategy includes three (3) interconnected storm water ponds and a conveyance system of ditches, culverts, and gravity trunk sewers. The Overall Concept is shown on Figure 3.

Interim servicing for the lands south of 109 Avenue is accomplished with using Pond A as a zero-discharge pond with a temporary connection to the existing storm sewer at 101 Street. With zero discharge, Pond A will store 100% of the runoff and empty into the storm system only after the downstream pipes have capacity.

The estimated cost for the servicing strategy is $2,353,200 including engineering and contingencies. Based on this cost, levies have been calculated as $10,810 /ha.

1.0 GENERAL

The purpose of this report is to consider storm water management for the north area of La Crete. The report also addresses a problem area identified by the County as shown on Figure 1. The report presents conceptual designs for the proposed infrastructure. Final detailed engineering design will be in accordance with the latest Mackenzie County General Municipal Improvement Standards.

2.0 SERVICE AREA

The service area is 217.6 ha. The lands included area as follows:

North of 109 Avenue (TWP RD 1060) – Management Area

- South half of SW16-106-15-5
- SE16-106-15-5
- SW15-106-15-5

South of 109 Avenue (TWP RD 1060) – Problem Area

- Portions of North half of 9-106-15-5

The area north of 109 Avenue requires a stormwater management plan. The report provides this.

The area south of 109 Avenue has been substantially developed with no storm water management. The area has been identified as a problem for major drainage. The report seeks to provide a long-term solution.

3.0 PROPOSED LAND USE

The proposed land use and existing topography for the basin is shown on Figure 2. The area is a mix of residential with commercial and light industrial. The land use and benefitting areas are shown on Table 1.

TABLE 1 - BENEFITTING AREAS

	South of 109 Avenue		North of 109 Avenue		Total
	Existing	Future	Existing	Future	
Residential	16.0	41.6	-	32.0	89.6
Commercial/Light Industrial	-	-	12.8	115.2	128.0
Total	**16.0**	**41.6**	**12.8**	**147.2**	**217.6**

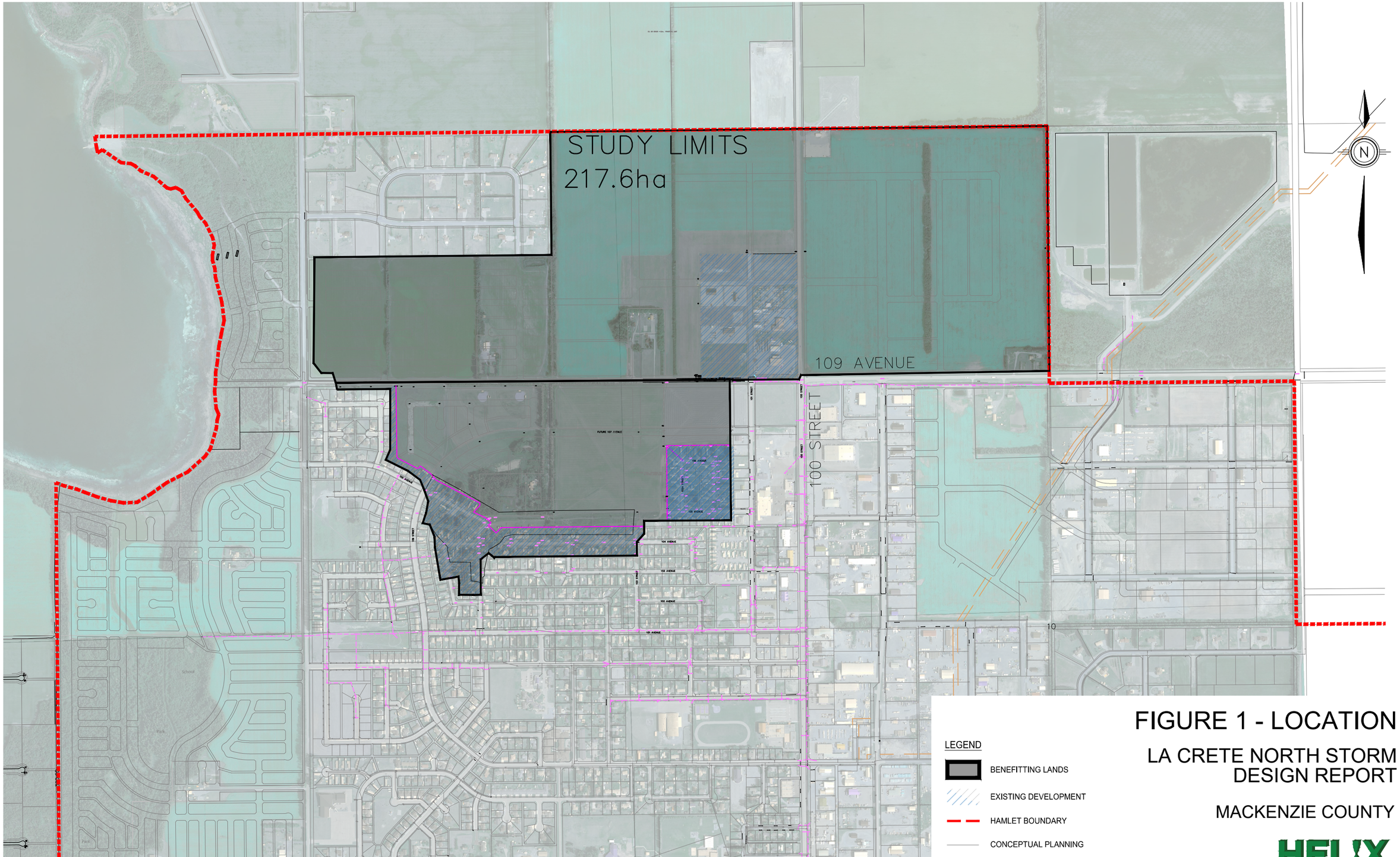


FIGURE 1 - LOCATION

LA CRETE NORTH STORM DESIGN REPORT

MACKENZIE COUNTY

HELIX Engineering Ltd.

2320-003-100DD-STORM SEWER.DWG Nov. 19, 2020 7:39 AM

COMMERCIAL/LIGHT INDUSTRIAL

64.0ha

64.0ha

Park

EX. DEVELOPMENT

Park

32.0ha

57.6ha

RESIDENTIAL

109 AVENUE

100 STREET

101 STREET

100A STREET

100B STREET

FUTURE 107 AVENUE

106 AVENUE

EXISTING DEVELOPMENT

105 AVENUE

105 AVENUE

109 STREET

EX. DEVELOPMENT

104 AVENUE

103 AVENUE

103 STREET

102 AVENUE

N

FIGURE 2

BENEFITTING AREA AND LAND USE

LEGEND

- RESIDENTIAL
- COMMERCIAL / LIGHTINDUSTRIAL
- EXISTING DEVELOPMENT
- HAMLET BOUNDARY
- CONCEPTUAL PLANNING

LA CRETE NORTH STORM DESIGN REPORT

MACKENZIE COUNTY

HELIX Engineering Ltd.

2320-003-100DD-STORM SEWER.DWG Nov. 19, 2020 8:06 AM

4.0 DESIGN CRITERIA

The design criteria used in the preliminary design is in accordance with the County Mackenzie County General Municipal Improvement Standards dated July 2014 and current Alberta Environment and Parks (AEP) guidelines. The preliminary design is based on the following criteria:

- 400 cu.m/ha storage required for Residential
- 550 cu.m/ha storage required for commercial and light industrial
- Rational method for estimating peak flows
- 5.0 l/s/ha pre-development flow rate
- 5:1 pond side slope from 1m above Normal Water Level (NWL)
- 7:1 pond side slope from 1m above NWL to 1m below NWL
- Minimum 2m water depth below NWL
- High Level IDF curves

The drainage system is addressed in two parts, the major and the minor system. Typically, the minor system is a series of catch basins and pipes that convey the 1:5 year rainfall event. The major system is the overland flow route for greater than the 1:5 year event, sized for the 1:100 year rainfall event. The major system can be the road/curbs/gutters or it can be the series of ditches and culverts. The major system also includes storage facilities, typically ponds, to attenuate the flows to pre-development rates, thereby minimizing the impact of development on the downstream systems.

5.0 DRAINAGE CONCEPT

As per the design criteria, the drainage concept has been developed to convey major and minor flows to storm water ponds. The ponds will store excess runoff generated from development and release to the downstream system at the pre-development flow rate. The resulting system will satisfy this requirement for the existing and future development areas defined by the basin.

Problem Area

The problem area south of 109 Avenue offers a few challenges to the system. In the absence of stormwater management facilities, the area is experiencing drainage issues during significant events. The undeveloped lands in this area have been subdivided into smaller parcels with multiple landowners. This makes assembling a storm water pond site difficult. Ultimately, it was determined the best option would be to site the facility for this area on the north side of 109 Avenue. Negotiations have occurred with the landowner and the land acquisition looks promising. There is pressure to develop this facility in the immediate future.

Ultimate Concept

The ultimate concept is shown on Figure 3. The system consists of ditches, storm sewer, culverts, and storm ponds. Runoff is directed to a series of 3 ponds, labelled as A, B and C. Ponds A and B are connected by an equalization pipe and will function as one pond. Controlled discharge from Pond A will flow east through ditches and culverts into Pond C. Controlled discharge from Pond C will be directed to the existing drainage course to the east on the lagoon site. To illustrate how these systems will work together, a profile of the system is provided on Figure 4.

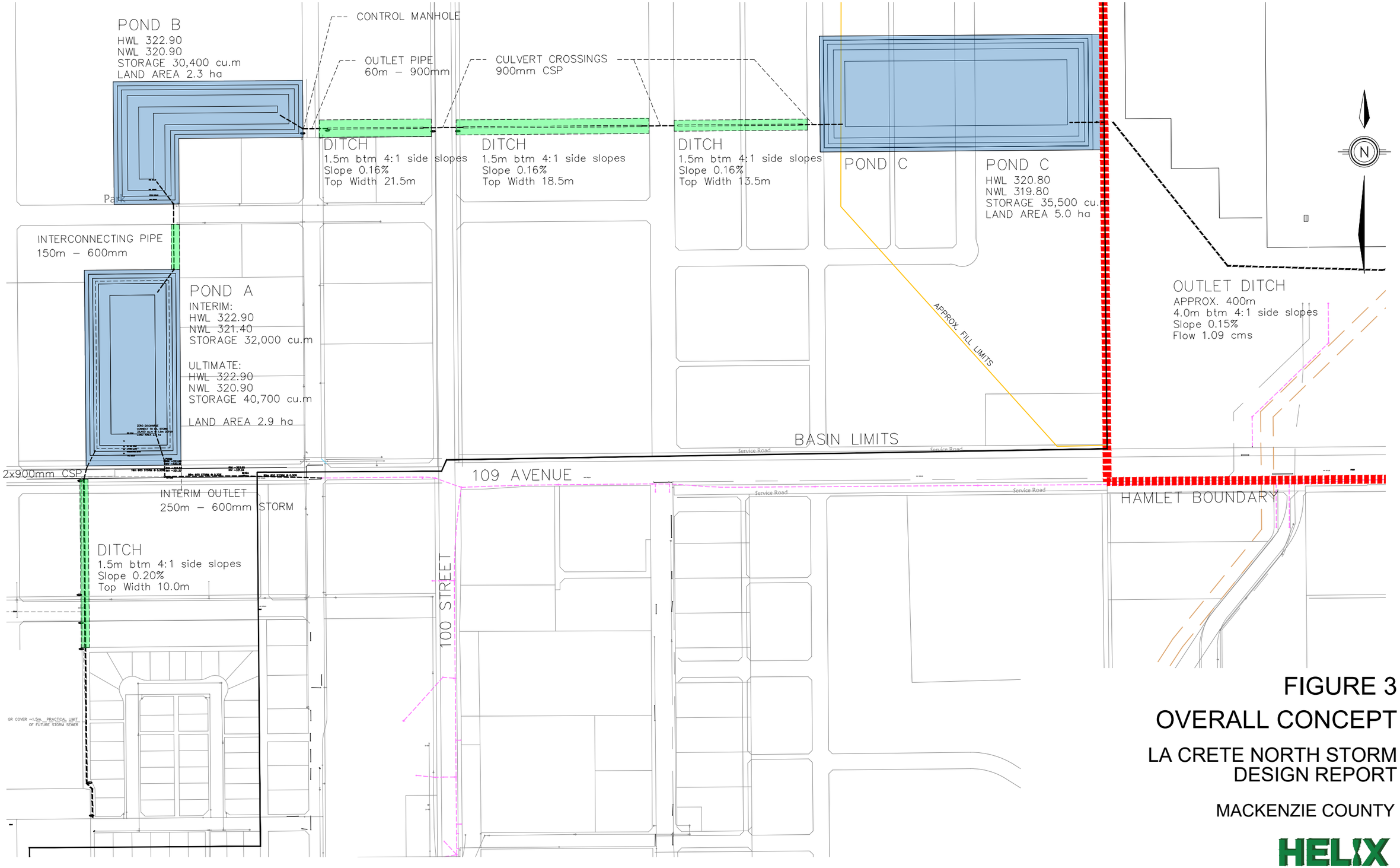
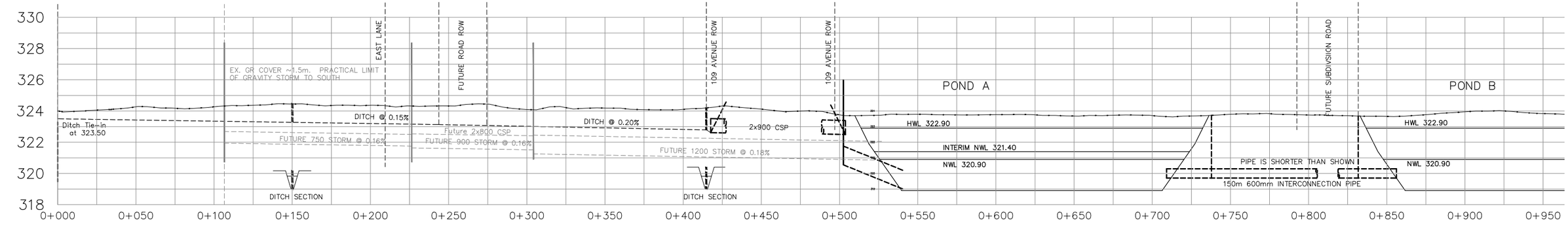


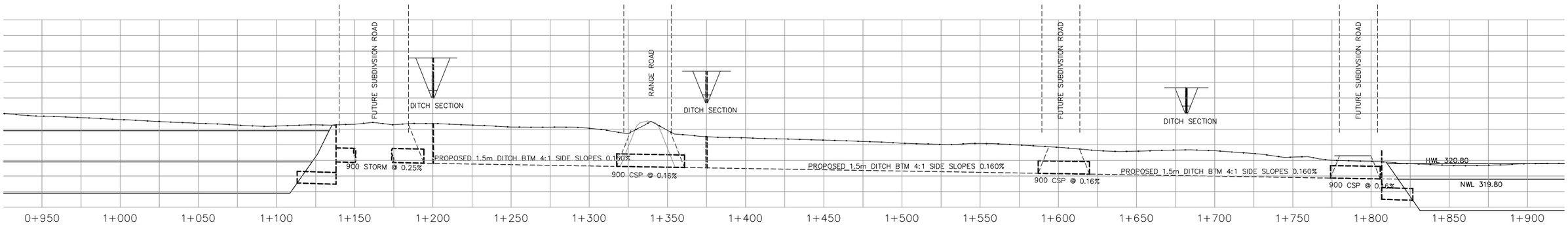
FIGURE 3
OVERALL CONCEPT

LA CRETE NORTH STORM DESIGN REPORT

MACKENZIE COUNTY

HELIX Engineering Ltd.





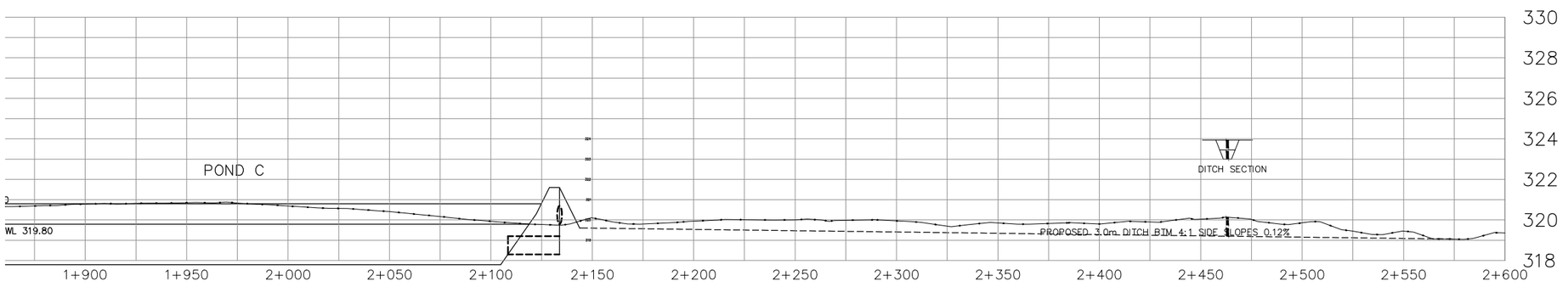


FIGURE 4
SYSTEM PROFILE
LA CRETE NORTH STORM DESIGN REPORT
MACKENZIE COUNTY

HELIX Engineering Ltd.

Interim Servicing

The ultimate system relies on the three ponds and the associated conveyance system to be in place. The immediate need is for Pond A. Interim construction of Pond A requires that the pond have an outlet, which will not exist until the ultimate system is constructed. On an interim basis, the outlet will be provided with a connection to the existing storm sewer system located at 109 Avenue and 101 Street. This system was not sized to accommodate flows from the pond. To ensure that the existing storm system is protected from negative impacts due to increased flows, operation of Pond A will be modified to allow 100% of the 100 year runoff from the basin south of 109 Avenue to be stored with zero discharge from the pond. To accommodate the storm sewer connection, the interim NWL will be set at or near 321.4, roughly 0.5m higher than the ultimate. The pond will only empty into the storm only when the water level in the existing pipes subsides to free up capacity.

The conceptual pond data is summarized in Table 2.

TABLE 2 - POND DATA

	Interim Pond A	Pond A	Pond B	Pond A & B	Pond C
Allowable Outlet - (l/s)	zero	-		768	1,088
Storage Required (cu.m)	31,553			71,040	35,200
Storage Provided (cu.m)	31,992	40,736	30,376	71,112	35,517
High Water Level (HWL)	322.9	322.9	322.9	322.9	320.8
Normal Water Level (NWL)	321.4	320.9	320.9	320.9	319.8
Pond Bottom (BTM)	319.9	319.9	319.9	319.9	317.8
Ultimate Pond A outlets to Pond B					

The ultimate concept will allow for urban servicing of the infill lands south of 109 Avenue. The water levels in Ponds A and B will allow a storm sewer connection that will service the area. This will allow the remaining lands to be developed with curb & gutter and storm sewer. The storm sewer should be designed for the 1:5 year event. The proposed ditch conveyance system that runs from south to north, crossing 109 Avenue, will continue to convey the major flows from the area. The road system should be designed to convey the major flows overland to the north-south ditch.

6.0 CONSTRUCTION COST ESTIMATES

The construction cost for the servicing concept has been estimated based on the preliminary design of the system. This includes the following:

- Ditches
- Road Culverts
- Inter-connection Pipes
- Storm Sewer
- Control Manholes
- Earthworks for storm ponds
- Erosion Control
- Restoration

In addition to the infrastructure costs, the costs estimates include the cost of land for Pond A and the associated ditching to the south. Also included:

- Cost of the servicing study
- 10% for Engineering
- 20% for Contingencies

The construction costs are summarized in Table 3.

TABLE 3 - ESTIMATED COSTS

	Phase				Total
	Offsite	Pond A	Pond B	Pond C	
Ditching/Piping	212,700	216,000	173,400	140,900	743,000
Ponds	25,000	287,600	300,300	408,100	1,021,000
Subtotal	237,700	503,600	473,700	549,000	1,764,000
Contingencies 20%	47,500	100,700	94,700	109,800	352,700
Engineering 10%	23,800	50,400	47,400	54,900	176,500
Subtotal	309,000	654,700	615,800	713,700	2,293,200
Design Report	60,000				60,000
Project Total	**369,000**	**654,700**	**615,800**	**713,700**	**2,353,200**

Note: $25,000 in Offsite ponds is the interim control manhole.

Land cost has been included in the offsite area for the offsite conveyance system (ditches) and for the land to construct Pond A. All other lands required to complete the servicing strategy will be taken as public utility lots at the time of subdivision. The offsite area is an exception to allow for an immediate solution to the problem area south of 109 Avenue.

7.0 BASIN LEVIES

The cost to service the basin will be charged back to the benefitting lands as a development levy. The system will result in the following development levy:

System Cost	$2,353,200
Benefitting Lands	217.6 ha
Levy	$10,810 / ha

Appendix A

Detailed Cost Estimates

Detailed Cost Estimate

Item	Unit	Unit Price	Pond A Offsites Quantity	Pond A Offsites Amount	Pond A Quantity	Pond A Amount	Pond B Quantity	Pond B Amount	Pond A and B Quantity	Pond A and B Amount	Pond A, B with Offsite Quantity	Pond A, B with Offsite Amount	Pond C Quantity	Pond C Amount	Pond A and B and C Quantity	Pond A and B and C Amount	Pond A, B, C with Offsite Quantity	Pond A, B, C with Offsite Amount
STORM PONDS																		
Common Excavation																		
To Stockpile	cu.m	3.50	-	-	62,800	219,800.00	58,602	205,107.00	121,402	424,907.00	121,402	424,907.00	79,695	278,932.50	201,097	703,839.50	201,097	703,839.50
To Fill	cu.m	4.00	-	-	-	-	-	-	-	-	-	-	3,600	14,400.00	3,600	14,400.00	3,600	14,400.00
Control Manhole	lump sum	25,000.00	1	25,000.00		-	1	25,000.00	1	25,000.00	2	50,000.00	1	25,000.00	2	50,000.00	3	75,000.00
Topsoil and Seeding	sq.m	4.00	-	-	11,637	46,548.00	11,868	47,472.00	23,505	94,020.00	23,505	94,020.00	15,069	60,276.00	38,574	154,296.00	38,574	154,296.00
Erosion Control	sq.m	9.00	-	-	2,364	21,276.00	2,520	22,680.00	4,884	43,956.00	4,884	43,956.00	3,272	29,448.00	8,156	73,404.00	8,156	73,404.00
CONVEYANCE																		
Storm Sewer:																		
600mm UltraRib	m	350.00	248	86,800.00		-	150	52,500.00	150	52,500.00	398	139,300.00	-	-	150	52,500.00	398	139,300.00
750mm PVC	m	500.00	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-
900mm PVC	m	750.00	-	-	-	-	70	52,500.00	70	52,500.00	70	52,500.00	40	30,000.00	110	82,500.00	110	82,500.00
Manholes	ver.m	2,750.00	6	16,500.00		-	6	16,500.00	6	16,500.00	12	33,000.00	-	-	6	16,500.00	12	33,000.00
Ditching	cu.m	5.00	3,413	17,062.50	-	-	3,968	19,837.50	3,968	19,837.50	7,380	36,900.00	9,988	49,938.75	13,955	69,776.25	17,368	86,838.75
Topsoil and Seeding	sq.m	4.00	4,830	19,320.00	-	-	2,967	11,868.00	2,967	11,868.00	7,797	31,188.00	6,307	25,228.80	9,274	37,096.80	14,104	56,416.80
Culverts:																		
600mm	lin.m	325.00		-	-	-		-	-	-	-	-		-	-	-	-	-
800mm	lin.m	450.00		-	-	-	45	20,250.00	45	20,250.00	45	20,250.00		-	45	20,250.00	45	20,250.00
900mm	lin.m	550.00	30	16,500.00	-	-		-	-	-	30	16,500.00	65	35,750.00	65	35,750.00	95	52,250.00
Road Repairs:																		
Pavement	sq.m	80.00	252	20,160.00	-	-	-	-	-	-	252	20,160.00	-	-	-	-	252	20,160.00
Gravel	sq.m	40.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Land - Pond	ac	30,000.00		-	7.2	216,000.00	-	-	7.2	216,000.00	7	216,000.00	-	-	7.2	216,000.00	7.2	216,000.00
Land - PUL	ls	5,500.00	1.0	5,500.00	-	-	-	-	-	-	1.0	5,500.00	-	-	-	-	1.0	5,500.00
Land - PUL	ls	12,600.00	1.0	12,600.00	-	-	-	-	-	-	1.0	12,600.00	-	-	-	-	1.0	12,600.00
Ditch Oversizing	ls	500.00	1.0	500.00							1.0	500.00			-	-	1.0	500.00
Culvert Oversizing	ls	17,718.90	1.0	17,718.90	-	-	-	-	-	-	1.0	17,718.90	-	-	-	-	1.0	17,718.90
		Subtotal		237,661.40	Subtotal	503,624.00	Subtotal	473,714.50	Subtotal	977,338.50	Subtotal	1,214,999.90	Subtotal	548,974.05	Subtotal	1,526,312.55	Subtotal	1,763,973.95
		Conveyance		212,700.00		216,000.00		173,400.00		389,400.00		602,100.00		140,900.00		530,400.00		743,100.00
		Ponds		25,000.00		287,600.00		300,300.00		587,900.00		612,900.00		408,100.00		995,900.00		1,020,900.00
		Construction		237,700.00		503,600.00		473,700.00		977,300.00		1,215,000.00		549,000.00		1,526,300.00		1,764,000.00
		Engineering 10%		23,800.00		50,400.00		47,400.00		97,700.00		122,000.00		54,900.00		153,000.00		176,400.00
		Basin Study		60,000.00						-		60,000.00		-		-		60,000.00
		Contingencies 20%		47,500.00		100,700.00		94,700.00		195,500.00		243,000.00		109,800.00		305,000.00		352,800.00
			Total	369,000.00		654,700.00		615,800.00		1,270,500.00		1,640,000.00		713,700.00		1,984,300.00		2,353,200.00

Basin Area	217.6	ha
Development Levy	10,800.00	/ha